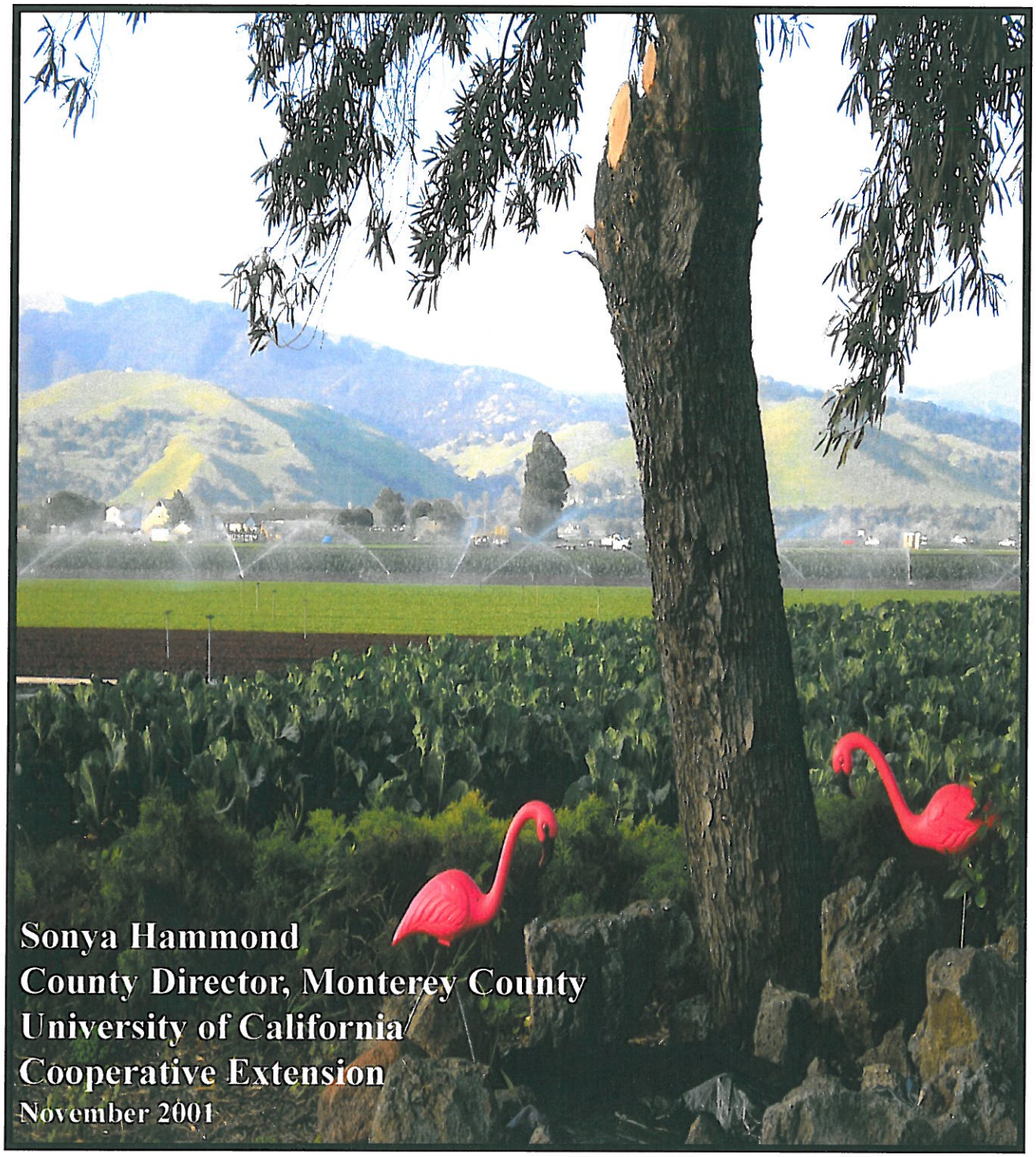
Buffer Planning Workbook



Sonya Hammond
County Director, Monterey County
University of California
Cooperative Extension
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About This Report

What follows are the conclusions made from extensive inquiries about buffer policies, about successful and not so successful implementations, and about attitudes and lessons learned.

Questionnaire and Interviews
A brief questionnaire[1] was sent to the seventy jurisdictions that require agricultural buffer zones, as listed by the California Planners' 1998 Book of Lists.[2] Numerous follow-up interviews were conducted. The questionnaire was also sent to all California county Farm Bureaus and all California County Agricultural Commissioners. Questionnaires were sent to another forty-six counties throughout the country selected as being among the major land resource areas (MLRA) most threatened by development, and cross-referenced for highest value per acre of farmland.[3] Eighty-one written responses were received, and additional leads from those responses were followed up with phone calls and emails. Also of great help were numerous land-use non-profit and governmental organizations.[4]

Buffer Basics
First buffers are discussed, including their rationale, design and planning. Next, cost and funding sources are presented.

Indicators for Success
Following are chapters on the three key points that emerged as contributing factors to successful implementation of buffers: process, principles and policies. It is important to interject and to make clear that although the three elements are discussed separately, they are all interrelated.

It is useful to offer here a brief amplification of what is meant by "process" and to stress its importance. The word process is used here to mean those methods employed to derive the desired outcomes. Process includes how people are involved, who is involved and the degree to which they are involved. It includes the degree to which training and background research are incorporated. Process also involves subjective and attitudinal perspectives that affect both the outcome and how the outcome will ultimately be perceived.

Process is important from start to finish. Inclusiveness and having the right people at the table at the right times is critical. Process should be included as an overarching consideration in each stage of the continuum from planning to execution.

Terminology
This report does not address the use of buffers for purposes other than agricultural/urban interface. "Conservation buffer" is a different use of the term "buffer" and applies to the use of planted strips to prevent erosion, to protect riparian and stream bank integrity, and in some cases, to provide habitat for birds, wildlife and insects.

The important roles and contributions of female farmers, planners, elected officials and developers are acknowledged here. The masculine pronoun is used throughout for convenience only.

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[1] See appendix
[2] < http://cercs.ca.gov/planning/bo1/1998/buffer.html> November 20, 2000.
[3] American Farmland Trust. Farming on the Edge. <www.farmlandinfo.org/cae/foe2>
[4] Agricultural Conservation Information Center, American Farmland Trust, California Farm Bureau Federation, California State Lands Commission, Land Trust Alliance, Nature Conservancy, National Resource Conservation Service, Natomas Basin Conservancy, United States Department of Agriculture.

Introduction

This guide is written to assist city and county planners, developers, farmers and others to successfully plan for, design, and implement buffers as a mitigation tool for conflict at the urban fringe where development meets agriculture.

Development Pushing Toward Agriculture
It is clear that pressure at the edge is only going to increase. If city and agriculture are to continue to coexist, or better yet, flourish, measures need to be implemented to insure positive relationships at the urban fringes. The goal is to increase edge planning in order to minimize conflict, and to think about buffers as a tool for planning sensible community edges.

Many pressures are pushing urban residences closer to active agricultural fields. The primary influence is population increase. Cities and counties are challenged to find places to locate new growth. The impacts of that growth can be harmful or minimal to agriculture depending on the effectiveness of planning and zoning efforts.

Lifestyle choices are another factor bringing residences closer to agriculture. Where suburbs have become tired, or where inner-city residence is too expensive, too dangerous, stressful, or too congested, people seek refuge in a better setting. They frequently look to country living (but with all the convenience of the city) to fulfill their desire for peace and a slower pace of life. People come to the country seeking a place for the children to play safely outdoors, or to have nature provide the greenery without having to maintain a garden. The dream of a bucolic country setting can be just that, a dream, without good planning and zoning. When the reality of barren, dusty fields during the winter months or the early morning thwack-thwack-thwack of a helicopter spraying fields shatter the vision of country living, the urbanite who loved the farmer prior to moving next door, now curses him. In too many cases, the new resident has been successful in severely limiting, or at the extreme, shutting down the very farm he or she sought to be near.

Motivation for Improving Life at the Interface
The purpose of reducing conflict at the edge and facilitating the coexistence of agricultural and urban life is two-fold. One is the preservation of productive farmland. Second, is to maintain viable options for cities and counties to place new growth. Several spin-off benefits might result, one being that city folks might gain a greater appreciation for how food is grown and how farming contributes to the economic revenue streams locally.

Buffers have been defined as a mitigation measure to reduce the degree of interface between the farm side and urban side of the "edge" to at least a tolerable level of co-existence. Buffers at the juncture of agricultural and urban space can take the form of spatial separations and/or physical barriers. A message that emerged from the study was that with words like "mitigation" and 'insulators", buffers have been perceived as analogous to the referee in a boxing ring, keeping the two fighters apart, but that it is time to think of buffers as a tool to facilitate a win-win solution. Rather than thinking of the "edge" as a place where people just tolerate each other, that buffers, in tandem with educational programs, can add to quality of life on both sides.

Many counties have established preservation of farmland (and open space) as a priority. Farmland is a unique type of open space, in that it is a working landscape, or an outdoor industry. If the farmland is to stay, farmers need to be able to farm profitably. Reducing conflict with the neighbors helps the farmer avoid costly expenses or restrictions. Also, collectively, as a society we care about the preservation of agricultural land for the fundamental reason of having a safe and abundant supply of food.

Challenges to Buffer Implementation
For both sides then, buffers are one tool for smoothing the impact when edges collide. Much has been written about buffers for the agricultural/urban edge. However, planners and developers are discovering that policies are weak, conflicting, or non-existent. A second problem is that there is a large leap from having a policy, however good it looks on paper, to successfully implementing an effective buffer zone. As one planner put it, ***"The tough part is hammering out the details."*** During the research for this project, several excellent examples of the disparity between policy and reality emerged (refer to buffer case studies). A third problem is time. It takes time to decide upon and develop good policy, and it takes time to build. It is not uncommon to be building today projects that were approved years ago. Some projects being built today still comply under regulations in effect at the time of their approval years ago, but outdated by today's standards. One planner likened planning to steering a large ship. ***"You have to initiate corrective measures far in advance of collision if you want to be able to turn the ship in time."***

Potential Solutions

The purpose of this workbook is to assist planners, developers, farmers or others who are considering buffers as a solution or preventative measure, and seeking ways to do it successfully. Although having policies is certainly a necessary start, the policy in and of itself does not insure successful implementation of a buffer. The substance of the policies is important, but equally, or arguably more important, is the process of how policies are decided upon and how they are interpreted. Successful implementation is as much a people issue as a policy issue. This guidebook outlines a process to follow that can lead to any number of variations to suit site-specific needs.

Buffers and Long-Term Planning

Mitigating conflict at the edge becomes inextricably connected to the bigger land use picture including growth and farmland preservation. Buffers should be considered as one component of a comprehensive long-term growth management plan. Buffers are just one of several support features of land use planning efforts that incorporate any number of tools such as general plans, easements, transfer of development rights, urban growth boundaries, right-to-farm ordinances, the Williamson Act and "Super" Williamson Act.

> "Vast areas of productive agricultural land have been converted to urban uses, sometimes, as in the San Jose area of California – by hopscotching and leaving parcels of uneconomically sized agricultural land to wither as they are surrounded by urban development."
>
> "The most critical areas of our world are the margins, the edges where related conditions require careful planning and decisions to determine the use of land on both sides of the border.
>
> [5]

[5] Eisner, S., Gallion, A., Eisner, S. The Urban Pattern (6th ed.). New York: Van Nostrand Reinhold, 1993 pp 395-396.

Executive Summary

This started out as a quest for successful examples of buffers and policies that could be boiled down to a list of common characteristics that anyone anywhere could then just copy to implement their own successful buffer. Admittedly, this is a bit of an exaggeration. However, the conclusions developed from compiling and analyzing all the data gathered indicate that buffer development is not as easy as it seems. Rather than providing a formula to follow, the study offers likely ingredients and likely methods to use in combining the ingredients. It is then up to each jurisdiction to artfully reach its own unique solutions. By thinking of buffers as another component of necessary infrastructure, jurisdictions can more routinely adopt the use of buffers.

Growth increases the need for buffers

The reasons for the sprawl that pushes housing developments up against existing agriculture are complex, and the subject of countless studies and books, but the causes most commonly cited in this study were:

- Population increases
- Lifestyle choices
- Tax laws that create financial incentives for cities to annex new land
- Low/no farming profits as compared to the high sales prices that farmers near the city can receive for development

What can the reduction of conflict at the edge achieve?

Buffers serve to reduce (**not** eliminate) the conflicts that occur when the two disparate users interface at a common edge. There are advantages to both sides when friction is minimized through a buffer. A loftier goal is, through the use of buffers and outreach, to not just minimize conflict, but to create a shift in thinking where both sides not only tolerate one another, but come to truly appreciate each other.

Urban Gains	Farming Gains
Increased viable options for placing development	Decreased intrusions into farming
Increased quality of life and health	Promotion of economic viability
Increased appreciation for agriculture	Increased appreciation for agriculture
Agriculture remains as an economic contributor	Promotion of ag land protection

Sources of conflict

The conflict goes both ways. From the urban perspective, the concerns range in severity and in substance. A person's family status and philosophical and political leanings influence the degree to which that person perceives the problem as a threat or accepts the situation. The problems can be perceived or real, and they can be a trivial nuisance, or a genuine health threat. For the farmer, the problems range from an inconvenience to incurring serious liability and costs.

Urban Complaints		Farmer Complaints	
Pesticides	Traffic	Theft	Litter
Dust, Pollen, Smoke	Lights	Vandalism	Increased Liability
Noise	Farm Personnel	Pest Infestation	Water drainage
Bees, flies, rodents	Odors	Farming Restrictions	Threat to profitability

Strategic use of buffers

Buffers are used in three ways. In the first instance, they are typically seen as a setback distance prescribed for a single house built in an area zoned rural residential or agricultural. Second, they are used as a substantial barrier between a project/development that is built immediately adjacent to active farmland. Finally, buffers are designed and strategically sited to serve as a stable, defined edge for a city, and are part of a comprehensive land use plan. This study focus primarily on the later two uses. Buffers that contribute to stable, even edges for population centers help increase efficient use of resources and services, as well as decreasing the surface area subject to potential conflict.

Buffer design and types

In almost all cases the buffer is placed on the non-farm side. In planning out the buffer, both the desired positive effects as well as the potential negative effects are considered.

What can serve as a buffer?

An installed barrier such as a fence, wall, or landscaping
Existing infrastructure or topographic features such as roads, rights-of-way, canals, hills
Building requirements such as setbacks, special construction specifications, or zoning
Recreational or commercial areas
Usage modifications, primarily voluntary

Cost

Costs typically are borne by the homeowner. However, public monies are used, and could be used more frequently when buffers are used and perceived as a public, rather than an individual, benefit. The steps are:

1)choose the appropriate buffer, 2)determine the costs 3)identify and obtain source of funding.

If cost is a barrier to installing a buffer at a distant urban limit line, then thought should be given to creative funding ideas, such as the possibility of recouping costs at a future date from the ultimate developers. Or, taking the broader view that the buffer benefits the entire community; mechanisms for spreading the costs should be explored.

In determining costs, the immediate expenses related to planning, land acquisition and building or planting are normally considered. Equally important though, and often forgotten are the on-going costs of maintenance and monitoring.

Elements for successful buffer implementation

The three major, *interrelated* components for successful buffer implementation are identified as follows:

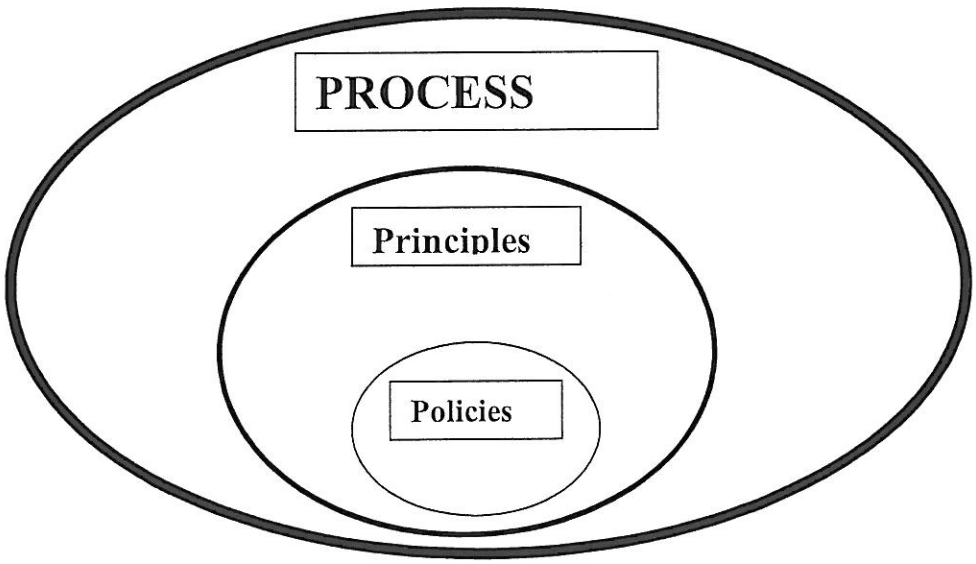
- *Process* – the ways in which things are done and the ways in which people are involved. Process includes the affective and subjective skills, attitudes and interaction that lead to problem solving and collaboration. The "*How*", the "*Who*" and the "*When*"

  Community and stakeholder involvement
  Education and outreach
  Fact/science driven decision-making
  Cross-jurisdictional and regional planning
  Apolitical approval and appeal processes
  Framing all the issues, reaching the hidden agendas

- *Principles* – the values and community culture or identity that guide decision-making. Community vision and uniqueness, and the degree to which those principles are felt and upheld by policy makers and the community or region. The "*Why*"
- *Policies* – the quality, clarity, consistency, completeness and power of the actual policies related to land use, growth, development, and agricultural preservation. The "*What*" and the "*Where*"

  Policy "Best Practices"

  Buffer policies are "on the books"
  Policies are clear, unambiguous, and uniform both intra- and inter-jurisdictional
  Provisions are made for case-by-case determination of appropriate buffers
  Policies do not try to regulate agriculture as though it were only open space
  Policies encourage consideration of cumulative effects of development on ag land
  Policies lead to stable, uniform edges; discourage leapfrog and rural development
  Policy implementers undergo on-going and appropriate training

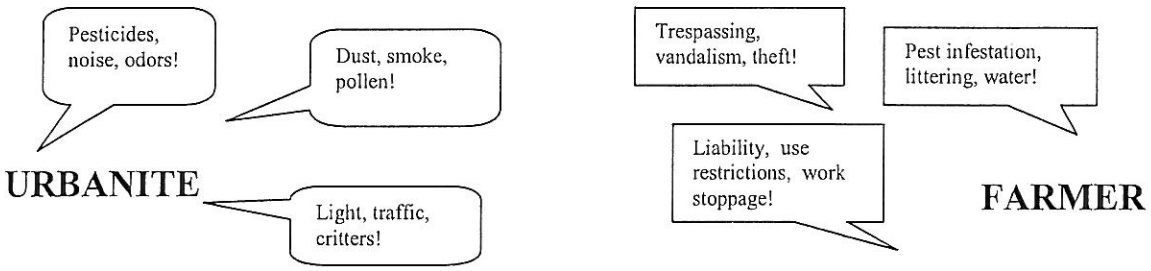


Defining the Problem

Picture: "Active Farm", "Up & Coming Subdivision"
Caption: "Buyer Beware! These Modesto farmers intend for every potential buyer in the new subdivision across the street from them to know about their farming operations.

