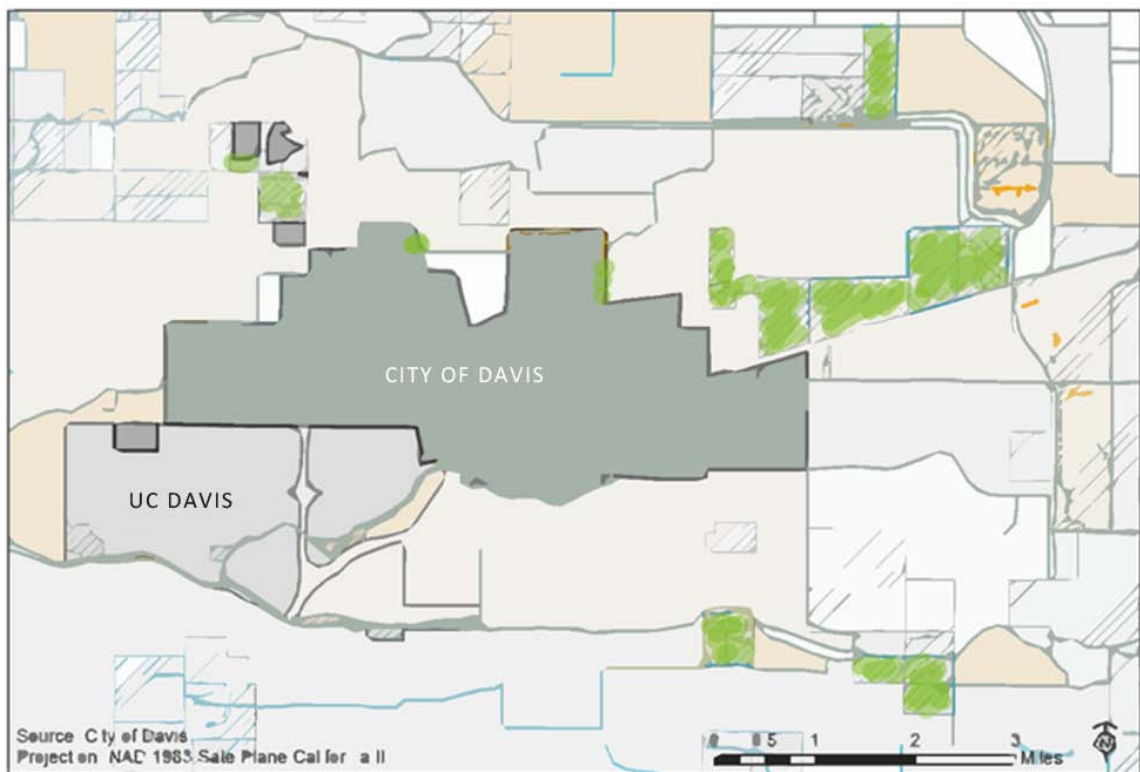


Growing at the Urban Edge

Enhancing Ecosystem Services

Through Community Farms in Davis, California



Susan Ellsworth
UC Davis, Community Development
2011

Growing at the Urban Edge: Enhancing Ecosystem Services
Through Community Farms in Davis, California

by

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B.A. (Colby College) 2003

THESIS

Submitted in partial satisfaction of the requirements for the degree of

MASTER OF SCIENCE
in
Community Development
in the
OFFICE OF GRADUATE STUDIES
of the
UNIVERSITY OF CALIFORNIA
DAVIS

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Summer 2011

To Colin for your endless humor, support, and creativity
in helping me see this through.

Also to Rob for helping me to “go big or go home”, to Steve for your
consistent sound advice, and to Mark for your willingness to jump on
board with another altruistic project.

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Abstract

The City of Davis has long supported open space and agricultural land preservation around the City's perimeter. The Davis Greenway Plan, produced in 1990 (Jones, Francis et al. 1989), as well as the City's Farmland Preservation Program (City of Davis 1995) and mitigation measures within the 2001 General Plan update, further cement its commitment to combining natural resource management, recreation and growth management while working to support continued agricultural use.

Passage of an innovative open space acquisition measure in November 2000, termed Measure O, has enabled the City to pursue these goals through the purchase and preservation of lands within the Davis planning area. Given their location within the fertile Sacramento Valley, the majority of these lands are currently under irrigated row or field crops, utilizing conventional, highly mechanized production techniques. As awareness regarding the environmental and human health impacts of conventionally grown foods increases and with it demand for locally grown foods, Measure O also provides the opportunity to demonstrate support for a new and increasingly sustainable model of agriculture.

What follows is a proposal for the establishment of community farms on lands acquired through the City's Open Space and Agricultural Preservation program. Specifically, this plan recommends making these publicly managed lands available for community-based multifunctional agriculture (CBMA) by providing incentives for practices that enhance ecosystem services and help the City of Davis to achieve its

planning goals. Through a set of site-specific and overarching management recommendations, this plan proposes an innovative new use regime for current lands and future acquisitions in support of the following three objectives:

- Agricultural land preservation
- Enhanced ecosystem services
- Increased food security

This plan is informed by ongoing collaboration with City staff and Open Space and Habitat Commissioners as well as stakeholder interviews, a foodshed assessment, case studies, and considerations for implementation. It is intended to support human and ecosystem health within the City of Davis and neighboring communities, while facilitating new entries into farming and improving the local food economy.

Excerpt from 2007 City of Davis General Plan Vision Section:

Parks and Open Space Program

- *Implement an open space program that creates, preserves and enhances open space and wildlife habitat.*
- *Provide a park system and recreational programs and facilities that meet the diverse needs of Davis citizens, enhance the environment and foster a sense of community.*

Agriculture

- *Protect the viability of agriculture and prime agricultural land in and around Davis.*
- *Encourage agriculture practices that are not injurious to the city's environment or residents.*

Ch. 1: Introducing Community Farms: Origins and Background

The Sacramento Valley, located in the northernmost section of California's great Central Valley, once encompassed a vast array of ecosystems ranging from annual and perennial grasslands to Valley Oak and riparian woodlands, vernal pools and freshwater marshes (Olson and Cox 2001). These ecosystems supported tremendous biodiversity as well as significant populations of native peoples.

Over the last 200 years, this landscape has been transformed, leaving only traces

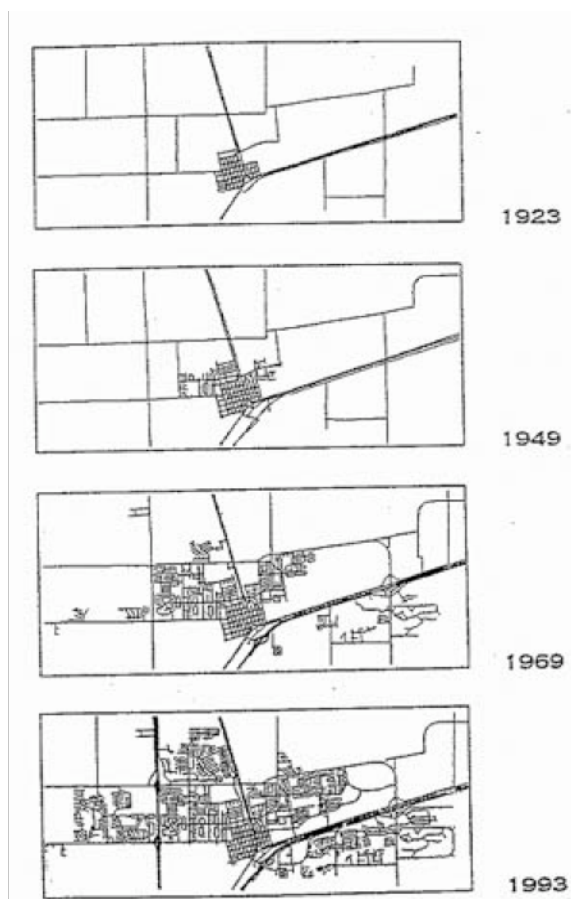


Figure 1-1: Growth of the City 1923-1993, City of Davis General Plan

of its prior inhabitants and ecosystems. In their place, agriculture and rangeland have become the predominant land uses, resulting in major alterations to the physical geography of the region, such as laser leveling of fields, elimination of native vegetation and the damming and redirecting of streams and rivers. At the same time, the amount of land for dedicated urban uses has grown by nearly 50 percent over the last quarter century in the 2-county region of Yolo and Solano where the City of Davis is located (Farmland

Mapping and Monitoring Program 1984-2008).

Land Conversion and Ecosystem Services

While agriculture in the Sacramento Valley serves as the economic foundation of many population centers, industrialized production methods coupled with development pressure have increasingly led to conflict and the conversion of farmland to urban uses (Sokolow, Varea Hammond et al. 2010). Because this conversion is a near-permanent modification, the potential for humans to benefit from ecosystem services on converted



Figure 1-2: Winter wheat, Yolo County. (All images author's own unless otherwise noted.)

farmland is significantly reduced (Machado, Stoms et al. 2006), while associated greenhouse gas emissions are increased (Wheeler and Tomuta 2011).

Ecosystem services are the benefits provided to humans by ecosystems. They include *provisioning* (food, water, fiber), *regulating* (regulating disease, water quality), *supporting* (soil production, pollination), and *cultural services* (recreation, education and aesthetic) (Ash, Blanco et al. 2010). Throughout history, provisioning services have often taken the form of private goods such as food, fuel, or fiber, while supporting and cultural services have generally taken the form of public goods such as clean air or

water, soil, pollination or pleasing landscapes (FAO 2007). Figure 2 lays out the four ecosystem service categories as defined by the United Nations Food and Agriculture Organization (FAO 2011).

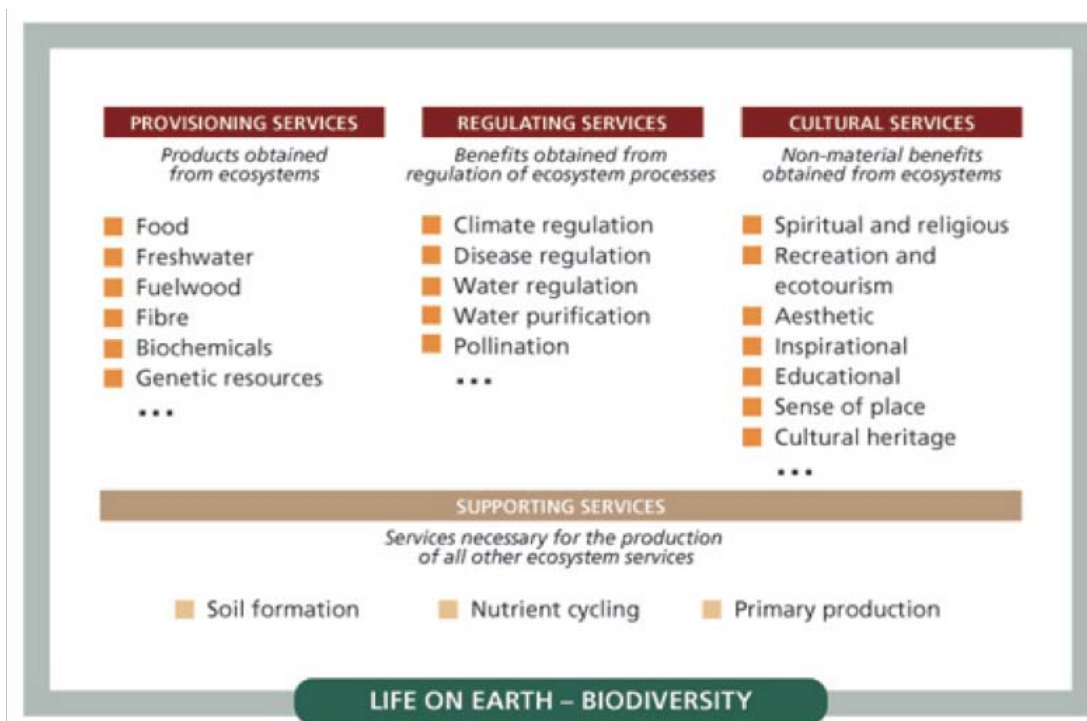


Figure 1-3: Ecosystem Services, United Nations FAO, (FAO 2007)

It should be noted that agriculture within the Sacramento Valley, characterized by heavy mechanization, tillage, irrigation, and chemical pest management, supports a limited range of ecosystem services generally in the interest of generating private goods. However, relatively simple modifications to production practices, such as cover cropping, reduced pesticide use and farmscaping, can significantly increase the range of services provided both on-site and within the region. As such, agricultural land, as compared to urban land, offers great potential for ecosystem service enhancement.

Making Agriculture Work for all Stakeholders

So how can agriculture in the Sacramento Valley increase ecosystem service

provision, while maintaining economic viability and sufficient food production? The concept of multifunctional agriculture (MFA) has been put forward by farmers, scientists, and policy-makers as one solution wherein agricultural landscapes are rewarded for providing both commodities and ecosystem services (Jordan and Warner 2010). MFA takes an ecological approach to agriculture, similar to agroecology, which seeks to achieve both an environmentally sound and economically viable production regime (Gliessman 2007). The approach, which is increasing in its application around the world, is built upon on the creation of pre and post-consumer values such as enhanced environmental and human health, the pleasure derived from increased understanding of food origin, and the aesthetic values of the diversified farm. Agri-tourism, grazing of livestock between solar panels, and the conversion from annual to perennial grain production are examples of multifunctional agriculture practices currently in use. Because of the capacity of multifunctional agriculture to benefit communities through ecosystem services, and the objective of this plan to support such service provision, the phrase *community-based* is used throughout this report in referring to the application of multifunctional agriculture on community farms.

Community-Based Multifunctional Agriculture in Davis, California

For almost 50 years, the City of Davis, located in California's Sacramento Valley has worked to ensure the preservation of open space and prime agricultural lands around its perimeter. In particular, Measure O, passed in 2000, utilizes an annual \$24 supplemental property tax to purchase, preserve and maintain undeveloped lands

adjacent to the City. Such efforts are motivated by a desire to maintain open space¹ and habitat while curtailing sprawl and stewarding some of the most productive and valuable food producing soils in the world (Davis 2002). The program also advances the City's objectives with respect to greenhouse gas emissions in light of a growing body of research demonstrating significantly increased emissions associated with urban and suburban land-use, as compared to agriculture (Wheeler et al. 2011). Additionally, as described in The Davis Greenway plan, written in 1989, such open spaces also have the potential to enhance recreation opportunities on public lands through a series of connected greenways encircling the City (Jones et al. 1989).

Currently the City owns and manages eight parcels with potential for inclusion in a community farm plan, ranging in size from 10 to nearly 800 acres, many acquired by way of Measure O funds. An additional parcel, which currently houses a secondary treatment phase of Davis's wastewater treatment process, is also included in light of the potential for a complementary use upon its retirement in several years. These parcels, located no more than 3 miles from the City's edge, total approximately 1800 acres, and are predominantly used for agricultural production.

Recognizing the potential to meet multiple City goals by way of a single initiative, the City Council in 2007, tasked its volunteer Open Space and Habitat Commission (OSHC) with the job of developing a plan for these City lands (Silva & Sears, 2010).

Citizen interest in local, sustainable food production, combined with new state laws

¹ According to the City of Davis' General Plan, open space includes all undeveloped land whose fee title or development rights are owned by the City or an open space trust or organization, and which is set aside for passive recreation, habitat preservation, buffering from surrounding uses, or agriculture

such as AB 32 and SB 375, which encourage the establishment of local-level greenhouse gas (GHG) emissions objectives, led the OHSC and City to consider CBMA initiatives, otherwise terms *community farms* (Silva & Sears, 2010).

City of Davis Greenway Plan

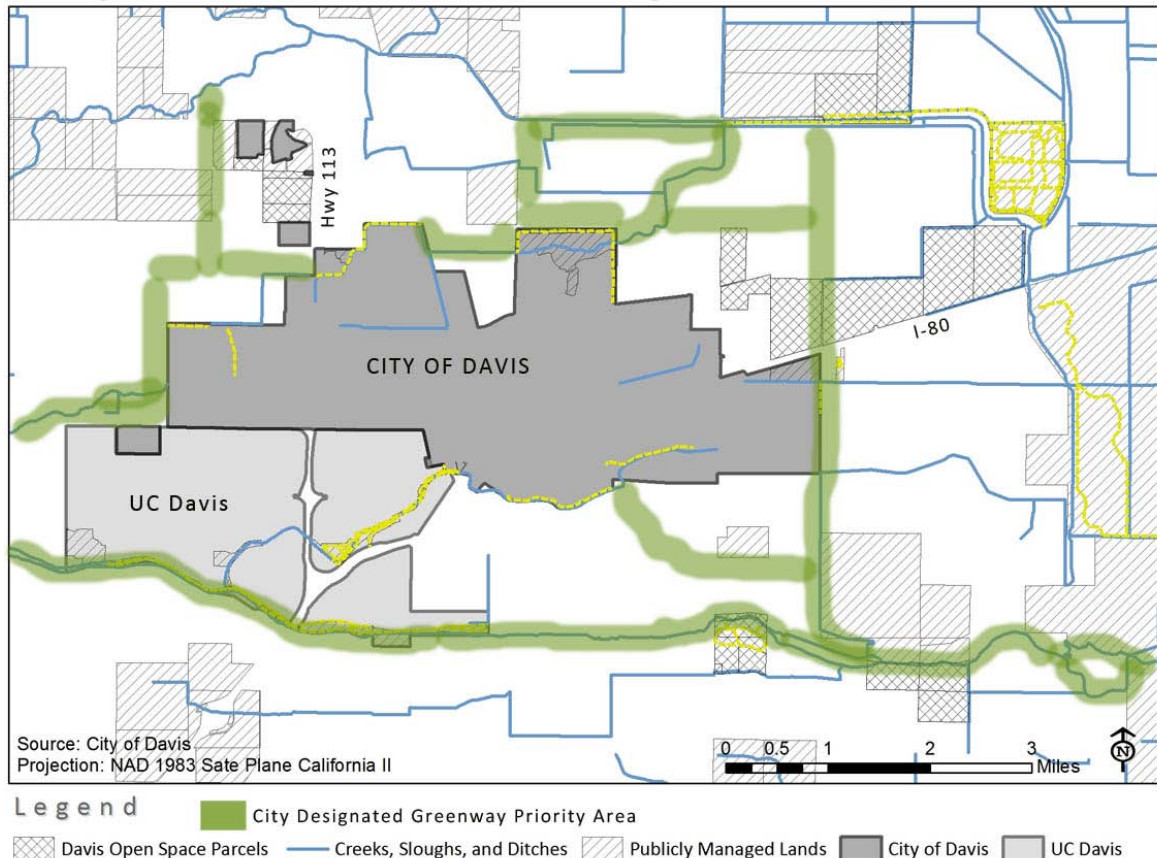
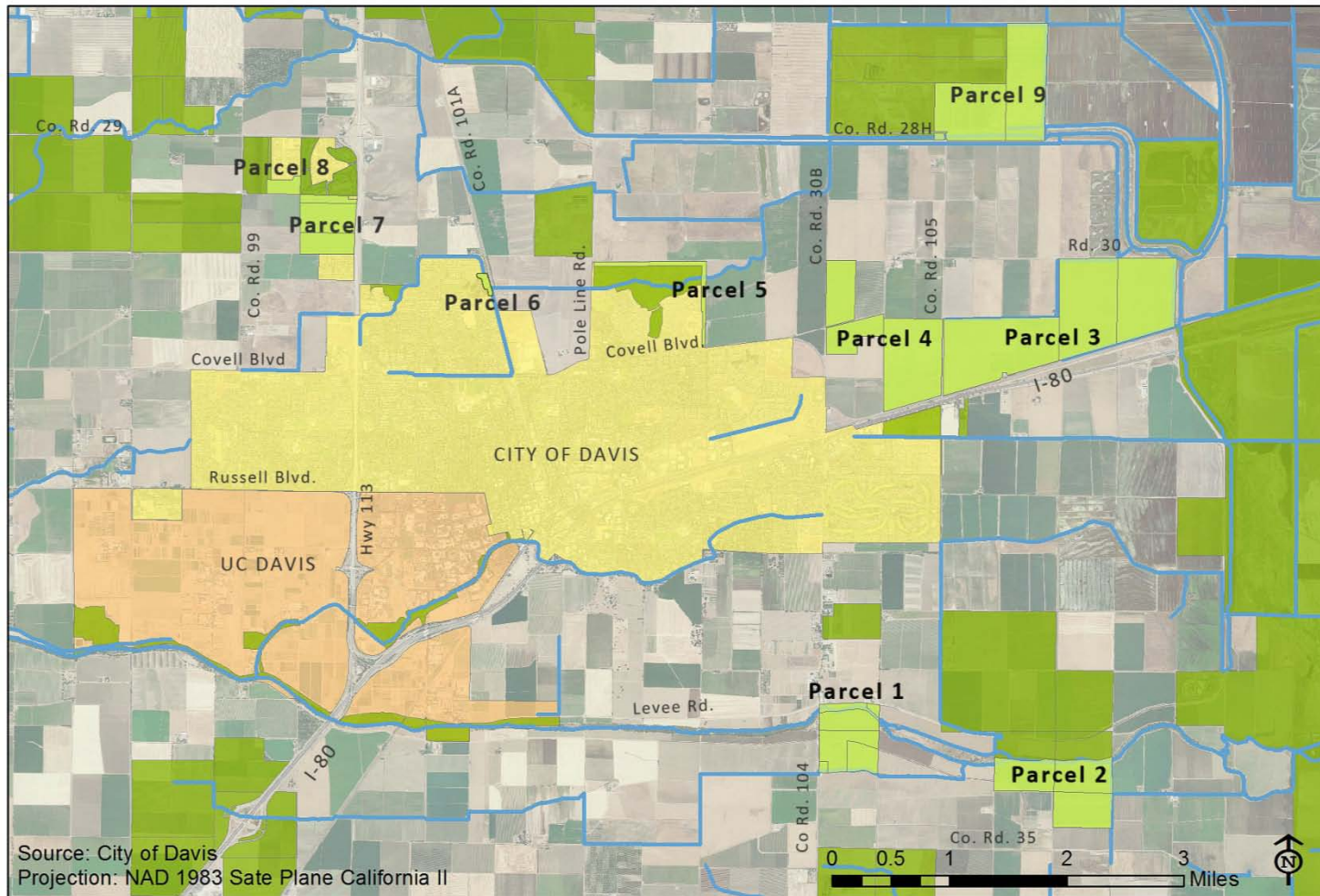


Figure 1-4: Greenway Priority Areas. Image adapted from January 2011 Open Space Protection Status Map

This proposal and the process of its development is intended to provide both a vision for the role of community farms as well as insight into stakeholder sentiment, market demands, and considerations for implementation. It is the objective of this document to support and complement the process currently underway with the Committee to establish a “pilot” community farm.

City of Davis Open Space Parcels



Legend

Davis Open Space Parcels
 Publicly Managed Lands
 City of Davis
 UC Davis

Figure 1-5: City of Davis Open Space Parcels

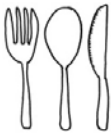
This paper proposes a new and multi-faceted management plan for current and future open space agricultural parcels owned by the City. The objectives of this plan, as determined through collaboration with City staff and Open Space and Habitat Commission members, are as follows:



Maintain agricultural lands and related open spaces on current and future parcels



Increase the environmental value of these parcels and ecosystem services provided therein



Increase access to locally grown food and support the local food economy

The concept of a community farm is meant in this context to include CBMA that benefits both humans and environment beyond the initial provision of food (Sears, 2004). Such benefits may include education, mentoring and support of young farmers, demonstrations of innovative production methods, and the establishment of infrastructure to enable enhanced production, marketing and distribution of local food (Sustainable Agriculture Education, 2005). Small-scale animal production and green waste management are additional, albeit more challenging, potential installments. Ideally a community farm combines with these amenities increased open space preservation, the maintenance of habitat in excess of that afforded by conventional production, and recreation opportunities.

Plan Significance

This plan lays out a vision not only for a dynamic new use regime for publically owned lands, but also for the role of a public agency in maximizing the benefit of these lands both for a wide range of stakeholders and for the environment. The City of Davis has long been a leader in renewable energy, sustainable transportation, and open space preservation. This plan provides an opportunity to demonstrate that leadership in the highly compatible sphere of sustainable agriculture, while simultaneously advancing other City objectives.

In addition to this plan, an abbreviated report will be generated for presentation to the OSHC and City Council as a means of informing next steps in the implementation of a community farm plan. A presentation will also be made at a public forum scheduled fall 2011.

Methods

Information and recommendations presented in this plan relies on the following methods:

- Interviews: Nineteen interviews (18 in-person and one by phone) were conducted during the process of plan development with the goal of recording and synthesizing feedback from diverse stakeholders. Interviewees were selected through snowball sampling and coded using constant comparison (Glaser and Strauss 1967), whereby codes are developed during the process of transcription.

- Foodshed assessment: A foodshed assessment encompassing Yolo and Solano Counties was undertaken to generate a snapshot of food system trends and conditions in the region surrounding City of Davis open space parcels. Foodshed assessments rely on the collection, compilation, depiction and analysis of data related to all phases of production, processing, consumption and waste management.
- Case Studies: Nine site visits to different locations within California and across the nation, were undertaken as part of a case study analysis. Case studies were selected on the basis of context (locations on the urban edge), objective (supporting beginning farmers, preserving ag land) and resource considerations (increasing ecosystem services or food access). Each case study included a tour of the site and interview with a representative. All interviews were recorded and analyzed in terms of relative applicability, opportunities, constraints and overall potential value of the site if applied in the context of City of Davis open space parcels.

Plan Overview

This plan is described in nine chapters and provides the background, rationale, design and considerations associated with the establishment of a community farm network on City-owned land.

Chapter 1: Introducing Community Farms: Origins and Background

This chapter includes an introduction to the concept of community farms and lays out the general background and interests underpinning the document. It introduces the goals of the plan and some of the key concepts of the document.

Chapter 2: Literary Context and Rationale

Through a review of relevant literature, this chapter establishes the context for a shift to CBMA on City-owned parcels. It includes an overview of impacts and actors, as well as the theoretical frames and practical avenues for reform.

Chapter 3: City of Davis Foodshed Assessment

Chapter 3 summarizes major trends within the foodshed surrounding the City. These trends help to demonstrate areas of food production, processing, distribution and consumption where community farms can serve a supporting role to help enhance both human and environmental health. The full assessment can be found in Appendix A

Chapter 4: Community Farm Stakeholder Feedback

This chapter summarizes feedback from interviews with a range of stakeholders regarding the potential benefits, challenges and optimal design of community farms. Stakeholders include farmers, agriculturally-focused community-based organizations, University of Davis affiliates and experts, City representatives and others with expertise relevant to community farms.

Chapter 5: Gaps and Limitations in the Local Food System

Chapter 5 synthesizes foodshed trends with stakeholder feedback to identify particular opportunities for support and enhancement of the food system by way of community farms.

Chapter 6: Guiding Principles for Agricultural Land Use

This chapter lays out guiding principles for the establishment of community farms on public land, including keeping farmers farming, enhancing ecosystem services, integrating renewable energy and food production and improving food security.

Chapter 7: Parcel Plan

This chapter provides a closer look at particular parcels under consideration for community farms, including limitations and beneficial characteristics. It then lays out a series of proposed uses that reflect these limitations and assets, while incorporating various guiding principles as laid out in Chapter 6.

Chapter 8: Practical Considerations

Chapter 8 lays out practical considerations associated with the proposed parcel uses within Chapter 7 as well as challenges related to the guiding principles enumerated in Chapter 6.

Chapter 9: Implementation

This chapter maps out a process for implementing community farms through a series of ten Planning Steps. These steps are designed to maximize stakeholder input

and enable feedback loops, while ensuring the program remains within the City's capacity to implement.

Chapter 10: Theoretical Considerations

Chapter 10 includes a series of larger considerations for the implementation of community farms, such as the potentially controversial nature of subsidies for ecosystem service provision, and the changeable nature of public support. It also lays out big picture benefits of community farms.

Chapter 11: Conclusion

Chapter 11 revisits the context, rationale and multifaceted benefits of a community farm plan in Davis, California.

Ch. 2: Literary Context and Rationale

Background

This chapter provides the theoretical frames and practical avenues for the establishment of community farms in Davis, California, making evident the need for CBMA on City open space parcels. Included is an examination of both global and local-level changes within the food system, as well as the notable distinction between California's agricultural heritage and that of other regions. The chapter also introduces a framework within which non-market elements, such as clean water, soil preservation, carbon sequestration, and open space preservation, can be recognized with real market value in local communities and economies.

Willard Cochrane and the American Family Farm

Richard Levin's short book, *Willard Cochrane and the American Family Farm*, documents the decline of the family farm and the rise of agribusiness as illustrated through the ascendancy of four companies: Cargill, John Deere, Monsanto, and Pioneer. Of particular focus is the emergence of industrialized production methods and their relationship to over-production. As Levin explains, the tractor and other technological and biological advances would come to mean that "American farmers routinely produced more food than American consumers were willing to buy at reasonable prices" (Levin 2000). At the same time, farmers were spending more on off-farm inputs such as seeds, fertilizers and pesticides to enable yields sufficient to make a profit. Cochrane, an economist and advisor to President Kennedy, came to refer to this

phenomenon as the 'technological treadmill'. He predicted that, as agricultural profits and lands increasingly ended up in the hands of large agribusiness interests, small family farms would all but disappear (Levins 2000).

Cochrane conceived of agriculture as a public utility, providing social and environment services beyond the production of food. As such, during his years in Washington D.C., Cochrane was an advocate for government intervention in agriculture primarily in the form of guaranteed prices and measures to control surplus production. From his vantage point, pure free market regulation was not sufficient to ensure the longevity of the independent family farm which in turn could be understood as the lynchpin for a country's "full and democratic control of its food supply," (Levins 2000).

First the Seed

In his book, *First the Seed*, Jack Kloppenburg echoes Cochrane's concern with his own observations of the rise of agricultural science and seed biotechnology (Kloppenburg 2004). He demonstrates more explicitly the relationship noted by Cochrane years earlier: the rise of agribusiness has resulted in the consolidation of ownership and the decline of the small family farm. A particularly acute nexus for capital accumulation, biotech seeds cannot be naturally reproduced or "saved" for future use. They thereby propel the shift away from self-sufficiency to a model increasingly dependent on outside inputs provided by a growing agribusiness sector.

Of relevance to the pursuit of a CBMA in Davis is the role of land grant universities in the production and fueling of such technological advances. Despite an initial ideological commitment "to the "mission" of serving the farmer," Kloppenburg

explains that nevertheless “the benefits of new technologies deployed in American agriculture have accrued principally to agribusiness and to the small group of farm operators in the technological vanguard” (Kloppenburg 2004). In this respect, its university setting creates an interesting dynamic for local food system reform in the City of Davis.

The Conquest of Bread

Walker’s *The Conquest of Bread* is a thorough examination of the California food system, providing detail on the evolution of major sectors and participants over the course of the last century. He distinguishes between the trends in California and the rest of the U.S., noting that California’s social history, not simply its unique suitability for agriculture, has generated the ideal context for commodification and capital accumulation. “Land had to be brought into the commodity nexus after the Gold Rush, wrested away from the rancheros of the Mexican era and privatized by the state and federal governments . . . Labor too, was rapidly commodified, and California agriculture became principally a hired-labor system, not a family farming nexus,” (Walker 2004). In this way, Walker describes California agriculture as intrinsically capitalist with farmers acting as market-oriented employers of wage labor as opposed to small holders tied to the natural rhythms of the land.

Because of this predisposition toward large land-holdings, and wage-labor, California agriculture also provided a unique proving ground for many aspects of consolidated agri-business, resulting in early leadership in the realms of processing, distribution and marketing. “California represents an historical vanguard of sorts, in

which many features of agribusiness now found around the world were originally worked out,” (Walker 2004). This bears a direct relationship to California’s ascendancy as a national and global leader in food production, with trading, processing, and retailing now dominating the industry by comparison to the act of production itself.

Such deeply rooted traditions are important to understand in evaluating the potential success of an agricultural system in which production is not only directed towards local consumption but tied to local demand. At the same time, attempts to generate a system for valuing the environmental and social services associated with CBMA may experience resistance within a context, as described Walker, so deeply and intrinsically imbued with an ethic of accumulation and commodification.

Food Politics and the Case of Foodshare

Moving beyond the origins of the industrial food system, Josée Johnston in his essay, “Counter-Hegemony or Bourgeois Piggery: Food Politics and the Case of Foodshare,” addresses the potential for reform and regaining of agency at the local level. He begins this analysis with an examination of the nature of power within the food system, noting two issues of particular relevance to efforts for increased local sovereignty. First, the Foucaultian idea that “the power to govern stems less from top-down regulation and more from bottom-up normalization, where people become their own ‘jailers’ One example is the ‘normal’ idea for most Americans that food should be a bargain price, a belief that relies on labor exploitation and environmental exhaustion at multiple points along the commodity chain,” (Johnston 2008).

The second is the idea that power should not be understood simply as a monolithic and unidirectional force. He suggests instead “that power is diffuse and fragmented, resting not just with heads of state but with the multiple agency of actors from ‘below,’ ” such as non-profits, civil society and social movements (Johnston 2008).

In other words, central to the success of movements for regained local agency, according to Johnston, is the idea that all stakeholders have the power to shape outcomes, both through the process of giving or taking away cultural consent and through organizing for change. From this concept of empowerment, Johnston builds a framework for action that rests on two principles: 1) reclaiming the commons and 2) creating post consumer values.

Reclaiming the commons is a concept of particular relevance to CBMA and the concept of payment for ecosystem services included in this plan². It rests upon the idea of reconfiguring economies to appropriately value and then enhance the provision of positive externalities associated with human activity. Examples of positive externalities include the community building opportunities provided by a farmers’ market or the habitat provided by diverse perennial cropping systems as opposed to annual monocrops.

Despite placing value on certain practices or system components, *reclaiming the commons* also supports movement away from commodification of resources. It does this through the creation of “a non-commodified realm where needs are not exclusively

² Payment for ecosystem services (PES) is a concept whereby farmers are compensated by private or public entities for utilizing production practices that support the provision of ecosystem services.

met through commodities, but through a combination of need reduction, need prevention, cooperation, and collective approaches” (Johnston 2008). The concept of providing publically owned land to farmers at a reduced cost, as discussed in a latter section of this proposal, in return for the use of production methods that stand to benefit the community, is an example of public policy aimed at reclaiming the commons.

Creating post-consumer values, the other leg of Johnston’s framework, refers to the need for finding pleasure, value and life meaning in activities other than consumption. Such a re-envisioning of social values relates directly to the potential of community farms to provide recreation opportunities and pleasure by way of increased closeness to, understanding of, and participation in the process of food production.

Large as these social and economic shifts may sound, Johnston nevertheless contends that transformative food politics can and should emerge from “historically specific, contextual, and continually evolving” efforts (Johnston 2008). Such projects are the natural rebuttal to one size fits all production and marketing patterns that fail to recognize the unique needs and demands of local communities.

Agroecology and Sustainable Food Systems

Defined in Stephen Gliessman’s seminal book, *Agroecology: The Ecology of Sustainable Food Systems*, as “the application of ecological concepts and principles to the design and management of sustainable food systems,” (Gliessman 2007), agroecology, or ecological agriculture, has become a guiding concept for continuing to meet human food and fiber needs while dramatically reducing the negative externalities

of conventional agriculture. In the opening pages, Gliessman lays the groundwork for this alternative production model through an ecologically tailored critique of industrial agriculture. He includes a list of its seven basic characteristics: intensive tillage, monoculture, irrigation, inorganic fertilizer application, chemical pest control, genetic modification of plants and animals, and factory farming of animals, many of which, bear direct application to production around the City of Davis (Gliessman 2007).

From the outset, Gliessman does not endorse the wholesale abandonment of current production methods in favor of historical or indigenous methods, suggesting that such methods no longer have the capacity to meet the resource needs of the planet. Instead, he proposes, a hybrid approach “that builds on the resource-conserving aspects of traditional, local, and small-scale agriculture while at the same time drawing on modern ecological knowledge and methods” (Gliessman 2007).

He proposes an agricultural model inextricably linked to local conditions, with practices tailored to unique ecological and social attributes and informed by the sharing of local knowledge. In turn, such practices have the capacity to lessen a farmer’s dependence on expensive and environmentally impactful outside inputs while creating responsive systems designed to help farmers remain economically viable and connected to local demand.

Civic Agriculture

Civic agriculture, as described by Thomas Lyson in his book of this title, is another response to the industrial food production model and disassociation of production from demand and its related externalities. Defined as a locally organized

system of agriculture and food production characterized by networks of producers bound together by place, civic agriculture can be understood as a concept for social and economic re-organization with respect to food (Lyson 2004).

Community Supported Agriculture shares (CSAs), farm-stands and farmers' markets, school gardens, grower controlled processing or marketing cooperatives, and community kitchens all fall under the category of civic agriculture, in that they enhance connectivity between food system stakeholders at the local level. While civic agriculture shares a commitment to sustainable, ecologically attuned production, it nevertheless focuses on the potential for local level social and economic enhancement rather than specific ecological solutions.

As in Johnston's essay, Lyson envisions a socio-economic realignment wherein "the imperative to earn a profit is filtered through a set of cooperative and mutually supporting social relations," (Lyson 2004). In other words, benefit is judged not just on the potential to enrich the individual farmer, processor, wholesaler or retailer, but rather on the potential to enhance quality of life for the community as a whole. Additionally, he cites several studies which demonstrate a clear connection between economic, social and political welfare in communities dominated by numerous small firms as opposed to one or several large absentee firms (Lyson 2004).

Standing in contrast to the vertical and horizontal integration of the current industrial model, Lyson uses the *production district*, within which farmers and food producers work cooperatively rather than in competition, as an important framing concept for a re-envisioned food system. Such an arrangement is relevant to the pursuit

of a more robust local food economy around the City of Davis, given its potential to enhance complementary rather than redundant production in face of limited (albeit growing) demand for local food.

Enhancing the Multifunctionality of US Agriculture

Multifunctional agriculture can be thought of as a means for implementing agro-ecological solutions that generate many of the benefits of civic agriculture. In their recent article titled *Enhancing the Multifunctionality of US Agriculture*, Nicholas Jordan and Keith Warner describe multifunctional agriculture as the “joint production of both agricultural commodities and a range of ecological services, including beneficial effects on pest and nutrient management, water quality and quantity, biodiversity, and amenity values,” (Jordan et al. 2010). Multifunctional agriculture is a concept advanced by a broad range of stakeholders in an effort to find practical and implementable solutions to problems associated with the current agri-food system.

Jordan and Warner’s analysis focuses on three separate processes for enhancing the implementation of multifunctional agriculture. The first concept is focused on developing economic opportunities for participating farmers through what Jordan and Warner term “virtuous circles” (Jordan et al. 2010). Such virtuous circles allow for the capture of value both from agricultural production as well as other services provided within the production zone. Examples include increasing plant diversity, the use of perennial varieties, and cover cropping, all of which mitigate production related nitrogen losses, increase habitat and offer improved carbon sequestration. The non-

agricultural value manifests in cost savings from averted eutrophication, drinking water contamination, and loss of species, among others.

The second concept is that of social learning. Successful multifunctional agriculture “demands balancing and synthesizing multiple socioeconomic goals – held by diverse individuals and institutions – within the biophysical constraints of specific agroecosystems” (Jordan et al. 2010). Yet, as noted by Warner in his *Agroecology in Action*, research and extension institutions are not currently well suited to facilitating information sharing of this nature, focusing instead on technology transfer (Jordan et al. 2010). Jordan and Warner contend that “participatory research by multiple stakeholders,” otherwise known as social learning, is particularly necessary for ensuring successful enterprise development for farmers shifting from conventional to agroecological production systems.

Finally, any large-scale revisioning of the agri-food system will require the support of “communities of ethical concern” who help to translate this vision to the larger society (Jordan et al. 2010). The fostering of mass-based support for multifunctional agriculture, Jordan and Warner argue, is essential to dismantling institutional inertia with respect to agri-food systems and changing the current relationship between society and agriculture in the United States. Similarly, payment for ecosystem (and community) services rests on growing public recognition of the value of certain non-commodity outputs from agriculture to society as a whole.

Conclusion

In sum, a review of literature addressing the development of our current agri-food system model and its social, environmental and economic impacts provides an essential base upon which to develop a vision for reform. In particular, Levins and Walker highlight the relationship between technology, farm consolidation, and overproduction, thereby grounding the pursuit of a new model within the City of Davis. Specifically, the absence of a family farm tradition, as well as early advances in marketing and processing, have resulted in a deeply capitalist tradition within California agriculture that may pose unique obstacles to adoption of a production model not wholly focused on commodity crops.

At the same time, this brief review helps to focus in on concrete avenues for change. Literature from Gliessman and Warner supports the adoption of ecological production systems that manifest in CBMA, while Johnston and Lyson describe the need for a re-orientation of value systems. All authors mutually acknowledge that change is vital and must be built around local knowledge and local environments. It is through this lens that this plan for community farms on City open space lands is put forward.

Ch. 3: City of Davis Foodshed Assessment

Planners, service providers and policy makers increasingly use food system assessments to understand the relationship between food consumption, resource-management, and human and environmental health. Such assessments account for the inputs, production practices, processing and distribution processes required to generate the food we eat. They include the marketing, consumption and resulting waste-management practices as well as the implications for workers, communities and ecosystems.

In a globalized market economy where nearly all communities have come to rely on food from around the world, food systems are no longer local or even regional in scale. Therefore, efforts to completely account for the resource flows and corollary environmental and social impacts of these systems are not within the scope of this proposal.



Figure 3-1: Highlighted Foodshed. Map: U.S. Census Bureau

A foodshed assessment, by comparison, examines “the elements and properties of [a] preferred, emergent alternative” (Kloppenburger, Hendrickson et al. 1996). Such an alternative might include increased production for local consumption, processing

options scaled to local growers, and a prioritization of ecological production methods in light of their benefits to human health and well-being.

This chapter provides an overview of the Davis foodshed as bounded by Yolo and Solano Counties. This boundary includes the four cities of Davis, Dixon, Winters and Woodland and helps to generate a picture of the opportunities and limitations of the current food production regime in which the City of Davis is located.

The assessment is divided into five sections: *Land base and farmers, Production and inputs, Processing and distribution, Consumption and waste management, and Community engagement*. Each of these contains a series of indicators drawn from regional, county and local data sources in order to generate a snapshot of the resource base, production methods and commodities as well as consumption side dynamics, necessary to inform a plan for community farms.

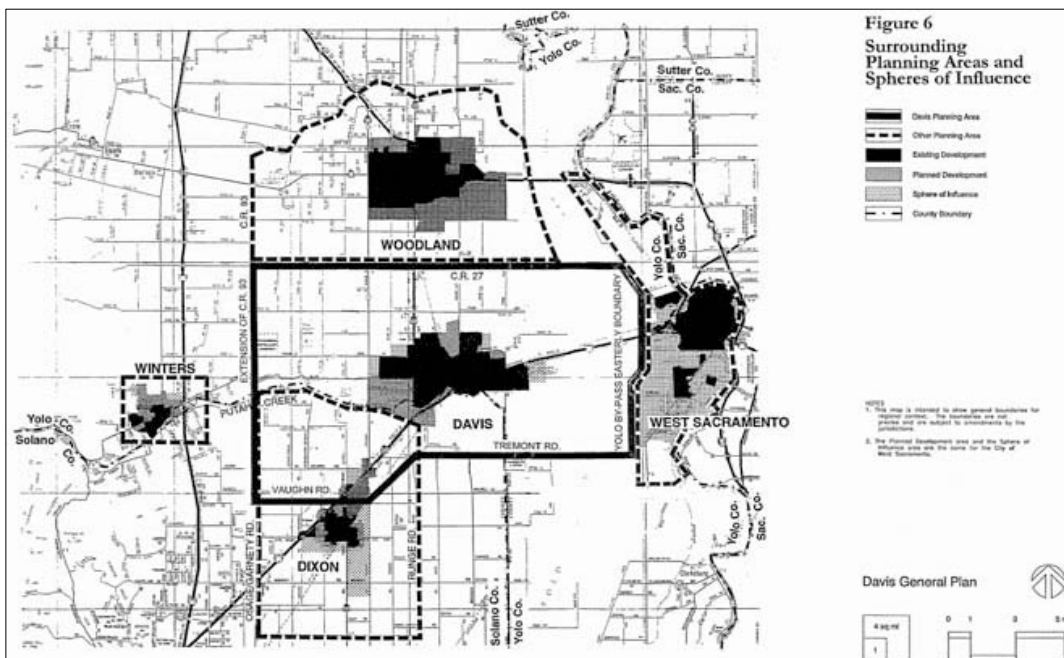


Figure 3-2: Neighboring cities and planning areas, City of Davis General Plan

Land Base and Farmers

Production within the Davis foodshed predominately takes the form of industrial agriculture. As of 2007, average farm size in Yolo and Solano Counties was 488 and 403 acres respectively, compared to the California average of 313 acres. As described by agroecologist Stephen Gliessman, farming on this scale relies on a number of mutually reinforcing production practices including intensive tillage, monoculture, irrigation, inorganic fertilizer application, and chemical pest control (Gliessman 2007).

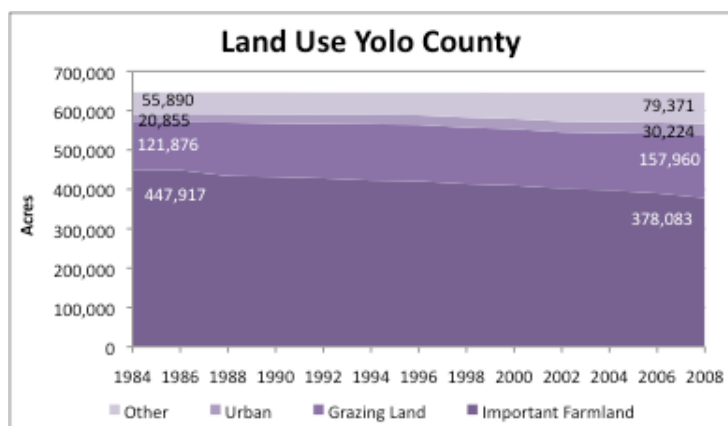
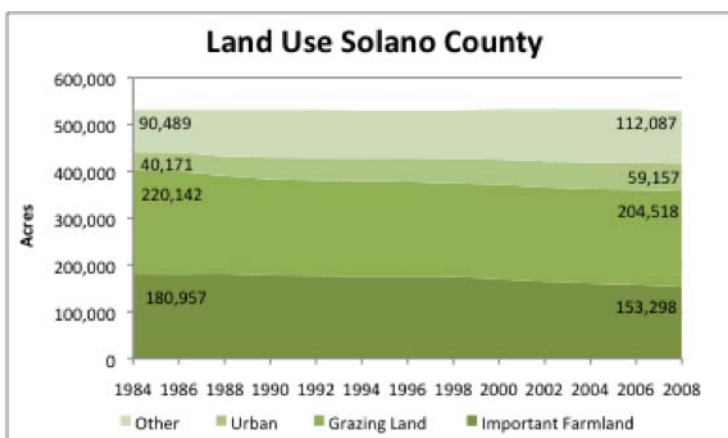


Figure 3-3: California Department of Conservation, Historic Land Use Conservation, Yolo and Solano Counties

Farmland³, as defined by California Department of Conservation, has decreased by approximately 15 percent in the foodshed between 1984 and 2008. At the same time, land for urban uses grew by at least 45 percent. “Other” land uses which includes low-density ranchettes, mining or vegetative but non-agricultural uses, has grown by

³ Farmland includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance as defined by the California Department of Conservation.

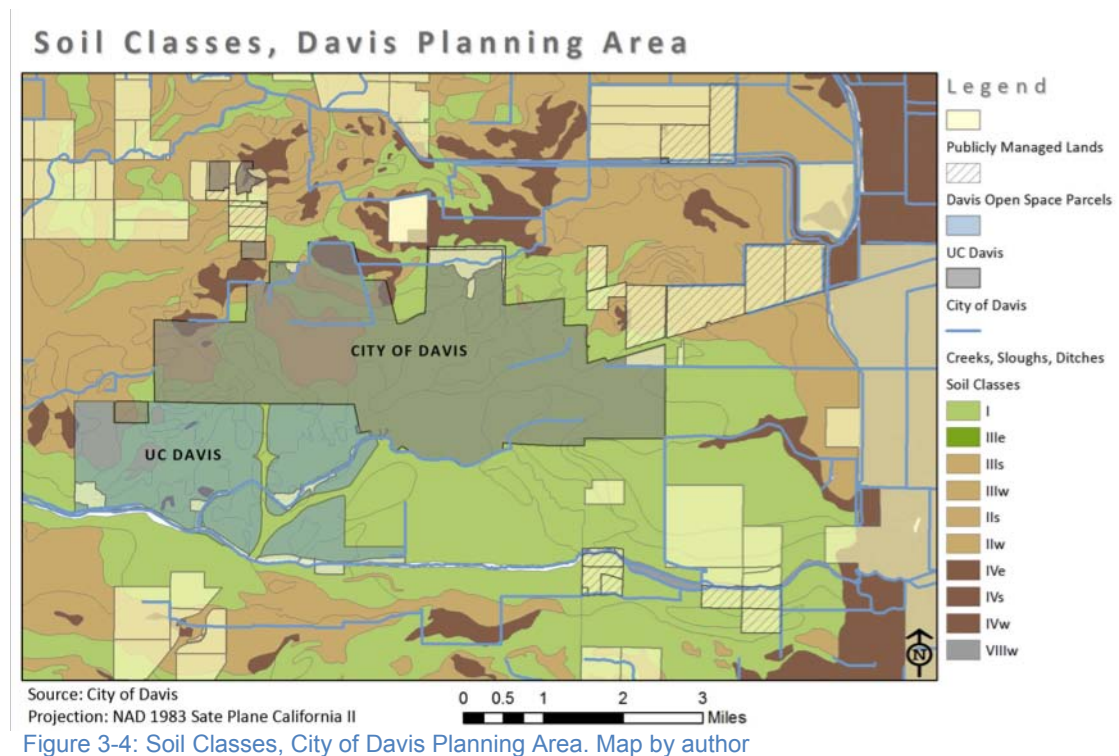
24 percent in Solano and 42 percent in Yolo. As in much of California, the majority of new development within both counties is low-density on the periphery of incorporated areas, often resulting in the loss of some of our nation's best soils (Thompson 2006).

In light of significant conversion of agricultural land to urban uses, an increasing number of acres have been protected by way of the Williamson Act, agricultural conservation easements and other programs. As of 2008, the Williamson Act temporarily secured 415,619 acres in Yolo and 269,606 in Solano, while 8,971 acres of farmland and habitat on 51 parcels were protected by the Yolo Land Trust and an additional 7,853 acres by the Solano Land Trust. The amount of land enrolled in federal conservation programs⁴ also increased in both counties over the last ten years.

Characterized by silty and clay loams, the product of erosion from the Coast Range which runs through each county along its western edge, both Solano and Yolo Counties have some of the best agricultural soils in the nation. Within the Davis planning area, more specifically, soils are largely Class 1 and 2, as seen in Figure 3-4.

According to the California Department of Conservation's Farmland Mapping Program, the majority of soil within the planning area is considered to be Prime Farmland, exhibiting the best combination of physical and chemical properties for agricultural production. An additional 10 percent is classified as Farmland of Statewide Importance, which is similar to Prime Farmland but with some minor limitations. In light

⁴ According to Appendix B of the Census of Agriculture, conservation programs include the Conservation Reserve Program, the Wetlands Reserve Program, the Farmable Wetlands Program and Conservation Reserve Enhancement Program



of its excellent soils and climate, agriculture has become the dominant land use within the foodshed.

Native grasslands, woodlands, wetlands and shrublands, have experienced degradation to the point of almost complete disappearance, while the majority of rivers

Table 1: California Wildlife Habitat Relationship System, Yolo and Solano Counties

Natural Habitat	Man-Made Habitat
Annual grassland	Dryland Grain Crops
Perennial grassland	Irrigated Hayfield
Fresh Emergent Wetland	Irrigated Row and Field Crops
Valley Foothill Riparian	Rice
Valley Oak Woodland	Orchard-Vineyard
Riverine	Deciduous Orchard
Lacustrine	Vineyard
	Urban
	Pasture

and streams have been damned, channeled or otherwise significantly altered. At present, the Davis planning area contains only traces of its natural habitats as listed by the California Wildlife Habitat Relationship

System. These native habitats have been replaced by managed landscapes as listed in

Table 1.

At the same time, though the total number of farms within the foodshed has increased by approximately 9 percent since 1978, the number of farms with cropland

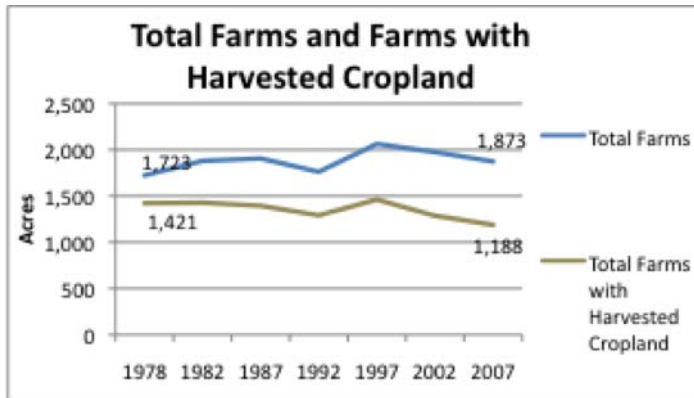


Figure 3-5: USDA, NASS, Census of Agriculture, Harvested Cropland by Size of Farm and Acres Harvested. Data collection changed in 1997 at which time it began adjusting for coverage.

harvested has declined by 16 percent. The discrepancy may be attributable to a range of factors including an increasing prevalence of ranchettes (i.e. rural residences located on farmland but not producing

crops), weather, or farmers making the transition from field to orchard and vineyard crops.

As in the nation and the state as a whole, the average age of farmers within the foodshed has climbed steadily for the last thirty years. In 1978, the average farmer within Solano County was 50.6 years old while in Yolo he or she was 51.5. By 2007 that average climbed to 58.5 for Solano and 58 for Yolo, indicating an aging farmer base that is not being replaced with new younger farmers.

Production and Inputs

Currently, field crops such as alfalfa, wheat, and rice make up the majority of cropland by acreage within the combined Yolo and Solano County foodshed. Vegetable crops, namely processing tomatoes, are the next most prevalent by acreage, followed by fruit and nut crops such as almonds and walnuts.

However, with respect to the value of vegetable crops, processing tomatoes are at the top of the list in both counties, generating approximately \$138,543,541 in Yolo and \$65,352,111 in Solano⁵ followed by field crops, generating \$124,098,558 and \$50,984,242 respectively. Fruit and nut crops have more recently experienced significant growth in both counties, largely attributable to walnuts, almonds and prunes. In Yolo County, grape production has also increased dramatically, making them the fourth most valuable crop. In Solano, despite a minor downturn since 2005, apiary, livestock, poultry and related products have increased in value significantly since 1997, due primarily to increased cattle and milk production.

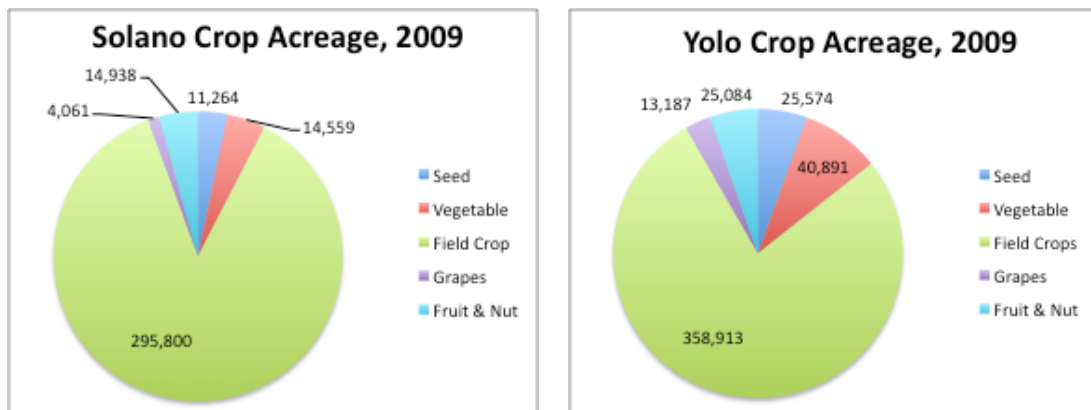


Figure 3-6: Solano and Yolo County Agricultural Departments, 2009 Agricultural Crop Report

Despite growth in total value of livestock, poultry, apiary and related products, the number of these operations (with sales) within the foodshed is on the decline with the most dramatic downturn occurring in operations with hogs and pigs; a decrease of 67 percent in Solano and 77 percent in Yolo County since 1982.

⁵ All monetary numbers are adjusted for 2011 dollars.

The number of operations with cattle and calves⁶ has declined by 52 percent in Solano and 37 percent in Yolo, while sheep and lamb operations have declined by 50 and 46 percent, respectively. However, the total number of cattle by head has increased. Egg laying operations⁷, have decreased by 37 percent in Solano and 21 percent in Yolo, while the number operations with broilers or meat birds has remained the same in Solano while declining by 33 percent in Yolo.

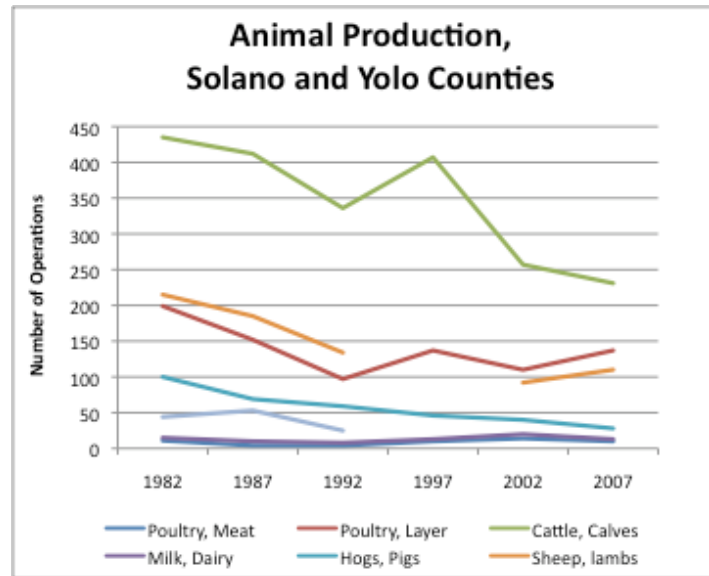


Figure 3-7: USDA, NASS Census of Agriculture, Operations with Sales, Yolo and Solano Counties. Data collection changed in 1997 at which time it began adjusting for coverage.

This general decline across animal sectors may be attributable to a consolidation within the industry as a whole and a loss of slaughter and processing facilities within the foodshed. Currently, there are only 3 slaughter facilities in Solano and none in Yolo County.

According to a local market assessment conducted the Sacramento Area Council of Governments (SACOG), consumption of milk, beef, and poultry within the 6-county

⁶ Not including dairy

⁷ This figure is derived from the total number of farms with any layers. All other numbers are derived from the number of farms with products sold.

planning area⁸ significantly exceeds production (SACOG 2010). While Solano County is not included in this calculation, these deficits in production demonstrate an opportunity for growers within the foodshed.

Organic production in the foodshed has increased significantly, both with regard to certified operations as well as certified acres. The total number of organic acres in Solano County has increased from 205 to more than 1,400 between 1997 and 2009 (Solano County 1997-2009), while in Yolo County, organic acreage has increased from 1,556 to 5,774 acres (Yolo County 1997-2009). The number of organic operations in Solano has increased from 15 in 2002 to 47 in 2009 while in Yolo the number has grown from 28 to 75 over the same period (Service 2007).

While operations may practice organic production while not being certified or utilize alternative production systems with reduced chemical inputs, the increase in certified acres serves as a good indicator of recent growth in ecological and low-chemical production. However, despite strong support for organic production within the foodshed and a particularly high percentage of certified acreage within Yolo County, organic cropland still makes up only 1.5 percent of total cropland land within the two-county area.

More than 100 million pounds of agricultural chemicals are applied on California farms each year, leading to widespread ecosystem toxicity as well as acute and chronic health impacts for humans and other organisms (Kegley, Neumeister et al. 1999). The percent of cropland in the foodshed receiving such applications has increased slightly

⁸ The SACOG 6-county region includes El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba Counties

over the last 20 years (see Table 2) and overall expenses on these inputs have remained stable. According to the San Francisco based Pesticide Action Network, a total of 35 different cases of pesticide exposure were experienced by farmworkers within Yolo and Solano Counties between 1997 and 2000, all related to tomato production (Reeves, Katten et al. 2002).

Table 2: USDA, NASS, Census of Agriculture, Table 9, Agricultural Chemicals Used. Data collection changed in 1997 at which time it began adjusting for coverage.

	Percent Cropland Applied 1978	Percent Cropland Applied 2007
Fungicide, Solano	10.0%	10.3%
Fungicide, Yolo	9.1%	13.9%
Herbicide, Solano	44.8%	46.8%
Herbicide, Yolo	50.5%	59.4%
Insecticide, Solano	33.3%	38.0%
Insecticide, Yolo	42.2%	45.5%

Intensive tillage, undertaken on the majority of the foodshed's annual cropland, facilitates the movement of agricultural chemicals through air, water, and soil erosion. As of the most recent regional watershed report for the Central Valley, agricultural chemicals were responsible for 120 separate water quality impairments, while excessive organic nutrients and ammonia were responsible for an additional 15 impairments (Central Valley Regional Water Board 2006).

Currently, 41 percent of total farmland⁹ in Solano County and 46 percent in Yolo County are irrigated for crop production. Flood or furrow irrigation is common in both counties, often resulting in inefficient application (US Geological Survey 2000). By comparison, drip, micro-sprinkler and other forms of micro-irrigation increase water-use

⁹ Includes grazing land

efficiency due to increased precision and uniformity in application. Sub-surface drip, in particular, has been shown to increase efficiency by 50 percent over furrow without compromising yields (Jackson, Santos-Martin et al. 2009). Similarly, the use of drip or other low-pressure methods has been shown to reduce CO₂ and N₂O emissions in-field by comparison to flood or furrow (Jackson et al. 2009).

Processing and Distribution:

With the exception of wineries, which have seen significant growth in both counties, the foodshed has experienced a decline across all food-processing sectors over the last decade (BLS 2010). Slaughter and processing facilities have declined from four in 2004 (the most recent data year) to only three in 2009. All of



Figure 3-8: Mariani Nut Company, Winters, CA.

these facilities are located in Solano County, primarily in the town of Dixon. Grain and oilseed milling has remained constant in Yolo between 2001 and 2009 at four establishments, while in Solano, the only establishment closed in 2005. Fruit and vegetable preserving and specialty operations declined from 10 in both counties in 2001 to six in 2009, while dairy product manufacturing operations have declined from five operations to only two (both in Solano) over the same period.

Agricultural products, both fresh and processed, make their way from growers to consumers through a wide-range of avenues, including wholesale, retail, and direct markets. While direct markets, such as Community Supporter Agriculture (CSAs) shares, farmers' markets, U-Pick and farmstands, allow the greatest interface between farmers and consumers, this method of distribution is by far the smallest with respect to volume and value of products sold. Within Yolo County, direct sales increased from .9 percent of total sales in 1992 to 1.6 percent in 2007. Solano County direct sales experienced a less substantial increase, growing from .45 in 1992 to .5 in 2007. By comparison, direct sales for the state of California are currently .48 percent, demonstrating a relatively high rate within the Davis foodshed overall.

Currently there are 12 farmers' markets within the foodshed; six in Yolo County and six in Solano. Approximately 14 CSA's are located within the foodshed, the majority of which are in Yolo County. Additionally, a small number of operations market their produce by way of U-Pick or roadside stands.