The problem has been referred to as "Conflict at the Edge" or "Conflict at the Fringe".[6] Growth and development patterns have pushed outward onto farmland and open space rather than inward, leading to what has become referred to as "sprawl." Much has been written about why sprawl is occurring. Two of the most commonly cited causes of sprawl are tax laws that encourage annexation and the considerable incentive for the farmer to sell his land to development versus the marginal profits from, and major obstacles in, farming. This sprawl is inefficient from several standpoints. It is not effective use of the land. It is costly to extend city infrastructure and utilities, to the point that some assert that the property taxes of sprawl development do not cover the cost of its necessary infrastructure. Irregular edges to the city increase the points at which conflict between city and agriculture can occur, and also make the remaining carved out pockets of agriculture less viable because of the cost to farm them and increased risks arising from the proximity of people. Compact urban form is more desirable from both the urban and the agricultural perspective.

Two-Way Conflict
As growth pushes development closer to existing farms, conflicts of various kinds can result where the two disparate uses meet. Complaints and conflict go both ways between the farmer and the urban residents.



Range: From Annoyance to Health and Safety
The urban dwellers have complaints and concerns over farming practices and their effects on their quality of life and health. The problems can be as serious as an overspray of pesticides, or it could be residents calling to complain about their newly washed car receiving mist from irrigation sprinklers. Conversely, the farmer can experience negative impacts of having residences adjacent to his or her active farm. This could include problems such as litter or serious threats to food safety, since the easily accessible product could be exposed to any number of chemicals or substances dumped by trespassers.

The legitimacy of those concerns is not the issue here. Whether or not the complaints are valid, they cause residents to experience stress and they cost the farmer money and time. Furthermore, once a complaint is registered with a public agency, it takes staff time to deal with it. The idea is to avoid generating complaints in the first place.

Perceptions and Reality
A recent study from North Carolina State University revealed that the urban perspective of farmers is positive, but outdated, as it is based on the status of farming as was common in the early 20th century.[7] This misperception of the current nature of farming contributes to people's disappointment when they move next door and are confronted with the realities of modern farming. They find out it is not Green Acres next door.

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[6] Coppock, R., Kreith, M. (Eds.) California's future: Maintaining viable agriculture at the urban edge. University of California Agricultural Issues Center, 1997.
Coppock, R., Kreith, M. (Eds.) *Farmers and neighbors: Land use, pesticides and other issues.* University of California Agricultural Issues Center, 1996.
[7] Hoban, T., Clifford, W.B. Impressions: A Survey of North Carolinians' views on agriculture and NC State University. NC State University College of Agriculture and Life Sciences, 1999.

Historical Perspective

Conflict at the edge is not a new issue. At a United States Department of Agriculture (USDA) summit twenty-five years ago, just outside Washington, D.C., a group of eighty experts convened from around the country to discuss the retention of prime agricultural land.[8] They recognized that productive soil was increasingly at-risk from non-agricultural uses and that steps needed to be taken to protect farmland. They further recognized that conflict at the urban/rural edge between incompatible users is a disincentive to farmers and therefore "research should identify ways to minimize conflicts [in regions where serious resource utilization conflict exists] and increasing compatibility in these situations in order to retain maximum options for agricultural production."

The purpose of buffers is then, to insulate farmers from residential neighbors, and vice-versa, with the aim of allowing the farmer to carry on business unimpeded, and for the residents to experience a high quality of life. Although a level with no conflict is desired, more desirable yet is a state of coexistence where each side sees the other as a benefit.

BENEFITS OF AVOIDING URBAN EDGE CONFLICT

Urban Perspective	Farm Perspective
• Viable options for placing housing • High quality of life • Appreciation of agriculture • Public health • Maintaining agriculture as an economic contributor	• Preserve agricultural soils • Promote economically viable farming • Have presence of housing be "transparent" to farmer, and/or a positive factor • Increased appreciation of farming

[8] Recommendations on prime lands. Seminar on retention of prime lands. Washington, D.C.: United Stated Department of Agriculture, 1975.

I. ALL ABOUT BUFFERS

1. Determining the reason or need for a buffer

Anticipating the potential need for a buffer, and analyzing the sources of concern that a particular site might generate are the first steps to successful buffer implementation. The different reasons leading to the need for buffers are listed here for consideration. Those issues should be considered in order to select the most appropriate buffer type and design.

Not All Complaints Are Equal
Regarding the nature of complaints, there are some very important distinctions to be made. There is a big difference between **nuisance** and **potential health/public safety.** One is transitory where the other can be harmful, and in some cases, life threatening. There is also a distinction to be made between **perceived** and **real** threat. A person's philosophical stance on farming and the environment, and their lifestyle preferences all contribute to how tolerant or critical a person will be of the neighbor's farming activities. Things such as pesticide drift and dust can be measured. There are instances where accidents happen or wind changes and real drift occurs. However, there are other times when a person thinks they are experiencing a problem although there is no justifiable cause. As an example, it is not uncommon for an Agricultural Commissioner to receive a complaint relating symptoms of coughing, burning eyes, or headache triggered by seeing tarps for methyl bromide, even though the methyl bromide hasn't yet actually been injected into the ground. The range of severity of problems runs from minor inconvenience to serious health concern.

There is no judgment here on the validity of concerns raised. Whether the concerns are justifiable or not, the complaints take attention and cause friction that needs to be resolved. Advance, deliberate planning will serve to avoid problems. The purpose of planning buffers is to reduce the number of complaints. Several interviewees stressed the need for *reasonable* expectations of what a buffer can do, and a pro-active educational process to dispel overly optimistic expectations of the buffer and describe the mutual benefits.

Buffers and Realistic Expectations
Buffers have been referred to as insulators. The expectation is that insulators will reduce a nuisance to an acceptable level, not totally eliminate it. The reciprocity of the buffering should be emphasized. Buffers are considered to be a compromise, with both sides still needing to accept and accommodate each other's presence. Right-to-farm ordinances are one tool used by many areas to inform potential buyers of existing farming conditions so they can decide not to locate there if they foresee the conditions being objectionable. Local education programs offered by organizations such as Cooperative Extension, Farm Bureau, Chamber of Commerce, and California Women for Agriculture can help increase knowledge and appreciation of agriculture, and promote dialogue.

The most commonly cited problems are as follows.

FROM THE URBAN PERSPECTIVE – POSSIBLE COMPLAINTS:

Pesticides
Despite the fact that the use of agricultural pesticides is strictly regulated and monitored, their use generates, in some people, strong emotions and perceptions. Where the welfare of children is involved, the level of concern is often heightened. People worry about the negative effects of drift, fumigation, and groundwater contamination through leaching. People also have concerns about the effects of insecticides and herbicides on their garden plants.[9]

[9] County Agricultural Commissioners are not required to report complaints about pesticides, or other issues to the State, although most have internal logs. To be reportable, a complainant must go to a doctor, who determines whether the symptoms are pesticide related. If pesticides are determined to be the cause, the doctor's report goes to County Health, who in turn sends the report to the State, where the statistics are compiled. The County Agricultural Commissioner investigates these exposure incidents. There were 555 agriculture-related cases reported in 1999. Of those, 65% were attributable to four counties (out of fifty). Source: 1999 Case reports of illness and injury attributable to pesticide exposure by County, California Department of Pesticide Regulation, Pesticide Illness Surveillance Program.

Dust
Normal activities of farming, whether conventional or organic, can create dust. Wind stirs up dust from the field, especially fallow fields. Besides the nuisance factor, certain diseases are spread by dust.

Pollen
The number of documented cases of allergies and asthma is increasing. There is anecdotal evidence that farm advisors are receiving increasing numbers of calls about tree pollen from orchards. Dense barriers might help block heavier pollens, but there is no way to eliminate pollen from traveling.

Smoke
Different open-air burning regulations apply, depending on regional air quality conditions. Smoke can be generated from permitted burning of crop residues, empty pesticide bags, or unusable packing supplies such as cartons. Smudge pots are now illegal, but their new-improved replacement, the stack field heater, is used in certain areas where crops are exposed to frost. Although much improved from the old smudge pots, the stack field heaters are cause for complaint anyway.

Noise
Loud or persistent noises can come from the operation of trucks, tractors, wind machines, or helicopter and fixed wing sprayers. If a cooling or packing facility or greenhouse is on a farmland parcel, motors and generators and moving machinery make considerable noise. Some vineyards use sound canons to scare away birds that damage the grapes.

Bees, flies
Bees are used for pollinating certain non-self-pollinating fruit and nut trees. Beehives are usually placed at the interior of the orchards, so the presence of bees in not usually a problem. However, with the heightened awareness about Africanized honeybees, the sight of bees, especially around children and pets causes concern and complaints.

Flies are a nuisance most closely associated with confined animal facilities, although they are also around compost piles. Crop residue that isn't quickly hauled away or incorporated into the soil will attract flies.

Odors
Disagreeable smells are associated with dairies, poultry production, and generally any large-volume or contained animal production facility. Certain pesticides have odors. From a distance, what people usually smell is the volatile "marker" and not necessarily the pesticide itself. Other possible sources of odors could come from active compost piles, fertilizer applications, fermenting processes and the decomposition of crop residue in the field. Some of the sources create chronic disagreeable odors, where others are short-lived. Processing plants, especially those using fermentation, may produce disagreeable odors. In these cases a system that controls air discharge is more effective than any buffer.

Trucks, tractors, slow traffic
Farm-related traffic can involve slow-moving trucks that tie up traffic. During or just after rainy weather, mud from trucks and tractors can be a nuisance or even a safety hazard by creating slippery roads or by restricting visibility. Traffic problems appear to be worse on smaller rural roads, and particularly where zoning allows mixed uses, such as rural "farmettes" or "ranchettes" interspersed with country houses on large lots. Other negative consequences of large lot rural residential zoning are outlined in the section on Buffer Design, Building Requirements or Restrictions.

Lights
Night harvesting or other operations sometimes require the use of bright lights that disturb nearby residents.

A strawberry and vegetable farmer in a highly urbanized, southern California county is surrounded by freeways, apartment buildings and houses, and business high-rises. He is separated from them by nothing more than a street, a fence, or a dirt road. He has received complaints about dust, mud on the streets, tractors that are too noisy in the morning, irrigation run-off, placement of portable toilets, crews eating lunch too close to residences, and odors of rotting cabbage.

FROM THE FARMING PERSPECTIVE – POSSIBLE COMPLAINTS:

Trespassing: theft, vandalism

Farming is like no other business in that every function performed and the products developed are in full view of the public, with ready access. Pilfering is one cause of on-the-farm loss. Vandalism and theft occur with expensive aluminum irrigation pipe or field machinery and tools. Costly pesticide and fertilizer are common targets for thieves. Farm buildings and machinery are subject to vandalism and arson. An open field can be flooded overnight. Neighborhood dogs, roaming freely on a farm can cause damage and create food safety concerns. The more people that live close to agriculture, the higher the chances are that a farm will suffer some type of damage or loss, simply because of the accessibility.

> The Holtzes, almond farmers in Modesto, have found an old typewriter, beer bottles, a Walkman among the almond trees. They've had broken tree branches, flipped over beehives, and kids building dirt-bike ramps. Stan Holtz says, "Who knows what you're going to encounter out there." The sign they've posted warns prospective buyers of the adjacent new homes, separated from their farm by a mere five feet and a 4-foot wooden wall, that it is an active farm. They want newcomers to be aware.[10]

Pest infestation

Adjacent yards and gardens are harbors of insects and diseases that can cause economic loss for the individual farmer, but also for the region. The glassy winged sharp shooter is a perfect example of a pest that presumably rode in on garden plants, only to spread to grape fields. The sharpshooter is a vector for Pierce's disease that has led to the destruction of many acres of vineyards. Gazania, a popular drought-resistant groundcover used in landscaping is thought to be a host plant for lettuce mosaic virus disease, a quickly spreading disease that kills lettuce. The medfly is another example of a pest that was harbored in gardens. Weeds spread easily to farm fields, and are also hosts to insect pests that either cause direct damage or are vectors for plant diseases.

Use restrictions

Regulations regarding the use of pesticides are very strict and heavily enforced. A farmer may have been able to apply a particular pesticide to the entire field, as long as no residences were adjacent. However, as soon as homes are placed nearby, his choice of products may become limited, or the perimeter areas of the field he can spray are reduced.

> Metasystox-R (MSR) is a Category II insecticide (Category I is the most toxic) commonly used on most types of lettuce and crucifers. The product label prohibits spraying within 100' of an occupied residence if sprayed by ground, and 150' if sprayed by air. A farmer with no neighbors can spray his field right up to the edge. If residences with a 50' buffer are built adjacent to the farmer's field, he now has to exclude 50' to 100' from spraying at his perimeter. The edges of a field are most susceptible to insect infiltration, so he is likely to suffer crop damage and product loss where he can no longer spray.
>
> Telone C-17, a Category I pesticide, is injected into the ground as a soil fungicide or nematicide. It is used on a wide variety of crops, such as strawberries, field crops, fruit and nut trees, and nursery plants. It cannot be used within 300' of an occupied structure, which includes business or residence. A development having any buffer that is less than 300' will restrict the farmer's ability to use Telone C-17 at the perimeter.

Restrictions or forced changes in farming practices can disrupt a farmer's ability to use an integrated pest management systems approach and other programs that use "soft" pesticides or less inputs.

Complaints from neighbors can lead to mandated changes for farmers: limited hours for operating equipment, restricted parking for fieldworkers, and so on. There have been attempts by residents in rural areas to have restrictions imposed on what constitutes "agriculture", preferring only those commodities with the least intrusive or objectionable practices. With enough pressure on city councils or Boards of Supervisors, vocal residents have shut down a viable farming operation.

Farmers, especially on rural residential roads, may be limited to the number of trips that their trucks can make, or the size of truck they can use. Parking on roads may also be restricted, affecting the farmer's ability to get farmworkers to his site, or he may have to take farmland out of production to provide parking for workers or customers.

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[10] Turner, M. Urban creep wraps farm. Modesto Bee. April 30, 2001.

Littering
Although litter may seem like just a nuisance, it can damage equipment if not detected. It is unsightly and makes the farmer look like a poor steward of his property. Paper and wood can become a haven for pests. It is not uncommon for people to dump old sofas, mattresses or other junk on farmland, passing along the cost of disposal to the farmer.

Increased liability
Liability is a serious economic threat to the farmer. The liability can stem from injury or loss. A resident might sue over damage to plants or the death of a pet, whether or not the farmer was actually to blame. More serious, it's conceivable that someone could sue related to a fatal illness ostensibly caused by chronic exposure to pesticides. The farm commodity's increased exposure to people and animals creates threats to food safety and product liability. Dogs and people roaming freely in a field heighten food-borne illness concerns, especially since today's sophisticated tracking procedures allow food in the marketplace to be traced back to the exact field where it was grown. When a farmer is sued, whether or not the suit has merit, he must incur the expense and time to defend himself. While insurance may cover a farmer, deductibles and special coverage premiums cost money.

Picture: "no trespassing"
Caption: Despite warnings, farmers often have adults, children, vehicles and dogs coming onto their property.

Water drainage & erosion
Paving does not allow water to percolate into the soil. If not properly designed for drainage, runoff can flood an adjacent grower field, or alter the percolation on his field, creating excess water. Erosion can occur on the farm from excess water flows, or eroded dirt from nearby might be washed onto the farm. A fix for the problems, if not avoided in the planning stages, will be costly.

Roots and rodents (two-way problems)
These two underground sources of problems can go both ways. Roots from neighboring trees can deprive crops as far as 250' to 300' away of water and nutrients or a farmer's commercial trees can disrupt neighboring gardens. Seed or nut crops are especially attractive to rodents. Garden rodents move onto farms, and certain crops that attract rodents can likewise burrow into yards. If a farm field has mice they can cause an infestation into urban sites when the field is harvested.

Interference with farm personnel
There are instances where neighbors have complained about farm personnel, or have interfered with their work. Besides requiring the time to resolve the matter, altercations can bring the work of the day to a halt.

Implications for profitability
According to the California Department of Pesticide Regulation, "California has embraced a scientific approach in developing the strictest and most comprehensive pesticide regulation program in the nation."[11] These most rigorous pesticide restrictions, along with the high cost of land, water, and utilities, and competition from imports grown with cheaper labor are all forces that are driving profit margins tighter and tighter for the California farmer, whether the commodity is rice, cotton, flowers, vegetables or anything in between. One saving grace has been the California farmer's ability to exact every possible efficiency. Therefore, each additional cost and reduced efficiency imposed by adjacent growth is one more notch of profit to be ratcheted down. A General Plan that espouses protection of agriculture yet allows for building to occur adjacent to and into farmland, will not achieve its goal.

[11] <http://www.cdpr.ca.gov/docs/pressrls/coverintro.pdf.> May 11, 2001.

The grid below is a useful tool in sorting out or discussing the potential issues at a particular site. The different variables at each particular site are what make a cookie-cutter approach to buffer implementation impossible. Farming practices vary greatly by commodity, so the type of product grown at a site, plus the farmer's own preference for the procedures and techniques he utilizes all play into the scenarios that will occur at a site.

FROM THE URBAN PERSPECTIVE			**FROM THE FARMER PERSPECTIVE**		
Airborne	PH*	Ns*	Access	$$*	Ns*
Pesticides			Trespassing, theft, vandalism		
Pollen			Litter		
Dust			Increased liability		
Smoke			Food Safety		
Noise			Pest infestation		
Bees, flies			Use restrictions		
Odors			Farm personnel problems		
Trucks, traffic			Water drainage & erosion		
Lights					
Roots, rodents					

[12] This chart adapted from a version by Mary Handel.

*PH = Public Health threat Ns = Nuisance $$= Cost

2. Buffer Types and Design

The best scenario would be to not need buffers of any type.

> "The best solution is avoidance away from ag areas."
> Planner, San Benito County

However, once the need for a buffer at a particular site has been established, the design can proceed. Next to be considered are all the conditions, including type of commodity grown, at the specific site and the existing topography or infrastructure that might lend themselves to all or a portion of the buffer solution. Another consideration is the amount of space available for the buffer. How the buffer gets designed (process) can greatly influence the degree to which the buffer is ultimately accepted. Neighbors, builders and farmers should all have a venue to listen and to be heard. The solutions should develop as a result of the meetings, as opposed to having meetings whose only purpose is to report out what has already been decided.

BUFFERS AS GROWTH BARRIERS

Besides mitigating urban-rural interface problems, buffers that are properly designed and strategically sited serve as a defined edge for redirecting growth. Conversely, growth barriers and community separators such as greenbelts might well end up serving as interface buffers. There are essentially two kinds of agricultural/urban interface buffers. The first type is where a development or a house is planned that will immediately adjoin agriculture upon construction. These types of buffers commonly take the form of a wall, street, setback, or perhaps some vegetation.

The second kind of buffer is a wide natural or planted area or large permanent geographical barrier that is used to demarcate a formal or informal urban growth line. When installed, it is quite possible that it might have agriculture on both sides until much later when the city is built out and eventually meets the buffer. To be effective, this buffer has to be part of a comprehensive plan that will not allow growth beyond the buffer, or else "Today's buffer is tomorrow's lineal park."[13] Besides urban growth boundaries (UGB) and sphere of influence designations, another tool that is used to restrict growth beyond a certain point is the city's restriction of service line extensions. Zoning is less effective

[12] Handel, M. E. Conflicts and Solutions when Agricultural Land Meets Urban Development. Community Development Master of Science Thesis, University of California. 1994 p 10, p 57.
[13] Marc Del Piero, Attorney. Great Valley Center Conference, Sacramento, May 10, 2001.

because it can be changed more easily. Paying for this type of buffer is more complicated since there isn't an immediate development going in where the developer pays and passes the cost on to the homeowners who will receive the benefit of the buffer. However, the argument can be made that the entire community should pay, because all benefit indirectly from the UGB and buffer since the city is saving taxpayer dollars by not extending utilities, saving on infrastructure costs and making more effective use of the city land and services. Who benefits and the extent of that benefit is a discussion that locals will have to decide for themselves.

BUFFER DESIGN

In constructing a buffer, the design process should consider and avoid any unintended consequences from a buffer. It is important to flesh out as many possible impacts, and revise the plan early in the process rather than having problems emerge later, jeopardizing the project or causing additional expenses to resolve the problem.

The buffer type should be chosen to most closely match the function it is to perform, based on the existing wind and weather conditions, type of crops grown, and anticipated problems to be mitigated by the buffer. The aesthetic or other characteristics favored by the stakeholders need to be taken into account. Strategic use of existing topographic or infrastructure features should be considered wherever possible. A major advantage to using existing features is the cost savings to urban development. If some of the savings are put back into the project, the existing infrastructure or topographic feature can be enhanced to augment its buffering capabilities. For example, landscaping can be added to beautify the area as well as strengthen the buffering properties. Buffer design will fall into one of the five following categories.

1) Installed barriers

Used individually or in combinations, these features are built to block the movement of airborne particles. Depending on the density, they can also effectively block out noise, views, and access. Fences that are tight fitting to the ground will control the movement of certain rodents, but are ineffective against burrowers such as pocket gophers, or climbers such as ground squirrels and rats.

Type	Does the design consider:
• substantial vegetation barrier: canopy trees, hedgerows • landscaped berm: berm in combination with strategic plantings • barrier wall*, or fence: naked or in combination with landscaping	• possibility of increased volume or velocity of rain and storm water? • attraction of pests harmful to crops[14]? • unfavorable growing conditions, such as excessive shade, heat reflection, or wind diverted onto fields? • attraction for nuisance, such as graffiti, dirt bikes? • costs of on-going maintenance, monitoring? • decreases in land value?

*Although high concrete barrier walls are fairly effective, they are not usually aesthetically pleasing unless specific design efforts are applied to overcome their drawbacks, according to the Woodland Rural/Urban Edge survey. [15] From the survey, negative comments about walls were that they're ugly, trashy, poorly designed, poorly landscaped, confining and too 'big city-ish'.

Picture: "Brick Divider"
Caption: The ubiquitous brick wall goes up first in preparation for a new subdivision to be built within its borders.

Walls also block the views that people enjoy, become targets for graffiti, and create a feeling of claustrophobia.

The primary objection that respondents in the Woodland Edges survey had about any type of buffer was if the buffer was unsightly or poorly maintained. Roads were favored as a natural barrier. Warehouses or industrial buildings were not favored if they are "junky, unattractive, or poorly landscaped." Commercial and retail development was viewed

[14] Cooperative Extension Farm Advisors can help determine the proper landscaping plants to use.
[15] Owens, P.E. Landscape at risk: The rural-urban edge. Unpublished manuscript. University of California, Davis. Distributed by the Center for Design, Research, Department of Environmental Design, 1997.

positively, but again the exception being where the buildings are seen as unattractive, or run down. Open fields, trees, shrubs and landscaping received overwhelming positive responses. (see footnote #15)

One might conclude then, that the two factors indicative of a buffer's acceptance, from the urban perspective, is its aesthetic character and superior maintenance including attractive landscaping. (see appendix for excerpt of Landscape at Risk.)

2) Existing topographic or infrastructure features

The advantages to using features that already exist adjacent to agriculture are minimum disruption to farming, and cost savings. In planning the construction and placement of certain features listed below, the possibility for serving a dual purpose as a buffer should be considered. Consideration of these features are used most effectively in the long-term, growth planning stages such as General Plans and zoning, well before the subdivision development stage.

- hills, valleys, cliffs, natural berms or rises
- water barrier, water course: canal, lake, ponds, streams or river, flood plain
- roadway and right-of-way, power line right-of-way
- airport runway or clear area
- parking lot
- designated greenbelt area in either natural state or "enhanced"
- cemetery

Picture: "New Subdivision"
Caption: The buffer between this new subdivision and the orchards consists of a canal, just visible to the left of the utility poles, the right-of-way, and a road. It is still too early to know how effective the combination will be.

3) Building requirements or restrictions

The designation of special use types and building features or placement in zoning regulations and as conditions for permits appears in several forms.

Type	Does The Design Consider:
• setback: prescribed or negotiated distance barrier *(see section on Setback Distances) • use of industrial, commercial zoning • large lot zoning, usually in combination with construction setbacks** • construction codes, in combination with setback, that dictate house orientation, double pane windows, and other types of mitigating features[16]	• if the effective loss of the use of land is reasonable? • what factors might still be of concern? • that large lot zones, especially in the path of growth, encourage sprawl and ag/urban friction**? • whether the chosen design will be effective? • whether the plan contains hidden costs, monetary or otherwise?

* Some policy documents use the terms "setback" and "buffer" interchangeably. A setback can be one type of buffer, but not all setbacks are buffers. Many policies include minimum yard sizes for single dwellings in agricultural or rural residential zones. While yard setbacks provide some separation, it is doubtful what mitigating effects a 20' – 50' space can have. This study addresses primarily the use of buffers at development or urban growth edges.

** Large lot zoning is increasingly proving not to be a solution. **"County and township planning officials should recognize that allowing low-density residential development in rural areas displaces farming as surely as other development, and is the worst kind of sprawl."**[17] The Riverside County Farm Bureau Executive manager characterizes the use of in-between zoning (2.5-acre to 5-acre parcels) for buffers as non-effective because parcels that size are "**too small to farm, too big to mow, and usually wind up being rural slums.**" His organization supports transitions from ten acres or larger directly to half-acre or smaller. Yolo County is getting away from "ranchettes." San

[16] City of Napa Zoning Ordinance 17.60.090.A.1, 2

[17] Paulson, J. Protecting farmland on the edge: What policies and programs work? Center for Agriculture in the Environment. p 7 <http://www.farmlandinfo.org/cae/wp/wp97-14.html>.

Benito County is eliminating Planned Unit Development on agriculture zoned land. Kings County has policies to facilitate reversion to acreage of "paper subdivisions" in the county, and to encourage abandonment of little used public roads in sparsely settled rural areas. Other counties are avoiding parcelization, are sunsetting old subdivision maps, or they encourage consolidation of undersized [agricultural] parcels through the use of land use districts (San Bernadino General Plan).

Picture: "Big White House II"
Caption: By no means the worst of examples, this weedy and trash-strewn yard is typical of many rural large lots. Agricultural uses seen at neighboring houses vary from livestock, vegetables, vineyards, to a plant breeding business. Some yards were less tended than this one, and others were tightly manicured.

Other planners and farm advisors concur that the majority of complaints about agriculture come from "ranchettes" and isolated rural developments, not from city-edge subdivisions.

> "What passes for agricultural zoning is really large-lot residential zoning and bears no relation to the minimum amount of land needed to support a commercial farming operation."
> Tom Daniels – Agricultural zoning: Managing growth, protecting farms.
> [18]

4) Recreational or "value-added" areas

Particularly where land values are high, the inclination is to explore options to make use of the buffer area and to extend its functionality beyond just being dead space. There are concerns, but knowing them ahead of time can help lead to successful implementation if this is the buffer avenue chosen.

TYPE	CONSIDERATIONS
• recreational trail: jogging, hiking or equestrian use • golf course, park, ball field • habitat preserve or wildlife corridor • income producing trees, such as timber or orange groves[19]	Buffers designed to provide additional function features such as recreation or habitat may be less likely to satisfy the farmers' reasons for needing a buffer since instead of limiting access to his farm, those buffers are actually drawing people and animals closer. Also, the question arises as to how much human or animal presence in the buffer area is safe if pesticide spray and drift is one of the reasons that a buffer is recommended.

5) Modified usage

By modifying usage, a type of "virtual buffer" can be created. However, restrictions on how or what a farmer grows is not a realistic solution, unless the farmer voluntarily changes his farming practice or the commodity he grows, presumably because he has determined he can do so profitably. Otherwise, some kind of incentive or compensation to voluntarily make changes could be offered, providing there were a funding source. Such an arrangement cannot be imposed. If a farmer can profitably convert to organic farming, he might do so voluntarily. Organic farming may be perceived as being more benign than conventional farming, but organic farming creates many of the same "by-products" as conventional farming, such as dust and smell. Although the inputs used are "natural", some of them are

[18] Daniels, T. Agricultural zoning : Managing growth, protecting farms. Zoning Reports. American Planning Association. August 1993.

[19] City of Redlands, Riverside County. The groves, acquired by the City (purchased with bond monies approved by voters for that purpose), are farmed on a contract basis. Proceeds from the groves cover the cost of operating them. In concept, profits are invested in an acquisition fund to buy more land.

very toxic. Not using chemically derived pesticides is the one main difference. Probably of more significance in mollifying the resident is his own *perception* that organic farming is a better neighbor than conventional farming. The mere perception that organic farming is less invasive may cut down on complaints from residents, although it doesn't address the need for buffering from the farmer perspective.

> "Organic ag has been cited as an example of a preferred urban neighbor, but under examination that becomes less practical."
> Farmer, Ventura County

> "Organic farming practices will not typically influence mitigation measures."
> County of San Luis Obispo, Mitigating Agricultural Residential Conflict. 1/1995

Certain types of crops that require minimal maintenance activity, such as hay or avocado and citrus trees, *if viable*, can work as a buffering area between residences and more intensively farmed land.

> "Non-farm neighbors love living adjacent to avocado groves and, in fact, realtors will advertise the fact. The situation with citrus is similar." San Diego County Farm Bureau Representative
>
> "Probably range land is the most desirable from an urban neighbor's perspective."
> Farmer

However, as soon as the farmer decides for economic reasons to switch to a more intensively farmed crop or build processing or greenhouse facilities, the buffer function of the previous crop may be lost. Also, the residents may have come to appreciate the previous crops as open space, and feel that any alterations have deprived them of their viewshed. Although that is the urban perspective, it is crucial to keep in mind that the farm is really an outdoor industry and will only provide open space as long as its operation remains profitable.

Picture: "House", "House II", "House w/Factory"
Caption: A French-style country estate and its mobile-home neighbor have a poultry feed mill as their backyard neighbor. Although the mill is a permissible use in this ag zone, the rural residents avidly protested its construction.

II. COSTS

Finding ways to pay for buffers and deciding who will bear the costs are two of the more challenging issues to resolve. Costs are a driving factor and can influence decisions that impact the effectiveness and suitability of the buffer. Therefore, the goal should be to install the best buffer, and then figure out the means, not vice versa. Also, funding sources, particularly those that depend on public vote, should be secured in advance. A funding source needs to be identified for the expenses that come up at the beginning of the project and for those that will continue for an extended period, or through the life of the buffer.

Type #1 IMMEDIATE – One Time	Type #2 DELAYED -On-Going
Land Design Installation	Upkeep, maintenance Monitoring

Who Pays

The first consideration is who will pay for the land that is going to serve as the buffer. In virtually all policies reviewed, the responsibility and cost of installing the buffer is placed on the developer who is proposing to locate adjacent to existing agriculture. The separator buffer is not required of the agricultural side, but typically the farmer already has to comply with pesticide application buffers (perimeter areas, as imposed by law, that are off-limits for spraying, depending on the type of product applied and method of application used).

> "Buffer zones for the use of pesticides are contained in pesticide labels, Federal pesticide regulations, California pesticide regulations, and County permit conditions. Buffer zones are generally placed on the farm property, often limiting the use or reducing the amount of farmable land. While these buffer zones work very well in protecting sensitive receptors, they do have a negative economic impact on the farmer." A County Agricultural Commissioner

The farmer must adhere to strict rules based on the specific farm commodity, type of pesticide and method of application (spraying from the ground, spraying from the air, etc.). To impose new restrictions on top of that because a homeowner settles next door makes no more sense than making an existing tire mounting business install sound insulation at the insistence of a new day spa that has located next door and wants tranquility.

When building a new subdivision, the costs of installing a buffer is no different than any other costs the developer pays for rendering the land acceptable for housing. That could mean remedying poor soil stability, drainage, a grading situation, or providing a sound wall to kill freeway noise. A buffer is another aspect of the infrastructure needed to make the site good for houses. These infrastructure costs are generally incorporated in the cost of the home. The complete costs of the buffer should be included in the financial analysis prior to construction.

Picture: "Broccoli & Shopping Center"
Caption: This field has a commercial/retail area as its neighbor. The road and parking lot serve a buffering purpose. The use of infrastructure as a buffer has circumvented costs for a dedicated buffer.

Types of funding for land acquisition, installation and subsequent maintenance are categorized below.

1) Public

<u>"Prepaid"</u>

Existing infrastructure has already been paid for. This is why roads, rights-of-way and canals are popular as buffers, sometimes the only buffer at a site.

<u>Specific tax or fee</u> (sales tax, bond issue, property tax, or assessment district)

Buffers may be included in an open space district or park district, and the jurisdiction passes a sales tax or bond issue to acquire and/or maintain them. Creating an assessment district is another avenue to pay for a buffer. The implication

here is that monies are generated from a larger pool than just the homeowners at the specific development in question. A case is made for benefit to the community-at-large, or as part of a larger community improvement program.

Special purpose public monies
Some buffer projects may be eligible for public grants, especially those where an interface buffer can also qualify as a conservation buffer. Conservation buffers produce one or multiple environmental benefits, such as the protection or improvement of soil, air or water quality, improvement of fish or wildlife habitat, and demonstrate a commitment to land stewardship.[20] Accomplishing such a dual use would be unique. The local USDA Natural Resources Conservation Service (NRCS) is a suggested source. Their continuous Conservation Reserve Program (CRP) is one example. NRCS can also assist in referring to other Federal, State, or local government programs.[21] The Land and Water Conservation Fund, or California Farmland Conservancy Program are other possibilities.

General fund
Monies can be used from a city or county general fund, depending on the health of the fund and the political will. Although not a realistic option for every buffer, general fund monies might fund a pilot or demonstration project as a catalyst to increasing the use of buffers.

Special legislation
For a particularly unique setting, this may be an option. A Massachusetts planner described state legislation that allows a town to raise taxes by 5% (of the tax, not of the valuation) to fund land preservation. The concept raises interesting possible variations for California, although there is no such legislation currently.

2) Private grants, private donations
A private non-profit community foundation or individual may have a particular interest in a project, or a project might fall under the foundation's funding priorities, such as preservation of open space or urban forest projects. One example is the Aromas Community Center Foundation. The Foundation purchased a 17½ acre parcel from a developer to turn into community baseball and soccer fields. The parcel provides buffering between the one-half to 1 acre parcel home sites and the strawberry fields on the other side.