The vast majority of sales take place by way of food distribution chains in which food undergoes post-harvest handling, processing, packing and shipment, and distribution to a wholesaler or retailer, all prior to consumption (SACOG 2010). As described by SACOG in its Sacramento Region Local Market Assessment, increasing consolidation within the retail and wholesale sectors results in homogenization of agricultural products for distribution and undermines the role of the retail buyer as a link between the grower and consumer (SACOG 2010). Additionally, it results in a system geared towards moving larger shipments of food and food products grown by

larger-scale commercial farm operations (SACOG 2009). Though SACOG's analysis does not encompass Solano County, these trends are not unique to the Sacramento region and are being experienced nationally and globally. In general the large wholesalers in and around the foodshed, with a few notable exceptions, rely on smaller, local farms for only a small fraction of their produce.

Local grocers such as Nugget and the Davis Co-op have prioritized sourcing locally and regionally grown products and are an exception to these general trends. However, consolidation within food distribution networks has resulted in a problem of scale, whereby many local, diversified producers in the region cannot supply the volume and consistency of produce required by area distributors and wholesalers.

Consumption and Waste Management

Assessing local food consumption trends can help paint a picture of the potential for local growers to meet local demand. Though data on food consumption is available only at the national level and must be extrapolated to the county level, it can provide a general sense for the degree to which the foodshed is capable of meeting the food needs of its residents. Though Yolo and Solana counties produce beyond demand in many categories, the architecture of the current food system means that the vast majority of food grown is exported, increasingly prior to processing. Meanwhile, much of the food purchased by consumers is imported from outside the region. Similarly, food security data show that food insecurity persists despite large scale commodity production

According to the Loss Adjusted Food Availability Data from the Economic Research Service of the USDA, Solano County produces only 84 percent of the total fruit demanded by its residents. However, it produces approximately 723 percent, or 7 times as many prunes-per-capita as demanded. Yolo County produces 112 percent of its residents' fruit needs and 20 times as many prunes. Wheat production in Solano only just exceeds demand, at 108 percent, while in Yolo, where wheat is larger commodity, it provides roughly 5 times as much wheat per person as required. Tomatoes are by far the most prevalent vegetable crop in both counties, generating 27 times the per capita demand in Solo County and approximately 190 times Yolo County per capita demand.

With respect to animal consumption, both counties produce significantly more sheep and lamb than consumed by its residents; nearly 15 times as much in Solano and

Table 3: Yolo and Solano County Crop Reports; Loss Adjusted Food Availability, Economic Research Service

Commodity	Pounds Produced	Lbs/capita Produced	% of Demand
Solano Fruit	86,096,000	211	84%
Solano Prunes	6,710,000	16	723%
Yolo Fruit	55,804,000	280	112%
Yolo Prunes	9,448,000	47	2,078%
Solano Wheat	60,192,000	148	108%
Yolo Wheat	139,748,000	701	513%
Solano Rice	N/A	N/A	N/A
Yolo Rice	1,558,000	8	37%
Solano Vegetable	979,200,000	2,405	612%
Solano Tomato	979,200,000	2,405	2,780%
Yolo Vegetable	3,213,066,000	16,113	4,103%
Yolo Tomato	3,213,066,000	16,113	18,628%
Solano Cattle	452,178,000	1,110	1,207%
Yolo Cattle	12,216,800	61	67%
Solano Sheep	6,666,700	16	1,488%
Yolo Sheep	1,547,600	8	706%
Solano Dairy	85,941,300	211	35%
Yolo Dairy	37,585,400	188	31%

7 times in Yolo. Cattle production in Solano results in beef availability 12 times in excess of demand, whereas in Yolo, per capital demand for beef is met only 67 percent. At 34 percent in Solano and 31 percent in Yolo, per capita dairy demand is the least well met of all commodity areas.

Food security is described by the USDA as having “access at all times to enough food for an active, healthy life for all household member,” (Nord, Andrews et al. 2008). Within Yolo County, the rate of households experiencing food insecurity was 33.8 percent in 2007, while in Solano the figure was slightly lower at 31.6 percent. Both are lower than that for the state as a whole where the rate of food insecurity in 2007 was 34.8 (CHIS 2008).

Davis has two large community gardens, one with 119 plots and the second with nearly as many. Community gardens, which contribute to food security at the household level, are not nearly as prevalent in other cities within the foodshed. Given relatively low-density urban landscapes, the frequency of fruit trees and backyard gardens is higher within the two-county region than in many other cities, however the rate of food insecurity is nevertheless notable.

Inevitably, cities within the foodshed generate a substantial amount of food and organic waste that must be disposed of. Currently, of the 11 registered compost facilities in Yolo and Solano Counties, only two have the ability to accept food waste. The City of Davis, which hauls its yard-waste to a facility approximately 22 miles away in Zamora, is in the process of initiating a pilot food-waste composting program for restaurants and food establishments. Increasing the number, distribution and capacity

of compost facilities throughout the foodshed would enhance access for farmers and gardeners to this valuable nutrient source.

Engagement

In response to the growing alienation between farmers and consumers resulting from our current agri-food system, interest in programs facilitating connections between consumers and farmers is on the rise across the nation. Farm to school programs are designed to simultaneously increase the prevalence of locally grown food in school meals while also deepening student understanding of food origin. Currently, Davis has a strong Farm to School program, which includes farm visits, cooking classes and locally sourced food, as does the City of Winters. No other formal farm to school programs exist within the foodshed.

Farm to institution connections are also on the rise, as seen at UC Davis Dining Services which supplies more than 20 percent of its cafeteria food with products from local and regional growers.

Similarly, in spring of 2011 Sutter Davis Hospital opened a weekly farmers' market and plans to

include locally grown fruits and vegetables in its patient meals. Nevertheless, this should be understood as a significant untapped market for locally grown foods and enhanced connectivity between local growers and consumers.

Agri-tourism is yet another method of facilitating engagement between consumers and producers. Olive oil and wine tastings, U-Pick, and farm-based festivals



Figure 3-9: Luscher Farm Children's Garden, Lake Oswego, OR.

are some of the many ways in which consumers have the opportunity to learn more about food production while supporting local growers. In Yolo County there are approximately 86 different agri-tourism opportunities, and while a total figure for Solano is not readily available, numerous opportunities also exist within the county.

Foodshed Summary

This foodshed assessment provides an overview of trends within the food system including production, processing and distribution, consumption and waste management. In so doing, it points to a number of opportunities that can be leveraged by a community farm plan. These trends include:

- Growth in urban land use and low-density ranchettes; increase in land within conservation programs
- Decrease in the number of farms with harvested cropland
- Preponderance of large farms, utilizing industrial scale production
- Production increasingly concentrated amongst several commodities including processing tomatoes, field crops, walnuts and prunes, oilseeds, rice and cattle
- Decline in the number of processing establishments
- Lack of distributors appropriately scaled for small growers despite growing interest in local sourcing
- Small but growing minority of organic and direct market oriented farms
- Growing interest in agri-tourism

Ch. 4: Community Farm Stakeholder Feedback

Implementing a network of community farm sites on City-owned land stands to have a range of impacts on both natural resources and community members. In an effort to gain insight into both the optimal design of this network and its potential impacts and benefits, a range of stakeholders and issue experts were consulted as a part of this planning process. A total of nineteen interviews were conducted over the course of 2010 and early 2011 with stakeholders falling into the following five categories:

- **Farmers:** both large and small-scale producers growing organic and non-organic crops around the Davis planning area
- **Community-based organizations and non-profits:** organizations engaged in agricultural education or support services
- **University of California Davis and related institutions:** representatives of university programs or institutions that engage with local agriculture and related activities
- **City of Davis:** representatives of City programs with an agricultural or gardening interest
- **Food System Experts:** Experts in agriculture and food system planning on the local scale

These interviews build upon preliminary public consultation undertaken by the OSHC in 2009 and again in 2010 by way of public and City Council meetings.

Nevertheless, these interviews are only a first step in public opinion gathering and should be supplemented with focus groups and additional community meetings at the next planning stage. In particular, feedback from consumer and retail representatives,

including farmer's markets and grocery outlets, as well as residents and farmers should be considered.

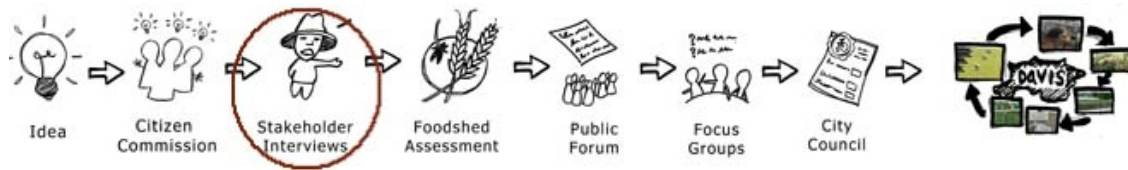


Figure 4-1: Community Engagement Process

Major Questions:

Interviews were conducted, both in-person and over the phone, with the intent of addressing the following general questions¹⁰:

- Are Community Farms on City-owned land a good idea? Are they feasible?
- How would you envision this network taking shape and what are the particular priorities for use of these parcels?
- What major challenges do you envision in moving towards this new use?¹¹

Farmers:

Farmers utilizing a wide range of production methods, scales and marketing avenues exist within and around the Davis planning area. For this reason it was important to solicit feedback from growers representing the full spectrum of this stakeholder group. However, farmers are a famously busy group, particularly during the spring, summer and fall. This factor, combined with their assumptions as to the underlying implications of my inquiry (pursuit of sustainable agriculture practice), made

¹⁰ Interviews were recorded, transcribed and coded using constant comparison. Constant comparison involves creating new codes throughout the process of transcription, thereby enabling new concepts and ideas to shape the analysis (Glaser, B. and A. Strauss, 1967)

¹¹ Interviewees were asked a set of ten general questions which were adapted for each stakeholder group with the intent of answering the three meta-questions above.

reaching some of the larger and more traditional growers difficult. Nevertheless, five farmers were interviewed, including two large-scale growers (more than 500 acres), and three small-scale. These included both organic and non-organic growers, producing of a range of crops (walnuts, tomatoes, wheat, olive oil, flowers, specialty greens and diversified) for sale through direct, retail and wholesale markets.

A number of common threads can be found running through interviews with all five farmers. First, support for production with greater ecosystem service potential was voiced by all interviewees. With varying degrees of specificity, practices for reducing irrigation demand, increasing habitat and limiting chemical pesticide and fertilizer use were cited as worthy components of a plan for future use of these parcels.

A number of common threads can be found running through interviews with all five farmers. First, support for production with greater ecosystem service potential was voiced by all interviewees.

However, all five interviewees also voiced concern about how such multifunctional and ecosystem service oriented practices should be achieved. In particular, these reservations centered around the concept of City-mandated

production requirements, such as use of cover crops or water conserving irrigation, with farmers citing the need to maintain “flexibility to do what they need to do to stay in business,” as one put it.

Despite this preliminary response to the concept of sustainable production requirements, the perspective of nearly all interviewees softened over the course of the interview. In many cases, individuals circled back to the subject later, suggesting that

farmers should be responsible for and free to adopt less resource intensive conservation practices, but that these might be subsidized to help offset the costs. The suggestion that large-scale conservation practices, such as windrows and tailwater ponds could be installed, but should be the responsibility of the City to pay for, was also universal.

All interviewees agreed that parcels close to the City might enjoy greater demand for locally grown

products in light of proximity to direct markets and desirable residential communities. While some expressed reservations about demand for certified organic parcels or parcels with other use stipulations, these reservations were tempered in light of this potential market access.

The lack of new farmers coming into the industry was also noted by all interviewees as a point of central importance for the City in its planning. This reflects a growing interest within the Sacramento Valley in supporting new farmers by way of farmer training and incubation programs. All interviewees noted that City-owned parcels could be used in concert with programs to facilitate the entry of new farmers into the marketplace, usually by way of favorable lease rates and assistance with infrastructure or equipment.

The lack of new farmers coming into the industry was also noted by all interviewees as an important point of consideration for the City in its planning. This reflects a growing interest within the Sacramento Valley in supporting the establishment of new farmers by way of farmer training and incubation programs.

In response to questions about vacant niches within the agricultural market around Davis, and the ability for the City's parcels to help address those vacancies, more than half of the interviewees cited the need for the market to determine these uses as opposed to being mandated. As described by one farmer: "what does the community ...

want more of? Does it need more strawberry fields, does it need more olive oil? And it might be yes or no.

And maybe that's really for the farmer to figure out, too. I don't know that the City wants to tell

"What does the community want more of? Does it need more strawberry fields, does it need more olive oil? And it might be yes or no. And maybe that's really for the farmer to figure out, too. I don't know that the City wants to tell people what to grow."

people what to grow." Nevertheless, the need to consider particular parcel characteristics, such as water access, soil quality, and flood risk, was also mentioned as fundamental to future use considerations, implying support for at least a modicum of direction on future use.

In the same vein, the need for increased animal production was cited by three out of five interviewees. This was expressed both with regard to vacancies in local direct markets as well as to sustainable crop production systems which benefit from rotational grazing, gleaning among orchards, and manure production for fertilizer.

With respect to demand for certified organic parcels, two interviewees, both organic growers, expressed some reservations. However, as mentioned above, both qualified this reservation with the fact that organic parcels for lease in direct proximity to the City of Davis might enjoy a greater demand than parcels farther from direct



Figure 4-2: Sheep grazing at Monkeyflower Ranch, one of the only sheep dairies in all of California, Royal Oaks, CA.

markets. One interviewee also recommended conducting a market assessment before undertaking the relatively lengthy and resource intensive process of certification.

Two farmer interviewees specifically noted the goal of agricultural land preservation as a significant rationale for community farm establishment. Two others expressed enthusiasm for the potential of community-based processing, storage or distribution facilities to be located on City-owned land.

Community-Based Organizations and Non-Profits

Yolo County, and the City of Davis in particular, are rich in community-based organizations (CBOs) supporting various aspects of the region's agricultural heritage. Representatives of four local and one regional CBO were interviewed, with expertise ranging from land access to beginning farmers and youth agricultural education to local markets and conservation programs. Three of the organizations focus primarily on

supporting farmer populations while the fourth focuses on nutrition and consumption of locally grown foods. A fifth is concerned with agricultural education and support of new and beginning farmer populations.

Regarding the overall value of establishing a network of community farm sites on City-owned land, all interviewees were in agreement: such a plan has potential to enhance farming opportunities, benefit the environment and enhance community food access. However, given different programmatic objectives and constituencies, this support rests on a range of different potential characteristics of community farms. Similarly, concerns varied from organization to organization.

For example, one interviewee was particularly interested in the potential for enhanced conservation value by way of certifying parcels for organic production. This approach, in combination with the provision of some limited economic incentives for select sustainable production practices or site enhancements, appeared to offer the greatest potential for overall community benefit. Others cited the importance of conservation, not necessarily as the overarching priority, but rather as a complementary objective to programming such as youth education or support of beginning farmers.

Regarding the overall value of establishing a network of community farm sites on City-owned land, all interviewees were in agreement: such a plan has potential to enhance farming opportunities, benefit the environment and enhance community food access.

Another interviewee expressed support for uses including an aggregation center to facilitate storage and distribution for small-scale producers. Also cited by this representative was the need for processing facilities such as a certified commercial kitchen or a mobile slaughterhouse. While such needs have increasingly been identified by members of the agricultural community in the county, another interviewee disagreed as to the viability of an aggregation center, suggesting that the current scope of small-scale production in the area wouldn't support such a facility.



Figure 4-3: Aggregation and distribution facility, the Intervale Center, Burlington, VT.

Echoing sentiments expressed by farmer interviewees, all four CBO interviewees noted the potential to provide land as part of a farm incubation program. One organization, newly engaged in work with beginning farmer populations, was particularly interested in the potential for collaboration with the City in this regard. Some expressed support for this use, however noted the need to find a partner to

manage leases, infrastructure and other use logistics. In particular, it was noted that such a partnership might allow the provision of smaller parcels for longer durations, both of which are important for the new farmer.

Also in concert with farmer interviewees, several CBO representative expressed concern about providing overly proscriptive designations for future uses of agricultural parcels. Instead, these interviewees recommended determining “the highest purpose of the land” by way of a community needs and foodshed assessment.

Four of the five interviewees mentioned the potential for educational programming on available parcels, with all but one qualifying this potential with the need to first determine whether such programming was in fact needed. Additionally, it was suggested that such programming would rely on a partnership or alternative managing entity with the interest and finances to take on additional programming. Several mentioned the need for additional local farms for school children to visit as part of farm to school programming.

University of California, Davis and Related Institutions

The City of Davis has much to gain from its relationship and proximity to the University. Beyond academic expertise on issues of planning, conservation, and sustainable agriculture, the University is home to a number of programs and institutions with deep insight into the state of local agriculture and food systems within and around the planning area. Interviews with five University faculty, staff and affiliates were conducted, with expertise ranging from local agricultural production, to food systems to habitat and landscape conservation and the agricultural-urban interface. Feedback from

these individuals helped to provide insight as to potential partnerships, challenges and community needs.

In general, University interviewees were supportive of the underlying tenets of the plan for a network of community farms sites, particularly with regards to its

Amongst interviewees engaged in farm and garden education, questions about demand for non-market based uses such as additional agricultural education programs were raised. Both suggested that current educational offerings in the region might already be sufficient and that perceived deficits were not the result of limited land, but rather, limited institutional support.

potential for overall community enhancement. However, each interviewee also expressed reservations with regard to specific elements.

Amongst interviewees engaged in farm and garden education, questions about demand for non-market based uses such as additional agricultural education programs were raised. Both suggested that current educational offerings in the region might already be sufficient and that perceived deficits were not the result of limited land, but rather, limited institutional support from within primary and secondary schools.

One interviewee noted the potential for concern amongst local growers about subsidized land and resulting unfair competition. Interestingly, this concern, also noted by one CBO interviewee, was not overtly mentioned by farmer interviewees.

Observation of the need to establish partnerships to assist in management of the new parcel uses was again mentioned, particularly to ensure that the process for accessing land is conducted in a fair and transparent manner. It was also noted by the same

interviewee that similar plans have, in the past, experienced some difficulty securing tenants in light of a non-traditional lease agreement.

The need to consider site characteristics, irrigation, storage and certification were mentioned as well, and it was suggested that further consultation with farmers, as potential tenants, be undertaken in advance of implementation.

An interviewee from within UC Davis Dining Services provided feedback focused on the potential for collaboration between local growers and University food providers. This interviewee indicated that while the University has already met its goal of 20 percent local sourcing by 2020, it still aims to increase procurement of locally grown goods. However, the interviewee noted that significant challenges remain in terms of linking small growers with the school's preferred vendors, such as Aramark, Sysco and Coke. Such challenges might serve as a barrier for new growers on City-owned parcels accessing the University food services market.

A fourth interviewee focused his concerns more specifically on the challenges of including animal production on land adjacent to the City as well as the need to ensure that markets exist not only for the land offered by the City, but also for the product grown therein.

City of Davis

Representatives of the Agricultural program at Davis Senior High and the City of Davis community garden were interviewed to gather information on the degree to which a proposed community farm network would benefit these existing institutions. With a waiting list of nearly 50 residents, the community garden representative

indicated that additional community garden plots would help to meet demand for



Figure 4-4: City of Davis Community Garden.

gardening space. In lieu of multiple plots managed by individuals, however, the interviewee suggested investigation of a more collective model where design and management decisions for the entire parcel

would be made cooperatively. With regard to garden education offerings, the interviewee corroborated sentiments expressed by other interviewees, that facilitated garden education opportunities were already readily available throughout the City.

The potential for collaboration with existing social service providers was also mentioned as a possible outlet for produce generated at a potential new garden site.

In terms of making land available to the Davis Joint Unified agricultural education programs, it was indicated by a program interviewee that this is not currently a need. While the program is still finalizing the details of a use agreement, a large parcel adjacent to Harper Junior High is likely to become the new central location for the high school's agricultural program.

Food System Experts

Finally, two interviews were conducted with individuals uniquely experienced in food system and urban edge land-use planning. One, through extensive participation in City government, provided particular insight into the role of the City and priorities of the non-farming portion of the community. The second, representing an organization experienced in designing and managing community farm projects in the region, provided insight into the feasibility and challenges of establishing such community farms.

The first interviewee, beyond general support for the proposed concept, focused her feedback on the need to promote environmental stewardship in production. More so than any other stakeholder, this interviewee focused her interest in and support for agriculture with environmental benefits and the potential to encourage sustainable production practices through monetary incentives. Though the potential for conflict around “subsidized” land was noted by the interviewee, she felt that well-reasoned compensation for conservation measures could be justified.

Additionally, the interviewee noted the range of potential markets for such a program, citing in particular, the opportunity to work with institutional buyers such as schools and hospitals. While concurring with other interviewees as to the challenges of accessing the successful Davis Farmer’s market, the interviewee noted the relative absence of local sourcing among area restaurants and supermarkets.

21 Acres, Woodinville, WA



Located on the outskirts of Woodinville, WA, within the Seattle metro region, 21 Acres is non-profit farm, education center, marketplace and distribution hub. Designed to reflect the basic principles of permaculture, 18 of the farm's 21 acres are allocated for production and are currently utilized by multiple tenants, including a veterans-support organization. The farm features a self-guided walking tour with demonstrations of sustainable production practices such as a solar powered water pump, livestock grazing for weed abatement, and dedicated habitat areas. The site also includes a LEED certified marketplace, commercial kitchen, and produce storage and distribution facility all intended for use by small-scale, local producers. Primarily supported by private donors from within the community, the organization hopes to apply facility use-fees and land lease revenue to support program costs in the future.

Unlike feedback from the majority of other stakeholders, this interviewee expressed support for a farm education center, though encouraged the City to stay away from actually implementing and managing programs itself. Instead, as suggested by others, it was recommended that the City partner with an outside institution to provide this service.

Similarly, the interviewee suggested that with regard to specific production choices for City-owned parcels, that "the market determine who needs what land, where, when," and that an outside entity such as the Yolo Land Trust be hired to manage the stipulations of use.

The second interviewee focused her observations on the logistics of site management with multiple tenants. In particular, the interviewee noted the

challenges of finding successful, established farmer tenants despite unique proximity to direct markets. It was explained by the interviewee that considerable time and resources were required for installation of infrastructure, conservation features, and organic certification of the land. This observation supports the recommendation of numerous other stakeholders as to the need for an outside or designated site manager.

The interviewee also noted some challenges with regard to determining a fair lease rate for the parcels, given lease agreements with additional conservation or community engagement mandates.

Summary of Findings from Stakeholders

Nearly all interviewees expressed support for a new use regime on City-owned lands designed around increased ecosystem services and community engagement. Specific nexuses of support included the idea of supporting new entries into farming and providing farmers the discretion as to which and how many ecosystem service supporting production measures to implement. In terms of compensating farmers for best practices, community-based organization and University interviewees expressed the most concern, particularly with respect to competition, as compared to farmers who expressed less concern. Another area of some dissent surrounds the need for agricultural education programs. Several interviewees expressed the feeling that such niches within the region were already full, while others supported the idea of land allocations for that use.

Ch. 5: Gaps and Limitations in the Local Food System

An assessment of the foodshed surrounding Davis, combined with analysis of stakeholder feedback reveals a number of opportunities for support and collaboration between the City, community members, and farmers by way of its open space parcels. Many of these opportunities are also noted within a report generated by the Yolo Ag and Food Alliance in February of 2011. The Alliance, a coalition of farmers, ranchers and agricultural support representatives, convened during the summer of 2010 “to identify the critical gaps in agricultural processing, storage, and distribution infrastructure and begin a process to close some the identified gaps through a discovery and prioritization process,” (Doran, Ervin et al. 2011). In cross-referencing this report with the research undertaken for this plan, the following trends and empty niches within the food system are important to consider for the support of local agriculture within the foodshed:



Figure 5-1: Yolo Ag and Food Alliance Logo. Image: Ag Innovations Network

- Aging farmer base
- Limited and declining crop diversity
- Predominance of monoculture
- Reliance on chemical inputs
- Lack of decentralized compost facilities
- Declining livestock and livestock processing
- Lack of distribution and consolidation options for small growers
- Lack of facilities for creating value-added commodities

- Insufficient community gardens and plots

However, such gaps should also be considered in the context of several positive trends that should be taken into account in developing a plan for community farms:

- Growing demand for locally grown foods
- Growing demand for organic or pesticide free foods
- Growing demand for agri-tourism

While not all of these gaps can be met by way of community farms, establishing use stipulations and management protocols that help to address them through agriculture and related activities is recommended. What follows is a brief examination of these trends and potential synergies with City open space parcels.

Aging Farmer Base

Within the two-county foodshed, as well as across the nation, the average age of farmers is increasing as fewer young people enter the industry. Consolidation within nearly all sectors and the resulting high costs of technology and production systems make it difficult for those without significant start-up capital to begin, while large parcel sizes, particularly prevalent within the Sacramento Valley, require inexperienced farmers to scale up rapidly. Additionally, many new or beginning farmers struggle to find land affordable for purchase or face short-term leases without the opportunity to build equity (Kraus 2005).

In light of these challenges, a number of beginning farmer training and incubation programs are springing up across the nation, including one in the process of development within the Sacramento Valley. The City of Davis has the unique

opportunity to support the development of new farmers and thereby the local food economy through the provision of appropriately sized parcels for longer duration leases. In turn, farmers with secure, affordable leases would be more likely to invest in management practices and site improvements that generate ecosystem services and engage the community (Fraser 2004).

Limited and Declining Crop Diversity

In keeping with national trends, demand for locally grown food products in Yolo and Solano Counties continues to grow (Doran et al. 2011). However, food production is focused on a relatively small number of commodities including walnuts, almonds, wine-grapes, plums, processing tomatoes, cattle, rice and field crops such as alfalfa and wheat (Richter 2009). These products, grown in significant excess of local demand, are produced largely for export to both domestic and international markets. While the export market is an important and reliable outlet for farmers in the region, it has been demonstrated that local sales return a higher percent of the production cost to the grower (La Trobe 2001). In an agricultural economy where the majority of a product's value is never seen by the farmer, the added return from direct sales may have a significant impact on local economies (Lyson 2004), while helping to supply a greater proportion of food for local consumers. However, this would require a shift in the current crop mix within the foodshed to include a greater diversity of fruits and vegetable crops as well as proteins. The study area, unlike many locations in the U.S., is uniquely situated to generate a wide-range of these products given relatively ideal

growing conditions.

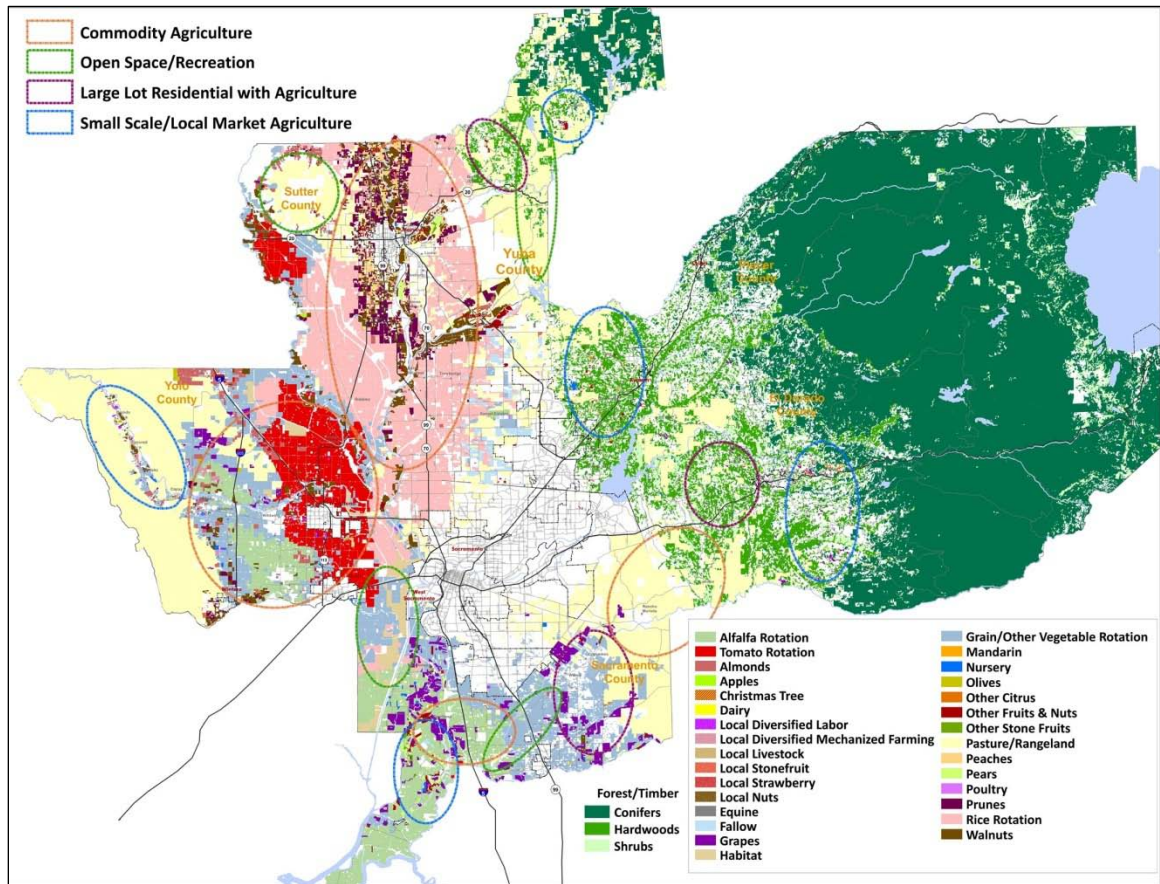


Figure 5-2: Agricultural Themes, Sacramento Region Rural-Urban Connection Strategy, SACOG

Despite a significant uptick in the number of small, diversified farm operations, the overall crop mix within the foodshed is becoming more homogenous as the dominant crops take up a greater proportion of overall acreage over time (Solano County 1997-2009; Yolo County 1997-2009; Service 2007). This homogenization, as measured by the Shannon-Weaver index can be associated with decreased bio-diversity (Jackson et al. 2009)¹².

¹² The Shannon Weaver index typically measure species richness and evenness and is used to assess overall biodiversity (Jackson et al. 2009).

Predominance of Monoculture

The vast majority of crops within the foodshed are grown in a monoculture, wherein large areas are planted to a single crop, facilitating mechanization, reducing labor costs, and simplifying management decisions in operations. Monoculture production is also highly correlated with the use of genetically uniform crops and, and



Figure 5-3: Furrow irrigated corn, Yolo County.

thus, chemical pest control given the increased susceptibility of such crops to disease or infestation (Gliessman 2007). Significant land modifications, such as laser leveling, installation of irrigation canals,

removal of any native vegetation are also common in an effort to facilitate efficient mechanization. Increased concentration of dominant crops such as processing tomatoes, alfalfa and walnuts, in combination with monoculture production, results in an agricultural landscape with a diminished capacity to provide ecosystem services (Ash et al. 2010).

A small, but growing number of direct sales oriented farms, many centered within Yolo's Capay Valley are the exception to this rule. Through organic production or reduced chemical dependence, a greater reliance on drip irrigation, enhanced crop

diversity and utilization of farmscaping, these operations provide a greater degree of ecosystem services with benefit to communities both locally and globally. Farmscaping, in particular, should be considered as priority for installation on City-owned parcels in light of their habitat, erosion control, filtration and aesthetic benefits.

Reliance on Chemical Inputs

Agriculture within the foodshed relies on chemical inputs ranging from fertilizer to insecticides, herbicides and fungicides. Despite a growing base of organic acreage, less than 1 percent of current cropland is certified organic within the foodshed. While chemical use, both pesticide and fertilizer, is declining overall within the state, persistent chemical applications over time has resulted in pollution in local waterways, low-level environmental toxicity (Central Valley Regional Water Board 2006) and occasional acute poisoning of farmworkers (Reeves, Katten et al. 2002). As demand for organic food and fodder increases across the region and the nation, Davis open space parcels, particularly those in proximity to waterways or on the urban edge, are well situated to capitalize on increased demand for organic production while enhancing the environmental and human health value of agriculture around the City.