3) Homeowner, through the cost of the house or special tax/fee
The cost of the buffer, including the land, is incorporated in the cost of the home. Through the purchase price the homeowner assumes the cost of the land acquisition and installation of any required landscaping. The maintenance can be paid through a homeowner association fee, or to the city through a specific district tax that is added to their property taxes. Additionally, they will pay normal property tax on the parcel. In the case of a required setback on the homeowner's property, he pays to acquire land and will annually pay property tax for land that is essentially limited or restricted in use.

If the city installs the buffer, a development impact fee is a way for the city to recoup the cost of extending or building infrastructure to support new development. The builder pays this fee to acquire the building permit and will roll that into the price of the house. Even though the developers pass the cost along to the homebuyer, each extra fee that they include in the price of the house shrinks their competitive advantage in the housing market.

In another method, the developer pays for the cost of developing a buffer as part of the common area landscaping in a subdivision he is developing. Homeowners pay for the open space acquisition (cost included in their home purchase price) and pay a periodic homeowner association fee for the cost of benefits they receive, including maintenance of the buffer. Planned unit developments typically assess for certain improvements, such as interior streets, public area landscaping (which could include an open, landscaped buffer), and lighting. If the buffer is created to offer recreational uses, as opposed to a simple viewshed, the residents may be willing to pay more. However, the drawbacks of a buffer space that is actively utilized, as noted in section I. 2. 4, need to be evaluated.

It is more difficult to fund a "future buffer", that is, an area zoned to delineate the urban growth barrier or boundary (UGB). If there is not a developer yet, a mechanism has to be devised to fund the buffer now and defer recouping of

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[20] Buffers are common-sense conservation. *Buffer Notes*. Natural Resource Conservation Service, United States Department of Agriculture. < http://www.nhq.nrcs.usda.gov/CCS/BufrsPub.html> November 30, 2000.
[21] Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentives Program (WHIP), Wetlands Reserve Program (WRP), Stewardship Incentive Program (SIP). . <http://www.nhq.nrcs.usda.gov/CCS/BufrsPub.html> November 30, 2000.

the cost at a future date from the developer (and residents) who eventually will reside there and be the ultimate beneficiaries of the buffer.

However, the argument can be made that such a buffer benefits not just the adjacent residents, but all the city's residents that enjoy the benefits of a compact, well-planned efficient city. If so convinced, the larger voting area could vote to assess themselves for UGB buffers. If, in thirty years, the buffer becomes a lineal park with development all around it, it nevertheless continues to be a public asset.

4) Land Owner

There may be unique instances where the landowner, either the farmer or the developer, finds advantage in donating an easement for a portion of his property for use as a buffer. In other words, the farmer voluntarily stops farming on that portion of his land that is to serve as the buffer, or the developer does not build on a portion of land, but also does not pass on the cost of that land to the homeowner.

5) Mixed

The developer pays for the land and development of the buffer (passing the cost on to homebuyers), and then deeds the buffer back to city, or relinquishes easement to the city. Then the city is responsible for maintenance, and recoups their costs through a property tax assessment on the subdivision homeowners, or from the taxpayers at large as part of the city's overall landscaping fee.

In instances where fee-based recreational use of the buffer space is acceptable, several options present themselves.

- Developer sells land to private enterprise to build and run as a business
- Developer deeds to jurisdiction to build and operate, or to build and lease
- City votes for a tax or bond to purchase and build; user fees amortize initial costs and pay for on-going maintenance.

<u>On-Going Costs</u>

Once the buffer is in place, it needs to be 1) supported, or 2) self-supporting. Depending on the type of buffer, financial support might mean periodic painting, litter removal, bank restoration, or plant care and replacement. A self-supporting buffer is one that requires no maintenance, or where the buffer is part of existing infrastructure and the maintenance is borne by an outside party, such as Caltrans or an irrigation district.

On-going costs can be reduced if the buffer area is planted with low-maintenance vegetation such as native grasses, trees and shrubbery. The remaining concern is that the open space could become blighted with weeds and litter.

A cost that is often overlooked is the cost of routine monitoring to follow up on maintenance, effectiveness of mitigation, design requirements and use restrictions that are stipulated in the subdivision or site plans. In Queen Anne's County, Maryland, the county requires the developer to install very specific plantings and to post a bond for 1½ times the cost of planting that the county holds (up to two years) until they are assured at least 75% of the plants are thriving. This ensures that the barrier does indeed get established, and that it presents a uniform front, whether the plantings are on individual parcels or part of a greenbelt.

> ...operating and maintenance costs necessary to support public improvements and facilities from which plan area development benefits shall be borne fully by the benefited development(s).
>
> Borkey Area Specific Plan, Paso Robles

For effective monitoring, there needs to be scheduled oversight and a means to pay for it. The monitoring would most likely be the responsibility of the entity or jurisdiction that imposed the buffering requirements. The use of volunteers, particularly from among the initial stakeholders, should not be overlooked. The California Coordinated Resource Management and Planning (CRMP) process uses stakeholder volunteers to monitor CRMP projects. These are groups comprised of stakeholders in natural resource conservation issues. [22] Other models besides CRMP are plentiful. The use of volunteers as monitors might be adaptable to some buffer situations.

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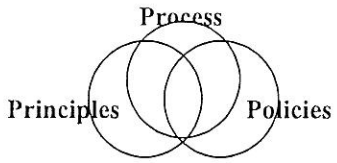
[22] For more information, see <http://ceres.ca.gov/cacrmp/hb-intro.html>

III. ELEMENTS OF SUCCESS

Three major components for successful buffer implementation emerged from the research for this project.

- *Process* – the ways in which things are done and the ways in which people are involved. Process includes the affective and subjective skills, attitudes and interaction that lead to problem solving and collaboration. The "*How*", the "*Who*" and the "*When*"
- *Principles* – the values and community culture or identity that guide decision-making. Community vision and uniqueness, and the degree to which those principles are felt and upheld by policy makers and the community or region. The "*Why*"
- *Policies* – the quality, clarity, consistency, completeness and power of the actual policies related to land use, growth, development, and agricultural preservation. The "*What*" and the "*Where*"



PROCESS

The first component to successful buffer implementation is frequent and solid communication, or mutual engagement, between all parties, from the policy development phase to subdivision approval to buffer implementation. To reiterate a point made earlier, process is a component of successful buffer implementation, but not a freestanding component. There has to be buy-in at each decision making juncture, and constant attention to communication back and forth to keep concerned parties in the loop as a factor of success, not flattery, and as a means to improving procedures, policies and design. The communication process is open and frank. Consistency in inclusion as well as in implementation lends credibility, which in turn creates a healthy process.

This boils down to being a people issue – getting people to understand and appreciate other points of view and resolving or averting conflict between two or more diverse user groups. It means having the right people at the table at the right time. One model, the California Coordinated Resource Management and Planning "(CRMP) is a resource planning, problem-solving and management process that allows for direct participation of everyone concerned with natural resource management in a given planning area. The concept underlying CRMP is that coordinating resource management strategies results in improved resource management and minimizes conflicts among land users, landowners, governmental agencies and interest groups."[23] There are many other resources to assist in facilitation, for example public agencies such as Cooperative Extension or community-based programs, as well as private consultants.

Beyond the logistics of process, it is a larger awareness and sensitivity to the need for inclusive processes. It means that people see value in stakeholder identification and involvement and believe that open communication will result in the best outcome.

Community and stakeholder involvement

The principles that serve as the foundation for developing policies and implementing them are best identified collaboratively. If policy makers assess the will of the community and the strength of their commitment to preserving agriculture before any policies are written, later implementation of the policies will be easier. It is important for counties and cities to seek constituent ideas and concerns in general plan updates. [24] It is incumbent on the farming community to show up at planning and informational meetings to present their points of view and to hear others.

A collaborative process, though at times cumbersome and time consuming, will be better for the long-term success of the project. Planning departments need to work together to involve all stakeholders on projects that might be

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[23] For more information, see <http://cercs.ca.gov/cacrmp/hb-intro.html>. Although usually associated with natural resource management for areas of riparian or habitat concern, the model can be adapted.

[24] Delta County Colorado developed a plan to protect the area's botanical resources. The landscape architects involved in developing the document assert that "the process of creating the plan has been almost as valuable as the actual document produced." Rodriguez, A. A Guide for growth. Landscape Architect. August 1998 pp 32 – 37.

controversial, but also on those that seem like a sure thing. There can be hidden conflicts that rise up when least expected, and exclusion creates animosity that is difficult to reverse. Exclusion, whether intentional or not, can lead to any number of later problems, from indifference to figurative sabotage. Where developers are aware of the community culture and attitudes toward agriculture, projects fare better when those considerations are incorporated in their plans from the beginning, including provisions for effective buffers. Land use initiatives, ballot measures, and suits brought about by special interest groups are sometimes the end result of insufficient dialogue earlier.

Ongoing education and outreach

Educational efforts need to be on-going on at least three fronts. First, the communities need to have frequent communication from governmental agencies about the land use goals and values that guide jurisdictional policies and decision-making. Outreach efforts will reinforce commitment, and will also garner input that serves as an early indicator that sentiment is changing direction, which can then be promptly addressed. Dialogue is needed between government, residents, and farmers.

On the second front, planners mentioned their needing to undergo on-going education in policy and land use issues, but especially in agriculture. In the course of their jobs they must make determinations and interpretations about agriculture, so a better understanding of agricultural processes and issues is critical to their ability to make good decisions.

The third facet of education and outreach should be between the agricultural community and urban residents.

> "The best situations are characterized by empathetic neighbors who actively seek to understand their neighbors' problems."
>
> Northern California Agricultural Commissioner

The ideal is that through outreach and education, common values and appreciation for other perspectives are instilled. The goal is to move beyond and above an attitude of mutual tolerance to one of genuine appreciation. Agricultural literacy programs exist through Farm Bureau, Cooperative Extension, Natural Resource Conservation Service, California Women for Agriculture, and others. These educational programs lead urbanites to a greater appreciation for the complexities of farming and a sense of connection to their food. They help bring the city dweller's outdated perception of farming up to today's reality of how complex it is. Likewise, there are farmers who actively listen to nearby residents and implement practices that make them better neighbors.[25] To increase understanding of agriculture, Southern California farmer A.G. Kawamura works with Farm Bureau tours, gives private tours, speaks to public groups and school children, organizes gleaning projects (re-harvesting a field to collect edible "seconds"), does public speaking, and works with hunger and nutrition projects. In Contra Costa County, some growers in sensitive areas voluntarily plant crops that require less pesticide application, or use lower toxicity pesticides, according to the local Agricultural Commissioner.

Pesticide education is one example where education can put people more at ease. Some pesticide "scent markers" (odors added to serve as an alerting mechanism) are more volatile than the pesticide itself, so when people smell pesticides, it can be the marker they're smelling. Smelling does not equate to exposure. Knowing the difference between perceived danger and real danger, as well as how to limit one's risk of real danger from pesticides gives a sense of control.

Not all farmer interactions with city dwellers are negative. In a study entitled "Conflicts and Solutions When Agricultural Land Meets Urban Development", Mary Handel[26] quotes several authors who contend that some farmers find it advantageous to farm at the urban edge. Direct sales are the most common opportunity for the farmer, and people enjoy buying products directly from the farm.[27] Although these niche markets are rarely the sole economic foundation for farmers, they are valuable tools for improving farm-urban relationships.

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[25] A.G. Kawamura, Orange County. "The Farm", Salinas-Monterey Highway

[26] Handel, M. E. Conflicts and Solutions when Agricultural Land Meets Urban Development. Community Development Master of Science Thesis, University of California. 1994 p 88.

[27] Bryant, C.R., Russwurm, L.H., McLellan, A.G. The city's countryside. New York: Longman, 1982 p 93. Lockeretz, W. (Ed.). Sustaining agriculture near cities. Ankeny, Iowa: Soil and Water Conservation Society, 1987. Blobaum, R. Farming on the Urban Fringe: The economic potential of the Rural-Urban Connection" in Lockeretz, Sustaining Agriculture Near Cities, op cit., p 3.

Fact or science driven
General buffer guidelines and implementation plans need to incorporate fact based, or science-based solutions. Arbitrary or unrealistic requirements, or those pushed by a vocal philosophical or political minority are more likely to suffer protests and appeals. The guidelines need to allow for flexibility without opening the door to exceptions that dilute them. Impartial fact and best practices rather than emotion or ideology should drive decision-making.

Cross-jurisdictional cooperation and integrated regional planning
A clear result of the research is that counties and cities must have clear and effective processes for communicating and working with each other on agricultural protection, growth and buffer issues. The decentralization of land-use planning makes two-way communication all the more important. Comprehensive buffer guidelines alone do not prevent counties from suing cities over development. Sutter County sued Yuba City over a subdivision's buffer distances that did not follow County guidelines. The suit was settled out of court with compromise distances. Several improvements to City-County planning communication were implemented as a result of the suit.[28] This suit was not unique, as this study came across other instances. Another county reported that they meet annually with the cities over previously approved projects to review the implementation and adjust procedures for continual improvement. This 360-degree communication, formal and informal, helps cement working relationships and leads to better policy implementation.

All the jurisdictional departments that hold advisory roles in the planning process should be included in the feedback loop. Where a review or advisory body, such as the Agricultural Commissioner, makes a recommendation, the final outcome should be communicated back to them. Knowing if any changes were made to their original recommendation is useful in developing recommendations on subsequent projects.

The Placer Legacy Open Space and Agricultural Conservation Program is an extremely comprehensive plan that exemplifies extensive community input, goals and guiding principles, and inclusion of outreach, identification of stakeholder and advisory groups, and a commitment to scientific review.[29] The Board of Supervisors approved the plan in June, 2000 and the expectation is that one of the important outcomes of this plan will be increased cooperation between the cities and counties regarding development and open space preservation. Where in the past, there hasn't been any requirement for the cities to apply buffer standards set by the county, the Legacy plan provides the initiative for inter-jurisdictional planning to "soften the edges", and not merely enclose everything with six-foot sound walls.

One out-of-state planner referred to "knock-down, drag-out fights" between the county and cities to develop a joint plan, but that the effort was worth it. They were committed to coming out with a plan, including matching zoning codes, and the result has been that now the only occasional differences are over interpretation.

> The 'Guidelines for Orderly Development' were developed jointly and adopted by the County of Ventura and the cities in 1969, with a few amendments since then and has been endorsed by LAFCO. "The Guidelines have prevented competition for development and tax monies between the cities and the County. They have prevented property owners and development interests from playing off the County and cities in terms of development standards."
>
> Executive Officer, Ventura County LAFCO

Approval and appeal processes
Counties that incorporate review from either the Agricultural Commissioner, or an agriculture policy advisory committee (San Mateo County, Tuolumne County, Santa Cruz County, Ventura County as examples) with additional technical input from Cooperative Extension Farm Advisors as necessary, report satisfaction with the process. Not only is the agricultural expertise more likely to yield an effective buffer, the recommendation generally incurs less resistance, presumably because there is credibility behind the recommendation.

In the case of the Agricultural Commissioner making the determination, their recommendations are advisory, although usually accepted.

San Luis Obispo County – The Agricultural Commissioner reviews approximately 100 projects per year. They have received a 95% acceptance rate on their buffer recommendations. This experience is historical, but may differ in the future. The Agricultural Commissioner makes the determination of "significant land use conflict" on project referrals,

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[28] Refer to "Buffer Case Studies" section for an amplified description.
[29] <http://www.placer.ca.gov/planning/legacy/legacy.htm> April 26, 2001.

and recommends mitigation measures. According to the San Luis Obispo planning department, there is rarely any protest from farmers on determinations because they have confidence in the Agricultural Commissioner's commitment to protecting agriculture.

Sonoma County – The Agricultural Commissioner receives referrals from the County Permit and Resource Management Department. The Agricultural Commissioner makes setback recommendations that are usually approved, occasionally modified. The Agricultural Commissioner recommends buffers as condition of approval on new projects that affect agriculture.

In general, processes that promote consistency and impartiality lead to decisions based on merit rather than influence, pressure or politics. Appeals processes, as with implementation, should be open, fair, and apolitical.[30]

Framing all the issues

Where controversy arises, it is important to recognize that the stated objections are not always the heart of the protests.[31] For example, objections might be voiced about the implementation of a buffer, but the unstated motive is anti-growth sentiment. Cost could be raised as an objection, but perhaps the real issue is power, or lack of trust. Unless the underlying problems are addressed, superficial fixes and discussions around the stated topic will not be effective. A facilitated process among stakeholders is one way to dig deeper into identifying both the real issues and the solutions. Many tools exist to frame issues and reach viable solutions.

The "Ventura County Ag Futures Alliance" is a coalition of diverse interests that has been "organized to address complex and critical issues facing the long term viability of agriculture in a cooperative, innovative and, hopefully, much more effective way than in the past. Its members are community leaders from various sectors – agriculture, environment, labor, health and wellness, media, government, education and community service." This group has funds to hire a skilled facilitator to assist their dialogue in airing their diverse interests and exploring solutions. The diversity of the group's funding sources reflects the buy-in of their members and the community.[32]

Ventura County may be unique. In most cases, a separate, funded facilitation process isn't utilized. The main thing for those seeking community and stakeholder involvement is to recognize that deeper issues are holding up progress and that those issues will have to be drawn out before being able to move ahead.

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[30] For appeals, Queen Anne's County, Maryland uses a quasi-judicial review panel appointed by the County Commissioners (Board of Supervisors) as the final appeal step.

[31] Abdalla, C. W., Kelsey, T. W. Breaking the impasse: Helping communities cope with change at the rural-urban interface. Journal of Soil and Water Conservation. Vol. 51, Number 6, November-December 1996.

[32] Pidduck, R., farmer in Ventura County (personal communication) May 2, 2001.

PRINCIPLES

Good policies alone do not insure successful buffer implementation. One research project[33] reviewed the buffer policies of sixteen California counties. Eight of the counties did not have buffer policies, but six of those eight used buffers anyway, even though not mandated by policy. All six counties had earned a reputation for being more sensitive to farmland protection issues than other counties in their regions.
Conversely, having buffer policies does not insure the viability of agriculture. This present study found counties where agriculture had virtually disappeared, even though the county at one time had agricultural buffer policies.[34]

Values Practiced
The conclusion is that policies alone do not, nor cannot achieve a goal. Underlying principles, or values and beliefs must be present to successfully implement farmland protection, with buffers being one component of that larger picture. This study revealed some of the principles held by communities:

> That the community buys into the value of agriculture and the importance of protecting it. The values of the community have been solicited, identified and publicized.
> That once the policies are put in place, they will be supported.
> That jurisdictions can and will work together.
> That the long-term benefits should override short-term expediency or gain.
> That both sides can be accommodated.
> That managed growth is possible.
> That there is no "one-size fits all".
> That differences will occur, but can be and will be resolved. There is a commitment to staying at the table until a resolution is reached.
> Integrity and consistency build trust and open communication.

These key attributes identified as necessary components for success are sound guiding principles that serve as the foundation for decision-making. There is a collective expression of value and appreciation for open space, including farmland. Inclusive processes are used in helping the community identify its common values and principles, which in turn, are incorporated into and reflected by the general plan and appropriate ordinances and policies.

Signs of Support
In those areas where preservation of farming appears to be a principle/value, it is seen as a heritage and lifestyle issue as well as an economic issue. The emotion tied to it reflects its status as a value, something greater than just another feature or business in the area. Buffers are seen as one part of a larger effort to preserve agricultural land. Other preservation measures include: agricultural zoning, Williamson Act contracts, "Super Williamson Act contracts (farm security zones), right-to-farm ordinances, subdivision design/cluster development, conservation easements on farmland, restricting large lot and rural residential development, elimination of sprawl-inducing policies, visioning, dialogue and policy agreement.[35] The multiple ways of supporting agricultural preservation lend credence and power to the community's principles.

The values are often elicited through a community-wide effort. The results are documented and widely publicized. The City of Redlands published "Redlands 2000", which promoted the concept of an emerald necklace [of citrus groves] around the perimeter of the city. The report is credited with raising the consciousness of the community about its heritage of citrus groves sufficiently to pass a bond measure for orange grove protection. The Placer County "Placer Legacy Open Space and Agricultural Conservation Program" is the result of extensive community input and it documents the area's concern for agricultural preservation. The words "heritage" and "legacy" connote a deep value, and illustrate the point being made here about the importance of the emotional commitment and foundation that drives and supports the policies.

This study identified counties with similar policies, but they differed from one another in the implementation. One reason for differences in how policies are carried out appears to be the strength of commitment to the values, or

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[33] Handel, M. E. Conflicts and Solutions when Agricultural Land Meets Urban Development. Department of Community Development. Master of Science Thesis, University of California, Davis. 1994 p 40.
[34] California Planners' 1998 Book of Lists , "Jurisdictions That Require Agricultural Buffer Zones. <http://ceres.ca.gov/planning/bol/1998/buffer.html> November 20, 2000.
[35] Sokolow, A. UC Cooperative Extension, UC Davis seminar, January, 2001

principles behind the policies, not only on a community level, but also to the degree they are supported by policy makers.

There is no magic combination of protective regulations or perfect wording. The magic is in getting the community to agree on what it values. Interpretation of policies is how disputes occur. Having a common vision can help focus and guide interpretation. The stronger the value on preserving agricultural land, the less susceptible the planners and policy makers are to making exceptions.

Trust

There must be trust and a commitment to jurisdictional cooperation. Decisions are made for the common good, and with the long-term view in mind.

Open communication includes a sincere desire to understand and accommodate differing points of view.

"**The attitude of local elected officials toward land use planning and development is the primary factor in how well farmland protection policies and programs are implemented.**"[36] Their buy-in to the underlying principles and long-range growth plans helps stay the course against conflicting pressures.

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[36] Paulson, J. Protecting farmland on the edge: What policies and programs work? Center for Agriculture in the Environment. p 1 <http://www.farmlandinfo.org/cae/wp/wp97-14.html>

THE POLICIES AND REGULATIONS

The third key to success that emerged from this study was the strength of the policies and regulations. The policies are driven by the principles of protecting agriculture and taking the long-term view for what is best for the area. The policies lead to well-designed buffers as a component of a comprehensive land-use plan.

The two aspects to address in policy development are 1) the content – the quality, foresight, specificity, enforceability, and 2) the degree to which all land use planning and implementation is integrated. The integration is important between documents (for example, zoning and subdivision ordinances closely follow the general plan), but also between neighboring jurisdictions. The content might include such things as incentives. The City of Oceanside recently developed a process whereby growers who wish to construct greenhouses or shade houses can get a waiver from the public hearing process on their permits if they build their structures at least 500' away from any property line. Fast-track incentives for development could promote the use of top quality buffers. The developer's costs to install a buffer could well be saved in time.

Formal inclusion of buffers in the land use planning process is a relatively new phenomenon. Study respondents were asked how long their buffer policies had been in effect. The average year of implementation was 1989, with a mean of 1991. Since the formalized use of buffers is fairly new, rather than finding one perfect set of policies, what was found were many good components and recommendations from different entities for strengthening buffer implementation.

Policy - Ten "Best Practices"

1. On the Books: Policies for buffers need to exist. This might seem as though stating the obvious, but without them the jurisdiction has nothing to stand on. A common commitment to protect agriculture is important, but without policies to codify the goals, eventually the commitment alone will not be enough. More than one planner expressed that a minimum setback distance is a "must", for without it, nothing can be imposed. Another planner described CEQA as a good "back up" for agricultural land mitigation, but not the best tool. It does require that impacts be identified, but it does not require that a project be denied, even without mitigation. Also, there is disparity in how agencies interpret "significant impact". If a project is deemed to meet all the requirements, the city has no ability to require buffers unless specified in the zoning requirements.

> Picture: "Pesticide Field", "Houses and Field"
> Caption: This vegetable farm is active year-round. The apartment complex was just built adjacent to it, with virtually no buffer. The properly posted signs indicate the field has been recently sprayed. It will be a long time before the young trees planted behind the complex provide any buffering. Notice the child's car, indicating children live and play nearby.

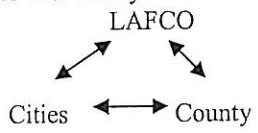
> "I am unable to locate any reference to a buffer, agricultural or otherwise. It would have been a good thought back in 1996 [revision of the General Plan], but I'm afraid it did not make it into the Plan. Planner, City of Calimesa, Riverside County

2. Clarity: Policies are very clear and direct. Policies need to be streamlined and clarified so as to eliminate, or at least reduce, differences of interpretation. Planners and developers have different missions, so it is natural that they would approach a given policy with different expectations. However, any progress made in clarifying policies will save time, and maybe even lawsuits. At some decision points implementation is subjective. It is often not as easy as it looks on paper, regardless of how solid the policies are. Key decision/interpretation points along the policy implementation process should be identified and bolstered to increase consistency and clarity, and to minimize the potential for challenge. It has also been suggested that in addition to policy alignment, the language and terminology should also be aligned and "litigation-proofed" to further avoid confusion and room for legal challenges.

3. Integration: Buffer policies are integrated into all phases of land use policy development and planning. The General Plan clearly states the values and goals that the City or County wishes to preserve and promote, including the use of buffers. Every relevant regulation and policy integrates language to consistently support and implement

the General Plan intent. The area plans (including local coastal plans for areas in the coastal zone) and the implementing regulations contain sections that mesh with one another. Regulations are included not only in the agricultural land use element, but also in the residential goals and development standards, land use maps, zoning ordinances, subdivision ordinances and specific site plans. A strong right-to-farm ordinance is another support mechanism, working in tandem with the land use policies. The right-to-farm ordinance is most effective early in the property purchase, rather than at the end, as when it is included in the escrow phase.

4. Alignment Among Jurisdictions: Land use policies of cities and the county are coordinated where possible, and are mutually supported. This is not an easy process, but the conviction that both sides can indeed reach agreement on key points is necessary. Policies that are clear and consistent are more likely to result in harmonious implementation. It is important for city and county to come together and agree upon those policies that need to be aligned. To be able to accomplish a good plan for where growth will go, LAFCO has to have a strong plan, but one that is mutually supportive between cities and county.



> "The success of the agricultural greenbelts has a great deal to do with the cities' 'buy-in' to the guidelines. The cooperation and coordination between the cities and LAFCO's enforcement of the adopted guidelines have been very successful in Ventura County."
>
> Land Use Consultant

5. Site Specific: Minimum buffer requirements exist, and are implemented on a case-by-case basis. There is no one-size-fits all. Provisions are made to consider all relevant site characteristics and topographic features. The size of a proposed development also needs to be considered. The practicality of a 500' buffer is very different for a 50 acre vs. a 500 acre development, as the buffer would consume a large percentage of the smaller development. Although case-by-case review is labor intensive, it may save money and time in the long run. An informal survey of University of California Cooperative Extension farm advisors was a part of this study. Their responses to a question about recommended setback distances indicated overwhelmingly that site-specific circumstances, especially wind, which is the cause of pesticide drift and dust, really call for customized handling. (See section on Setback Distances).

6. Technical Expertise: Input on policy development and site recommendations is obtained from the Agricultural Commissioner or an Agricultural Advisory Committee. The role is usually advisory. Participation might be by tradition or custom rather than by policy, but it is recommended that such technical advice, which may include input from farm advisors, be a considered as a required step in the approval process. Final conditions for approval are forwarded back to the body that developed the initial recommendations so they can know the final status.
7. Ag $\neq$ Open Space: Land use policies do not lump agriculture in with open space policies. Although open space is how many city people perceive agriculture, open space regulations aren't necessarily consistent with farming practices and the need for profitability. Agriculture has zoning needs distinct from open space.

8. Cumulative Effects Considered: Policies address development's cumulative impact on a regional scale rather than on a parcel by parcel basis. They consider the cumulative effect on agriculture and recognize that for agriculture to be sustainable and economically viable in the long term, large expanses of agricultural land (the critical mass, in the critical places) and its infrastructure need to remain intact. Under CEQA, an EIR is to determine if development is considered to result in "significant impact" on agriculture because 1) development converts prime agricultural land to non-agricultural use, or 2) project would result in conflict or nuisance with adjacent land uses. A buffer could result as a mitigation measure. However, CEQA fails to address the cumulative effect of individual projects or site findings, so there must be a means to consider cumulative effects. One way to control cumulative losses of agricultural land is for local governments to adopt thresholds for agricultural land conversion or to attach conditions. "Although CEQA states that a local agency cannot use CEQA to attach conditions to a subdivision approval, the Subdivision Map Act gives the local agency the power to do just that."[37]

9. "Edge" Stabilization: Progress is made to 1) straighten the urban edge, and 2) stabilize the edge. Limiting the number of edges along the city reduces the potential for conflict. Ideally the edge appears more as a solid line than

[37] California Farm Bureau Federation. Land Use Reference Guide. Section 1 – 88.

scattered boxes. Not only does a straighter edge reduce conflict, it makes for more efficient deployment of services. Where possible, regulatory "holes are plugged", meaning that previous statutes or zoning ordinances that allowed sprawl and inefficient land use to take place are identified and then eliminated or revised.[38] Through the General Plan or the designation of an urban growth limit the jurisdictions commit to a firm boundary.

10. Training: In-service training of planning staff needs to occur so staff, especially newer members, are fully aware of the policies and their implications. Some of the study respondents were very well informed, but others were confused about, or unaware of existing policies. Planners expressed the desire to know more about agriculture, and how such knowledge would increase their work abilities. Training in affective skill-building, facilitation and group dynamics is also useful.

> "Keys to Success"
> Broad support [of Urban Limit Boundary] between cites, county, special interests and communities
> Fortitude of cities and county to stand firm with boundary once established
> Avoid temptation to find loopholes, make exceptions
> Rely on purpose and policy to provide implementation direction
> Incorporate into every available policy and implementation plan document"
> Chico City Planning Department

Challenges

There are challenges to developing buffer policies, but the more challenges that can be foreseen and addressed early, the better chance the project has of succeeding.

One of the inherent characteristics of policy development and implementation is the need to balance differing interests. In buffer development, there are several sets of apparently opposing forces.

Preserving agricultural land and rural quality of life.....while.....promoting economic viability
Making short-term decisions .....while.....the decisions have long-term impacts
Developing long-term farm protection policies.....while.....maintaining a farmer's property rights
Preferences for non-regulatory implementation.....while.... needing assurance of compliance and accountability
Recognizing the need for clear policies.....while.....allowing for flexibility and adaptability
Embracing the implementation of buffers.....while.....accepting that no one likes to pay for them
Urban growth boundaries protect agriculture from development.....while.....diminishing the value of agricultural land closest to the UGB

> "Landowners tend to oppose them [urban limit boundaries] because of the loss of development value and government has no funding to acquire them [development rights]."
> A County Farm Bureau Representative.

There is a balance also in setting minimum distances for buffers. A jurisdiction must at least establish through policy that there will be buffers. If they set the minimum very low, the developer will push for the minimum, which in some instances may not be adequate. If, on the other hand, they set the minimum at a very high level, the policy will be appealed too frequently, especially for smaller subdivisions where the buffer would make a project uneconomical. The other consideration for large buffers is how the buffer land will be used, and how it will be maintained.

[38] The State currently exempts schools from LAFCO and CEQA. School districts look for cheap land since they usually have very limited funding. When schools are built on cheaper land found out in agricultural areas, they are often cited as the cause for the sprawl that creeps out to meet the school.

Another set of challenges is money and politics. The old adages "rules are there to be broken" and "money talks" certainly apply here. Politics is the game of influence, and where someone has the will to broker a deal or seek allowances or exemptions, they will do so. There is no implication here of impropriety. It is just the nature of decision making and the fact that the challenges listed above are frequently settled at a political level. Some of the comments from planners:

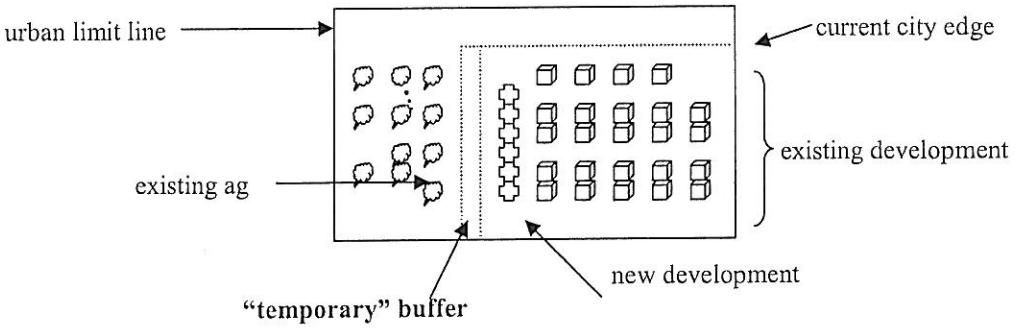
> ***"When it comes down to specific projects and locations, then politics gets involved."***
>
> ***"At some point, we feel the effects of compromise."***
>
> ***"Developers put pressure on cities to annex county land, perceiving that it's easier to rezone to non-ag uses under the city."***

The Case for Long-term Planning

> "We're just now building projects that were approved eleven years ago."
>
> County planner.

Most general plans cover 20 to 30 years. Long-term planning is difficult since no one can totally foresee the future. Not knowing the future makes comprehensive planning that much more important. This includes planning for buffers, especially in the context of buffers at what might be a temporary edge, meaning that the character of that edge will someday be different. For example, today's ag/urban edge might become urban/urban. Or today's ag/ag edge might one day become ag/urban.

Within the city growth limits, where new development is built next to active farmland, the agricultural use is sometimes referred to as "transitional". Since the farm is inside the urban line, it is assumed that one day the land will be developed, unless it is under some sort of protection. There might be a reluctance to install a buffer in this situation, under the argument that the interface is "temporary". However, the people currently living and working there deserve the protection offered by a buffer. The city of Carlsbad requires development that is proposed next to interim agricultural uses to provide fencing, walls or landscaping to create a buffer between the two uses. The city of San Luis Obispo and Sacramento County, as examples, allow for, at their discretion, removal of an agricultural buffer when the adjacent agricultural land is developed. It also requires the developer to pay a non-refundable mitigation fee in cases where a buffer is not possible, as compensation for short-term impacts to agriculture. A mitigation fee however, does nothing to reduce the many causes of edge conflict. Reluctance to pay for a temporary buffer is often the issue. One solution could be a funding mechanism whereby the current builder pays for half of the buffer installation, and "forwards" the rest of the cost to the next developer whose side will eventually enjoy the benefits as a greenbelt or neighborhood separator.

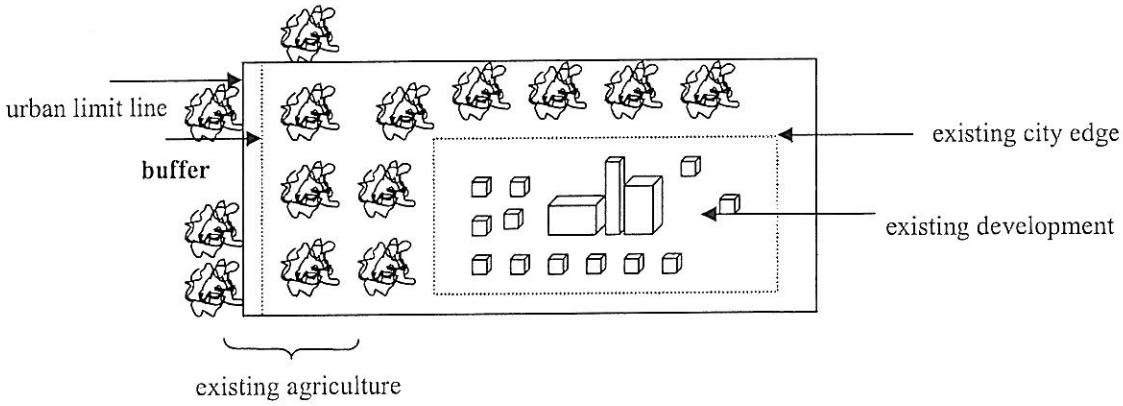


Possible Solutions to Short-Term Edge	Not Advisable for Short-term Edge
Peripheral roads enhanced with landscaping Landscaped berms, greenbelt, walls Existing infrastructure Modified farming practices (incentive-induced* or voluntary)	Large setbacks that cannot be filled at a later date. Zoning for large parcels ("ranchettes")

*Would need to determine what kind of incentives could be offered and who would pay.