Lack of Compost Facilities

It is well documented that composted plant waste and animal manure can serve as a valuable Nitrogen source for agricultural crops in lieu of chemical fertilizer while helping to divert waste from landfills or lagoons. While compost may generate CO₂ emissions during production in light of microbial processes, its ability to store carbon

after application more than mitigates these emissions (Jackson et al. 2009). Because the majority of fertilizer is imported from international producers and is dependent on petroleum for its production, its price and availability are also somewhat variable.

As a growing number of climate change mitigation plans call for reducing the carbon footprint of agriculture, compost stands as an important alternative. While there are currently eleven compost facilities within the two-county foodshed, an increased distribution and decentralization of production would help to reduce emissions related to hauling the heavy product to the farm site. Only two of the facilities currently accept food waste, suggesting a significant additional waste-stream for generating compost, diverting waste, and reducing CO₂ emissions.

Declining Livestock Production

As demand for locally grown foods increase, locally raised and slaughtered meat remains difficult to come by. Consolidation within the slaughter and processing sectors means that livestock often has to be shipped great distances to be slaughtered, while most facilities are not equipped to work with small livestock producers (Doran et al. 2011). As a result of this consolidation, the number of livestock producers across nearly all livestock sectors has declined, most markedly in beef, hogs and sheep. Interestingly, the total number of cattle by head within the foodshed has increased, as compared to a precipitous decline in the other sectors, suggesting that fewer beef operations now raise more cattle (Solano County 1997-2009; Yolo County 1997-2009).

While net grazing land has not decreased, due in large part to Conservation Reserve Program sign ups (Jackson et al. 2009), the general decline of livestock within



Figure 5-4: Small-scale poultry slaughter, Hain Ranch, Central Coast, California

the two-county region suggests that land under this use designation may ultimately be at risk. By comparison to production involving frequent tillage and irrigation, carefully managed grazing land provides greater habitat and sequestration opportunities (Swinton, Lupi et al. 2007), requires little irrigation or chemical pest management and results in minimal erosion (Fraser 2004).

With the majority of rangeland located in the northern and western regions of the foodshed, the use of some City-owned parcels with poor soil quality for grazing or diversified production including livestock would offer a myriad of ecosystem benefits, particularly if paired with an alternative use such as solar generation. At the same time, increased access to grazing land would stand to enhance access to local protein, though slaughter and processing remains an issue.

Lack of Distribution and Consolidation Options for Small Farmers

As of 2007, the last agricultural census year, about 1.2 percent of agricultural products grown or raised within the foodshed were sold direct to consumer. The remaining 98.8 percent travel through a wide range of processing and distribution

channels before finding their way to our plate. The wholesale food distribution system within the Sacramento Valley continues to experience consolidation, as seen across the nation and the globe, with many distributors operating as subsidiaries to larger enterprises or themselves encompassing other smaller distributors (SACOG 2009). An often-cited challenge for smaller producers is the ability to generate the volume and consistency of agricultural products required by large distributors. While distributors

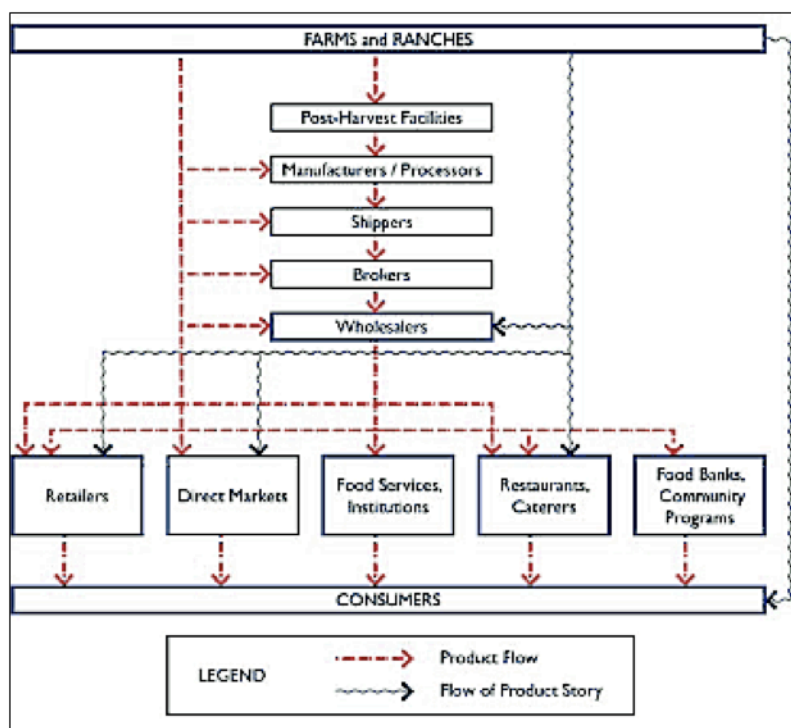


Figure 5-5: Food Distribution Diagram, Sacramento Region Local Market Assessment (SACOG 2009).

also recognize the value of developing relationships with smaller-scale growers, both note the lack of infrastructure to facilitate affordable storage, transportation and processing of products from decentralized

production locations. The absence of infrastructure and mechanisms to efficiently and affordably distribute locally grown food also exacerbate inequality in access due to price and availability.

While discussions have been ongoing with regard to the establishment of an aggregation and distribution facility to serve small growers in the Sacramento region,

there is considerable interest in locating an additional facility around the Davis area with the potential to serve growers north and west of the City. While such a facility would optimally be located within a pre-existing warehouse, and not on prime agricultural land, consideration of this opportunity should be taken into account given its potential to support the local, sustainable food production within the region. In the event that multiple farmers growing for local markets are located on a single parcel or adjacent to one another, as in the case of a farm incubator, enabling storage and handling to happen on-site would also be highly beneficial.

Lack of Facilities for Creating Value-Added Commodities

Increasingly, as demonstrated in studies across the nation, farmers producing for local consumption are pursuing value-added goods in light of the additional return they generate per unit of commodity product (SACOG 2010). Additionally, many approaches to generating value-added products extend the shelf-life of that product, enabling farmers to market it over a longer period of time and thereby mitigate some of the affects of seasonal flooding of the market. However, farmers and other food system participants involved in value-added production face a number of challenges. First, in light of consolidation within the food system and decreased crop diversity, only a limited number of processing facilities now exist in the region and for a limited number of commodities. As a result, many of the secondary products in value added goods (sugar in jam, flour in pie) must be sourced from outside of the region even if they could be grown within it.

Another challenge for farmers looking to produce value-added products is access to certified commercial kitchens, which are required for the production of most food products for direct sale (Doran et al. 2011). Because certified kitchens often cost tens of thousands of dollars to install and require the navigation of complex food safety regulations, the establishment of community kitchens, which can be shared by multiple farmers, is an increasingly well-supported concept. Such an installation should also be



Figure 5-6: Value-added goods produced at a canning workshop, Common Good City Farm, Washington, D.C.

located within an existing structure, if possible, to avoid conversion of agricultural land, or could be associated with an aggregation and distribution facility.

Insufficient Community Gardens

Community gardens provide valuable supplementary food access for individuals and families and are relatively scarce within the

foodshed. Despite their location within a major agricultural area, Davis and surrounding cities do not necessarily enjoy enhanced food security. The addition of a community garden or small plot intensive production site on parcels immediately adjacent to the City would add aesthetic, cultural and food security benefits while serving as a buffer between conventional production and residential areas. Such gardens should be open to

residents from surrounding communities in light of the relative dearth of gardens therein.

Growing Interest in Agri-tourism

To meet growing local and national interest, farmers within the foodshed are increasingly marketing products and building a consumer base by way of agri-tourism.



Figure 5-7: Self-guided tour at 21 Acres, Woodinville, WA.

While there are currently 86 different sites in Yolo alone (SACOG 2009), such opportunities could be much expanded. City open space parcels, given their proximity to a population center and existing recreational infrastructure, could support a number of operations with

agri-tourism components. Agri-tourism on the urban edge is a particularly effective way to enhance food access and the local food economy while generating support for policies that maintain this land-use. In the case of City-owned parcels, appropriate agri-tourism installations might include pick-your-own, farm tours, corn-mazes, on-site sales of value-added products, and fundraising events. More infrastructure intensive options like wine-tasting, cooking or preserving classes and agricultural bed and breakfast arrangements would require additional consideration by the City as well as longer term use agreements.

Summary

Through synthesis of stakeholder feedback, an assessment of the Yolo and Solano County foodshed and supplementary analysis from agricultural support organizations, a number of gaps within the local food system have been identified. These gaps, including an aging farmer base, lack of consolidation, distribution and processing facilities, and a continuing reliance on industrial production techniques despite growing demand for more sustainable foods, pose and opportunity in considering a new use regime for City-owned open space parcels. The following chapters propose strategies for addressing these gaps on available land.

Ch. 6: Guiding Principles for Agricultural Land Use

Through its acquisition of approximately 1800 acres of prime farmland and farmland of state and local importance, the City is in a position to implement strategies that demonstrate innovative management in support of enhanced ecosystem services, while increasing public valuation of agriculture at the urban edge.

While these open space parcels are not at immediate risk of conversion in light of public support by way of Measure O, a great many urban edge parcels within the Sacramento Valley do face this threat. Through the implementation of a management plan that encourages continued agricultural use, while facilitating sustainable production practices and enhancing opportunities for civic engagement, the City can serve as a model for other communities within the Central Valley and across the nation. This chapter provides a series of guiding principles for achieving the three overarching management goals laid out in Chapter 1:



Maintain agricultural lands and related open spaces on current and future parcels



Increase the environmental value of these parcels and ecosystem services provided therein



Increase access to locally grown food and support the local food economy

Detailed implementation recommendations with respect to available parcels are included in Chapter 6, while practical implementation considerations, including the

challenges associated with these proposals, are included in chapter 7. As the City is likely to acquire additional open space parcels in the future, the strategies and recommendations included here can also be used to help shape future use at the time of additional acquisitions.

Goal 1: Maintain Agricultural Lands and Related Open Spaces

Avoiding Conversion

Avoiding additional conversion of farmland to urban uses is essential to maintaining agriculture within the foodshed and preventing increased greenhouse gas emissions associated with urban uses (Wheeler et al. 2011). While there are many ways



Figure 6-1: Agriculture at the urban edge, Winters, CA.

to facilitate anticipated population growth without adding to our urban footprint, options, such as increasing density

requirements within the urban core and modified zoning to encourage infill, often require more political will and face greater public opposition than simply allowing a city to expand outwards on agricultural land.

Given the predominance of conventional production around the City's edge, and its real and perceived impacts, public support for development policies that require more aggressive infill may be difficult to come by. Complaints about dust, noise, and chemicals, as well as the relative alienation of residents from large-scale commodity crop production, do not help to foster common ground between urban residents and farmers. Finding ways to mitigate potential conflict or apathy may significantly improve the climate needed for policy change in support of sustainable infill development and avoided conversion.

The City has developed one of the most robust agricultural mitigation programs in the nation. Examples of mitigation strategies already in affect within the City's General Plan include the following:

- Requirement that two acres of farmland be protected for each acre converted to urban uses
- A minimum 150 foot agricultural buffer required between farmland and the City's edge
- A tax sharing agreement between the City and the County to direct urban growth into the City
- A commitment to a conflict resolution program for agriculture-residential disputes.

Additional strategies, such as encouraging community members to participate more actively in the processes of production, whether through educational opportunities such as tours, tastings or volunteering, could help to generate greater understanding of and tolerance for the unavoidable negative externalities of food production. While public engagement may have more value in some production

contexts than others, for instance a diversified farm with livestock where families can harvest and sample, large-scale producers could also host community or educational events. In some cases, the simple addition of signage to provide information about the form of production taking place and the food (or fiber or energy) products under cultivation may be enough to build valuable community awareness.

Finding ways to harmonize other community priorities, such as recreation to and around agricultural sites, may also add value to these lands and integrate urban users into the rural landscape.

Keep Farmers Farming

Beyond maintaining agricultural lands, ensuring that there are farmers to work and steward these lands is an issue of growing concern both locally and across the nation. Farm incubator programs, typically managed by community-based organizations, are one way to support new and beginning farmers as they enter the industry. Such programs typically provide short-term, subsidized land access on parcels appropriately sized to new farmers with limited start-up capital. Generally, the land subsidy for participating farmers decreases each year until market rate is reached or the farmer graduates from the program. Farm incubators often include equipment and infrastructure sharing and technical assistance to get farmers started successfully.

Intervale Center, Burlington, VT



The Intervale Center, located just outside Burlington, VT, is an innovative agricultural support organization with 23 years of experience in community-based farming. Current programs include a 2-year business planning course to help farmers generate successful market strategies, as well as a farm incubator, where new farmers can apply for low-cost access to land, equipment, and infrastructure to help them get started. A bicycle-powered CSA, and food hub, where local growers can aggregate produce for later distribution, provide markets for both on-site growers as well as other small farms and value-added producers in the area. Also located on-site is a native plant nursery for restoration projects, a compost facility (Vermont's leading compost provider) for recycling organic waste, as well as trails and wildlife corridors. The Intervale Center is a non-profit organization, but includes for-profit farm operations within its incubator and CSA components.

Integrate Renewable Energy and Food Production

In light of growing concern about the adverse impacts of climate change, the City is working to reduce its dependency on fossil fuels. Already, the City receives a portion of its energy from renewable sources and is planning to meet 5% of total community energy demand with locally produced renewable power by 2015. The City's long-term goal is to reduce energy demand and eventually become a net exporter of renewable energy by 2050. To meet these goals, several large-scale solar projects are under discussion with the potential to be located on one or more open space parcels. While the efficacy of locating renewable energy installations on undeveloped land is one of sure debate, considering compatible agricultural uses for prospective sites

should be undertaken from the outset and may provide the opportunity to demonstrate innovative new joint-use solutions and serve as a model for other communities.

Compatible
uses might
include the
grazing of
livestock or
poultry
between the
panels, which



Figure 6-2: Sheep grazing beneath solar panels; Image courtesy of Bert Bostelmann/Getty Images

simultaneously enables the re-vegetation of grasslands surrounding the panels.

Additionally, parcels could be utilized for bio-fuel production, if determined to be of economic value to the farmer under the relevant parcel use stipulations.

Goal 2: Enhance Ecosystem Services and Conservation

Alternatives to modern industrial agriculture are increasingly prevalent and have the potential to balance competing environmental and human demands more effectively. Specifically, (community-based) multifunctional agriculture supports the “joint production of both agricultural commodities and a range of ecological services, including beneficial effects on pest and nutrient management, water quality and quantity, biodiversity, and amenity values,” (Jordan et al. 2010). Pursuing management goals for open space parcels that encourage and support ecosystem service provision is essential to realizing the planning objectives of this paper. In particular, given that

resources addressed by this plan, including land and funds for future open space acquisitions, ultimately belong to taxpayers, it is essential that these lands generate public goods, such as clean air and water, enhanced food access and opportunities for community engagement.

Provisioning Services

Ecosystem provisions are the “goods” humans derive from ecosystems, such as water, food and fiber. While agriculture has been very successful at generating provisioning services with immediate market value (FAO 2011), it has been less



Figure 6-3: Largescale diversified production, Suzie's Farm, San Diego, CA

successful (albeit more so than urban land uses) at providing ecosystem services that can't readily be bought and sold. In particular, supporting and

regulating services, and to a lesser degree cultural services, have been diminished in the push to generate provisioning services.

Finding ways to maintain or enhance the acquisition of food, fiber and other ecosystem provisions without adversely impacting the generation of regulating and

supporting services is an important objective and should be encouraged by the City in planning for community farm implementation.

In particular, a growing body of research indicates that production systems that incorporate biodiversity generate higher yields on average than systems reliant on monoculture (Ash et al. 2010). Biodiversity can be achieved in a multitude of ways, but the following are several priority mechanisms for consideration by the City.

- **Farmscaping:** Farmscaping refers to the installation of hedgerows and buffers, riparian strips and in some cases cover crops and water reservoirs to generate environmental amenities in the context of production. Carefully planned and maintained farmscaping can also play an important role in increasing yields. Specifically, the inclusion of insectary plants that attract beneficial insects or vegetation that provide habitat for species such as raptors can help to regulate common farm pests. Additionally, farmscaping may help to draw valuable pollinators, though care should be taken to ensure that such installations do not

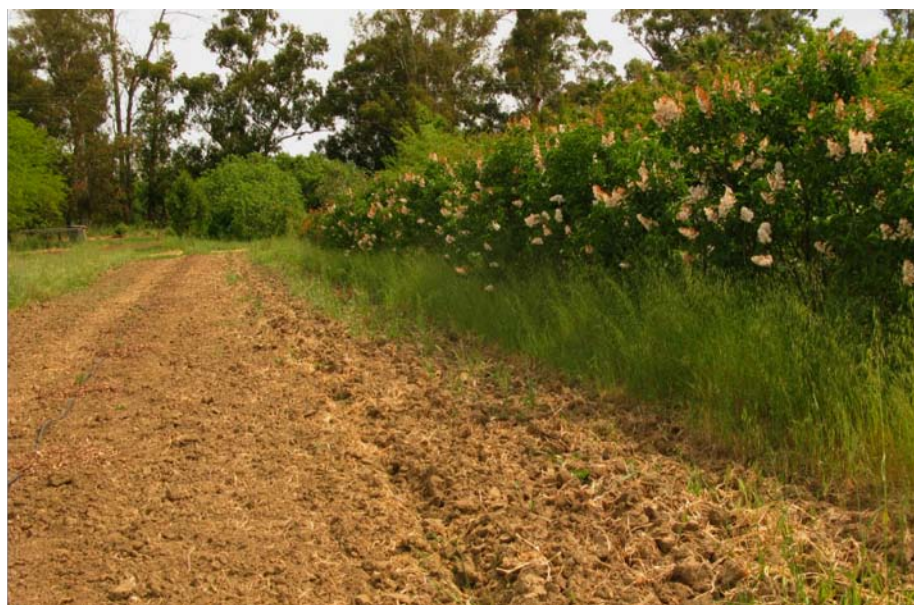


Figure 6-4: Flowering hedgerow, Yolo Bulb Farm, Winters, CA.

harbor harmful organisms including pest insects, vertebrates or plant pathogens.

- **Conservation Tillage:** Soil biodiversity is directly related to fertility, with soil microbes and organisms contributing to soil organic matter and nutrient availability. Unfortunately, frequent tillage and chemical applications generally diminish the number of organisms and microbes present in the soil, thereby also diminishing their beneficial effects. Conservation tillage, which involves planting with the previous season's crop residue still in-field, thereby avoiding tillage, has the potential to mitigate the loss of soil biodiversity. At the same time, reducing tillage, also reduces greenhouse gas emissions both from increased CO₂ retention in soil and from reduced fossil fuel inputs for tillage-related farm machinery (Uri, Atwood et al. 1998).
- **Compost Application:** Amending soil with compost also has the potential to significantly increase the number of soil organisms and thereby nutrient availability for crops. However both compost and conservation tillage have the potential to add to production costs at the outset. The City should consider incentives for growers willing to make these investments in light of the value they add to overall biodiversity.

Regulating Services

Regulating services are the benefits that humans derive from the regulation of ecosystem processes such as water purification, pollination, and climate regulation. According to the United Nation's *Millennium Ecosystem Assessment*, 70 percent of regulating services are in decline across the globe. Because these services have direct

implications both for the climate and for human health they are of particular importance for consideration in developing a management strategy. The following mechanisms enhance regulating services on open space parcels:

- ***Re-establishment of Grasslands or Forage on Parcels of Lower Soil Quality:*** The vast majority of land surrounding the City is under row crop production wherein soil is routinely tilled and often bare for a period of time after harvest. Though rangeland is typically considered to have less economic value than land used for the cultivation of irrigated row or field crops, this fails to take into account the non-market value of regulating services such as sequestration, soil building, and water filtration provided by rangeland (Fraser 2004).¹³ Other non-market values include habitat, recovery of native landscapes such vernal pools, the increased prevalence of protein in the immediate foodshed, and improved aesthetics. City-owned parcels with lower quality soil and or with flood potential should be considered for this use.

- ***Conservation Tillage and Fertilizer***

Applications: Tillage and fertilizer



Figure 6-5: Vegetative strip along Russell Blvd., Davis, CA.

¹³ Hilly or overgrazed rangeland is a clear exception to this rule. However, all parcels under consideration are nearly level and would be required to practice conservation-minded grazing.

application are two of the major sources of emissions related to row-crop production. With respect to tillage, emissions result from the decay and consumption of organic matter related to disturbance as well as fossil fuel powered machinery. In the case of fertilizer, emissions result from the production, transport, and application of the fertilizer product itself as well as soil fluxes after application. In combination, these emissions constitute nearly half of agricultural emissions in California (Jackson et al. 2009) and impair climactic regulatory capacity. The certification of select parcels as organic would help to reduce chemical fertilizer applications while conservation tillage, as described above, would help to reduce emissions associated with traditional tillage. Both would serve as important steps towards reducing energy inputs in agriculture and helping to meet the state's climate goals. Unfortunately, combining organic production with limited or no-till agriculture poses a number of challenges related to weed control, which are considered in Chapter 7.

- **Farmscaping:** Beyond the potential to increase yields through beneficial insects and pollinators, farmscaping can offer a range of specific regulating services. Hedgerows between fields can reduce dust born erosion, helping to keep soil on site, as well as pesticide drift either onto or off of the parcel. Similarly, riparian buffers, which are vegetative areas between fields and adjacent waterways, can prevent waterborne erosion and run-off thereby improving water quality miles downstream. Riparian buffers may also improve filtration, while providing valuable riparian habitat. Here again, however, such elements need to be

carefully planned to ensure maximum benefit including the selection of vegetation attractive to beneficial rather than harmful organisms.

- ***Local Composting:*** Not only does compost add vital organic matter to soil, it increases water-holding capacity while decreasing erosion potential. The fungi present in compost can be highly effective at combating certain plant diseases. At present, the only compost facilities with a significant volume of production within the foodshed are located nearly 20 miles outside of the City. As a result, for many area farmers, the largest cost associated with the application of compost, is the fee for trucking the amendment to the farm site. As it considers the possibility of a municipal food waste composting service, the City should also consider allowing the co-location of a compost facility on open-space land already used for waste management, such as the City's wastewater treatment plant adjacent to the Yolo County Landfill. Facilitating compost production within the Davis planning area would simultaneously divert one of the most problematic waste streams from landfills while increasing access to this valuable soil amendment for farmers and gardeners alike.

While this plan does not recommend that the City commit to the construction and management of a municipal compost facility, given a myriad of associated costs and challenges, it is nevertheless important to consider making land available for this use in light of potential fertility benefits to community farms.

Supporting Services

Supporting services such as soil formation, photosynthesis and nutrient cycling, serve as the foundation for many of the other benefits provided by ecosystems. As with regulating services, supporting services, in particular soil formation and nutrient cycling, have struggled to keep up with the pace of utilization (FAO 2007). However a range of mechanisms exist through which this over utilization can be addressed.

- **Cover Cropping and Rotational Production:** It is well understood that crops should be rotated from season to season to enhance nutrient cycling. However, the common rotational regime in the Sacramento Valley often leaves soil bare for months at a time. Cover cropping, such that the appropriate nutrients are returned to the soil as will be demanded by the next crop, not only stands to minimize fertilizer applications, but also adds organic matter to the soil, while preventing erosion and further soil loss.
- **Perennial Crops:** Planting crops that don't require cultivation and re-seeding each year can help to facilitate soil production and carbon storage, particularly if grasses or cover crops are allowed to grow between rows. Ideally, cover crops serve to suppress or outcompete more problematic weeds, while fixing nitrogen and improving water penetration. Perennial crops also tend to have deeper roots, which allows them to access water within the subsoil while providing enhanced sequestration within the crop itself and offering more enduring habitat. Finally, in the case of some perennial crops, excess product often remains on the ground after harvest, which can be consumed by livestock such

as pigs, sheep or goats, provided manure is carefully managed and incorporated into to soil to avoid food safety concerns.

Unfortunately, it is difficult for farmers to cultivate perennial crops without the security afforded by a long-term lease. Longer term leases should be considered for farmers committed to the production of perennial crops, particularly under the following circumstance: organic production, use of micro sprinkler or other efficient irrigation, cover cropping, and/or the running of livestock through the crop at mutually beneficial times.

- **Conservation Tillage:** As discussed previously, reducing tillage and planting into the prior season's crop residue prevents compaction and allows for the maintenance of soil organic matter. However, this practice generally relies on the use of herbicides to manage weeds otherwise addressed through tillage. Such herbicides (as well as insecticides and fungicides), kill not only weeds and pests but also their predators and beneficial soil microbes, important to the formation of soil (Gliessman 2007). Encouraging production methods that limit tillage while minimizing chemical applications should be considered by the City as highly effective measures for supporting soil maintenance and formation.

Cultural Services

Cultural services include the aesthetic, spiritual, religious, and educational benefits provided by ecosystems. Ensuring the continued provision of such services is important to maintaining the human perception of the (non-market) value within functioning ecosystems and the environment. Particularly in the context of the urban-

Luscher Farm, Lake Oswego, OR



Owned by the City of Lake Oswego and managed by its Parks and Recreation Department, Luscher Farm supports a variety of uses on its nearly 90-acre site just outside of the City. Acquired from the Luscher Family in the interest of open space preservation, recreation and education opportunities, the farm currently supports a variety of uses both public and private. In addition to several sports fields, a playground and other recreation infrastructure, a large community garden provides 185 plots for small-scale production, while a children's garden engages youth in hands-on garden education. Additional partners include Oregon Tilth, an organization working in support of ecologically sound production, who manages a demonstration site, and a small farm leasing 12 acres for a CSA. In addition to allocating significant acreage for habitat, the entire farm is certified organic.

rural interface, finding ways to generate cultural services while safeguarding the environment is essential. The following are mechanisms for supporting cultural services on City-owned open space parcels:

- ***Educational Opportunities:***

Providing opportunities for community members to better understand the complex production processes underway on open space parcels, particularly those enhancing environmental values, may help create greater understanding and interest in agriculture. Farm-tours, field days, workshops, and even simple signage can help increase awareness while generating new markets for direct sales-oriented growers.

- ***Recreational Opportunities:***

Supporting outdoor recreation opportunities has long been a priority for the City. Specifically, efforts toward

creating a greenbelt of walking, biking and running paths surrounding the City have been ongoing particularly in light of the 1989 *Davis Greenway Plan* (Jones et al. 1989). Finding ways to facilitate linkages between greenbelt recreation infrastructure and community farm operations should be included within management considerations. However, recognizing that not all operations are conducive to community visits or educational opportunities, incentives or other forms of support may be required.

- **Agri-tourism:** Agri-tourism is an area of great economic promise for many farmers in the Sacramento Valley and across the nation. Whether wine-tasting, visiting a local meat purveyor, or picking your own berries, agri-tourism not only facilitates connection between producers and consumers, but also creates higher-value markets for farm products. In an effort to enhance the vitality of the local food economy and generate a greater valuation of the cultural services provided by agriculture, the City should continue to uphold supportive zoning conditions as well as collaboration with regulators such that agri-tourism opportunities are facilitated on relevant open space parcels. Currently, the Yolo County General Plan is supportive of the establishment of agri-tourism-oriented facilities, establishments and events.¹⁴
- **Encourage Hedgerows, Diversified and Perennial Production:** Agriculture within the Central Valley is famous for its flat, unbroken swaths of monocrop

¹⁴ For more information on Agri-tourism in Yolo County, visit http://www.sacog.org/rucs/wiki/index.php/Yolo_County_Current_Agricultural_Policy_Inventory

production. With its laser-leveled fields and roads that run for miles without a curve this landscape does not necessarily facilitate emotional or spiritual connection to the natural environment. Hedgerows, buffer strips, riparian corridors and other farmscaping provide welcome relief from the monotony and help to create a unique and California-specific pastoral aesthetic. Similarly, diversified production, ideally including perennial tree crops, creates a



Figure 6-6: Educational signage at the Center for Land-Based Learning, Winters, CA

variegated landscape while simultaneously enhancing other ecosystem services.

In considering the value of alternative production regimes and conservation-oriented amenities, the affect that enhanced aesthetic appeal has for both farmers and community members is important to recognize.

Goal 3: Improve Food Security

Despite being located within one of the most intensive food producing areas in the world, food insecurity is nevertheless prevalent in a number of communities within the Central Valley. Ironically, food insecurity is often the most acute amongst farmworkers and is frequently correlated with low household income as well as distance to affordable markets and social services (Cason, Nieto-Montenegro et al. 2003) (Quandt, Arcury et al. 2004). Access to locally grown food, or the ability to grow one's own, has great potential to help mitigate food insecurity, particularly when this locally produced food is affordable.

Increase Access to Locally Grown Food

The City of Davis enjoys a relative abundance of direct-to-consumer avenues for locally grown farm products. This includes four different weekly markets at three locations. Locally grown produce can also be purchased at several grocery stores and restaurants as well as at UC Davis Dining Facilities, the ASUCD Coffee House, Davis Farm to School and a number of CSAs serving Davis.

Nevertheless, sales of locally grown food, whether at farmers' markets or through retail establishments are still only a small fraction of total food consumption, suggesting great potential for expanding markets in the future. Particularly in the neighboring cities of Winters, Woodland, and Dixon, where average household income is less than that in Davis, the often-higher relative price tag for locally grown foods makes them even less accessible. Though this higher price is typically thought to reflect additional benefits to the environment and human health generated through smaller,

direct-sales oriented production, it often has the affect of limiting the clientele for local growers to the more affluent.

As expressed by growers at the Yolo Ag and Food Alliance, increasing the availability of infrastructure to assist small farmers and those growing for direct markets is important to lowering the cost of locally grown food for the consumer. In particular, the lack of infrastructure to “efficiently produce, store, process, and distribute local food,” was cited as a barrier to making food available at a lower price (Doran et al. 2011). The following are methods for increasing access to locally grown food applicable to community farms:

- ***Ecosystem Service Incentive Program:*** As described above, organic, diversified or small-scale growers producing for local markets often have to sell at a higher per-unit price to account for additional production costs (mostly labor) and lower volume. However, these growers typically provide a greater modicum of ecosystem services while generating fewer environmental and health-related costs. Finding ways to mitigate the additional costs borne by sustainable growers would help to not only incentivize sustainability-oriented best practices (FAO 2007), but also provide a lever to lower the price of locally grown foods. In particular, linking the lease price of City-owned open space land to the value of ecosystem services provided would clearly demonstrate support for and recognition of the benefits to all community members provided by sustainable agriculture.

- ***Provide Land for Supporting Infrastructure:*** Determining the availability of affordable, appropriate land for processing, distribution or other agricultural support activities is one important factor in establishing this infrastructure. While in some cases, open space parcels with less agricultural value might be considered for this purpose, ideally, this infrastructure should not be located on agricultural land given its ecosystem service potential. Rather, parcels already converted to urban uses on the City's urban edge, as well as parcels with underutilized structures, would be best suited to this use.



Figure 6-7: On-site farmstand, Chino Farm, Rancho Santa Fe, CA

A certified commercial kitchen for use by farmers and community groups, as well as a storage, aggregation and distribution facility are two infrastructural elements often mentioned by local

growers (Doran et al. 2011). Also in need, but more challenging to pursue in this context, is a livestock slaughter facility with the ability to serve smaller operations.

- ***Enable Sales On-site:*** Gaining vendor access at the most vibrant area farmers' markets can take years. Newer or less well-attended markets are generally more accessible but may not generate sufficient sales for farmers to feel that their

time is being well spent. Similarly, retail markets can be difficult to permeate, particularly for smaller or newer growers. Allowing on-site sales for farmers growing on open-space parcels would provide additional markets, while enhancing connectivity between growers and consumers, and taking advantage of emerging interest in agri-tourism.

- ***Small Parcel Intensive Production:*** In light of an aging farmer base and often noted deficit in small parcels for beginning farmers, making half to one acre parcels available for entrepreneurs or individuals considering farming would be a valuable use of City-owned land. Specifically, utilizing smaller, urban edge parcels not conducive to mechanized production such as long, narrow agricultural buffer zones, should be considered. This would provide a low-risk environment for individuals to experiment with production and sales while figuring out if agriculture is a viable career path.
- ***Community Gardens:*** Community gardens, which generally consist of small plots, between 20 and 100 square feet, have long provided residents the valuable opportunity to supplement household food purchases with produce, and in some cases animal products, grown themselves. They also provide the opportunity for knowledge sharing between neighbors, reconnecting with ecological processes, and getting exercise. Given excess demand for plots in Davis and a limited number of gardens in surrounding communities, providing land for use as a community garden should be considered in light of the many cultural services provided therein.

Ch. 7 Parcel Plan

The following is proposal for parcel-specific community farm installations that help advance the aforementioned plan objectives. Proposed uses reflect input from City Staff and OSHC, as well as feedback synthesized from stakeholder interviews. Subsequently, this feedback has been integrated with findings from the foodshed assessment (Chapter 2) in an effort to address specific gaps within the local food system. Critical to determining the feasibility of these proposed uses is an assessment of parcel characteristics, including attributes and limitations. Such characteristics include the following:

- proximity to the City
- public access and recreation opportunities
- existing habitat or potential for connectivity to habitat
- current tenants and lease duration
- production history
- soil quality
- potential competing uses
- existing infrastructure and viability of that infrastructure
- size and configuration of the parcel

The execution of this vision, first and foremost, necessitates community engagement and support. While preliminary outreach and engagement has already been undertaken, additional opportunities for feedback are already in the planning stages for fall of 2011. Management and implementation will require staff time from several City employees while infrastructure improvements will also require investment.

Demand for parcels under a new use regime will also influence how rapidly and comprehensively plan objectives are pursued. All of these considerations, as addressed in Chapter 7, suggest that implementation

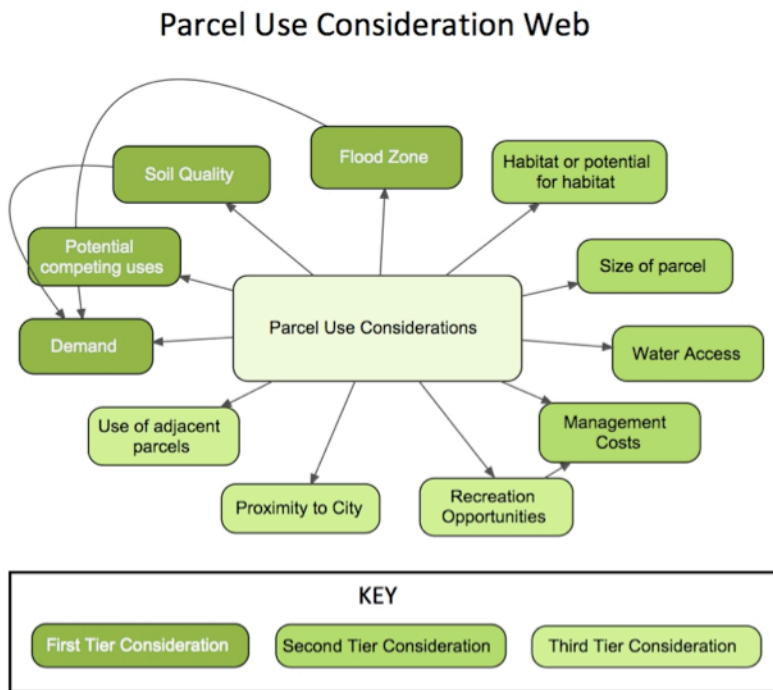


Figure 7-1: Parcel use consideration web

should be gradual so as to balance costs and allow for monitoring and adjustments. A proposed timeline is included in the following chapter.

Finally, it should be noted that uses outlined here are intended to serve as a vision rather than a prescription and should be tailored to the circumstances and potential tenants as the plan is implemented.

Parcel 1: South Fork Preserve

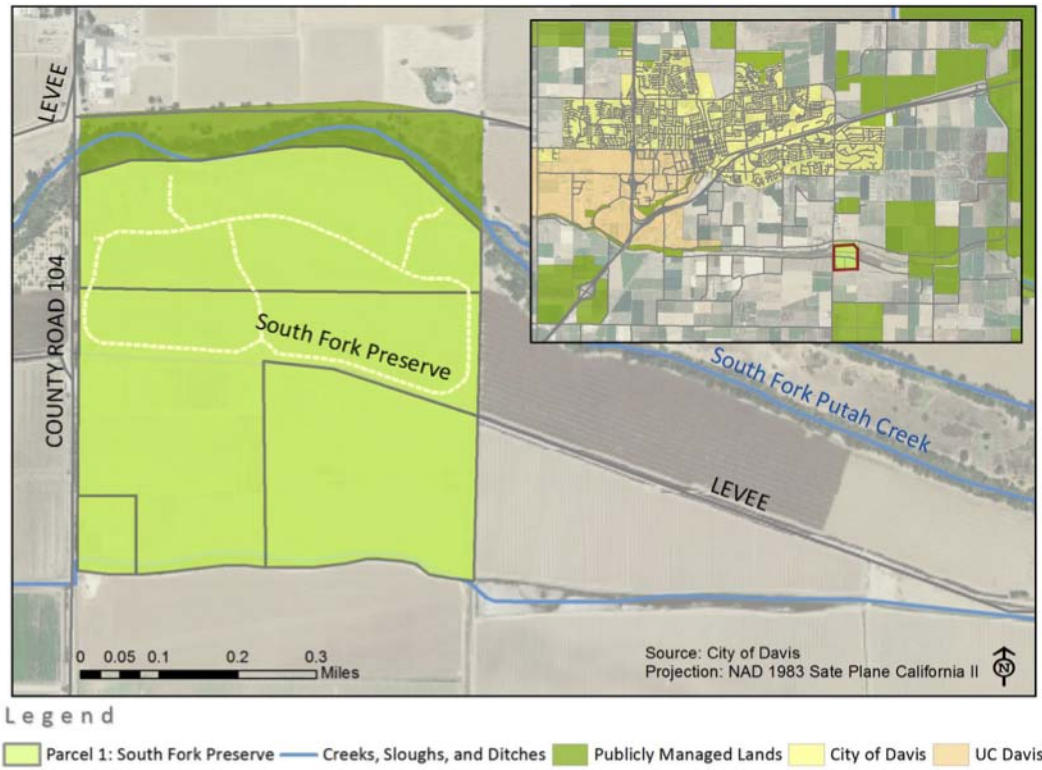


Figure 7-2: City of Davis Open Space Parcel 1: South Fork Preserve

Vision: Community-oriented

Diversified Farm, South Fork Preserve

In light of its outstanding soils (southern 65 acres), restored native riparian vegetation (north 110 acres) and public access trails, this location lends itself to diversified production that can integrate and capitalize on the full range of site attributes. In particular, finding one or more tenants willing to facilitate community visits would be ideal.

Because of its proximity to Putah Creek and the essential habitat along its perimeter, this parcel is an ideal candidate for organic certification and would benefit from erosion mitigating production practices.

The ideal lessee would integrate livestock or poultry into his or her production model, enabling conservation-oriented grazing in the re-vegetated area. With a pressurized tank already in place, this site

is also a good candidate for water saving drip irrigation.

Size: 175 acres; north 110 in restoration, south 65 available for production

Current Use: Limited grazing on northern restored area, no tenant on south 65.

Current Tenant: Greg Schmidt occasionally grazes north 110, was leased by Harris Moran Seed Co.

Lease Specifics: No fee; grazing in exchange for weed abatement

Other considerations: Public access on north section already established. Well may require maintenance.

Parcel 2: Los Rios

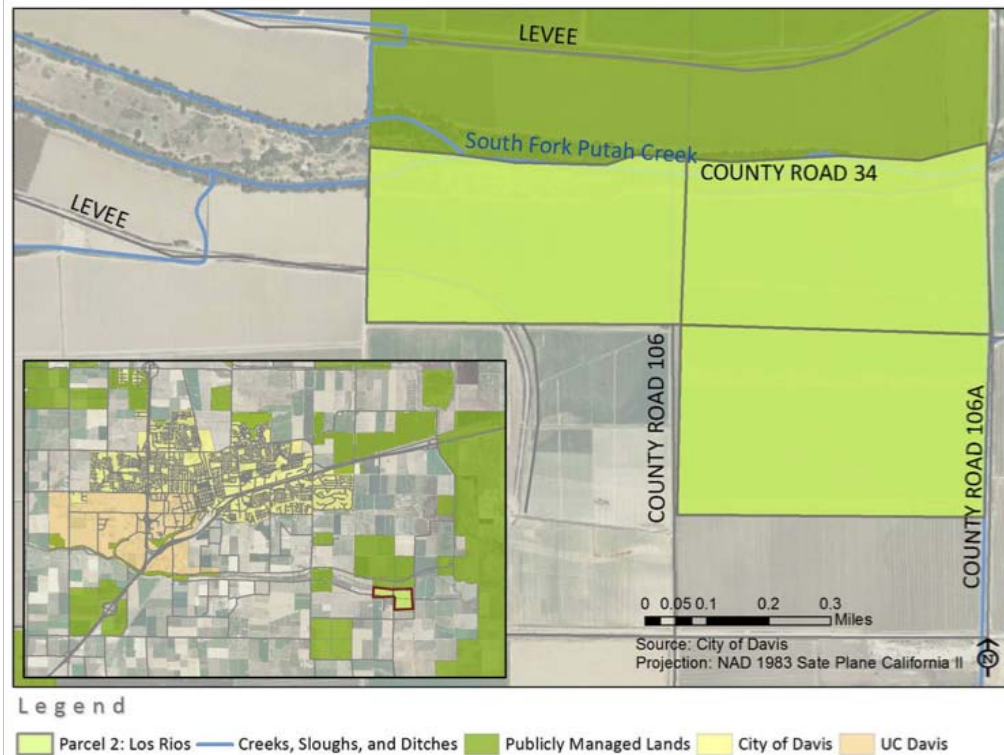


Figure 7-3: City of Davis Open Space Parcel 2: Los Rios

most reasonable management strategy.

***Vision:** Certified Organic Production, Los Rios*

This large tract, bordered by Putah Creek to the north, contains not only a riparian buffer, but also some of the best soils the Central Valley has to offer. Because the majority of acreage is located inside the creek's levees, resulting in occasional flooding, the parcel is well suited to an experienced farmer with the ability to manage this additional consideration.

The parcel is an excellent candidate for organic certification, given its proximity to the creek and riparian habitat as well as anticipated long-term agricultural use. Conservation tillage and installation of hedgerows and riparian buffers would help to mitigate erosion.

Demand for this parcel may be tempered by its flood risk; as such, the initial goal of achieving organic certification may be the

Size: 252 total acres including 22 acre riparian corridor and 230 acres in production **Current Tenant:** Greg Schmidt

Current Use: alfalfa or field crops in lower 230 acres; occasional grazing in upper 22 acres

Lease Specifics: Crop share: 20% corn; 20% safflower; 12% tomato. Avg. annual income = \$24k/yr

Other Considerations: 10 acres are located outside of the levees (less flood risk) and could be subdivided for lease to a separate tenant. Current tenant pulls water from causeway toe drain, but the on-site well should be in working order.

Vision: Multi-use Site with Native Plant Re-vegetation, Howatt and Clayton Ranch

Though not procured with Measure O funds, this large site should nonetheless be considered as a community farm location. Managed by the Public Works Department, it contains two parcels: Howatt Ranch, comprising the western and central segments and Clayton Ranch containing the easternmost. Soil is primarily Class 2, decreasing in quality from west to east. Field and oilseed crops are currently grown on Howatt Ranch, but heavy soil and periodic flooding make production difficult on much of Clayton Ranch. For this reason, production on this parcel is likely to transition to fodder or grazing land, offering the potential of habitat enhancement, in particular connectivity to the Yolo Wildlife Area, as well as additional sequestration opportunity.

Bordered by I-80 to the south, this site is under consideration for a sports complex and solar farm.

Interest has also been expressed in utilizing some of this land for an aggregation facility for local farmers. While such a facility has the potential to enhance distribution of local produce, investigation of existing structures with the City's current urban footprint should be undertaken to avoid additional conversion of farmland.

Parcel 3: Howatt and Clayton Ranch

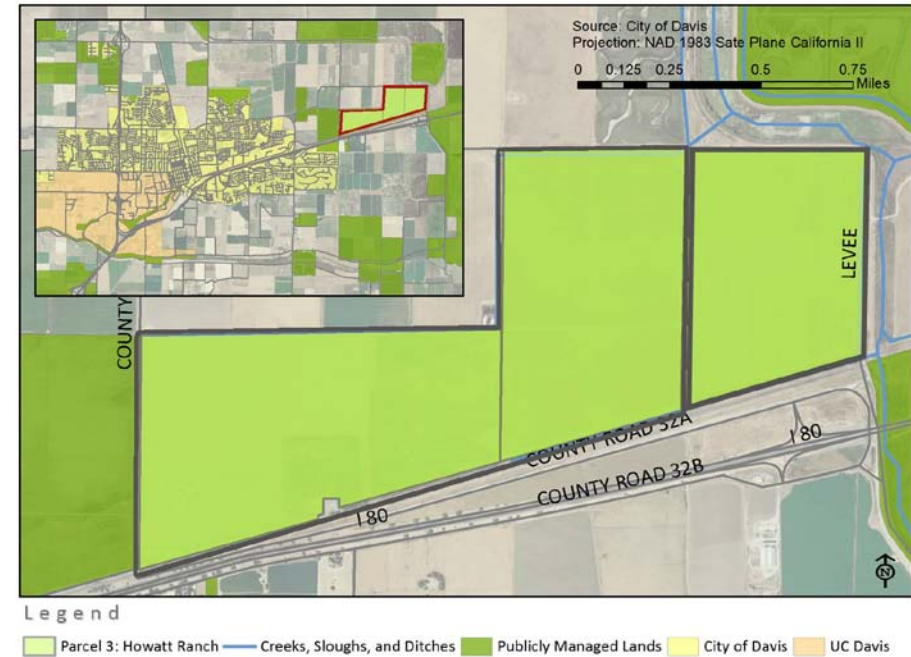


Figure 7-4: City of Davis Open Space Parcel 3: Howatt and Clayton Ranch

Size: Howatt: 521 arable acres; Clayton Ranch: 177 arable. Total acreage 780

Current Tenant: Bob Dettling

Current Use: Alfalfa, wheat and safflower on Howatt Ranch to the west. Fodder or grazing on Clayton Ranch to the east.

Lease Specifics: Howatt: 15-25% crop share (depending on crop); fodder crops at \$40/acre on Clayton

Other Considerations: Clayton Ranch is located in floodplain and has no reliable water source, compounding production challenges. A riparian corridor runs along the south parcel borders adjacent to I-80.

Vision: Organic Crop Production and Farm Incubator, Mace Curve

Purchase of this site is currently pending, however it is anticipated that once completed, the property will be resold in full or in part under easement.

However, proximity of this parcel to the City and its high quality soil (Class 1 & 2) lend itself to a more community-oriented use such as a farm incubator. The Center for Land-Based Learning is a potential collaborator in this regard and has expressed interest in helping manage site logistics for such a program. Such logistics might include facilitating subsidized, short-term leases to multiple tenants on 1-10 acre parcels.

In this case, 100 of the 390 acres could be preserved by the City and leased to a partner such as CLBL to facilitate use by new farmers, with the remainder sold under easement. Additional opportunities for this site include an adjoining drainage basin and storm water channel cutting directly across the parcel. This feature could be enhanced for habitat value and joined to the riparian corridor running adjacent to I-80 at the south of the parcel thereby creating enhanced habitat connectivity with the Vic Fazio – Yolo Wildlife Area.

Parcel 4: Mace Curve

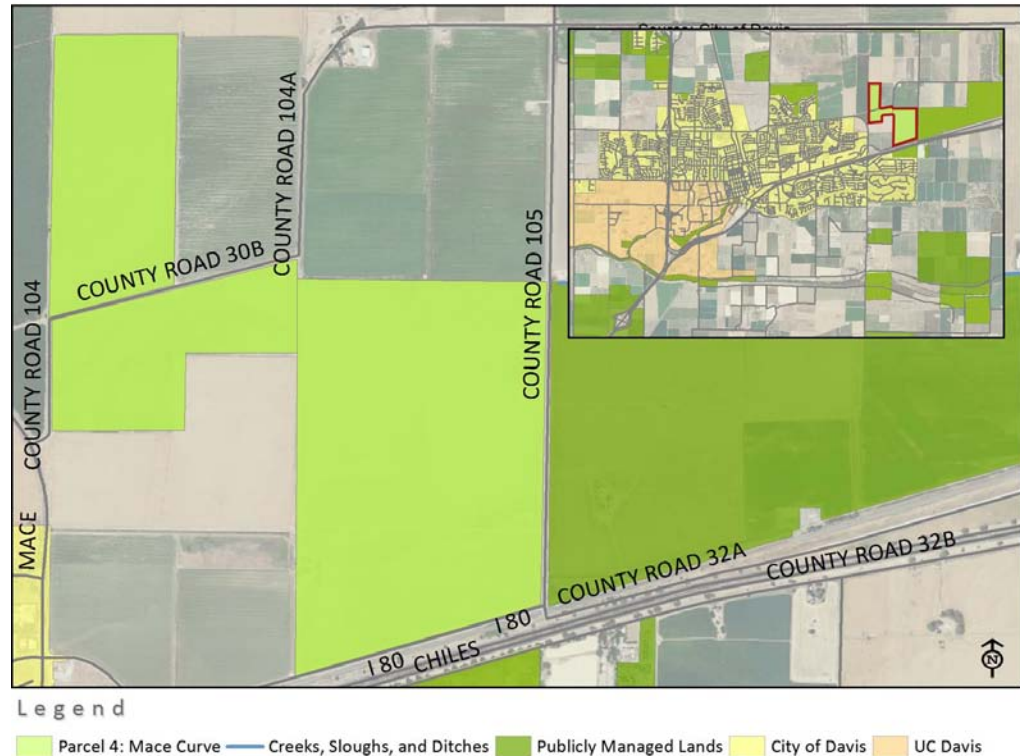


Figure 7-5: City of Davis Open Space Parcel 4: Mace Curve

Size: 390 acres **Current Use:** Field and oil seed crops **Current Tenant:** Mark Hoffart **Lease Specifics:** N/A

Other Considerations: This odd shaped parcel, made up of three smaller parcels, has higher quality soil to the north and west. Though a couple of wells are located on site, their functionality is not known.

Parcel 5: Wildhorse Agricultural Buffer

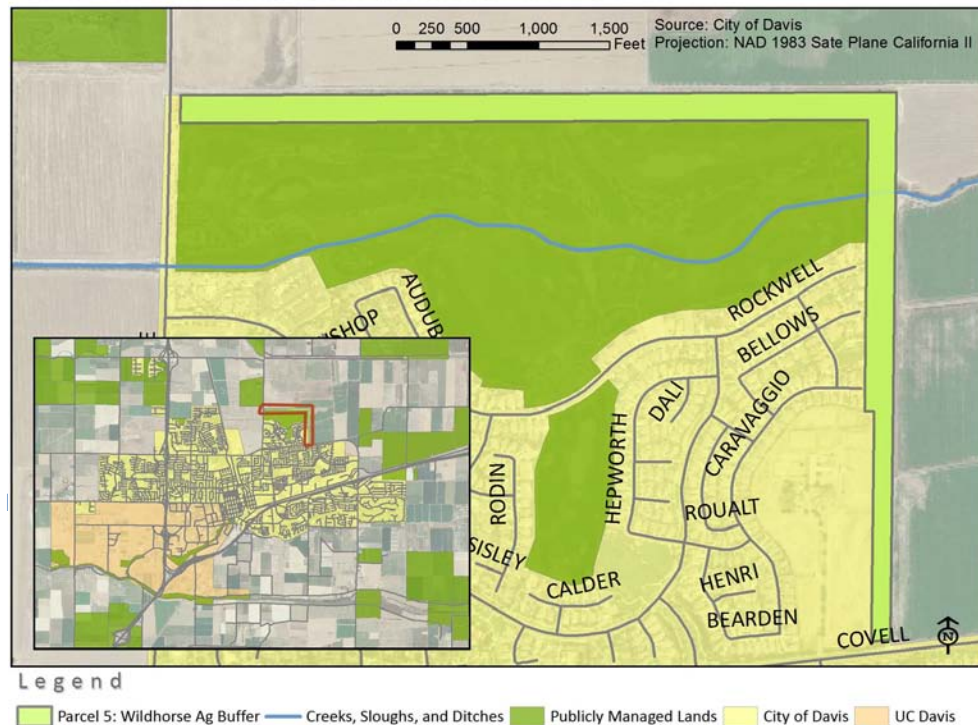


Figure 7-6: City of Davis Open Space Parcel 5: Wildhorse Agricultural Buffer

or entrepreneurs to experiment with production in a low risk environment without taking on the capital investments associated with larger parcels.

Vision: Small Parcel Intensive Production, Wildhorse Ag Buffer

Wildhorse Agricultural Buffer serves as an Urban Agricultural Transition Area (UATA) between farmland and the Wildhorse development and golf course. Its configuration and the presence of threatened species such as the burrowing owl restrict use on this parcel to approximately 5 acres along the south-east margin.

Despite the small size of this parcel, its immediate proximity to City and potential direct markets makes this an ideal location for small-scale intensive production. Additionally, recreation trails running through the site generate enough foot traffic to support a roadside stand or other form of on-site sales or agri-tourism.

Parcels of approximately 1-1.5 acres would provide the opportunity for beginning farmers

Size: 38 acres; 5-10 usable for agriculture **Current Use:** Agricultural buffer and recreation **Current Tenant:** None

Other Considerations: The presence of burrowing owls and species of concern make this location sensitive with respect to agriculture. Diversified, organic production would be a priority. Water may also be an issue on this site as no well is currently installed. For small-plot intensive a drip compatible system would be ideal.

Vision: Large Plot Community Garden or Urban Farm, F St. Farms

Located within the City limits and containing just two arable acres, this small parcel lends itself to a public use such as an urban farm or community garden. Given its relatively high traffic location, and proximity to walking trails and a wildlife pond, a small-scale operation demonstrating sustainable production techniques would help to generate interest in local food production while adding a dynamic element to this north Davis neighborhood. Through on-site sales or workshops, community members could participate in production while enjoying increased access to locally grown foods.

Alternatively, establishment of a community garden would help to address the waiting list at the City's other community garden site, while enhancing food security and recreation opportunities.

Parcel 6: F St. Farms at North Davis Pond

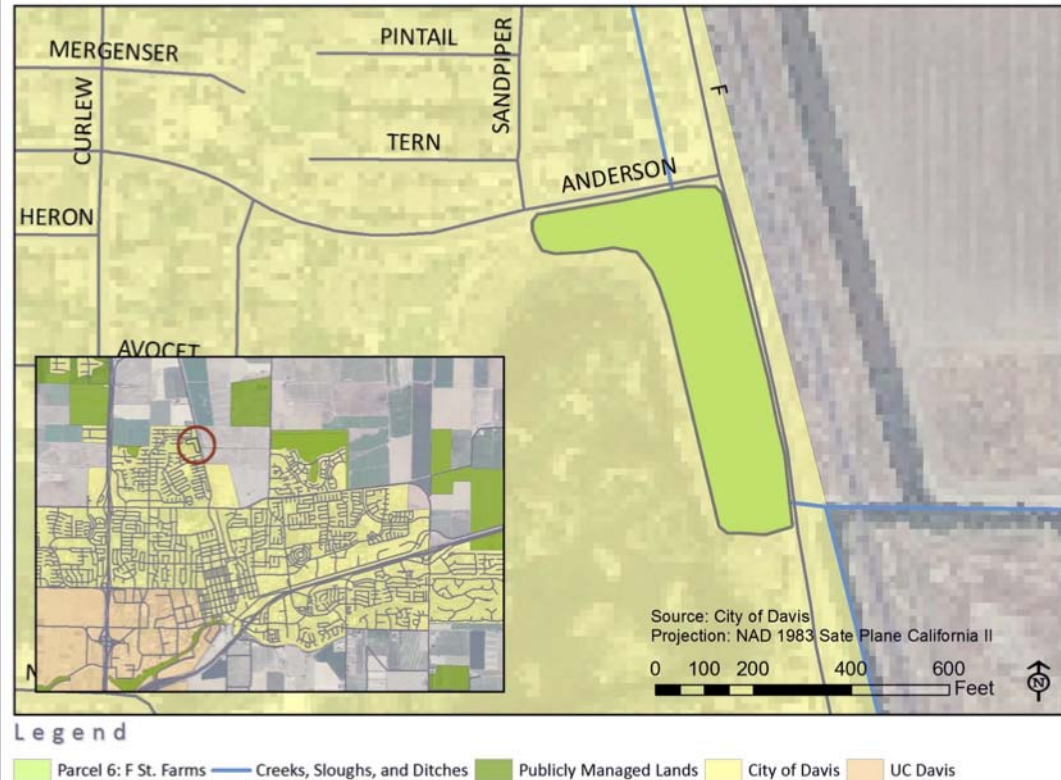


Figure 7-7: City of Davis Open Space Parcel 6: F St. Farms at North Davis Pond

Size: Approximately 2 acres

Current Use: Open space, not in production

Current Tenant: None

Other Considerations: Organic or chemical-free production should be encouraged on this site, as well as limited tillage, in an effort to minimize run-off and nutrient loading into the adjacent pond. Additionally, strategies to minimize dust and noise should be considered given immediate proximity to a residential area.

Parcel 7: Golfcourse A

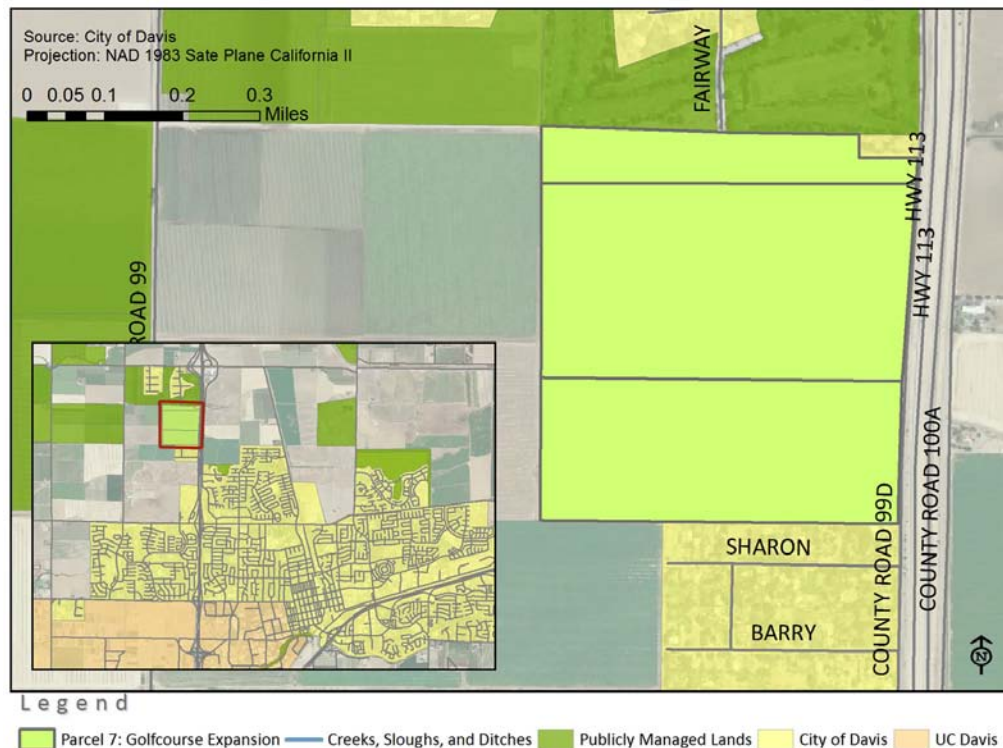


Figure 2: City of Davis Open Space Parcel 7: Golf Course A

preventing wind-born erosion, and facilitating sequestration.

Vision: Integrated Solar and Free-range Animal Production, Golf Course A

This parcel, just south of the Davis Golf Course, was originally slated as an expansion site for additional holes. However, changing demand suggests that such an expansion may no longer be needed and the site is now being considered for a solar farm.

While citing solar farms on productive farmland is less than desirable, the potential to supplement solar generation with grazing beneath the panels is under discussion and would add considerable value to this use while simultaneously filling a somewhat vacant niche within the local market.

Native grass and legume varieties, if allowed to grow beneath the panels, would allow forage for sheep, goats or chickens, while replenishing the soil with manure,

Size: 148 acres

Current Use: Tomatoes, winter wheat and alfalfa

Current Tenant: Dettling Family

Lease Specifics: Crop Share: Tomatoes: 15%; Wheat: 30%

Other Considerations: The site is located on Class 1 and Class 2 soil and has 2 working wells.

While row crop production beneath the panels has been discussed it may prove less viable than grazing given competition for light and periodic vehicle traffic to clean or repair panels.

Vision: Organic Production with Possible Transition to Organic Golf Course, Golf Course B

This smaller parcel is directly west of the Davis Golf Course, and unlike Golf course Parcel A, is more likely to be considered for expansion of the current course. However, such expansion is not likely to take place for a number of years, making it a viable candidate for more sustainable production in the interim.

With class 1 soil and good water access, this parcel is an excellent candidate for organic certification. Given potential for conversion to additional holes, more ambitious conservation strategies may not make sense, while organic certification could be carried over into its future use, creating Davis' first organic golf course.

Parcel 8: Golfcourse B

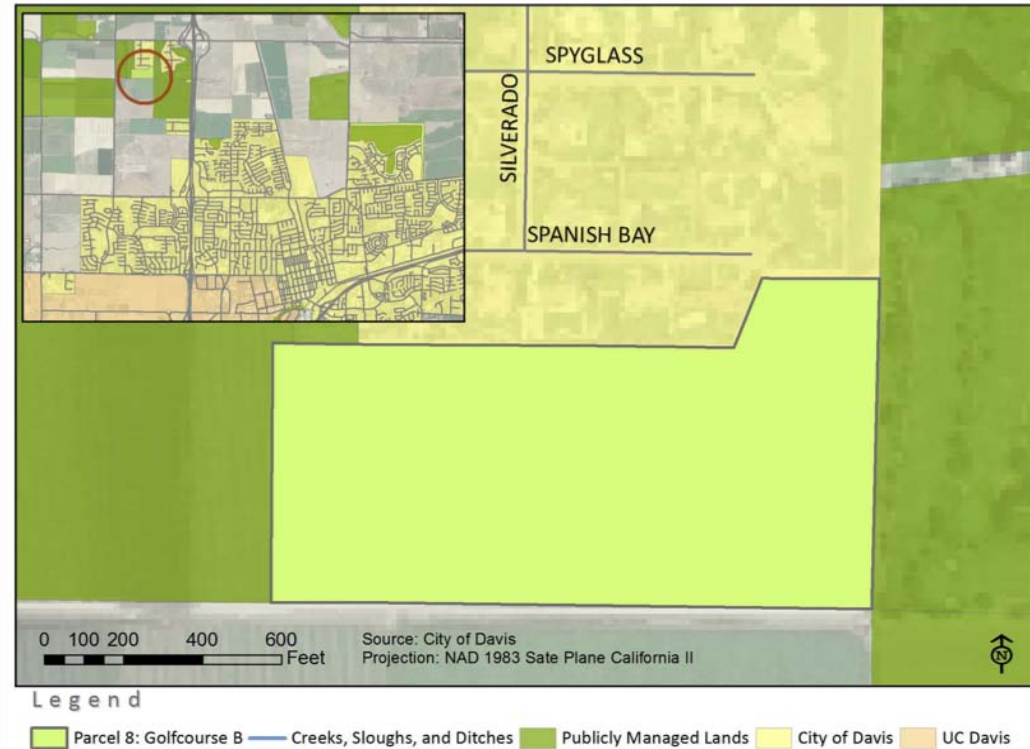


Figure 7-9: City of Davis Open Space Parcel 8: Golf Course B

Size: 25 acres

Current Tenant: J. H. Meek and Sons

Current Use: Alfalfa, corn, tomato, sunflower, vineseed

Lease Specifics: Crop Share: Alfalfa: 18-15%; Corn: 15-23%; Sunflower: 18%; Tom

Other Considerations: On site well is shared between current tenant and tenant on an adjacent parcel.