Picture: "Grass and Lake"
Caption: A retention basin has been extended into a greenbelt. With housing now on both sides, it serves as a neighborhood recreational area, open space and wildlife refuge.

The above example was within the urban growth boundary. Of consideration further out, both in distance and time frame, is what happens at the urban growth limit line. Some argue against installing a buffer at a permanent growth line because one day that line might be encompassed on both sides by development, making the buffer unnecessary. The point of the buffer, however, is to help prevent sprawl and support implementation of long term zoning and build out plans. Although fifty years from now the buffer might be breached, this is not a sufficient argument to stop planners or a community wishing to install a growth boundary buffer today. Events beyond the scope of the general plan should be planned for, but can never be fully predicted. Financing such a buffer creates a challenge since there is no immediate developer to pay for (and pass on to homebuyers) the cost of the buffer. This is where creativity is needed to devise alternative means to financing.



IV. SETBACK DISTANCES

Since setbacks are by far the most common embodiment of the buffer concept, an expanded discussion is offered here.

Setbacks are building restrictions that require that a residence or other inhabited structure(s) to be built back a certain designated distance from the boundary, and in this case, of an agricultural field. Uses are sometimes restricted within the setback to low exposure uses, such as storage sheds, animal corrals, greenhouses, and swimming pools.

Policies usually stipulate that the setbacks will be imposed on the non-agricultural side. This is consistent with the intent of protecting agriculture, and in protecting the rights of the person who was there first. It was not uncommon in the policies reviewed to provide for a reduced buffer width if landscaping is added as a screen.

Although not all the jurisdictions surveyed had buffer policies, virtually all had some reference to setbacks. Setbacks are simple, as opposed to deciding on a specific buffer construction. The cost, including maintenance, is passed on to the buyer of the property.

The Dilemma of Rural Residential Development

The distinction should be made between a setback from the lot line for individual residences in rural or agricultural zones, versus setbacks for development and growth boundaries. However, typically the prescribed yard setbacks are smaller for the single residence instance than for developments. The reasoning behind this difference is questionable, since the argument can be made that a single house is just as prone to all the same intrusions of agriculture as a subdivision house that adjoins agriculture. The only exception would be a farmer building his own house on his own farm. Even then, although presumably he wouldn't be bothered by the typical results of farming operations, is it not advisable for him to be protected from pesticide drift, dust, and other health/safety related dangers?

Questions Raised by Range in Variability

The marked variation in setback distances from one jurisdiction to another is a clear indication that there is little agreement about what constitutes adequate separation, and that distances selected are somewhat arbitrary (see excerpts in Appendix). To a degree, the differences may reflect a county's philosophical views on setbacks, but they also indicate the need for better efficacy data. In reading the policies, several questions come to mind.

- What is a rational distance and who determines those numbers?
- What scientific evidence supports the setback distances?
- How are provisions made for exceptions and reductions, and who grants them? Is the process open to too much pressure or subjectivity?
- What is the advisability of allowing for transfer of the buffering requirement or dispensation for a fee?
- How adequate is the language?
- How is interpretation of non-specific requirements such as "reasonable" and "adequate" made?

A setback distance of 200' is frequently cited within the many policies reviewed, but there is no hard evidence that 200' is the optimal distance, nor is there evidence that it works.

> "Historically the County has required 100' to 200' buffers between new residential uses and agricultural operations, but this setback has not been universally effective in avoiding land use conflicts."
>
> Senior Planner, Ventura County

San Luis Obispo County Agricultural Commissioner devised the following recommendations as part of their policy entitled "Mitigating Agricultural/Residential Conflict", revised January 1995. They were based on "our best professional judgement and experience in dealing with agricultural/urban interface." Sutter County's setbacks closely follow the San Luis Obispo County recommendations.

SAN LUIS OBISPO COUNTY AGRICULTURAL COMMISSIONER
RECOMMENDATIONS FOR BUFFER DISTANCE RANGE BY CROP

Green House (indoor)	50 - 250'
Nursery (outdoor)	100 - 500'
Open Rangeland, pasture	50 - 200'
Ag - designated, but inactive	100 - 200'
Dry-farm almonds	100 - 200'
Irrigated orchards	300 - 800'*
Irrigated vegetables, berries	200 - 500'*
Vineyards	400 - 800'*
Alternatives	8 - 12' solid block or concrete walls
	Dense Vegetation

*As of 2001, San Luis Obispo County reports that they are tending toward using smaller distances for vineyards, orchards and vegetable crops: 200 – 400'.

A consortium of chemical companies developed an independent Spray Drift Task Force (SDTF) in 1990 to develop spray drift information. Although much localized drift information was available, there was little available with broader applicability. The SDTF goal was to "develop a generic data base on the premise that spray drift behavior is independent of the active ingredient." The work of the SDTF was with the cooperation and encouragement of the US Environmental Protection Agency Office of Pesticide Programs. The SDTF findings are categorized by type of application: aerial, ground, air blast, and chemigation.[39] Their work is useful in determining proper setbacks, but it is important to remember that pesticide drift, although a serious consideration, is only one of the factors leading to the need for buffers.

Farm Advisor responses

In an attempt to determine if there is more substantial rationale for setback distances, this study conducted an informal survey of Cooperative Extension Farm Advisors for the major commodity groups. The variation in their responses, even within a given commodity group, varied substantially and their comments are revealing.

> ***"There is every reason to be concerned about the lack of consistency from county to county about the size of setbacks."*** (implying the arbitrariness in selecting distances)
>
> ***"Buffer sizes is a very good question. There is little information about the effectiveness of them or about appropriate size."***
>
> ***"Since the type of agriculture conducted may change with time, the setback will probably need to be based on the worst case scenario."***
>
> ***"My own feeling is that the setbacks should be two miles, although most planning agencies and developers would find this distance totally unacceptable."***
>
> ***"You are trying to get a simplistic answer out of a complex problem."***

[39] www.agdrift.com July 2, 2001.

Weather was a common theme in their response, especially the variability of wind velocity and prevailing directions from one site to another, making specific setback distances difficult to standardize.

Responding advisors felt that walls and vegetative landscaping could be very helpful in reducing pesticide drift and the other airborne nuisances.

With regards to pesticide application, the California Department of Pesticide Regulation and County Agricultural Commissioners enforce set standards and distances for spraying, depending on the category of pesticide used and the method of application. Additionally, each specific pesticide has it own label instructions including spray setbacks. State and county pesticide regulations restrict farming practices near inhabited structures. Advisors pointed out that additional restrictions imposed by planning policies could unduly hamper a farmer.

A 200' minimum was the average between all responses, although the answers were so varied, it is hard to call the two hundred foot minimum a meaningful average. The conclusion is that setbacks are needed, that the distance should be arrived upon based on the circumstances at the local site in question, and that although more space would be advisable, the relationships of cost to risk must be taken into consideration.

V. RECOMMENDATIONS

The following list is closer to being a brainstorming list than true recommendations. Just as buffers need to be site-specific, how any particular area chooses to adapt or implement practices and ideas from this study will also be very customized. Which issues need work will differ from one area to another.

As mentioned in the introduction, buffers are just one part the increasingly complex job of deciding how best to use our land resources, with an eye to the future. The recommendations below were gleaned from this study about buffers, but not surprisingly, could be applied to many land use issues.

The following suggestions are placed under subheadings, but many are interchangeable. Some items are chronologically dependent on other items happening first, and others are "stand-alone". Once a jurisdiction selects the topics they wish to explore, they could then easily develop a flow-chart.

LOCAL NEED FOR BUFFERS

- Conduct an inventory of local complaints regarding edge issues. Assess the degree of severity, both in number and type of complaints.
- Inventory the types of near-city farming and what the likelihood of conflict is from that type of farming/crops.
- Determine if buffers have a role to play in the long-term growth strategies, and how that role might be strengthened.
- Explore the concept of multiple-use (value-added) buffers and their local acceptability.

COSTS

- Explore local options for funding buffers as part of the necessary infrastructure.
- Examine creative funding options. Conduct some costs-sharing brainstorming.
- Correlate existing fee authorizations to applicability as funding mechanisms for buffers.

PROCESS

- Identify and address or "heal" old wounds that are preventing or impeding progress.
- Establish a buffer "team" to develop vision and process. Determine the composition and members.
    - Provide training – affective (team building, empathy for farming)
- Develop setback guidelines through a technical committee.
- Analyze exemption statistics. Determine if exemptions and reductions are a problem or not. Develop a technical-based rather than political-based appeal process.
- Develop a "land use dialogue group" that is cross-jurisdictional (city/county) and cross-interest (government/environment/development/agriculture). Such a group would ideally be run by a non-biased entity. If one group is too unwieldy, there could be two groups, with representatives from each that meet together periodically. From the governmental side, departments beyond planning should be included. Other departments (water resources, for example) deal with land use related issues and should not be left out of land use planning discussions.
- Alert statewide constituency groups of needed changes to state laws (CEQA, tax structures, etc.)
- Encourage agricultural awareness education. Work with appropriate groups to improve the public's understanding of the importance and value of agriculture, as well as a better understanding of modern production methods.

PRINCIPLES

- Assess the strength of local will to maintain agriculture as an economic contributor.
    - Public
    - Elected officials
    - Other stakeholders
- Conduct community forums to determine what the people value. What is their vision for the area?
- See how aligned what people say they want (example: good schools) is with what they do (example: vote "no" on school bond issues)? Determine what needs to be done to correct discrepancies.

POLICY

- Assess how well current policies and statutes address land use and effectively direct growth.
- Figure out how to "fill in" where current policies leave off (example: CEQA and EIR's).
- Review General Plans of cities and county to evaluate for continuity, conflicts, and opportunities for potential synchronization.
- Review policies for opportunities to "close growth gaps" left by old statutes.
- "Personalize" the ten best policy practices offered in this study.
- Review policy direction on rural residential development. Determine if it will be allowed, where it fits in, and how buffers can be improved.
- Determine if policies adequately include buffers as infrastructure.

VI. SHORT CASE STUDIES

Two sites were visited, chosen for their interesting experiences with buffers. As it turned out, the two are quite different in circumstances and demographics. The population in Yuba City is older, less affluent and more politically and fiscally conservative than Davis. Davis' demographics reflect the presence of a major university. Davis is more politically engaged and has a greater interest in environmental issues, and more prone in the past to tax themselves. The demographic uniqueness of each area affects the way in which they view buffers and how willing they are to pay for having them. (see appendix for brief statistical comparison).

SITE VISITATION # ONE

Place:	Yuba City, Sutter County
Site:	Buttes Vista Neighborhood
Interview Date:	May 16, 2001
Contacts:	Denis Cook, Community Development Director, Yuba City
	Tom Last, Chief of Planning, Sutter County

Synopsis: This case study examines the interaction between City and County over buffer distances for a 240-acre neighborhood plan. The area in question was within the City limits, but touching the County boundary. The sphere of influence was set over ten years ago, and both City and County are proud of the fact that there have been no development exceptions made since then. Despite the fact that both departments enjoyed productive interaction, there were assumptions made and unintentional specific lapses in communication that led to complications in implementing the buffer at a specific site.

The County wrote Sutter County Design Guidelines that are the implementation vehicle for their General Plan. The Guidelines were finalized in January 1999. Included in the 100+ page document are the Agricultural Buffering Guidelines.

Both City and County planning departments had a history of working together, and offered mutual document review opportunities where appropriate. Thus, before final adoption of the Design Guidelines, the County planners submitted the Guidelines to the Yuba City planners for review. The City had comments on other portions of the Design Guidelines, but none regarding the buffers, as they appeared to them to apply only to land within the County. The County did adopt the buffer guidelines as written. The guidelines state, "For development projects located on the north or south boundary lines of the Yuba City Sphere of Influence, the County may require a buffer distance which exceeds the distances found on Table 1-1 [which specifies 300' – 800' next to irrigated orchards]. This is to provide additional 'insulation' for agricultural parcels located immediately outside of the urban boundary and will result in a more permanent urban boundary line."

Moving along on a parallel track, the City was involved in approving a 240-acre neighborhood plan, the Buttes Vista Neighborhood Plan, within the City limits, but touching the City's sphere of influence boundary. Back when the City prepared the Environment Impact Review (EIR) for annexation of that area into the City, the EIR specified minimum 100' buffers. At that time, the annexation EIR was reviewed by the County and deemed adequate.

Abiding by the EIR, the City's site plan for the Buttes Vista Neighborhood Plan specified a 118' buffer (98' right-of-way, 20' backyard setback).

The County, upon becoming aware of the proposed project's 118' buffer at the sphere's edge, pressed for the maximum 800' buffer next to irrigated orchards, as prescribed in their Buffer Guidelines. The County was especially adamant because of the location right at the ultimate growth perimeter. From the City's perspective, an 800' buffer was excessive because it would have taken up approximately a third of the proposed development. Also, any land the City had to buy back from the developer would have to be purchased at a valuation based on potential development, or approximately $40,000 per acre. Right across the street, orchards just outside the urban growth boundary are worth $3,000 to $5,000 per acre.

The City and County appointed a small ad hoc committee composed of City Council members and County Supervisors and planning staff to craft a compromise. The committee was making progress, but it was ultimately a suit filed by the County against the City that pressed the process toward a compromise. There was no disagreement on having a buffer. The major disagreement was the width of the buffer.

The suit was dismissed after the same ad hoc committee that had been convened prior to the suit devised the winning compromise. The final buffer was settled upon at 168'. Thirty feet were added to the backyards on the perimeter, with the developer adding the cost of the land and the impact fees onto the purchase price of the homes. Between the street and the homes, the landscaped area was increased by twenty feet, including a 6' masonry wall atop a 4' berm. Trees had always been planned, but the compromise increased the spacing between three rows, and the stressed row is to be planted on an elevated berm. The houses are being built and sold, but construction has not yet reached the city edge, so the buffer has not yet been planted.

The City had to purchase that extra 20' landscaping width from the developer. To pay for it, the city added a development impact fee of approximately $800 per house to the building permit. Every homebuyer within the development pays this "perimeter conflict mitigation fee". To pay for the maintenance of the trees and other landscaping, the city set up a lighting and landscape district that homeowners within the specific area plan pay for through their annual real estate taxes.

Outcome: The compromise led to the suit being dropped. The City made sure that the settlement was not precedent setting. Today, City-County relationships are characterized as positive, with no apparent lingering ill will over the suit. A tax exchange agreement between the two jurisdictions is evidence of that positive working relationship. Planners work well together and agree philosophically on the need for buffers. They also agree that the difficulty is in hammering out the details. This case showed that the 300' to 800' buffer distances may not always be realistic, but at this time there is no indication from the Board of Supervisors that they want to revise the guidelines. However, there is the flexibility in the guidelines to review projects on a "site-by-site basis".

Conclusions:

The Need for Buffers

Both the City's Community Development Director and the County's Chief of Planning agree that buffers are necessary, but that they don't fully accomplish what they're supposed to, especially for the farmer. The major problems their farmers closest to the city experience are young people partying and joggers who consider the farm open space. Both situations create considerable liability risks for the farmer. No trespassing signs and chaining off entry roads have not been effective.

> "No one is opposed to a buffer. It's just figuring out what everyone can live with and what we can afford."
> Denis Cook, Community Development Director, Yuba City

Buffer Design

The hardest part is coming up with distances and designs that are a compromise between opposing needs. As Denis Cook said, "We're in the business of minimizing." By this, he meant that they rarely find a perfect cure, but instead can only try to minimize conflict at the edge, minimize impacts of urban development, minimize costs to the city, developer and ultimately the homeowner, minimize loss of ag land, etc.

Both planners agreed that the maximum distance that is *feasible* should be implemented, but then the problem is what to do with that buffer land. Leaving it idle is not efficient use of land, and it would just become weeds and litter if not properly maintained, which costs money. Denis Cook feels that canals offer a bit more protection to the farmer, and don't incur additional costs, as they are pre-existing infrastructure. However, canals are a viable option in very limited instances.

Costs

The City found ways to pay for the land and on-going maintenance that ensure a tidy and property-enhancing buffer strip. Where existing authority allows for jurisdictions to charge for the cost of infrastructure, such devices should be considered. When new developments are being reviewed, a thorough analysis should include both the overt and hidden costs of infrastructure, including buffers, and provisions made for the homeowners to cover the costs.

Denis Cook offered the idea of buying easements along the sphere of influence to help fortify the perimeter of the city from growth and to provide for a smooth, compact urban edge once fully filled in. Many jurisdictions are moving toward achieving this model, but what was unique about Denis' easement idea is that growers entering into the easement agreement would also be paid an "inconvenience fee" to compensate them for the inconveniences they experience by adjoining urban development. In Yuba City's case, approximately 400 to 500 acres would have to be purchased to fully achieve such a cordon. Paying for such easements should be a citywide or possibly countywide responsibility. Such a payment is based on the argument that the entire region benefits by keeping agriculture viable and thus a significant economic contributor, and by creating a compact urban boundary that promotes efficient land use and keeps infrastructure and city services costs down. The easement idea has not garnered any champions in the tax-conservative City and County.