Parcel 9: Wastewater Treatment Site

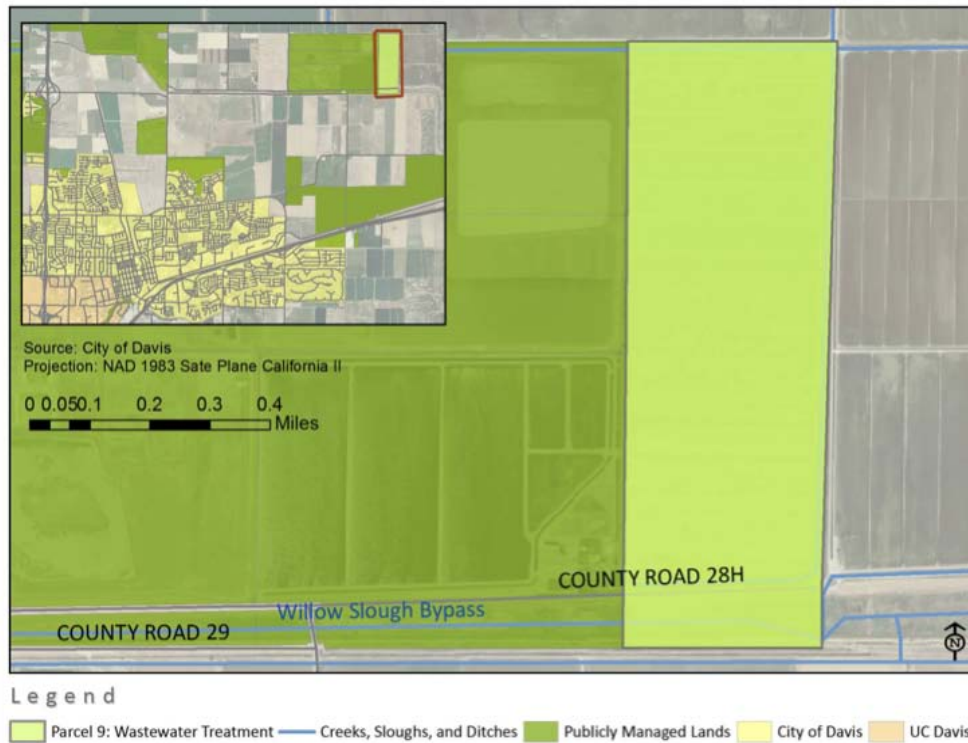


Figure 7-10: City of Davis Open Space Parcel 9: Wastewater Treatment Site

Vision: Local Compost Facility, Wastewater Treatment Site

The Davis wastewater treatment plant, installed in 1979, contains numerous large fields utilized as part of a secondary treatment phase.

These fields, referred to as sprayfields, will not continue to be used upon the construction of the City's new wastewater treatment plant, and would provide an excellent location for a compost facility, particularly given proximity to the Yolo County Landfill.

Currently, the majority of the City's greenwaste is shipped to compost producers outside the planning area, resulting in higher transportation costs. Bringing a compost production facility closer to the City would increase access both for farmers and gardeners to this valuable resource while reducing transportation related greenhouse gasses.

Additionally, as the City considers measures to help meet commitments within AB 32 and other global warming legislation, providing alternatives to greenhouse gas intensive fertilizer is an essential lever,

while also increasing the water holding capacity of soil, thereby reducing irrigation demand.

Finally, given its use history, this site may be incompatible with other open-space uses such as recreation or crop production, yet is far enough from the edge of town to mitigate concerns about smells and noise associated with the production of compost. Though such a facility need not be run by the City itself, enabling this use should be considered in the implementation of a community farm plan.

Ch. 8: Practical Considerations

There are many practical considerations in planning for the implementation of community farms. These range from the determination of public support to the costs associated with staff time and infrastructure improvements to the time required for organic certification. Additional variables include demand for parcels under new management priorities, as well as the ability for local markets to absorb more locally grown food. This chapter examines a cross-section of these factors and lays out steps and a timeline for implementation.

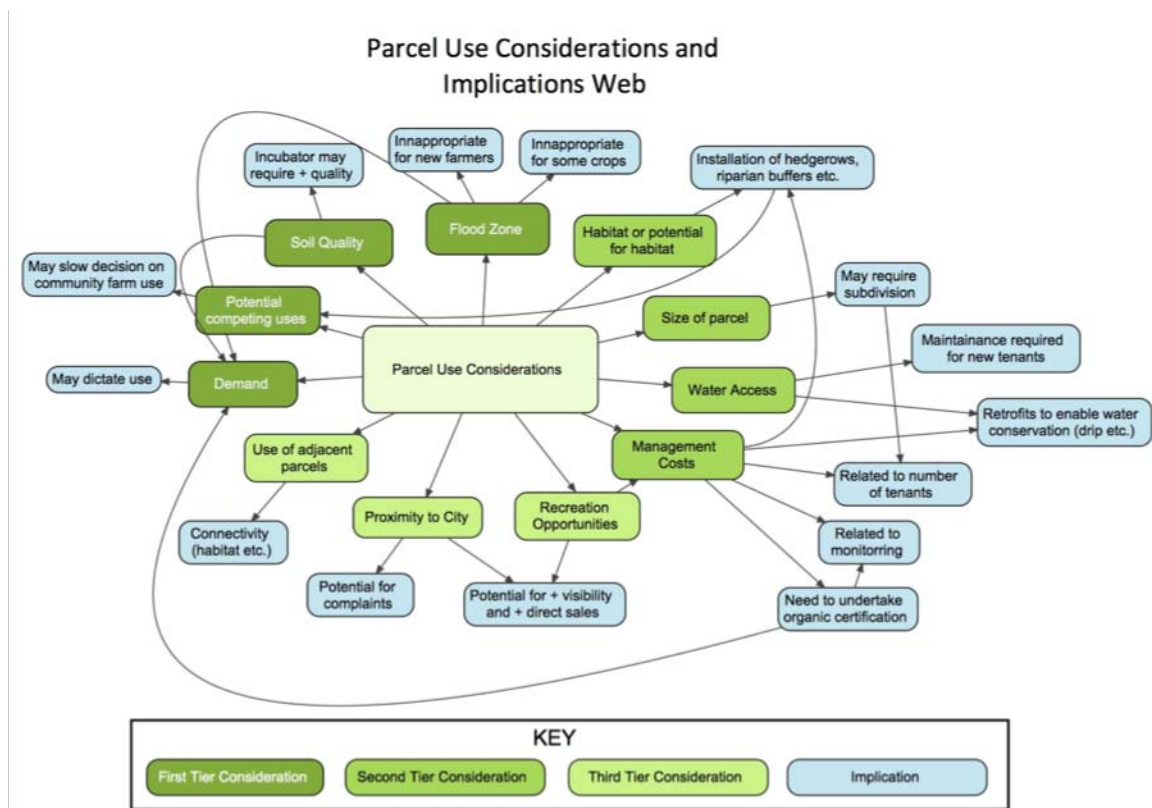


Figure 8-1: Parcel use considerations and implications web

General Considerations

Public Support: Given the origins of the City's Open Space funds, it is essential that the public be invited to provide feedback on any plan utilizing these public resources. Though this plan derives from perceived public interest by way of the City Council and OSHC, this interest must be confirmed and characterized through community meetings and focus groups. Mechanisms should also be put in place to provide a feedback loop upon implementation.

Administrative Costs: Moving towards a vision of multifunctional community farms on City land will likely rely on the dedication of additional staff time. While several staff are currently involved in various aspects of the management, including lease drafting and communication with tenants, repairing infrastructure, managing invasive species and monitoring habitat in re-vegetated areas, the addition of new and more ambitious management priorities will inevitably demand increased management. In particular, the following additional responsibilities will require attention by the managing entity:

- Formulation and vetting of new management priorities and permissible uses
- Facilitation of a community feedback process
- Organic certification on select parcels
- Preparation of parcels for use
- Selection of new tenants
- Installing and oversight of additional infrastructure such as wells, pumps, storage facilities or signs
- Solicitation of funds for additional conservation improvements
- Development of strategic alliances to assist in implementation and monitoring

- **Monitoring**

Seeking additional program support by way of grants or matching funds may be a viable mechanism for supporting additional costs associated with this plan. While some grant funding may be available to the City, partner organizations, such as California FarmLink, or the Center for Land-Based Learning, might be better situated to secure grant funding for the management of community farms. Alternatively, the City might consider supporting the establishment of a non-profit organization set up expressly to manage its lands and facilitate community use.

Parcel Modifications and Improvements: A number of parcel modifications and improvements will need to be undertaken to achieve plan objectives. The following are some that should be considered:

- **Parcel sizes:** Because the City's open space parcels are already protected, subdivision into smaller parcels does not increase the risk of development as is sometimes the case on unprotected lands. However, it does increase the administrative burden associated with the overall acreage in light of additional leases and tenants, and in some cases the need for additional infrastructure such as pumps and roads.
- **Infrastructure:** While the majority of parcels have existing infrastructure sufficient for current use, new management priorities may necessitate additional infrastructure. In particular, low-pressure pumps compatible with more efficient irrigation systems may be needed on some sites, while the construction of

washing, packing and storage facilities could be considered given their important role in production for small and direct sales oriented farmers.



Figure 8-2: Produce washing station made from old bathtubs, Intervale Center, Burlington, VT

Parcels, not currently in production, such as Wildhorse Ranch or F Street, may require basic land-clearing, as well as the installation of entirely new wells, pumps, roads and curb-cuts. Electrical may also need to be made available on new parcels.

All of these installations, particularly wells and pumps, may pose considerable up-front expenses. Though some of these may be payable out of Measure O funds as agricultural investments, others might require eventual repayment by way of lease fees. Some of these elements, such as washing, packing and storage facilities do not require expensive construction and could be provided by the City on appropriate parcels or constructed by tenants with long-term leases.

Farmscaping: Most forms of farmscaping are too costly for installation by short-term tenants, and require maintenance and space that might otherwise be utilized for crop production. In the case of short to medium term leases, farmscaping should be undertaken by the landlord with maintenance by the tenant credited towards rent. For

longer-term tenants, the willingness to install and maintain farmscaping might be a pre-condition of the lease, with the lease value adjusted to reflect these costs. Cost-sharing by way of federal conservation dollars or local programs should be pursued in either case, thereby helping to minimize out-of-pocket costs. Given that the flowering of hedgerows can be timed to coincide with the flowering of particular crops to assist in pollination, joint planning of farmscaping can have concrete benefits for crop production. Similarly, ensuring that farmscaping harbors beneficial rather than problematic insects and organisms for the particular crop or combination of crops also requires consultation between grower and the party responsible for designing and installing the farmscape element.

Organic certification: While organic production does not encompass the full range of best practices required to optimize ecosystem service provision, it does provide a concrete and officially sanctioned baseline. However, certifying a parcel of land as organic requires time, resources and some degree of certainty as to demand for certified acreage. Certification of parcels within Yolo County and potentially Solano County can be conducted by way of the Yolo County Agricultural Commissioner's Office, or other certifying bodies, and generally involves the following steps:

- Cessation of application of all unauthorized fertilizers, pesticides and other inputs.
- Submission of completed pesticide application forms documenting no application of unauthorized inputs for 3 years
- Submission of an application to the certifying body including an organic systems plan
- Site inspection

Once all of these steps have been completed, which generally requires a minimum of three years from the time of last application of prohibited material, the parcel will then be granted certification and all future users would be required to practice organic production in adherence with USDA's National Organic Program. As described in Chapter 3, despite some perceived limitation in demand for certified parcels within the foodshed, interviewees indicated that certified parcels with proximity to an urban center and related direct markets would likely be in higher demand.

Zoning: With the majority of open space parcels located in Yolo County, it is important to understand the degree to which City and County zoning support activities promoted within this plan. In addition to its support for agri-tourism, the Yolo County general plan specifically mentions the importance of small and specialty crop farm operations to the overall fabric of agriculture within the Valley. It also stipulates that agricultural land should be used only for production and production support activities, such as on-site sales or agricultural education. It discourages the use of agricultural land for residences in an effort to prevent sprawling ranchette-style development.

In light of high housing costs within Davis and the low-wages and high-risks associated with many forms of production, enabling farmers to reside on select parcels may be an important form of support. Currently County zoning allows a farm residence and farm support buildings to be located on parcels under agricultural use. While construction of new residences is likely beyond the scope of this plan, alternative housing options such as temporary structures, yurts or the movement of existing residences onto the site could all be considered. In the case of future development, such

as the proposed Cannery Park plan, housing within required affordable units might be allocated for use in conjunction with a community farm program.

While incorporation of livestock and fowl into agricultural operations on City-lands would generally be considered an asset, it would require careful consideration in the context of smaller agricultural buffer and mitigation parcels. Currently, small livestock and fowl are allowed on agricultural buffers and UATA's, however, the potential for noise, smells and other disruptions to nearby residences should be discussed in community meetings prior to establishment of formal use stipulations for these parcels.

Re-Vegetating For Use as

Rangeland: Generally, the re-vegetation of irrigated croplands with native grasses and shrubs is seen to diminish the value of the parcel. While this may be true with regards

Mara Farm, Seattle, Washington



Marra Farm is located on 4 acres of historic farmland in Seattle's diverse South Park neighborhood. Originally sold to King County by the Marra family, the farm was eventually handed over to Seattle City Parks and Recreation who currently manage it in partnership with a coalition of community-based organizations. At present, the site includes a community garden supporting 25 families, a gardening and nutrition program for youth, and an employment program whereby food produced on the farm is sold to local outlets. Approximately 13,000 pounds of produce are donated to senior citizens and area foodbanks annually. Though the farm is not certified organic, no chemical pesticides or fertilizers are used on the site and significant efforts have been made to restore the local watershed.

to the market value of products produced there, this valuation fails to take into account the value of habitat, sequestration, biodiversity and in some cases, the ability to fill local production niches. In the case of City-owned parcels, re-vegetation should be considered on parcels with poor soils, high flood risk or likely competing uses that would make irrigated crop production unfeasible. Nevertheless, such a conversion, despite high value to society, requires resources and expertise to execute and would present an opportunity for collaboration with local organizations experienced in re-vegetation. Additionally, heavy competition from exotic species makes careful, preliminary irrigation and rotational grazing an important piece of the management of such parcels and thereby ensures continuing agricultural use.

Establish and Manage Community Gardens: Should a community garden be pursued on one of the smaller urban edge parcels such as Wildhorse Ranch or F St., some considerations with respect to management and aesthetic should be noted. Given a large number and diversity of users, community gardens generally require one or more individuals to manage the allocation of plots, monitor pests, and fix garden infrastructure such as irrigation, compost bins and shared equipment. Community gardens, while more vibrant and colorful than the many forms of agricultural production within the Sacramento Valley, also have a tendency to become cluttered and neglected. In some cases, neighbors may complain about pests or excessive traffic to and from the garden. Nevertheless, provided a baseline of management, most community members find community gardens to be an asset to the neighborhood.

Managing for Ecosystem Service Provision: Considerations and Challenges

Beyond practical considerations for the implementation of community farms, a number of specific considerations exist with regards to best practices for ecosystem service provision. Many relate specifically to production decisions that must be made by the farmer, and the potential for these decisions to result in additional costs and labor. This section of the paper focuses on particular considerations associated with each ecosystem enhancing practice and a set of incentives for specific best practices:

Diversified Production: Highly diversified farms often require a range of production techniques, as well as implements, amendments, and infrastructure. Such operations also tend to rely more heavily of manual labor. While these production choices may be associated with additional upfront costs and may limit a farmer's ability to capitalize on economies of scale, they also enhance bio-diversity and generally reduce the risk of complete crop failure. Some expenditures, such as equipment or infrastructure can also be thought of as capital investments to be used and potentially shared for years.

Despite potential ecological benefits, integrating livestock within a diversified operation may raise concerns, particularly at the urban edge in light of noise, dust and manure management issues. In some cases, farmers may have to take extra precautions with regard to food safety when working with mixed, integrated systems.

Cover Crops: Cover cropping, while generally recognized to be of ecological value, requires the purchase of seed, planting, and oftentimes, enough irrigation to establish the plants. Later, the crop must be turned under or otherwise incorporated

into the soil prior to planting the next season's crop. Depending upon weather and other factors, these practices may impede or conflict with the timeliness of other farming operations. However, many farmers have come to view this as a minor investment by comparison to the payback in soil fertility, improved tilth and avoided erosion, all of which stand to positively affect plant health and thereby yield. Nevertheless, this payback is compounded over time and may not be worth the upfront risks and costs if a farmer is not assured future use of that parcel.

Drip or Other Water-Saving Irrigation: Drip, micro-sprinklers and other forms of water saving irrigation are increasingly being utilized within the foodshed, though still constitute the minority of irrigation. While many of these systems may significantly reduce water use through more precise and frequent application, equipment must be purchased and installed and the farmer must have the ability to monitor and repair it throughout the season. By comparison to the more commonly utilized furrow or flood irrigation, these generally more efficient alternatives have significant upfront costs that must be borne by the farmer. Additionally, alternative methods generally necessitate a pump with the ability to provide water at variable quantities and pressures while most parcels in the foodshed have less flexible and less expensive pumps appropriate for flood or furrow irrigation. Installation of variable output pumps is a large expense, which should be undertaken by the land-owner, while costs related to the purchase, installation and maintenance of irrigation equipment is generally born by the farmer. Here again, a farmer may require the assurance of a longer-term lease before he or she makes the monetary commitment to transition to more efficient irrigation.

Conservation tillage: Conservation tillage refers to any form of cultivation where the previous season's crop residue remains in the field. While the environmental benefits of this practice are many, it also has some added costs. Generally, conservation tillage requires the use of specific farm implements such as special planting equipment that allow seeds or seedlings to be planted through the residue into the soil. Also, many farmers practicing conservation tillage rely on herbicides to combat weeds otherwise controlled through tillage. For this reason, the potential to practice organic agriculture



Figure 8-3: Drip irrigation

simultaneous to conservation tillage may prove a limitation to its application on certified parcels.

Perennial Crops: Perennial crops provide a number of ecosystem services not as readily available in annual crops, through reduced tillage, enhanced sequestration, soil building potential and deeper roots with the ability to access water in the subsoil. However, there are also a number of significant limitations to their use in

agriculture such as the inability to respond to changes in demand by altering one's cash crop from season to season, or the higher costs associated with establishment and therefore higher risk should crops fail. Additionally, the first returns from perennial crops are generally not seen for 3-5 years, as opposed to 3-5 months for most annuals.



Figure 8-4: Walnut orchard, Solano County, CA

Reduced Fertilizer Use; Increase Compost Application: In farming systems where soil organic matter and micro-organisms are routinely lost to tillage, erosion and chemical applications, dependence on fertilizer is significant. Despite increasingly well-understood concerns about emissions from the production and use of chemical fertilizers, reducing its use is not something that can be undertaken without risks and potential upfront costs. Because rebuilding soil fertility cannot be undertaken in a single season, farmers who are willing to commit to soil-building production techniques should have the opportunity to benefit from the labor and expenses of this work. In other words, it is more likely that tenant farmers will be willing to serve as stewards of the land provided a guarantee of the potential to benefit from this stewardship. Composts, cover crops and other organic soil amendments, which are often used as substitutes for

chemical fertilizers, can provide both nutrients and the organic matter to improve soil tilth and permeability.

Direct Sales: Direct sales have been shown to offer significant benefits both to the local economy and human health (Lyson 2004). In this regard, demand for locally grown products is on the rise across the foodshed. However, in the absence of infrastructure to enable the production and sale of these products at lower cost, demand may slow as the limited number of high-end markets becomes saturated. Particularly within low-income communities, the higher price charged for locally grown food often makes it inaccessible.

At the same time, with a long waiting list to become a vendor at some prestigious farmers' markets, and stiff competition for limited shelf space at retail outlets, the viability of adding further competition must be considered.

Community Engagement: Finding ways to engage the local community in



Figure 8-5: Wine tour and tasting, Bokisch Vineyard, Lodi, CA

agriculture is an effective means of building support for continued agricultural use and avoiding conversion. Yet, despite these and other benefits, there are very real challenges and costs that may make it impractical or unappealing for some farmers. First, allowing public access generally requires the tenant or landowner to acquire liability insurance, while hosting community members means time away from production-related activities. Bathrooms and access to shade and water are also necessary if groups are frequently hosted, and activities must be thoughtfully planned as many farm activities are not safe or practical for inexperienced individuals.

Table 4 below provides a summary of the ecosystem services and considerations associated with the range of potential management practices discussed above.

Table 4: Management practices and related ecosystem services and implementation considerations

MANAGEMENT PRACTICE	ECOSYSTEM SERVICE	CHALLENGES/CONSIDERATIONS
Farmscaping: Hedgerows, Riparian Corridors, Vegetated Ditches, Filter Strips	<ul style="list-style-type: none"> Improved habitat Improved pollination Windbreak and sound barrier Enhanced erosion and run-off control Improved filtration Increased breakdown of pesticides on site Increased carbon storage Prevent spread of invasive weeds Improved scenic landscapes 	<ul style="list-style-type: none"> Expensive to install Must be maintained May take land out of production May harbor invasives CA Leafy Greens Agreement
Crop Rotation	<ul style="list-style-type: none"> Improved soil nutrient balance Improved habitat 	<ul style="list-style-type: none"> May require additional equipment.
Cover Cropping	<ul style="list-style-type: none"> Improved habitat Improved soil nutrient balance Enhanced erosion and run-off control Improved filtration Legumes may reduce demand for N fertilizer 	<ul style="list-style-type: none"> Additional seed, water and management costs Additional labor time Potential increase in N2O emissions from field
Perennial Cropping	<ul style="list-style-type: none"> Improved habitat Reduced tillage Improved soil tilth and reduced compaction Enhanced erosion and run-off control Improved filtration Enhanced carbon sequestration Improved scenic landscapes 	<ul style="list-style-type: none"> Longer term investment Higher risk
Diversified Production	<ul style="list-style-type: none"> Improved habitat Greater crop security Improved soil nutrient balance Improved pollination Improved scenic landscapes 	<ul style="list-style-type: none"> Increased labor costs May require additional equipment
Drip and other low-water use irrigation	<ul style="list-style-type: none"> Reduced N2O and CO2 emissions Reduced water consumption Improved weed control 	<ul style="list-style-type: none"> Infrastructure cost Pressurization cost Repair and maintenance
Conservation Tillage	<ul style="list-style-type: none"> Reduced N2O and CO2 emissions Increased foraging habitat Improved soil tilth and reduced compaction Improved soil biodiversity Reduced erosion and run-off control Increased filtration Reduced labor costs Reduced fossil fuel expenditures 	<ul style="list-style-type: none"> Alternative weed management required Special equipment to plant through crop residue Increased weeds growing amidst residue
Organic	<ul style="list-style-type: none"> Enhanced water quality 	<ul style="list-style-type: none"> Alternative pest

Production	<ul style="list-style-type: none"> ▪ Reduced chemical exposure ▪ Improved peripheral habitat ▪ Improved soil biodiversity ▪ Improved soil nutrient balance ▪ Reduced expenditures on chemicals ▪ Reduced N2O from chemical fertilizers 	<ul style="list-style-type: none"> management required ▪ Potentially more labor intensive ▪ Potential vulnerability to new (climate change related) pests
IPM	<ul style="list-style-type: none"> ▪ Reduced chemical exposures ▪ Reduced expenditures on pesticide 	<ul style="list-style-type: none"> ▪ Potential increase in management costs during transition
Maintenance of Unique Habitat	<ul style="list-style-type: none"> ▪ Improved habitat/biodiversity 	<ul style="list-style-type: none"> ▪ May take land out of production
Rotational Grazing	<ul style="list-style-type: none"> ▪ Supports establishment of native plants ▪ Increased carbon sequestration by comparison to annual crop production ▪ Allows for soil regeneration 	<ul style="list-style-type: none"> ▪ Costs associated with meat ▪ Lower value use if done sustainably due to need to rotate and rest
Sediment Traps	<ul style="list-style-type: none"> ▪ Reduced sediment in run-off ▪ Improved quality of run-off ▪ Enables capture and re-distribution of sediment on site 	<ul style="list-style-type: none"> ▪ Must be maintained ▪ Expensive to install
Direct Sales	<ul style="list-style-type: none"> ▪ Increases access to locally grown food ▪ Supports local economy ▪ Reduces transport-related GHGs ▪ Increases food security ▪ Generates increased support of agriculture 	<ul style="list-style-type: none"> ▪ Difficulty accessing local markets/consumers ▪ Insufficient local demand ▪ Higher prices than conventional produce
Community Engagement and Access	<ul style="list-style-type: none"> ▪ Generates increased support for agriculture ▪ Supports local food economy 	<ul style="list-style-type: none"> ▪ May compromise operational efficiency ▪ May take land out of production

Ch. 9: Implementation

With the guiding principles for implementation laid out (Ch. 6), the proposed parcel uses outlined (Ch. 7) and considerations for these uses acknowledged (Ch. 8), this chapter proposes a series of steps for implementation. These steps are designed to enable a phased-in approach to establishing community farms and should be used as a conceptual model rather than a specific prescription.

Implementation Steps

- Step 1: Conduct internal feasibility assessment
- Step 2: Secure support of OSHC
- Step 3: Convene public meeting to introduce concept, solicit and incorporate feedback
- Step 4: Formulate incentive program
- Step 5: Determine target parcels for certification
- Step 6: Develop Request for Proposal (RFP) process
- Step 7: Propose general timeline for implementation
- Step 8: Conduct focus groups with stakeholders
- Step 9: Resubmit to OSHC
- Step 10: Seek approval by City Council

Step 1: Conduct Internal Feasibility Assessment

While ensuring public support for a plan of this scope is fundamental to its success, ultimately, much of the administrative and logistical leg work for implementation will need to be undertaken by the City. As a first step, an internal capacity assessment should be undertaken to determine the amount and type of

resources available to achieve objectives. This assessment might include an estimate of staff time needed, enumeration of plan components to be undertaken in-house vs. externally, and overall resources required and available. These results should be used to revise and re-prioritize plan objectives and implementation strategies as needed.

Step 2: Secure Support of OSHC

Though City staff and later the OSHC have been actively involved in conceptualizing Community Farms over the past several years, and more recently, a pilot community farm, the broader proposal presented here is still pending a formal vote of support. Such a show of support, while just the first step towards a City-wide community farm program, should be achieved in advance of significant further planning. Assuring the support and understanding of the OSHC is a necessary pre-requisite to the presentation of any plan concerning the use of open space parcels to the City Council.

Step 3: Convene Public Meeting

Once OSHC support has been determined and the plan for implementation has been revised to reflect available resources, the first of what may be a series of public meetings should be convened to share the overall vision. Gathering feedback at an early stage is important to minimizing conflicts down the line.

Boone's Farm, Jacksonville, Oregon



Located in Jacksonville, Oregon, Boone's Farm is a model for small-scale livestock production and community engagement. With a herd of approximately 21 does, the farm's dairy component operates under the model of a herd-share, whereby community members contribute a monthly boarding fee of \$25 towards the running of the operation in return for a monthly share of milk or cheese. This arrangement not only provides up-front support for the farmer, but also enables viable production on a smaller scale, an important consideration for smaller urban edge parcels.



A community meeting is already in the planning stages for the fall of 2011 to present the concept of a community farm pilot project, and could serve as an opportunity to solicit feedback on the larger plan described here. Community opinion should be thoughtfully recorded and significant trends in feedback considered in subsequent stages of planning.

Step 4: Formulate Incentive Program

Modern, industrial agriculture encourages a production regime whereby cheap food is made available at the expense of the environment and human health (Gliessman 2007). This plan calls upon future tenants of City open space lands to act as stewards and in so doing, to actively increase the ecosystem services provided by those lands. However, as described in Chapter 7, increasing ecosystem services has the potential to incur real costs that may not be

readily returned through the market value of goods produced.

Payment for Ecosystem Services

Beyond certain minimum thresholds of sustainable production, requiring farmers to utilize best practices for ecosystem service provision is neither a practical nor effective means for realizing the City's goals. Therefore, conceptualizing a mechanism to encourage the voluntary adoption of select, appropriate best practices will be important to successful implementation. Such incentive programs, sometimes termed Payment for Environmental Services (PES), have been implemented in a number of locations around the world and are specifically addressed by the United Nations Food and Agriculture Organization in its 2007 report on *The State of Food and Agriculture* (FAO 2007).

PES schemes can be controversial in their attempt to monetize specific services and to compensate some farmers for those services while others provide them irrespective of financial support (FAO 2007). Yet as governments and large landholders increasingly face pressure to address climate change and other resource concerns, there is a growing need for creative mechanisms to compensate good actors while working to reform a system that allows the environment and public health to pick up the tab for unsustainable production.

What is envisioned here is a more modest proposal whereby tenants on City-owned land would receive a pre-determined reduction on rent correlating to ecosystem services provided. Table 5 lays out a configuration for this system in which both the *level of commitment* (time) required to undertake the management practice, as well as

the *cost* are rated on a scale of 1-5 with 1 being the least and 5 being the most labor or cost intensive. Adding the time and cost ratings, a final score with a maximum combined rating of 10 is given to the specific practice, correlating to its value. Then, all the scores for all intended management practices are totaled, yielding a grand total, which corresponds to a particular rent reduction bracket. Each bracket is equivalent to a percent lease reduction, which can be applied to the base lease price of a particular parcel.

Table 5: Management scoring table

Management Practice	Level of Commitment/Time	Cost	Score
Maintenance of Farmscaping	3	1	4
Crop Rotation	1	1	2
Cover Cropping	3	3	6
Perennial Cropping	1	3	4
Diversified Production	4	4	8
Drip and other low-water use irrigation	3	3	6
Conservation Tillage	3	4	7
Organic Production	4	4	8
IPM	4	2	6
Maintenance of Unique Habitat	3	3	6
Rotational Grazing	4	4	8
Maintenance of Sediment Traps	4	2	5
Direct Sales	4	1	5
Community Engagement and Access	4	2	6
(Total Score)→Percent Reduction: (12-25) →10% (26-40) →20% (41-59) →30% (60-81) →40%			

Level of commitment is based upon both the prevalence of this management practice within the foodshed, the labor involved in undertaking it, and the degree to which it must be consistently performed in order to achieve or maintain function. Cost

is based upon the predictable monetary expense to be borne by the tenant in undertaking the practice as well as the risk of additional expense and reasonable anticipation of return. In advance of finalizing this rent reduction matrix, feedback from local farmers representing a range of scales and production models, as well as agricultural experts, should be solicited, to ensure the accurate assessment of costs and commitments related to each practice.

Parcel Income and Tax Burden

Currently, the City has tenants on five of the 10 parcels mentioned in this proposal (see Figure 11). Parcel 4, otherwise referred to as Mace Ranch, which is in the process of acquisition at the time of this report, is currently farmed, however revenue from this parcel is not known at this time.

The majority of these leases are crop-share agreements, in which the tenant pays a pre-determined percentage of a given crop's revenue to the City as rent. Percentages differ by crop and when combined with typical variability, result in differential revenue from year to year. Revenue from the five parcels currently under lease totaled approximately \$129,000 for 2009-2010 with a property tax burden of \$56,000. Because the City requires only enough revenue generation to cover the cost of the taxes and infrastructure and maintenance on these parcels, it is in the fortunate position to be able to moderate lease prices as a lever to achieve its social and environmental goals. In light of relatively abundant and affordable farmland within the foodshed, as compared to other locations such as the Salinas Valley, discounted lease rates, while useful as an incentive to farmers already inclined toward ecological

production, are not as likely to generate controversy as they would in an environment of less available and higher cost land.