The Three "P's"

Process

Both planners agree that the suit resulted primarily from lack of communication specific to the Guidelines and the project, and miscommunication. Although there had been frequent communication and good working relationships between departments on other issues, the County did not do anything beyond their ordinary procedure of sending over a copy. In retrospect, they might have spent extra time with the key City staff to go over the Guidelines and to give the opportunity for more interactive review and comment. The review process the City used with the draft Guidelines did not generate any comments or suggested revisions for the County regarding the buffers because they seemed to apply only to land within the County. Once the conflicting regulations became apparent, the ad hoc committee was a good mechanism to arrive at a workable solution. Before the committee had a chance to resolve the issue, the cross-jurisdictional

cooperation broke down. The County used the suit as a vehicle to press the issue, and a compromise was finally reached.

Fortunately, the suit left no apparent negative feelings. Realizing that more thorough communication might have prevented the whole incident, both the City and County planning departments established a monthly meeting to jointly review issues related to development, special projects, and zoning. The meetings improve communication and cut down on assumptions. City and County are jointly making a big effort to align their standards so when the City eventually annexes an area, projects already built there under County codes will automatically comply with City standards. The City is conducting a general plan update and both jurisdictions are working together on it.

Principles

The community-at-large professes a commitment to the preservation of agriculture. What is not as clear, based on recent failed taxation measures, is a community willingness to pay for agricultural preservation. Also, there does not appear to be full recognition of the farmer's property rights by those residents that feel they have free reign on farms and can treat it as fully accessible open space.

Policies

The County appears to be satisfied with its policies. The County's buffers are ambitious, but do allow for flexibility and site-specific adjustments. The planners' major problems come from having to deal with policies that were made, or policy exceptions that were granted, well over ten years ago. As an example, their biggest problems with interface don't come at the straight edge of current development, but rather from the multitude of isolated residential developments that zigzag and polka dot the landscape outside the city boundary. These pockets of development were allowed to pop up years ago, but today the consequences are very real. The leapfrog development from years past points out the rationale for buffers. They also make a case for long-range planning and for straight(er)-edge development.

Finally, writing the policy for their own jurisdiction is not the problem. The hard part is in writing policy that both jurisdictions can agree on. The creativity, problem solving, and compromise required to find the solution brings us back around to *process*. What the planners struggle with most is how to get agreement and how to implement policy in each and every unique situation. The old adage, "The devil is in the detail," is quite apt in planning.

SITE VISITATION # TWO

Place: Davis, Yolo County
Interview Date: May 30, 2001
Site: Wildhorse Davis Greenbelt
Contacts: Bob Cordrey, Parks and Open Space Administrator, Parks and Community Services, City of Davis
Mitch Sears, Open Space Resources Coordinator, City of Davis
Paul Deering, Landscape Architect, Deering Design
Frank J. Chan, Principle, Native Plant Resources

Synopsis: The Wildhorse Development consists of 400+ acres of upscale housing and open space, including a private golf course that is open to the public. It is situated at the northeastern side of the city limits. The buffer at this site is unique for its size and the degree to which it has been planned and enhanced as a greenbelt for public use and as a wildlife and native plant showcase.

The buffer borders two sides of the development, with active agriculture (safflower, tomatoes, alfalfa) on the opposing side of the buffer. The buffer strip is 1¾ miles long, and is 200' wide for the majority of that distance. The 200' width has been divided in half by a wildlife fence, with the half closest to the development being open to the public for walking, jogging and biking and for wildlife and scenic viewing stations. The 100' closest to the fields are planted similarly with native grasses and plants and the original black walnut trees, but provide protection for the wildlife. A linear hedgerow abuts the fence separating this section from the agricultural fields. During the site visit, burrowing owls, ground squirrels, jack rabbits, a blue heron and a hawk were spotted.

Picture: "Natural buffer IV"
Caption: From right to left: Golf course to the right (unseen); first hundred feet of buffer, with gravel recreational trail, native species plantings, fence separating public space from 100-foot wildlife corridor with more plantings and existing walnut trees, farm fields to the far left.

The City requires any developer to improve and dedicate neighborhood interior streetscape improvements and to provide 10% of the development to be improved as neighborhood greenbelt. The City also uses the Quimby Act to appropriate undeveloped park acreage. The 200' Wildhorse Ag Buffer fulfilled the City's requirement for agricultural mitigation. The land designated for the buffer had existing black walnut trees, weeds and grass, all of which probably would have stayed more or less in that state until future city improvement.

What led to the enhancements was that the developer excavated topsoil from the buffer strip for use within the development, including the golf course. The City considered this a violation of the buffer agreement. The City considered legal options and decided that a more effective solution would be for the developer to be responsible for restoration of the buffer vegetation. The developers, wanting to maintain their reputation, and in the interest of doing the right thing, agreed. This not only accelerated the project timeline, it provided an opportunity to create a model native plant buffer.

The City and developer have been working as a team to establish the buffer. In January 2002 the developer will deed the buffer to the City, which will then assume responsibility for maintenance of the buffer.

Outcome

Besides its intended uses, the City is using this as a study site. All those involved view this as a great research resource. The City is learning in the process, and providing educational opportunities for others. With the plant and landscape experts that were hired to design the buffer, they will be monitoring the effectiveness of the soil preparation, plant establishment, and wildlife activity. They have the unique opportunity to work with professors and students at the University of California, Davis, who are using GPS to monitor soil changes and fertility. They spent the first 1½ years conducting extensive soil preparation and weed control. They have test plots in the subsoil where the topsoil was removed to study the progress of soil building and the effectiveness of natural innoculum in contributing to the health of the native grasses. They expect to see an evolution of the landscape as natural succession takes place.

Conclusions

The need for buffers

The City strongly supports buffers and they are a part of the City's comprehensive planning. Buffers clearly serve as insulators between agricultural and residential use, but the City views them in a broader sense as one of their means to improving the quality of life. They provide greenscape, serve as neighborhood separators and city/county growth boundaries. Other cities in the region successfully use buffers as community separators. It is intended that Davis' agricultural buffers will connect to the City's internal greenbelt system to provide continuous open space within and around the city.

Buffer design

The buffer maximizes use by people and wildlife. Native indigenous plants were used for minimum maintenance. Most of the 53 plant species were collected within 15 miles of Davis. The walking/biking trail is gravel, as opposed to asphalt, to conform to the desired rustic look. Special riparian seed mixes were planted and vegetation "islands" were installed to provide wildlife habitat. The riparian areas flood several times in the winter, but are also fed with water off the golf course. The golf course incorporated vegetation recommended by the Audubon Society Guidelines for golf courses. Walnut trees are dominant in the buffer now, but valley oaks that have been planted will dominate once they grow bigger. There is also a sycamore grove. All plant choices were reviewed for compatibility with the adjacent farm commodities.

In contrast, another buffer area along the south side of Davis has a more "constructed" feel. Houses back up to a meandering, lighted asphalt trail that ends up tunneling under the freeway and connecting to the University. Between the trail and the farmlands is a creek, with vegetation lining the steep banks.

Picture: "Scenic Buffer I"
Caption: From right to left: Back yard fences; light posts and blacktop trail; trees and landscaping; and unseen steep bank to creek and the farm fields on the other side of the creek. In contrast to the natural settings of Wildhorse, Davis' Putah Creek greenbelt buffer has a more urban, constructed feel to it, with lighted trails and park benches. The trail connects to the University's pathway system.

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Costs

The cost of the land for the buffer was paid for by the developer and assumed by the homebuyers in the cost of their homes. The agreement is that the developer will deed the buffer land back to the City, at which time the City will assume maintenance costs. One of the benefits of native plants is to minimize on-going costs. Once the plants are established, it is anticipated that maintenance will be limited to mowing for fire protection, vegetation/weed management, minimal replanting, trash removal and signage maintenance.

Wildhorse is unique in having the extra money the developer agreed to put into the design and installation of the buffer, to make amends for having removed the topsoil. Since the developer has been paying the bills, an exact amount is not known but the City estimates that the developer has paid about $275,000 for the construction. This includes grading, water lines, riparian areas, planting, and the gravel road. The cost of the consultants is extra.

Once the City takes over the buffer in January, it will pay for maintenance through Measure "O" monies. This initiative provides for the City to impose a $24 per year per parcel tax, for thirty years. Besides maintenance for the Wildhorse buffer, the money is designated for purchase of conservation easements and outright purchase (fee title) of agricultural land and riparian corridors around the City. It also provides for the maintenance of lands that are purchased and for open space maintenance.

Although not related to the buffer, the City also assesses a landscape tax of $49 per year per parcel. Voters approved the measure to help maintain the City's parks and internal greenbelt system. Another ballot measure that would have doubled that tax to $98 failed in June 2001. It received 59% "yes votes, but needed a 2/3 majority to pass.

The Parks and Open Space department has a $3 ½ million budget for parks and open space maintenance and operations.

The Three "P's"

Process

There was a great deal of community involvement in Wildhorse. When the City annexed the agricultural land for the Wildhorse development, sufficient numbers of people were upset enough about the loss of farmland to get a measure on the ballot that would require future annexations of agricultural land to be approved by voters. The measure passed by 70+%.

The City and County are in sync on land use and agricultural preservation.

The City staff refer to working relationships between the themselves and the developer as an "ideal team" in how they resolved the buffer issue.

Principles

Principles and values in the City of Davis are influenced, to a large degree, by the presence of the University and the population there. Residents are protective of the environment and of farmland. The City wants to maintain its small town character, shunning "big-box" stores, large car dealerships and big retail centers. On the flip side, without a large retail tax base, the City and infrastructure costs must borne by the residents. Based on the successful passage of several special taxes, the voters appear to be willing to pay for what they say they want. They also pay extra for greenwaste removal and for recycling.

Policies

The City's policies related to development are extensive. As one planner said, "It's not cheap to develop here." The policies reflect the community's principles, as can be seen in the provisions for greenbelts and the deliberate and planned acquisition of a permanent farmland and open space perimeter. The City has acquired easements or title to approximately 2,500 acres. Buffers are one part of the comprehensive plan.

The City does not have a formal urban growth boundary, but the general plan specifies where growth is to occur. Any development on agricultural land that is not currently approved in the general plan must be voted on.

The Wildhorse buffer is an example of what can be achieved with sufficient resources and creativity, and with the policies to make it happen.

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APPENDICES

Questionnaire

Excerpts – Specific Language on Buffers and Setbacks

Excerpt – Woodland Rural/Urban Edge Survey

Sutter County Design Guidelines, Agricultural Buffering Guidelines

Ventura County 1996 Guideline for Orderly Development

Yuba City/Davis Comparative Demographics

Pictures

EXCERPTED SPECIFIC LANGUAGE ON BUFFERS AND SETBACKS

It should be noted that these excerpts are random samples. They illustrate similarities and differences of language, buffer uses and definitions, and prescribed distances. They do raise questions about:

- what a rational distance is and who determines it
- how provisions are made for exceptions and reductions, and who grants them
- advisability of transfer of buffering requirement
- adequacy of language
- interpretation of requirements such as "reasonable", "adequate", "may"

Carlsbad General Plan (C.5): "Buffer agriculture from more intensive urban land uses with mutually compatible intermediate land uses."

> Carlsbad Ranch Specific Plan (Policy 4-A): "Establish a **25 foot** building setback from adjoining agricultural areas."
> (Policy 4-B): A **6 foot solid wall or 3 foot high berm with 3 foot high landscaping on top shall be installed** around the perimeter of the area designated for development adjacent to agricultural areas..."

Del Norte County Local Coastal Program (C.2. d.): In order to maintain the productivity of agricultural lands, priority should be given to adjacent land uses which complement or at least do not greatly interfere with farm and ranchland operation. (C.2.e.): Buffer zones, **reasonable transitions of zones**, may be utilized to shield agricultural lands from adjoining incompatible uses. Likewise, the area of separation may serve to protect adjacent uses from agricultural impacts. In any event, these protection zones **should be of sufficient width to adequately separate** all incompatible uses and minimize potential impacts."

El Dorado County General Plan, Agriculture and Forestry Element (8.1.3.2.): "Agriculturally incompatible uses adjacent to agricultural zones lands within designated agricultural districts shall provide **a minimum setback of 200 feet** from the boundary of the agriculturally zoned lands. Agriculturally incompatible uses adjacent to agriculturally zoned land outside of designated agricultural **districts shall provide a minimum setback of 200 feet on parcels 10 acres or larger**. Administrative relief to these setbacks may be granted by the County Planning Director, where appropriate." (8.4.1.2): "A **permanent setback of at least 200 feet** shall be provided on parcels located adjacent to lands identified as timber production lands... These setbacks shall be included in the zoning ordinance and shall be delineated on newly recorded parcel or subdivision maps. The Agricultural Commission may recommend a lessor setback to **a minimum of 100 feet**." Projects located within a Community Region or Rural Center planning concept area shall maintain a **minimum setback of 50 feet**. The 50 foot setback shall only apply to incompatible uses including residential structures."

City of Hanford Zoning Ordinance, Chapter 17.14 AG Agricultural District. (17.14.090.A.): "The **minimum front yard measured from the front property line shall be not less than fifty (50) feet** except along those streets and highways where a greater setback is required by other ordinances... and further provided that the distance from the centerline of a street to the rear of the required front yard shall not be less than eighty (80) feet." (17.14.090.B): "The minimum rear yard measured from the rear property line shall be twenty (20) feet, subject to the following conditions..."

Mendocino County Coastal Element for Agriculture (3.2-9) "In order to minimize agricultural-residential conflicts, land divisions or site plans in a residential area **shall not result in a residential structure being closer than 200 feet** from a parcel designated for agricultural use unless there is no other feasible building site on the parcel." [note: **same 200-foot designation applied to residential development located next to timberland.**]

Monterey County General Plan (currently under revision), Agricultural Element (30.0.2): "The County **shall require that permanent, well-defined buffer areas be provided** as part of new non-agricultural development proposals which are located adjacent to agricultural land uses on viable farm lands designated as prime, of statewide importance, unique, or of local importance. These **buffer areas shall be dedicated in perpetuity, shall be of sufficient size to protect agriculture** from the impacts of incompatible development and to mitigate against the effects of agricultural operations on adjacent land uses, and shall be credited as open space." Zoning Ordinance (F.2.): New development adjacent to agricultural areas shall be required to establish a well-defined buffer zone within the area to be developed. The area to be utilized as a buffer shall be placed in an easement, required as a condition of project approval. Requirements for the easement are as follows:...For development adjacent to "F", "PG", or "RG" zoning districts the easement **shall be a**

width of 200 feet, or wider where necessary to mitigate adverse impacts.... In all other zoning districts, the easement **may be reduced to a width of not less than 50 feet.** (F.2.c.): Land within the easement may not be used for recreational areas as part of the housing projects or public facilities."

City of Napa Zoning Ordinance (17.60.090), Agricultural buffer areas (CR-7). "A special agricultural setback of **not less than eighty feet (or more if needed for mitigation established in the environmental review process)** from the property lines(s) adjoining the RUL line shall be observed for the location of dwellings or other structures designed for human habitation. Within the special agricultural setback, a landscape buffer designed to provide a clear boundary between urban and agricultural uses **having a minimum width of fifteen feet** measured from the property lines(s) adjoining the RUL line, consisting of a mixture of trees, shrubs, berms, fences, walls, etc., acceptable to the architectural review commission (or planning director in the case of single-family dwellings which are exempt from review by the architectural review commission) shall be provided along such property lines.

City of Ontario, Agricultural Overlay District, Separation requirements for new development. (Sec. 9-1.2760): "The following separation requirements from existing dairies/feed lots shall apply to new residential, commercial, and/or industrial development or structures used for public assembly purposes from existing dairies/feed lots. **A minimum 100' separation** shall be required between a new residential, commercial or industrial development or structures uses for public assembly and an existing animal feed trough, corral/pen or an existing dairy/feed lot including manure stockpiles and related wastewater detention basins. The 100-foot separation requirement may be satisfied by an off-site easement acceptable to the Planning Director with adjacent properties, submitted with the initial final map and recorded prior to or concurrent with the final map."

Sacramento County, Agricultural Element Implementation Measures (D.): "Develop and implement guidelines for design of buffers to be established between areas in a Permanent Agricultural Zone proposed for conversion from agricultural to urban use and adjacent farmlands. Develop and implement **procedures for evaluating site-specific buffer proposals** and making recommendations to the County Planning Commission. Title to buffer areas may be transferred to the County or other appropriate entity, but shall be credited to the proposed development as open space. Buffer design criteria shall include, but not be limited to, the following: buffers shall generally consist of a physical **separation 300 – 500 feet wide** including roadways; narrower buffers may be approved depending on the natural features of the buffer, applicable specific plan policies and on the relative intensities of the proposed urban use and the adjacent agricultural use. (E): Develop and implement **guidelines for maintenance** of buffers including, but not limited to, the following criteria: the County, a homeowners association, or other **appropriate entity shall maintain buffers** to control litter, fire hazards, and pests; compatible agriculture shall be allowed on buffers; and buffers may be removed once agricultural uses on all adjacent parcels have permanently ceased."

San Benito County, Land Use Element (Policy 4): "Development proposals adjacent to Grade 1 agricultural lands and soils suitable for the production of row crops, flowers, or **orchards shall be required to mitigate potential land use conflicts with agricultural operations.** a) Development proposals shall provide a non-development buffer beginning at the property line of the proposed development. b) Development proposals shall not be allowed to increase the volume or velocity of storm water runoff to adjoining agricultural lands. c) Landscaping plans for the non-development buffer areas shall be reviewed to ensure that vegetation will not create intrusive shade, a habitat for pests, or other nuisance to the agricultural operator.

City of San Luis Obispo, Open Space Element (OS 10.2.3 – Buffers): "Urban uses adjacent to agricultural lands **shall provide an agricultural buffer**. This requirement may be eliminated or modified only if there are significant topographical differences, a barrier of vegetation capable of eliminating potentially adverse impacts associated with agriculture on adjacent development, or existing physical barriers between the urban development and the agricultural land. If a developer cannot provide an adequate agricultural buffer between urban uses and agricultural land, the developer shall pay a mitigation fee to purchase agricultural protection elsewhere within the Greenbelt."