Nevertheless, it is reasonable to anticipate some resistance amongst farmers already undertaking conservation or community engagement practices on lands for which discounted lease rates will not be offered (i.e. non City-owned land). For this reason it will be particularly important to ensure an unbiased public bidding process for each parcel under these new terms.

Step 5: Determine Target Parcels for Certification

If organic certification is determined to be a priority by the City Council, just two or three parcels should be selected at the outset in light of the time and resources involved in certification, and relatively unknown demand for parcels with these use restrictions. Once staff is familiar with the process of certification and sufficient time has elapsed to assess demand, additional certifications may be undertaken.

Parcels well suited to this first round of certification include the following:

- ***Parcel 1 – South Fork Preserve:*** In light of its riparian border to the north, and re-vegetated grassland area with public access, this parcel has significant habitat and recreational value making it an ideal candidate for certification. As the parcel is currently without a tenant, the process of certification could begin almost immediately.
- ***Parcel 6 – Wildhorse Ag Buffer:*** This long, narrow parcel, running along the north and east borders of the Wildhorse development and golf course currently serves as an agricultural buffer and habitat area. The section to the southeast, which does not harbor burrowing owls like the section to the north, is ideal for certification given its potential to be used for small plot intensive production in

close proximity to residences. This site is not conducive to large-scale mechanization or other industrial production practices and should be allowed to maintain a thin buffer strip akin to a hedgerow for the maintenance of habitat value and mitigation of drift from adjacent conventional parcels.

- **Parcel 8 – Golf course B:** Golf course B, located directly to the west of the Davis Public Golf course, is still under consideration as an expansion site for the course. In light of its tenuous future for agricultural production, it is not a good candidate for costly site modifications such as the installation of farmscaping, low-pressure pumps, or tail-water ponds. However, organic certification would allow for an improvement in ecosystem service provision while laying the groundwork for continuing organic use down the line, including an organic golf course.

While a tenant's commitment to organic production will be accounted for in the proposed ecosystem incentive program, certification should be considered irrespective of the ultimate fate of the Community Farm Plan.

Step 6: Develop Request for Proposal (RFP) process:

With the City's open space land use goals laid out and an incentive program outlined, a new tenant application process will be necessary. In the past, farmers renting the land at the time of acquisition by the City were allowed to remain as tenants under new short-term renewable leases. However, as additional parcels are brought into use, a public "request for proposal" or RFP process should be initiated to ensure that all qualified parties are provided a fair opportunity to access this land (California FarmLink 2008) and to mitigate controversy associated with lease rates tied to ecosystem service provision.

In initiating a new RFP process, general objectives for land management and ecosystem service provision should be clearly articulated, as well as the specific goals for each parcel. This would also be the process through which a specific incentive program would be introduced, inviting potential tenants to outline the management practices they anticipate utilizing in support of ecosystem services. Parcels where tenants were grandfathered in should also utilize a public RFP process after lease expiry and appropriate notification period, with the current tenant encouraged to submit a proposal.

Step 7: Propose General Timeline for Implementation

Prior to soliciting a final round of stakeholder feedback, a clear timeline for implementation will need to be developed, including a proposed ordering for community farm implementation on various parcels. Table 7 is a model timeline, which will require revision to reflect the City's goals and priorities once they have been amended to reflect internal resource availability and public feedback. Unless otherwise noted, the following actions are anticipated to be staff driven.

Table 6: Implementation Timeline

August 2011	Propose future use and site-plan for Mace Curve upon acquisition (parcel #4)
September 2011	Conduct internal and site feasibility assessment
September 2011	Present plan to OSHC
September 2011	Initiate meetings with current tenants to discuss plan and potential certifications
September 2011	Target parcels for certification
October 2011	Convene community meeting to discuss Community Farm pilot and general vision for community farms on additional parcels
November 2011	Develop RFP for candidate parcels
November 2011	Begin site enhancements on Wildhorse and/or F St. parcel (#5 and #6)

November-January 2011	Collaborate with partners to formulate incentive program
December 2011	Distribute first round of RFPs
December 2011	Initiate certification on all desired parcels
January 2012	Develop general RFP process for remaining parcels
January 2012	Solidify farm incubator site and partnership
Jan-Feb 2012	Conduct focus groups with stakeholders
February 2012	Distribute South Fork Preserve (parcel #1) RFP
February 2012	Propose general timeline for implementation
March 2012	Resubmit to OSHC for approval
April 2012:	Present to City Council for Approval

Step 8: Conduct Focus Groups with Stakeholders

Once the timeline has been finalized, the proposal will be ready for presentation to stakeholder groups, including farmers, and residents in direct proximity to parcels, to gather feedback on feasibility and interest. Questions should be generated to facilitate conversation about organic certification, rate of rent reduction and other potentially controversial issues. Relevant feedback should be carefully recorded and later synthesized by staff to determine the degree to which the plan should be adapted.

Step 9: Resubmit to OSHC

Though the OSHC will have been involved throughout this process, including hosting public forums and helping to formulate an RFP for pilot community farm sites, it will nevertheless be necessary for a final review and vote of confidence prior to recommendation to the City Council.

Step 10: Seek Approval by City Council

While City staff may have the authority to begin moving forward on some components of this plan, without official sanction, given its scope and the public

resources to be leveraged, a vote of the City Council will be necessary prior to formal implementation.

Ch. 10: Theoretical Considerations

Beyond a number of practical considerations that accompany a plan of this nature, several larger, more theoretical considerations bear mentioning.

Valuation of Ecosystem Services in a Time of Recession

The success of this plan rests on the fundamental re-valuation of sustainable agriculture production methods to include the non-market value of ecosystem services provided therein. It will require the full range of stakeholders, including farmers, consumers, City staff and elected officials, to acknowledge the public benefit of these ecosystem services and to accept certain related costs. However, these costs, which include 1) staff time to finalize and implement the plan, 2) site preparation and retrofits, 3) modified production practices, and 4) incentives for modified production practices, come at a time of budget shortfalls and belt-tightening across the state and the nation. Though none of these costs should be understood as prohibitive, and in some cases they will help to catalyze revenue (such as getting tenants onto currently unoccupied parcels), the perception of additional demands on already stretched budgets is an important and potentially limiting circumstance.

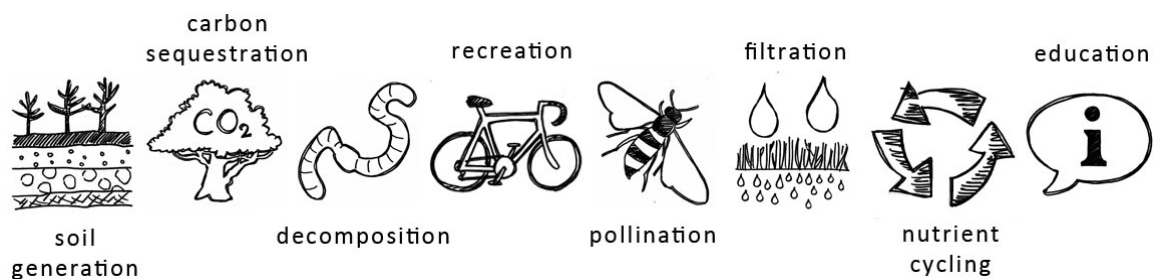


Figure 11-1: Example ecosystem service icons for community and consumer education. Images courtesy of Colin Dixon

Enduring Support for Enhanced Ecosystem Service Provision

Interest in locally grown food and sustainable agriculture has grown meteorically over the last decade. Since 2000, farmers' markets have increased by 114% across the nation (Wasserman 2010), while CSA's and agri-tourism have become a major marketing avenue for many operations. The perceived value of this proposal is based on a belief that demand for locally grown foods, and the environmental and community values they embody, will continue to grow in the future. As the City seeks to support agricultural enterprises that provide benefits beyond the provision of food, it will be important to ensure enduring support from community members. In this regard, generating opportunities for community engagement that demonstrate and make tangible these benefits will be self-reinforcing to the success of this plan.

As described in Chapter 2, not all of these values are unanimously supported amongst agricultural associations and research institutions. Within the context of one the nation's premier land grant universities, it is important to recognize that prioritizing ecosystem service provision within agriculture may not be without controversy.

Subsidies: Who Benefits?

The role of subsidies in agriculture is almost always a subject of hot debate. As described by the Environmental Working Group, Washington, D.C. based think tank, "in 2009, the top 10 percent of California's subsidy recipients collected 73 percent of all federal payments, at an average of almost \$65,000 a year," (Hamerschlag 2010). With subsidies allocated almost exclusively for large, conventional wheat, rice, corn, cotton and livestock producers, fruit and vegetable farmers, who generate approximately half

of the state's agricultural revenue receive almost no subsidies (Hamerschlag 2010). For this reason, subsidies have come to represent a system that supports farmers operating at the expense of the environment and human health, while smaller more ecologically sensitive growers, must absorb costs associated with sustainable production.

Though this proposal is designed to help mitigate this imbalance in subsidy programs, it nevertheless uses public money and resources to support a particular type of agricultural production. Developing clear explanations regarding the ultimate public benefit of these expenditures will be important to the success of this plan.

Ch 11: Conclusion

Central to the City of Davis' planning objectives are the prevention of sprawl and maintenance of open space surrounding the City, the support and restoration of the local environment, provision of greenspace for recreation, and preservation of agriculture and farmland.

In an effort to advance many of these objectives, the City has acquired nearly two thousand acres of land on the urban edge, much of which is currently under conventional row or commodity crop production. While this production supports several of the City's general planning goals, such as maintenance of open space and preservation of agriculture, it is less effective at supporting others.

The establishment of community farms on City-owned open spaces has been under discussion for several years and offers an innovative mechanism for addressing all of the aforementioned planning objectives while simultaneously helping to meet increased demand for locally grown foods.

Harkening to Ebenezer Howard's *Garden City of To-Morrow*, a network of community farms will both solidify earlier visions for a greenbelt around the City (Jones et al. 1989), while modernizing this vision to address social, economic, and environmental pressures in the Sacramento Valley.

Big Picture Benefits

Despite a number of important considerations, both practical and analytical, increasing ecosystem services by way of community farms promises many benefits to a

wide-range of stakeholders.

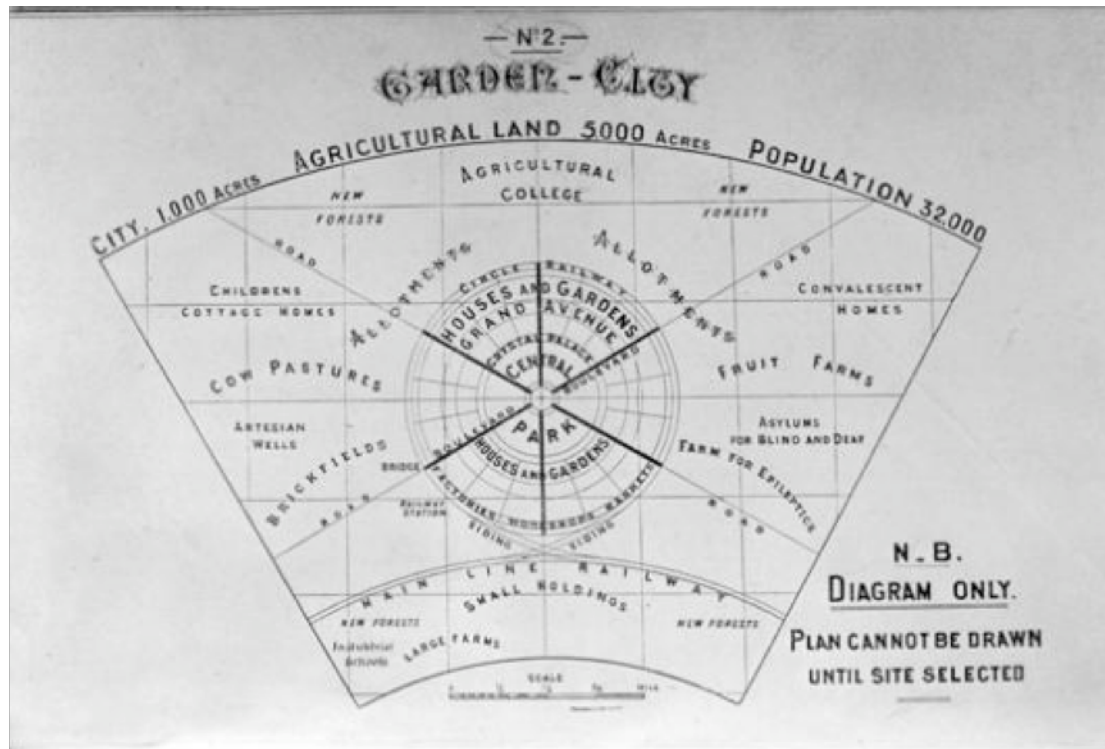


Figure 11-1: Image from Ebenezer Howard's Garden City of To-Morrow.

Most important to note are the real benefits, both short and long term, locally and regionally, to the environment and ecosystems within the foodshed. These benefits, which include reduced chemical applications and related environmental toxicity, increased habitat and opportunities for biodiversity, reduced water consumption and improved water quality, and reduced greenhouse gas emissions, all have the added benefit of improving quality of life for residents and farmers alike.

Beyond environmental benefits, community farms will help to increase awareness of, demand for, and access to locally grown food. Increased fresh food access benefits the health of communities, while circulating income more effectively through local economies (Lyson 2004). Through the provision of small plots for intensive production and partnerships in support of beginning farmers, community farms will help

to incubate the next generation of farmers within the Sacramento Valley and thereby maintain its agricultural heritage.

Benefits to farmers include the potential for reduced land costs in reflection of ecosystem service provision, making it more economically feasible to engage in best practices for sustainability. Implementation of a community farm plan also has the potential to generate increased markets for locally grown products, particularly by way of on-site direct sales or an aggregation facility. In the long term, ensuring public support for agriculture will help to prevent the further conversion of farmland to urban uses, encouraging instead, infill development while maintaining a vibrant agricultural community.

Beyond all these benefits, it is important to note the unique confluence of circumstances within which this plan takes form. City of Davis open space parcels are located within one of the most fertile and productive agricultural valleys in the world. Simultaneously, predictions of growth between the Sacramento and San Francisco metropolitan areas suggest growing pressure on open space and farmland as demand for housing, roads and other infrastructure increases. With aggressive open space preservation programs already in place, and access to tremendous resources by way of its university context, a well-implemented community farm plan in Davis stands to be truly visionary and to serve as a model for other vulnerable cities and towns throughout the Central Valley and across the nation.

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Appendix

- A. Potential Organizational Partners and Resources
- B. Map of Threatened or Endangered Species
- C. Sample Lease from California Farmlink
- D. Davis Open Space Acquisition and Management Plan – 2002
- E. Covell Village Small Urban Farms Concept Paper, DRAFT – 2004

Appendix A: Potential Organizational Partners and Resources

The following organization and institutions conduct agricultural support activities in or around the Davis foodshed and have the potential to act as strategic partners with the City in the implementation of community farms.

California Farmlink:

www.californiafarmlink.org/joomla/index.php

- *Linking Program* connects farmers with available land
- *Farm Opportunities Loan Program* provides low-interest USDA Farm Service Agency loans
- Technical assistance program to assist farmers or agencies in securing land-use partnerships

Community Alliance with Family Farmers

www.caff.org

- *Farmscaping program* assists farmers and ranchers in installation of farmscaping
- *Buy Fresh Buy Local* helps to strengthen regional markets for family farms
- *Farm to School Program* helps to reconnect school children with the origin of their food

The Center for Land-Based Learning

www.landbasedlearning.org

- *Beginning Farmer Training Program and Farm Incubator* currently in development
- *SLEWS Program* works with youth on conservation and restoration projects
- *FARMS Program* introduces teens to sustainable production techniques

The National Center for Appropriate Technology

<http://www.ncat.org>

- *ATTRA Project* provides extensive paper and online publications on sustainable production methods

The Farmer-Veteran Coalition

www.farmvetco.org

- Connects veterans with farming opportunities through employment development and mentoring

Sustainable Conservation

www.suscon.org

- *Ecosystem Services Program* seeks to create a model for quantifying the value of ecosystem services

Yolo County Resource Conservation District

www.yolorcd.org

- Numerous conservation programs of relevance to community farms
- Currently developing a Payment for Ecosystem Services model in conjunction with Defenders of Wildlife and other organizational partners

Yolo County Natural Resources Conservation Service

- Administers conservation programs including matching funds for land conservation, conservation practices and farmscaping

UC Davis Student Farm

<http://studentfarm.ucdavis.edu>

- Educates potential young farmers about sustainable production

Sustainable Agriculture Education (SAGE)

www.sagecenter.org

- Author of *Urban Edge Agricultural Parks Toolkit*
- Currently manages an AgPark in Sunol, CA

Sonoma County Agricultural Preservation and Open Space District (SCAPOS)

www.sonomaopenspace.org

- *Small Farms Program* helps to create affordable parcels for row-crop farmers in Sonoma

Yolo County Ag and Food Alliance

<http://aginnovations.org/alliances/yolo>

- Collaborative network of farmers, distributors, processors, academics and supporting organizations
- Convene forums and generate reports on food system needs in Yolo County

Appendix B

Threatened or Endangered Species Occurrences City of Davis Open Space Parcels

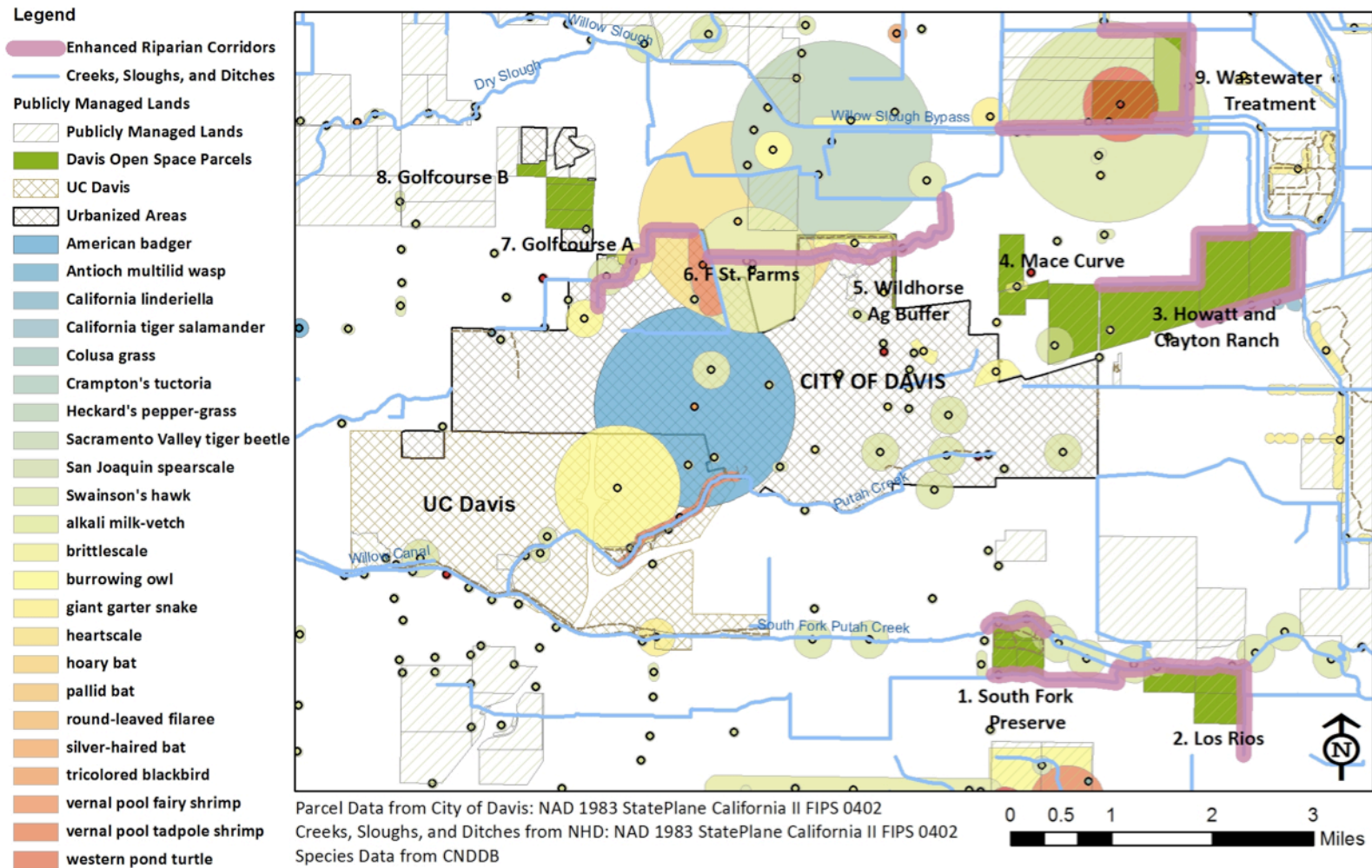


Figure 0. Species Occurrences, City of Davis Open Space Parcels

The following long-term lease from a non-profit entity reflects several interesting clauses advantageous to the lessee. See paragraphs 2, 4.2 and 6.2B.

84024

LEASE

Lease entered into on ~~2nd~~ 1978 between the Northern California Land Trust, hereafter called Lessor, and New Life Farm, hereafter called Lessee.

1. TRANSFER AND POSSESSION OF THE LEASEHOLD.

1.1 The Lessor leases to the Lessee the land described as the South one-half of the South one-half of the North West quarter of Section 18 Township 4 North Range 8 East, comprising approximately 40 acres.

1.2 This lease shall apply to farming and development rights only. Mineral, timber, and other use rights are reserved by the Lessor, but may be conveyed under another agreement, with the approval of the Lessee.

2. TERM

2.1 The term of this lease shall be for a period of 49 years, unless terminated sooner as provided for elsewhere in this lease.

2.2 At the end of this term, a new lease shall be made, and the Lessee shall have the option to renew this lease upon terms mutually agreed upon.

3. PURPOSE AND USE OF THE LEASEHOLD

3.1 Except for insubstantial variations, the land leased by this agreement will be used for the following purposes:

A. To provide land for use of landless and disadvantaged persons while allowing for a desirable quality of life.

B. To promote community land trusts in the area.

3.2 The following restrictions shall govern the use of the land:

A. All income producing activities shall be consistent with the goals and purposes stated elsewhere herein, and residents shall

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- be offered the first option for employment on the land.
- B. The lessee shall undertake to maintain the integrity of the landscape, and shall prepare and implement a development plan for the land and improvements of the entire leasehold in cooperation with the lessor. This plan must be approved by both the lessee and the lessor. Said plan shall set forth the natural characteristics of the land, pertinent ecologically sound principles and practices to be followed, and the lessee shall conform thereto. Said plan may be reviewed and amended by the lessee and lessor as needed.

4. LEASE FEE

- 4.1 The annual lease fee for this land, commencing with the signing of this lease and continuing until title to the land is free and clear, shall be \$3,000.00, or an amount equal to one year's payment due for the purchase of the land, plus the annual property tax, plus any mortgage assumed by the lessee during the term of this lease, whichever is greater. This fee shall be paid in monthly installments of one twelfth of the annual fee, due on the first of each month. Any amount paid over and above the amount due for purchase payments, plus property taxes, plus any mortgage assumed by the lessee will be credited to New Life Farm toward the purchase of improvements through separate agreement.
- 4.2 When the property has been paid off, the annual lease fee shall be determined according to the following formula, and paid in the manner described in Section 4.1:

$$\text{ANNUAL LEASE FEE} = T + M + V$$

T = the annual property tax.

M = one year's payment on any mortgage assumed by the lessee during the term of this lease.

V = payment dedicated to the purposes stated in Section 3.1. Payment V is to be renegotiated every three years, or when applicable, taking into account the fair market rental value of the land, the current use value of the leasehold, increases in the cost of living, and the financial resources of the lessee. At no time shall this payment V be greater than 3% of the assessed value of the land.

5. IMPROVEMENTS

- 5.1 All development and improvement costs for the leasehold subsequent to the date of this lease shall be incurred and borne solely by the Lessee, unless by separate agreement.
- 5.2 The Lessee shall pay for all services and utilities. Should the Lessor, in order to protect the land in trust, pay all or part of any amount due, the amount so paid shall be refunded by the Lessee, such sum to be payable in full with the next installment of the leasefee.
- 5.3 The Lessee shall have title to all buildings and improvements made by them or at their expense.
- 5.4 The Lessee shall have the full right to transfer, sell, assign, mortgage, or pledge their title to buildings and improvements upon the land, provided they are current in all assessments and payments to the lessor.
- 5.5 The Lessee shall provide a written notice to the Lessor no less than 60 days prior to any transfer of title to, or removal of buildings or improvements and a new lease agreement shall be executed between the Lessor and the Transferee.

6. TRANSFER AND ENCUMBRANCE

- 6.1 Neither party to this agreement may hereafter cause any legal encumbrance to fall on any portion of this leased land without the written consent of the other party.
- 6.2 The parties agree that money may be borrowed with this land used as collateral on the following conditions:
- A. There is a written request from the Lessee to do so.
 - B. The purpose of the request is to finance improvements on the land which are consistent with the land-use agreements set forth herein, or to promote the appropriate economic development of the community.

C. Any such mortgage is approved by the Trustees of the Northern California Land Trust.

6.3 The Lessee may assign rights under this lease, or sublease any portion of the land, but the use restrictions of this agreement shall be binding upon such sublessees. The Lessee shall have the right to determine who shall live on the land hereby leased and under what terms and conditions, so long as it is in compliance with the provisions herein set forth. Upon the signing of any such agreement the Lessee shall inform the Lessor of these subleases and these terms.

6.4 The Northern California Land Trust may not sell the land herein leased, except under all of the following conditions:

- A. Both the Trustees of the Northern California Land Trust and the Lessees give unanimous written consent and,
- B. Proceeds from the sale of this land have been legally committed for the purchase of a mutually desirable piece of land and,
- C. This lease or a replacement lease shall be entered into in regard to the otherland with the current Lessee, who shall have the first option to do so, or with some other Lessees.

6.5 If title to this land is ever lost by eminent domain or other forced sale, the proceeds will be used to purchase other land which shall be subject to either this lease or a similar lease. In the event that any buildings or improvements constructed by the Lessee during the term of this lease or purchased from the Lessor is taken in whole or in part, the Lessee shall be reimbursed by the amount of the payment or award which represents the value of such improvements taken.

7. TERMINATION

7.1 The Lessee has the right to terminate the lease at any time and without cause upon 90 days written notice to the Lessor.

7.2 The Lessor shall have the right, after 60 days written notice, to terminate this lease for any of the following reasons:

- A. Abandonment of the land, which shall be deemed to occur if Lessees have not lived on the land for a continuous period of one year.
- B. A notice of delinquency has been issued to the Lessee 30 days or more after payment of the lease fee was due.
- C. Any significant violation of the purposes set forth in Article 3.
- D. Failure of the Lessee to comply with an arbitration ruling.
- E. Default by the Lessee under any buildings, lease agreement or contract of sale entered into with the Lessor.

8. LIABILITY

The Lessee assumes all legal liability for injuries and accidents occurring on the land during the term of this lease, as well as for damages to any buildings and improvements on the land, whether constructed by the Lessee or not. The Lessee shall keep in force liability insurance for this purpose.

9. ENFORCEMENT

- 9.1 Lessee gives consent to Lessor to inspect the land at the Lessee's convenience with 10 days notice.
- 9.2 Failure of the Lessor to enforce any provision of this lease does not preclude it from enforcing any other provision, or from subsequently enforcing the provision in question at some future time.

10. ARBITRATION

- 10.1 Any dispute between the Lessor and the Lessee pertaining to this lease shall be settled by binding arbitration, which may be requested by either party.
- 10.2 Each party shall designate an arbitrator within 10 days after one party receives a written request from the other for arbitration. These two arbitrators will select a third who is mutually agreed upon by them. Where possible, any decision made by the arbitrators shall include a period of time within which to cure the default.

11. MISCELLANEOUS

- 11.1 Each party to this lease shall have the right to go into court or before any judicial or governmental body, on behalf of the other party and against outside parties, if necessary, for the protection of the land.
- 11.2 This agreement shall be enforced according to the laws of the state of California.
- 11.3 The Lessee shall not engage in any activity which might jeopardize the 501(c)3 tax-exempt status of the Northern California Land Trust.
- 11.4 The various parts of this agreement shall be severable and, if any part be ruled invalid, the remaining parts shall continue in effect.
- 11.5 This lease may be amended by mutual consent of the parties.

Executed on October 26, 1978, by:

The Northern California Land Trust, Lessor

Stephen Bridge
President

Stephen Bridge

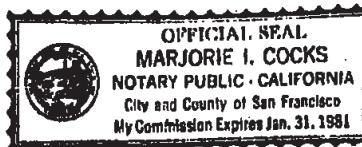
John deValcourt
Treasurer

John deValcourt

Subscribed and sworn to before me this
26th day of October, 1978

Marjorie I. Cocks
Notary Public,

In and for the City and County of San Francisco, State of California BOOK **4478** PAGE **370**



DAVIS OPEN SPACE ACQUISITION AND MANAGEMENT PLAN

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Open Space Acquisition and Management Plan Goal Summary

This summary includes all the goals from the Acquisition and Management Plan (AMP). These goals direct the City's actions in acquiring and managing open space resources. Each of the goals are supported by policies and procedures that guide implementation of the plan. This summary is provided to allow for ease of use and reference.

Acquisition Goals

- GOAL: **Protect the maximum feasible area of important strategically located open space within the Davis Planning Area. Importance is determined by the extent to which parcels help meet other goals.**
- GOAL: **Acquire open space within each of the following acquisition categories: Urban Fringe, Community Separator, Agriculture, Biological and Natural Resources, and Scenic Resources.**
- GOAL: **Provide decision-makers with an objective open space property evaluation system.**
- GOAL: **Adopt an open, consistent, and objective decision making process for all open space acquisitions by the City.**

Management Goal

- GOAL: **Provide management of open space lands and resources that are owned or otherwise protected by the City in a manner consistent with the identified reason(s) why the site was originally acquired.**

Budget Goal

- GOAL: **Develop an open space program budget.**

SECTION I

INTRODUCTION and BACKGROUND

1.1 Introduction

Like most communities in the Great Central Valley, the history and character of Davis is tightly interwoven with the surrounding landscape. The original human inhabitants of the Davis area, the Patwin tribe, chose to live along the banks of Putah Creek since it provided for the necessities of their existence. Later, settlers chose this area because cultivation of the rich alluvial soils provided sustenance and income. The railways followed to transport agricultural goods to the population centers of northern California. Soon after, the University of California selected this area for its farm campus due in part to the quality of the soils and the existing transportation infrastructure. This abbreviated history shows that the City of Davis is truly a product of its surroundings.

Today these surroundings continue to play an important role in defining the character of Davis. The open farms and remaining wild areas around the city help create a sense of place and contribute to the vitality of Davis. Since 1958 the Davis General Plan has included open space and agricultural protection policies that recognize this important link. Civic leaders have understood for many years that these open spaces strengthen the connection between citizens and their community by helping to define a limit to the area that they perceive as their home. Among the benefits derived from enhancing this connection is that citizens who closely identify with a place or social group are more likely to be involved in activities that build community. In addition, these open space areas contribute to the vitality of Davis by sustaining the regional ecosystem, supporting the local economy, providing

opportunities for outdoor recreation and learning, and offering visual relief from urban landscapes. The overall objective of this plan is to support the City's sustained efforts to maintain and enhance the rural and urban mosaic that contributes to the high quality of life in Davis.

1.2 Background

The City of Davis Open Space Program was established twelve years ago to implement long standing policies that called for the protection of the farmlands and wild areas that surround the community. Initially, efforts focused on defining how the program would function, setting initial priorities for open space acquisitions, and identifying potential funding sources. This initial stage of the program included several significant milestones:

- Acceptance of the first easement by the City (1988)
- Acquisition of the South Fork Preserve (1993)
- Adoption of the Farmland Protection Ordinance (1995)
- Establishment of the Open Space Commission (1996)
- Completion of the Open Space Implementation Financing Plan (1998)

Between 1988 and 1998 the city and its partners protected over 2,400 acres of prime farmland and sensitive habitat areas by combining impact fees from new development with state grants to purchase lands and conservation easements. Though the City was able to attain some of its open space objectives with this funding strategy, it became clear that a stable funding source was needed for the city to reach its long term open space protection and management goals.

Beginning in 1999, the program entered a new phase that focused on the task of establishing a stable local funding source for land acquisitions and management. After a year and a half of preparation, the City Council placed Measure O on the November 2000 ballot. Needing a super majority, the measure passed with over 70% of the vote. The new tax measure provides \$17.5 million dollars over the next 30 years for open space acquisitions and management.

As part of the debate that led up to the passage of Measure O, the Davis City Council decided that a more formal approach to open space acquisition and management planning was needed. Prior to the election, the Council outlined a process that would generate a plan to guide future open space program decisions. Acting on this direction, the Open Space Commission and staff began a year-long public process to refine city open space priorities and establish a framework plan to guide future acquisition and management decisions.

With the adoption of the Davis Open Space Acquisition and Management Plan (AMP), the Open Space Program is well positioned to carry out the community's open space protection goals. With adoption of this plan, the Open Space Program includes the following elements:

- General Plan goals and policies that lend long-standing support for the program.
- An established track record of successful acquisitions (over 2,400 acres currently protected).

- An acquisition and management plan that clearly identifies acquisition priorities, management goals, and establishes processes for carrying out program goals.
- Implementation tools (Farmland Protection Ordinance) and a stable funding source that can be used to leverage state, federal, and private grant funds.
- Strong support from the Community (community surveys and the vote on the tax measure).

1.3 Purpose

The City of Davis General Plan includes many interrelated open space protection and stewardship goals. The Open Space Acquisition and Management Plan (AMP) provides a framework for how these community goals can be achieved. The purpose of the plan is to provide clear direction for staff, advisory bodies, and decision-makers as open space protection and management choices are being considered. The framework laid out in this plan is intended to:

- Set general goals and policies that will direct the City's effort to protect and effectively manage open space lands and resources.
- Provide the basis for informed open space land and resource acquisition decisions.
- Provide direction for land and resource management decisions.
- Provide organizational guidelines for the open space program budget.

- Establish a framework for a consistent, objective, and open decision-making process.
- Provide a basis for evaluating the City's progress toward reaching the open space protection goals established in the General Plan.

The AMP provides the context within which open space protection and management decisions will be made. The guidance provided by this plan is intended to be used in conjunction with other more site-specific selection and management tools such as property evaluation criteria and site-specific management plans.

1.4 Organization

The AMP is organized to provide a clear understanding of the types of open space lands and resources that are considered important to the community. The plan includes general goals and specific policies that direct the City's efforts to identify, acquire, and effectively manage threatened open space lands and resources. General priorities are identified to guide and support the open space protection decision making process. Focused policies and implementation measures are included to direct the actions and activities that are necessary to carry out the plan. In order to minimize speculative influences on land values and disturbance of rural landowners, the plan does not identify specific parcels for acquisition.

The plan addresses five main issue areas: (1) Acquisitions, (2) Land and Resource Management, (3) Program Budget, (4) Acquisition Administration, and (5) Plan Implementation. Program goals and supporting policies are established to

provide guidance in each issue area. Each goal is followed by a short narrative outlining the rationale behind the goal.

Pursuant to AMP goals, two additional plan components will be developed to provide specific guidance on property evaluation and resource management. The first supporting component is a property and resource evaluation tool that utilizes the City's Geographic Information System (GIS) to rank the conservation value of open space properties and resources. This tool will allow the City to easily reference and apply a variety of land and resource information that is related to a particular property, including agricultural, natural resource, habitat, and open space features. Also, general information related to the physical characteristics of a parcel such as size, land use, proximity to protected land, and distance from the city and roads can be quickly obtained. Together, these measurable attributes will help the city evaluate which lands should be acquired when offered by a willing seller.

The second supporting component is a focused set of land and resource management guidelines for the various types of open spaces that the City is likely to acquire. In conjunction with site specific management plans, these policies will enable the City to effectively manage lands and resources once they are acquired. This tiered approach will allow the City to revise and adjust management strategies as properties with unique characteristics are acquired and information is gathered that reveals possible alternatives to existing management practices.

1.5 Relationship to other plans

Davis General Plan - The AMP is consistent with the open space protection and stewardship goals established in the recently updated 2001 Davis General Plan. Through the Open Space chapter and the Community Resource Conservation section, the General Plan

provides clear direction for the creation of an open space planning and management document. The AMP is considered an implementation tool for these General Plan chapters. A reference list of the relevant sections of the General Plan are included as appendix 1.

Measure J and the Pass through Agreement - The AMP is designed to work with existing land use controls to implement General Plan open space protection goals. Currently, Measure J and the City/County Pass Through Agreement allow voters and elected officials in Davis to have a direct voice in land use decisions that occur outside the city limits. Measure J and the Pass Through Agreement provide temporary land use controls with each scheduled to expire in the next 10-12 years. The easements and fee-title purchases that result from implementation of the AMP provide permanent protection for lands that are highly valued by the community. These land use tools, taken together, allow the city to plan for the short and long-term protection of important strategically located open space lands in the Davis area.

Yolo County General Plan – The Board of Supervisors adopted the most recent Yolo County General Plan on July 17, 1983. While there have been some policy changes since that time (land use policies specific to the Knight’s Landing development were updated in 1990), there have been no comprehensive revisions of the Plan since its adoption. County policy and practice is of critical importance to future expansion and maintenance of the agricultural setting with limited urbanized areas in the land outside the city. The County's goals of agricultural preservation and contiguous urban development are generally consistent with Davis policies.

The County General Plan contains 42 goals. The goals which relate to the Davis open space protection efforts are as follows:

- Protect prime and other agricultural land from urban development.
- Create urban open spaces, greenbelts and scenic highways.
- Discourage urban sprawl.
- Continue to improve existing urban uses and place new urban uses in existing planned urban areas.
- Conserve natural resources.

Solano County General Plan - The Solano County General Plan was adopted by the Solano Board of Supervisors in 1980. Generally the Solano County General Plan conforms with the Davis General Plan policies. Solano County's General Plan contains policies regarding preserving agricultural land and encouraging urban development within existing communities.

Solano County’s Proposition A was adopted by the voters in the mid-1980's and stated that no urban development can occur outside city spheres of influence. The principles contained in Proposition A were renewed by Solano County’s voters in 1995 with the passage of a measure called the Orderly Growth Initiative. The initiative works similarly to Proposition A and is valid through 2010.

Most of the land in Solano County within the Davis Planning Area is designated for intensive agriculture except for the land at the Pedrick Road interchange which is designated for highway commercial. Putah Creek is designated in the Park and Recreation Element as a recreation resource area.

State Law – State law defines “open space land” as “any parcel or area of land or water which is essentially unimproved and devoted to

an open space use...” Open space uses are broadly defined to include areas used for the preservation of natural resources, the managed production of resources, outdoor recreation, and public health and safety.

The Davis General plan meets the requirements that each county and city prepare an Open Space Element that addresses how preservation of open space lands will be implemented. The AMP is the implementation tool for Davis’ open space land preservation goals.

Environmental Regulations – Adoption of the AMP, individual acquisitions, and other open space protection activities must conform to the California Environmental Quality Act (CEQA), where applicable. Projects that involve Federal agency participation or funding may require compliance with the National Environmental Policy Act (NEPA).

1.6 Program Funding

A combination of funding sources will be utilized to implement the open space protection activities described in the AMP. Measure O, passed by 70% of the Davis voters in 2000, is the primary local funding source for implementation of the AMP goals. This measure will generate approximately \$17.5 million dollars over the next thirty years to be used exclusively for open space acquisitions and management. Measure O funds, in combination with development impact fees, provides a stable local funding source that will allow the City to compete effectively for state and federal open space protection grants. In addition to the local tax measure, the City has committed discretionary capitol improvement funding for the protection of open space.

SECTION II ACQUISITIONS

2.1 Introduction

Program goals and policies in each section of the plan establish the context for open space acquisition, management, and administration decisions. Taken together, these goals and policies serve to implement the General Plan open space protection and stewardship goals.

2.2 Acquisitions

The City carries out its open space protection goals by setting policy and acquiring conservation easements and ownership of land from willing sellers. The City is committed to an approach that maximizes preservation of threatened open space lands and resources. An effective, direct, and equitable method of assuring important resources endure is to purchase protection (easements and fee-title) at a fair market price from willing sellers. The following goals and policies direct the City’s efforts to protect locally and regionally important open space lands and resources.

Guiding Principles

Two fundamental principles guide all acquisitions by the City:

- ❖ Acquire open space from willing sellers only. [In rare instances it may be advantageous for a property owner to request condemnation of property by the City. Condemnation will not be used by the City to acquire open space unless requested by the landowner.]
- ❖ Lands or resources must be located within the Davis Planning Area Boundary to qualify for acquisition or management by the City.

1. **GOAL:** Protect the maximum feasible area of important strategically located open space within the Davis Planning Area. Importance is determined by the extent to which parcels help meet other goals.

The City seeks to protect the greatest amount of high quality open space land and resources as possible within its funding constraints. Though the community's willingness to support open space protection through self taxation is remarkable, it is clear that protection of all undeveloped lands and sensitive resources in the Davis area is not possible. In order to maximize the effectiveness of available funding, the City will utilize the most cost effective open space protection tools (conservation easements) and seek to acquire open space that serves to buffer other lands from threat of conversion.

POLICIES and PRACTICES:

- Acquire and hold the least interest in a property necessary to carry out the City's General Plan goals for open space protection.
- Utilize conservation easements as the primary method of open space protection. Conservation easements shall be held in perpetuity.
- Acquire and hold fee-title to properties where protection of unique resources , restoration, or public access are desired.
- Protect open space lands and resources that are threatened by urban development or a significant change in land use. Risk of loss can be indicated by direct action (non-renewal of a Williamson Act

Contract, land use change, etc.) or indirect action (land use policy change, transportation corridor improvements, etc.).

- Acquire lands that facilitate the protection of other open space lands in the same area through interruption of sprawl, establishing linkages, buffering, and aggregation of protected open space lands.
- Acquire lands that have existing significant wildlife habitat or potentially restorable significant wildlife habitat.
- Consider the relative scarcity of the land type or resource being conserved when analyzing acquisition options.
- Balance efforts to restore natural resources with efforts to maintain agricultural production in the planning area.
- Factors such as the urgency or advantage of a particular sale, market conditions, and risk of loss without City participation may be considered in acquisition decisions.
- Consider potential management goals for an open space parcel during the acquisition phase to ensure that the parcel is considered in the context of surrounding land uses and that adequate funding is available to achieve conservation objectives.
- Continue to develop partnerships with conservation organizations, farm groups, and public agencies to facilitate the acquisition of open space lands and resources.

2. **GOAL:** Acquire open space within each of the following acquisition categories: Urban Fringe, Community Separator, Agriculture, Biological and Natural Resources, and Scenic Resources.

Acquisition categories identify the various types of open space lands and resources identified by the City for protection. The categories help organize the City's acquisition priorities by identifying the land and resource values that are desirable to the community. In addition, the categories form the basis for the establishment of an objective, science based property and resource evaluation system.

- *Urban Fringe:* Use protected open space to help define the urban limits of Davis and provide an adequate buffer between urban and rural land uses.
- *Urban Separator:* Establish Urban Separators between Davis and neighboring cities to preserve the unique character of each community.
- *Agriculture:* Protect prime agricultural lands and sustainable farming practices (e.g., organic agriculture) to maintain the long-term viability of agriculture in the Davis Planning Area.
- *Biological and Natural Resources:* Protect important wildlife habitat, sensitive species, and other significant natural resources through open space acquisitions.
- *Scenic Resources:* Protect views of significant landmarks and community gateways.

POLICIES and PRACTICES:

- Seek open space lands that overlap multiple acquisition categories.
- Attract willing sellers by identifying mutually beneficial land management opportunities.
- Ensure through the evaluation and planning phase that lands are acquired under one of these categories.

3. **GOAL:** Provide decision-makers with an objective open space property evaluation system.

Decision-makers, advisory bodies, and staff would benefit from a tool that compiles information and allows for an objective analysis of the conservation value of properties. This information will enable the City to make consistent, defensible decisions regarding open space protection.

POLICIES and PRACTICES:

- Develop a science-based land and resource evaluation system utilizing the City's geographic information system (GIS). Examples of map layers may include agricultural resources, biological resources, land use, protected open space lands, urban areas, and roads.
- Use the best information available for open space planning and decision-making, subject to budget and time constraints. Update data as necessary to maintain relevance.

The following list illustrates the types of factors that the City may consider in the decision to acquire an open space property or easement (see Plan Implementation Section 6.6 for a more complete list of Selection Guidance Factors).

- *Strategic location of the proposed acquisition (protection of land is key to protecting other open space land in the same area).*
- *Project size and what effect it may have on whether the land type or resource can be maintained over time.*
- *Viability of agricultural use in the long-term.*
- *Connectivity to intact or relatively intact natural area(s).*
- *Adjacency to protected lands.*

SECTION III

LAND and RESOURCE MANAGEMENT

3.1 Land and Resource Management

The long-term success of the Davis Open Space Program will be determined by both the quality of open spaces protected and how they are managed. To this end, successful implementation of this plan requires effective management of all City protected open space (easements and fee-title). Effective management involves protecting resources and sustaining them in perpetuity. The following goals and policies serve to implement General Plan goals calling for the protection and stewardship of open space lands and resources within the Davis Planning Area.

1. **GOAL:** Provide management of open space lands and resources that are owned or otherwise protected by the City in a manner consistent with the identified reason(s) why the site was originally acquired.

Management policies listed below provide direction for City in its effort to maintain (and in some cases enhance) the resources present on its open space lands. Sub-categories are intended to provide both programmatic direction (*Land and Resource Planning*) and focused direction that applies to specific land types or issues.

POLICIES and PRACTICES:

Land and Resource Planning

- Adopt a land and resource management planning process to provide general direction for open space management.
- Employ a systems approach in managing open space land and resources. A systems approach includes consideration of how a site functions within the context of surrounding land uses as well as how the various components of a site function together.
- Develop baseline inventories for City open space lands and resources (e.g. property size, resources present when acquired, current use).
- Adopt management plans for City open space lands and resources that address site specific management needs and changing conditions.
- Budget for management planning, implementation, and monitoring.
- Carry out monitoring of easement compliance and condition of the resources intended to be protected.

- Conduct periodic reviews of management actions and results, and amend policies and plans as necessary. During periodic review consider and respond to public comments on land and resource management actions and results. Maintain a file of public comments on each open space property acquired by the City.

Restoration

- Restore degraded or deteriorating areas where appropriate and as funding allows.
- Use native plant species occurring within the bio-region (lower Sacramento Valley) for restoration projects.
- Protect and enhance habitat for special status plant and animal species where appropriate.
- Discourage the spread of invasive non-native species whenever control is feasible.
- Utilize integrated pest management (IPM) practices in all open space management plans and actions, while prioritizing non-chemical means for management.
- Protect and enhance surface and ground water quality through open space management practices.

Public Access

- Allow public access only where it is consistent with the resource protection goals for a site.

- Where public access is appropriate, minimize evidence of human use and impacts through site design, use regulations, and visitor education.
- Coordinate with local landowners and farmers to minimize the occurrence of trespass and related impacts on private lands.

Agriculture

- Manage City owned agricultural lands in a sustainable manner that balances protection of natural systems with the viability of agricultural production on the site.
- Lease revenues should be primarily applied to the management cost of the agricultural and restoration activities onsite.
- Reincorporate excess lease revenue into the Open Space Program budget.

Historic Resources

- Identify and retain historic structures, artifacts, and archaeological sites through open space management practices. Seek appropriate partners for maintenance, management, and/or disposition of such resources.

Research

- Coordinate and cooperate with institutions, agencies, organizations, and individuals that are conducting resource-related research.
- Integrate research results and findings into site management plans as appropriate.

Education

- Provide interpretive facilities and materials on all publicly accessible City owned open space lands.
- Coordinate with local schools, the Science Center, and organizations to provide opportunities for environmental education on City open space lands.

SECTION IV BUDGET

4.1 Annual Program Budget

The primary purpose of the open space program budget is to plan for expenditure of funds and set spending priorities. The budget also provides an opportunity to gauge the effectiveness of land and resource management strategies and to initiate appropriate action if expected results do not occur. The program budget will consist of Measure O revenues, Capitol Improvement Program funds, agricultural mitigation funds, and state and federal grants. The program budget will be augmented by the City's General Fund.

1. GOAL: Develop an open space program budget.

The Open Space Program has a dedicated funding source (Measure O revenues) for the first time. In order to effectively allocate and track expenditures, a program budget is necessary.

POLICIES and PRACTICES:

- Adopt an annual open space program budget that describes the priorities for the coming year and allocates funds accordingly. The Open Space

Commission will review the draft program budget and make recommendations to the City Council.

- Utilize the budget process to conduct a review of land and resource management actions and results, and amend policies and implementation measures as appropriate.
- Create an open space program budget section in the City's annual budget.
- Utilize partnerships with other governmental agencies, organizations, and volunteers to reduce land and resource management costs.
- Ensure that Measure O funds are spent in accordance with the language of the Measure and the City Council Resolution (Resolution No. 00-145, Series 2000) describing the guidelines for expenditure.
- Accept verbal and written public input on the proposed annual budget and priorities at the Open Space Commission annual Open Space Program budget meeting.
- Consistent with the public expectation at the time of the passage of Measure O, establish an initial (first 2 years) ratio of at least 80% of the Measure O revenues toward acquisition and 20% for administration and planning. Maintain City funding for the Open Space Program at a level at least equal to that prior to passage of Measure O.
- Consider utilizing contractual services for large-scale restoration projects when economically advantageous.

SECTION V ACQUISITION ADMINISTRATION

5.1 Acquisition Administration

This goal establishes the framework for a consistent, objective, and open acquisition process. The implementation of this process will enable staff, advisory bodies, and decision-makers to clearly understand their respective roles in a typical open space transaction. Providing an open process with opportunities for public participation helps garner community support for both the individual transaction and the program as a whole.

1. **GOAL:** Adopt an open, consistent, and objective decision making process for all open space acquisitions by the City.

An acquisition process outline is included in the implementation section of the AMP and is intended guide the City in a typical open space acquisition. Though there are numerous intermediate steps and each acquisition is unique, the outline lists the critical decision points and opportunities for public input.

SECTION VI PLAN IMPLEMENTATION

6.1 Plan Implementation

The City will utilize both analytical and procedural tools to implement the goals and policies of the AMP. The analytical tools will enable the City to evaluate the conservation potential of open space properties based on objective information. The procedural tools provide a process framework that directs how acquisition and funding decisions will be made. In addition, the City will utilize several other implementation tools and

strategies outlined below to assist in the implementation of the AMP goals.

6.1.1 Analytical Tools

Land and Resource Information. The City will collect land and resource information from existing sources to create a database of the various factors that contribute to the open space value of land within the Davis Planning Area. This data will be assembled into map layers that can be used with the City's Geographic Information System (GIS). The GIS will allow City staff and the Open Space Commission to overlay these maps and provide easy reference to a variety of land and resource information, including agricultural, natural resource, habitat, and open space features. Also, general information related to the physical characteristics of a parcel such as size, land use, proximity to protected land, and distance from the city and roads can be quickly obtained. This science-based tool will allow City staff, the Open Space Commission, and the City Council to efficiently and objectively evaluate the various factors that contribute to the open space value of a particular parcel. This tool also allows the City to establish a consistent, objective rationale for prioritizing and making open space protection decisions. In addition, the GIS can also play a part in managing open space properties and resources by creating a single source for information on the City's land and resource protection projects.

Scarcity Factor. Another analytical tool can assist in quantifying the relative sensitivity of an open space land type or resource to development influences. This tool can be employed to help determine whether a particular parcel or resource should receive a high priority for protection by the City. This tool measures the relative scarcity of the land type or resource by looking at factors such as whether it is in general decline in the Davis area, how much is already protected as open space, if the land supports sensitive

species, and whether its protection contributes significantly to the protection of other high priority open space lands or resources. Each of these general factors can be quantified with the results incorporated into a GIS map layer that provides a more complete understanding of the conservation potential of a particular parcel.

Timing: Collect resource data and construct GIS based evaluation tool within six months of adoption of the AMP.

6.1.2 *Procedural Tools*

Procedural implementation tools allow the City to act in an efficient and consistent manner on open space opportunities that the analytical tools described above help identify. Two procedures will be established to facilitate the protection of open space by the City: (1) an acquisitions process and (2) an annual project goals and budget setting process. These procedures help define the roles of staff, advisory bodies, and decision makers in acting on open space protection opportunities and the expenditure of open space funds.

Acquisitions procedure. The following outline is intended guide the City in a typical open space acquisition. Though there are numerous intermediate steps and each acquisition is unique, the outline lists the critical decision points and opportunities for public input. A typical acquisition process includes the following general steps:

- Identification of parcels that meet the goals and acquisition categories described in the plan.
- Contact with a property owner(s) or agents who may be interested in the program.

- Submission of a letter of interest by a landowner requesting a property evaluation and site visit by staff.
- Completion of a preliminary property evaluation by staff including: project description, initial analysis of consistency with program goals and budget priorities, and investigation of available outside funding sources for the project.
- Presentation of preliminary property evaluation to the Open Space Commission for recommendation on appropriate next steps (appraisal, negotiation, or rejection). Public input opportunity.
- Direction from City Council on next steps.

If direction is given to proceed, the following steps are necessary:

- Appraisal preparation, environmental site assessment, title reports, and collection of other pertinent documents and information.
- CEQA analysis.
- Negotiations on terms and easement language if necessary. May include closed session meetings with the City Council on terms of the acquisition.
- Staff report to Open Space Commission for recommended action on transaction. Public input opportunity.
- Staff report to City Council action on the transaction and release of funding. Public input opportunity.

The acquisition process outline provides an overview of a typical open space transaction. However, the City Council may modify the process in exceptional cases (subject to legal requirements) where there is a high risk of loss without accelerated action by the City.

Timing: Adopt resolution outlining acquisitions process within two months of adoption of the AMP.

Annual project goals and budget setting. In order to assure that open space funds are allocated consistent with the legal requirements of Measure O and with the goals and objectives of this plan, the City will enact the following Open Space Program budget process:

- Early in the calendar year (February), the Open Space Commission will hold a public hearing on the City's Open Space Program budget. The report to the Commission will provide summaries of the year to date activities and expenditures and projections for the following fiscal year. Fiscal reporting will include all aspects of the program budget, including acquisitions and management of open space lands and resources.
- The Open Space Program annual budget report and Commission recommendations will be forwarded to the Finance and Economics Commission for review and comment.
- The Commission will provide the City Council with recommendations regarding allocation of resources for the following fiscal year. This recommendation will be incorporated into the general budget reports presented to the City Council during the City's annual budget setting process in late spring/early summer.

Timing: Adopt resolution outlining annual project goals and budget setting process within two months of adoption of the AMP.

6.2 Land and Resource Management Planning

The policies of the plan call for adoption of a land and resource management planning process in order to support the general guidelines established in the AMP. The primary focus of this supplemental planning process will be the development of site specific management plans that are consistent with the AMP.

Timing: Develop and adopt a Land and Resource Management Planning Process within nine months of the adoption of the AMP.

6.3 Conservation Partnerships

The City will continue to work closely with local conservation organizations to implement its open space protection goals. Close collaboration with these organizations and identification of common objectives has allowed the City to achieve the level of success it has in protecting open space. The City will sustain its efforts to identify projects that maintain and enhance these important relationships. In addition, the City will look to develop partnerships with regional and national conservation organizations that share its objectives. Memberships in organizations, lobbying state and federal representatives, and participation in regional open space discussions are a few of the actions the City can take to build partnerships with regional and national organizations.

6.4 Science and Research

Scientific research and academic field studies on City open space lands can assist the City in achieving the goals outlined in the AMP. The intent is to create a collaborative relationship with researchers that will produce information that will allow the City to increase its knowledge of the resources under its stewardship and provide the basis for sound planning and management decisions. Research can provide additional benefits such as the collection of source information for the City's open space interpretive programs.

Research and field studies will be actively encouraged where they are consistent with the goals and policies of the AMP.

6.5 Education and Interpretation

Education is a key factor in building strong public support for the City's Open Space Program. Appropriate and well-managed public access on City open space lands provides opportunities for citizens to learn about the natural and cultural history of the Davis area and the Central Valley. Increasing public knowledge and appreciation of agricultural and natural systems will improve support for their conservation. The City will work closely with school districts, local conservation organizations (e.g.: Yolo Basin Foundation), and outside agencies to develop open space related educational materials and firsthand learning experiences.

6.6 Selection Guidance Factors

As described above, the City will employ a number of tools to evaluate and select projects. The foundation for these tools are the goals and policies established in this plan. Though not a comprehensive list, the following examples of factors that may be considered during the acquisition decision process illustrate under what circumstances the City may act to protect open space. Consistency with one or all these factors is not necessarily required for the City to choose to proceed (or not proceed) with a project.

Factors:

- Strategic location of the proposed acquisition (protection of land is key to protecting other open space land in the same area).
- Project size and what effect it may have on whether the land type or resource can be maintained over time.

- Viability of agricultural use in the long-term.
- Connectivity to intact or relatively intact natural area(s).
- Adjacency to protected lands.
- Ecological value (unique habitat, species diversity, protection of listed species or species in local decline, etc.).
- High risk of loss of exceptional open space resource(s) without participation by the City.
- Outstanding scenic values (views of significant local or regional landmarks, community gateways, etc.).
- High recreational value that is consistent with the City's open space protection goals and provides opportunities for unmet recreational needs (e.g. wildlife viewing, hiking, etc.).
- Landowner commitment to perpetuation of conservation values (sustainable farming practices, voluntary protection of sensitive natural resources, etc.).
- Land or conservation easement can be acquired with reasonable effort in relation to its cost.
- Landowner insists on provisions in an easement, which would diminish the property's conservation values.
- City effort required to enforce and/or monitor an easement.
- Potential impacts of adjacent properties on the conservation value of the protected land or resource.
- Consideration of destructive trespass, dumping, or other activities that may have a negative impact on conservation values.
- Title issues, boundary disputes, or pending legal actions associated with the land or easement.

These factors are not intended to limit the discussion of the positive or negative attributes of a proposed acquisition by the City. Instead, they should be used to assist in the analysis of whether a particular parcel or resource should be protected by the City. These factors

should not be considered static and should be modified to address changing conditions and unique circumstances.

DRAFT

Covell Village Small Urban Farms Concept – Draft December 2004

Issue statement: The CV project is designed to meet multiple objectives of both the City and the applicant. The footprint of the project is one of the primary features as it determines how successful the City is in meeting its goal of maintaining a compact urban form surrounded by farmland. One option under consideration is developing urban uses south of Channel A while retaining agricultural uses north of the channel. While considerable information has been developed for the higher density project alternative area south of the channel, little analysis has been done regarding potential land uses north of the channel. This concept paper offers a summary analysis of one alternative.

Goal: Create a sustainable land use at the north edge of the CV project that:

- Establishes an effective urban/ag buffer.
- Integrates farming and the community through recreational, educational, and direct marketing opportunities.
- Provides an opportunity for farmers to develop sustainable farms and farming practices.
- Creates beneficial connections for people and wildlife between existing habitat/greenbelts to the east and west of the CV site.
- Develops a successful example of small urban farms.
- Creates opportunities for redevelopment of the City's abandoned landfill that supports the agricultural industry.

Measures of success

The small farms concept would be considered a success if it is:

- Sustainable (economic, environmental, and community)
- Accepted by the community
- Supports diversity in yolo county ag production
- Enhances wildlife habitat value.

Concept elements:

Physical design (see Attachment 1)

- 4 Small organic farms (120ac)
- 4 Limited Resource Producer farmsteads for entry level farmers either on marginal soils or in the CV housing development near the farms (4ac).
- 1 Consolidated farm stand marketing area @ Poleline Road (2ac)
- 1 Community gardens (5ac)
- Greenbelt @ Channel A (14ac)

Total area: 145ac

Cultural design

- Small organic farms established prior to construction of adjacent housing to minimize urban/ag conflicts and to establish realistic expectations for homeowners living on or near the rural edge.
- Direct access to local markets (farm stand, CSA program, farmers market, Coop, etc).
- Support recruitment of farmers to replace retiring generation.
- Build knowledge of and support for sustainable farm practices in the County.
- Integrate farms into the fabric of the community, blending urban and rural land uses.
- Diversify ag production in the County to better withstand market fluctuations and changing national and global ag policies.

How/Why?

How will the concept be implemented and why is it advantageous.

1. Supports and complements higher density design south of the channel.
2. The project can provide its adjacent mitigation north of the channel, satisfying adjacency requirements and realizing bonuses associated with providing additional adjacent mitigation. Preliminary staff calculations, ag mitigation requirement reduced from 766ac to 334ac.
3. City can possibly provide incentives in the development agreement process to reduce parks and greenbelt area south of the channel in exchange for developer participation. (Nexus: opportunity for farm visits by the general public). Reduces parks O&M cost to City and allows more space in development for identified housing need.
4. City buys back north of channel land with project open space impact fees (at ag value). City retains ownership and enters into long term leases with small farmers or sells farms with CE and right of first refusal. Any lease revenues would be used to fund community education programs, community gardens, buffer management, etc.
5. Develop a non-profit to administer the community outreach and education program.
6. Identify grants to redevelop landfill to support sustainable ag uses (packing facility, etc.).

Comparison (north of channel area)

Small Farms Concept	Existing proposal
Supports and complements higher density south of Channel A.	Does not support higher density south of Channel A.
More ag mitigation adjacent to City.	More ag mitigation in outlying areas.
Uses project and ag mitigation to directly support sustainable ag in the Davis area.	Passive support of ag in general. "Buys down" a large block of ag land that could support sustainable ag in the future.
Meets expressed need in the ag community for affordable small farms for entry level farmers.	Large block generally better suited to conventional, more established producers.
Directly engages community in the issue of the viability of ag.	Creates opportunity to engage community in ag viability discussion on a more theoretical level.
Buffers old land fill from housing and creates opportunities for ag related redevelopment of the site.	Does not create new redevelopment opportunities. Likely to create need to redevelop old land fill as non-revenue generating recreational use compatible with adjacent housing.
Integrates more compatible farms with community.	Separates less compatible farms from community.
Implements new, innovative program that will require administrative support from City staff.	Implements an existing program that will not require significant additional administrative support from City staff.

Sustainability

Economics

- Direct marketing
- Land/leases at agricultural values
- Affordable homes for entry level farmers
- City able to reinvest lease revenues back into farms

Environment

- Connections with existing habitat areas adjacent to the site
- Organic ag production supports and takes advantage of on-site natural resources and natural biological cycles and controls (e.g. IMP, hedgerows, soil building, tail water ponds, etc).

Community

- Farms accessible to the community (location and opportunities)
- Builds more direct connection between the farming community and the City and its residents
- “Destination” along the City’s greenbelt encourages outdoor activity/exercise
- Integrates community garden with “professional” ag production
- Fresh produce for local consumers
- Creates a balance between accessible, less structured “open space” for residents living in a relatively dense development south of the channel
- Creates connections between University and community through unique ag research opportunities

Desired outcome: Integrate small sustainable farms into CV design to complement higher density design south of the channel.

Ideas:

- | | |
|--|---|
| <ul style="list-style-type: none">• Use Fairview Gardens as a working example (see Attachment 2)• Use UC Sustainable Agriculture Research & Ed. Program and Small Farms Center as resources.• Work with CAFF to develop farm support and community integration program.• Engage local sustainable farm consultant to assist in developing business plan for sustained agricultural use on the site. | <h4>Issues:</h4> <ul style="list-style-type: none">• Liability insurance• Vandalism• Dust/Noise• Financing• Land owner interest/participation• Viable business plan for farmers |
|--|---|

Issues:

Attachments

1. Conceptual land use plan.
2. Fairview Gardens information sheet (www.fairviewgardens.org).

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