San Mateo County General Plan (9.30.c.) "Buffer any nonagricultural activities from agricultural activities by means of distance, physical barriers or other nondisruptive methods.

Santa Barbara County

Goleta Community Plan (Policy LUA-GV-2): "New development adjacent to agriculturally zoned property **shall include buffers to protect agricultural operations.**" (DevStd LUA-GV-2.1): "Buffers composed of predominantly native and low water using species, or other appropriate perimeter screening, such as fences and walls, shall be required, the size of which **will be determined by parcel specific review** for all new development adjacent to agriculturally zoned property."

City of Guadalupe (P&D Comment letters regarding a residential development) "...the **adequacy of the buffer should be based on an evaluation** of local topographic and climatic conditions, as well as the type and intensity of adjacent agricultural development. ...In addition to providing a buffer area between the development and adjacent agricultural lands, **dense landscaping should be provided** along the perimeter of the buffer to reduce the exposure of future residents to dust and pesticide drift."
City of Buellton (regarding a residential development) "The 60' buffer between the proposed new development and upwind neighboring agricultural land would not be sufficient to avoid conflicts; the **County typically recommends 100'-300' buffers**, depending on conditions and intensity of agricultural use..."

Sonoma County, General Plan (Goal AR-4c): "Protect agricultural operations by establishing a buffer between the agricultural land use and the residential use at the urban fringe adjacent to an agricultural land use category. **Buffers shall generally be defined as a physical separation of 100 to 200'** and/or may be a topographic feature, a substantial tree stand, water course or similar feature. In some circumstances a landscaped berm may provide the buffer. The buffer shall occur on the parcel for which a permit is sought and shall favor protection of the maximum amount of farmable land." (Zoning Regulations Sec. 26-88-040): "...The requirement for buffer may be modified after hearing by the advisory agency following a written recommendation by the agricultural commissioner."

Tuolumne County, General Plan, Agricultural Resources (11.C.c): "Prohibit construction of new residential/non-agricultural buildings, resulting from development approved subsequent to adoption of this Element closer than **200 feet from the boundary** of a parcel classified as high value agricultural land or agricultural land of local importance. This setback may be reduced by the Planning Director, with the concurrence of the Agricultural Advisory Committee..."

Ventura County, Ordinance Code (Article 9, Sec. 8109-0.4): "Protection of Agricultural Resources. When establishing permit conditions, **the adverse effects on agricultural resources shall be considered**. It is specifically intended that non-agricultural uses in proximity to agricultural land should be located, designed, and operated to minimize adverse effects on agriculture, including but not limited to water runoff, siltation, erosion, dust, introduction of pests and diseases, and the potential for trespassing, pilferage, or vandalism; as well as conflicts between agricultural and non-agricultural uses including but not limited to vehicular traffic and the application of agricultural chemicals to agricultural property. Specific measures, including but not limited to use restrictions, buffer zones, fences and walls, and/or screening, may be required in order to ensure that the above standard is met. Said measures shall be **developed in consultation with the Agricultural Commissioner**."

Yuba County General Plan, Agricultural Lands (2-LUG, 8-LUO, 29-LUP): "Urban-Agricultural interface areas shall be recognized in proximity to Community Boundaries, within which all new development projects shall incorporate a **buffer zone at least 300 feet in depth** to separate the development project from surrounding agricultural land. This requirement may be eliminated or modified if there are significant topographical differences, substantial vegetation, or existing physical barriers between urban and agricultural areas."

Plumas Lake Specific Plan, Draft EIR: (3.1): "Where the Specific Plan abuts agriculture lands, a minimum 300' buffer shall be established between the two areas. The exact width of the buffer shall be determined by the Planning Commission in conjunction with the Yuba County Agricultural Commission. (3.3): A six foot solid masonry wall and fence shall be required between any portion of the Specific Plan which abuts an agricultural use, subject to review and approval by the Planning Commission."

Frederick County, Maryland (1998 Countywide Comprehensive Plan, Volume I: Chapter 4.B.11): "A greenbelt will be identified around each Community Growth Area to establish an urban-rural demarcation line or boundary and will be identified on the Comprehensive Plan Map during the update of each Regional Plan. The **Greenbelt should be at least 2,000 feet wide.**

Queen Anne's County, Maryland , County Code (18-1-089): "This subpart contains the landscaping standards required for on-site parking lots, district boundaries, and street buffers. The standards...(listing of specific plant combination alternatives)... "These areas **form a rural greenbelt around the planning area and function as a growth boundary**."

EXCERPTS – LANDSCAPE AT RISK: THE RURAL-URBAN EDGE[40]

Question #9.

Name some things which separate Woodland from the outlying areas (for example, walls, buildings, fences, roads, etc.) and describe your feelings about them. Multiple responses possible

What do your see? (Total responding = 137)

Walls:	50 (36.5%)	Fences:	27 (19.7%)
Surrounding roads:	46 (33.6%)	Trees, shrubs, landscaping:	13 (9.5%)
Warehouses, industrial bldgs:	41 (29.9%)	Mall:	9 (6.6%)
Farmland/open or dirt fields:	38 (27.7%)	[Grocery] Center:	8 (5.8%)
Houses/housing developments:	37 (27.0%)	Other:	40 (29.2%)
Commercial /retail bldgs:	32 (23.4%)		

"Other" things mentioned included irrigation ditches and canals, the rice mills, railroad tracks and spurs, traffic lights, freeways, older Victorian homes, etc.

How do you feel?

Comments regarding feelings about what is seen at the edge were both positive and negative and were numerous. Walls were viewed in a negative way by over half of the respondents and many comments (both good and bad) were directed at the walls on Road [XX]. On the positive side, walls were seen as good (even necessary) noise barriers and nice looking provided they are properly landscaped. However, to others walls were seen as ugly, trashy, poorly designed, poorly landscaped, confining and too "big city-ish."

Surrounding Roads were viewed positively by over half of the respondents. They were described as good natural boundaries, providing a way to keep an open view and accommodating increased traffic. In a negative sense, several were worried that development would eventually jump the boundary roads (such as Road [XX]). Others mentioned that several entrances to town had few trees and little or no landscaping and weren't very attractive. Other comments included the roads being too heavily traveled and needing better maintenance.

Warehouses and industrial buildings, too received many negative comments. They were seen as junky, unattractive, poorly landscaped, and as an unappealing entrance to town. Positive comments included the industrial area being vital for employment, and providing jobs. Several commented that some of the newer warehouses such as [car dealership], were attractive and nicely landscaped.

Farmland/open fields and trees, shrubs and landscaping received overwhelming positive responses. Respondents enjoyed the openness and general ag feeling associated with the farmland. Trees received no negative comments at all and were seen as providing an excellent natural boundary.

Houses/housing developments received many negative comments. Many commented there was too much building and development, and that services (and schools) couldn't keep up. Several mentioned that new lots are too small and there are too few trees, not enough open space. Others mentioned that the new developments created very abrupt boundaries between country and city. On the positive side, some saw new housing as a sign of Woodland's prosperity. Others saw housing as a necessary part of growth. A few commented on the nice character of older homes.

Commercial/retail development received mixed comments. In a positive sense, it was seen as blending well with residential, as an indication of available goods and services, and as a sign of jobs. In a negative sense, [XXX's] corner and the [XXX] Street corridor were seen as unattractive entrances giving visitors a bad impression. Other comments included needing more trees and landscaping, the town having too many run down buildings as well as too many new buildings.

Fences were described as a defining, but not imposing boundary, and at times necessary to discourage trespassing. On the negative side, some felt they were not well maintained, an eyesore, and too abrupt a boundary when there was no landscaping.

Mall comments were primarily positive. It was described as attractive and well maintained, and a good addition to the town. However, others mentioned that it imposed on a beautiful area, and that it killed the downtown area.

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[40] Owens, P.E. Landscape at Risk: The Rural-Urban Edge. Unpublished manuscript. University of California, Davis. Distributed by the Center for Design Research, Department of Environmental Design, 1997.

Agricultural Buffering Guidelines

1.0 Introduction

Sutter County has adopted certain Policies and Implementation Programs in its General Plan which require that agricultural lands be protected from incompatible adjacent land uses. Incompatible adjacent land uses are those which tend to interfere and disrupt agricultural practices and often force the cessation of agricultural activities over time. The protection of agricultural uses is intended

to be accomplished in several different ways. One of the protective methods required by the County's General Plan is to implement certain types of standards for insulating (i.e., buffering) agricultural properties from adjacent incompatible land uses.

Buffers are defined as physical separations between land parcels which utilize topographic features, a substantial vegetation barrier, a water barrier, a landscape berm, setbacks, or a combination of these. Where buffers are to be implemented as part of an overall development project, they are typically designed specifically for that particular application and locale. (Refer to Figure 1).

The specific type and location(s) of buffering will be required by the County at the time a development project is proposed on one or more parcels which are located adjacent to agricultural uses. In nearly all situations, the County will require that all buffers will be located on the non-agricultural parcel(s).

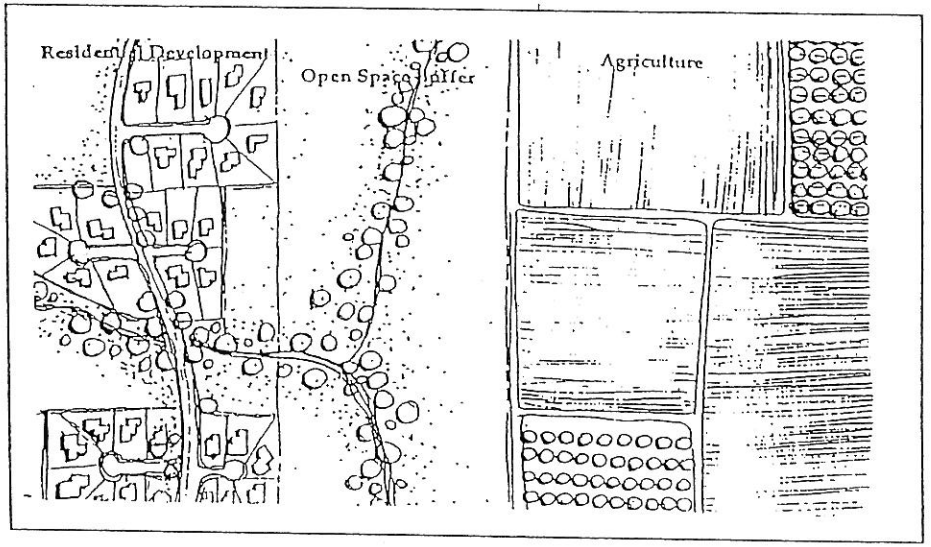


Figure 1: Buffers provide insulation from conflicts for agricultural land uses

2.0 Authority

The Sutter County General Plan contains the following Findings and Policies relating to Agricultural Buffering:

2.1 Findings

Urbanization and other land use conversion often results in conflicts between agricultural land non-agricultural uses.

2.2 General Plan Policy

Policy 1. F-1: The County shall require that new development adjacent to agricultural areas be designed to minimize conflicts with adjacent agricultural uses.

Policy 1. F-2: The County shall require that all lands be set aside or utilized for mitigation of development in Sutter County or the Natomas Basin demonstrates that its creation and existence will not adversely impact existing and/or future planned agriculture or urban development.

Policy 1. F-3: The County shall continue to implement its Right to Farm Ordinance. (Agricultural Operations Disclosure, Ordinance Code 1013 , Chapter 1330 or its successor.)

Policy 1. F-4: The County shall protect agricultural operations from conflicts with non-agricultural uses by requiring buffers between proposed non-agricultural uses and adjacent agricultural operations.

3.0 Implementation Program

The General Plan includes certain implementation measures which require the preparation of subsequent planning documents, guidelines and plans for agricultural preservation. These Implementation requirements are listed below:

Implementation Program 1.8: The County shall develop a buffer program containing buffer design and maintenance guidelines that will be used to minimize conflicts between agricultural and non-agricultural uses. The program should include, but not be limited to, the following:

1). Buffers shall be physically and biologically designed to avoid conflicts between agricultural and non-agricultural uses. The biological design should ensure that the buffer does not provide a host environment for pests or carriers of disease which could potentially impact farming operations.

2). Buffers shall be located on the parcel proposed for non-agricultural use.

3). Buffers should primarily consist of a physical separation (setback) between agricultural and non-agricultural uses. The appropriate width shall be determined on a site-by-site basis, taking into account the type of existing agricultural uses, the nature of the proposed development, the natural features of the site, and any other factors that affect the specific situation.

4). In addition to physical separation, the following buffer options should be considered: greenbelts/open space, park and recreation areas, roads, waterways, vegetative screens and certified organic farms. These buffering options may be used in any combination to most effectively reduce conflicts arising from adjacent incompatible uses.

5). An on-going maintenance program for the buffer which may include vector controls.

6). Policies indicating that buffer restrictions may be removed if all adjacent parcels have been irreversibly converted to non-agricultural uses.

4.0 Buffer Descriptions

A buffer is a strip of land used to physically separate one conflicting use from another. Buffer zones are specifically intended to shield or obstruct noise, dust, lights, or other nuisances generated on one parcel and transmitted to another. A buffer zone can take several forms. Distance can create one form of horizontal buffer. A barrier such as dense tree plantings or earth mounds can create another type of buffer. Usually a combination of more than one buffer type makes the most appealing and effective buffer system. Fences or walls are also viable buffer designs but, used by themselves, are often not a good single solution to separating potentially conflicting land uses. One of the best buffers for agricultural uses is horizontal distance, or setbacks, being maintained between conflicting land uses. Reasonable setback distances provide the spatial insulation needed to dilute the effects of noise, dust, insects (flies) or pesticides from one parcel to another. A well designed buffer system will consider, incorporate or utilize the following:

- *Uses on both sides of the proposed buffer area,*
- *Physical or legal barriers in the area,*
- *Features of the development project such as parks, trails or roadways.*
- *Historic or environmental features of the site,*
- *Flood plains or streams,*
- *Views / vistas*
- *Major landmarks*
- *Existing circulation system*
- *Existing structures*
- *Soil types in the area*
- *Maintenance of the buffer and the entity responsible*
- *Efficient use of land*
- *Level of cooperation between parties*

The following Sections describe the buffering elements that should be considered in the planning of development projects which are located adjacent to agricultural areas. It is important to carefully consider a projects' buffering needs in order to prevent future problems and avoid potential conflicts to adjacent agricultural areas in the future.

5.0 Buffer Standards and Guidelines

The Buffering Standards and Guidelines provide a set of criteria and examples for buffering that will be used to incorporate appropriate buffering designs for various development projects. The Standards and Guidelines will be used by the County Staff, Planning Commission and Board of Supervisors in determining the general development characteristics that projects requiring buffers should comply with.

5.1 Definition of Buffering Standards and Buffering Guidelines

Buffering Standards are intended to provide the rules for buffering while the Guidelines describe one or more different strategies or ways that the Standards may be implemented.

5.1.1. Buffers Required

Buffers are required for any new "project" which proposes to locate adjacent to an existing or zoned agricultural use or a "project" which proposes to expand it's use through the granting of additional entitlements from the County and is located adjacent to an agricultural use. These "projects" will be evaluated for potential land use conflicts to agriculture.

5.1.2 Compatible Biological Design

Standard: Buffers should be physically and biologically designed to avoid conflicts between agricultural and non-agricultural uses. The biological design should ensure that the buffer does not provide a host environment for pests or carriers of disease which could potentially impact adjacent agricultural operations.

Guideline: As part of the overall project application, the applicant will consult with the County Agricultural Commission, the U.C. Extension Agricultural Advisor's Office and also may use other qualified consultants* to insure that the plant materials or other buffer improvements proposed will not create a host environment for pests or diseases for the agricultural area.. If the County feels that additional consultants are needed, the County will determine what consultants are necessary. (*Qualified consultants may include Resource Ecologists, Biologists, various agricultural consultants, entomologists, and other related fields)

5.1.3 Location

Standard: Buffers should be located on the parcel proposed for non-agricultural use.

Guideline: A development project located adjacent to an agricultural use or parcel(s) will be required to locate the required buffer on the development project's side. In general, only non-habitated structures, and no residential structures will be allowed within the setback zone. Other compatible uses may be allowed within the buffer area as determined by the County.

5.1.4 Setbacks

Standard: Buffers should primarily consist of a physical separation (setback) between agricultural and non-agricultural uses. The appropriate buffer distance shall be determined on a site-by-site basis taking into account the type of existing agricultural uses, the nature of the proposed development, the natural features of the site, and any other factors that may affect the specific buffering needs. Table 1-1 identifies the recommended minimum setbacks from various agricultural uses:

Table 1-1
Minimum Agricultural Buffer Zone Dimensions

Agricultural Use	Buffer Zone Width		Modifiers
	Residential Exclusion Area [A]	Buffer Width Range [B]	
Field Crops	100 ft.	100 to 400 ft.	1.,2.,3.
Irrigated Orchards	300 ft.	300 to 800 ft.	1.,2.,3.
Irrigated Vegetables, Rice	200 ft.	200 to 800 ft.	1.,2.,3.
Rangeland, Pasture	50 ft.	50 to 200 ft.	2.,3.
Vineyards	300 ft.	300 to 800 ft.	1.,2.,3.
Dry Farm Nuts	100 ft.	100 to 200 ft.	1.,2.,3.
Wholesale Nurseries	100 ft.	100 to 400 ft.	1.,2.,3.
Animal Husbandry	200 ft.	200 to 1,000 ft	3.

(A.) Residential structures prohibited, non-habitable structures permitted on a case-by-case basis

(B.) Actual buffer zone dimensions determined upon project or design review.

1. Use of screen plantings, berms, other types of compatible agriculture (organic farms, etc.) and other compatible land use types will allow for reduced setbacks. The actual setback distance will be determined at the project/design review stage with recommendations from agriculture experts or other consultants.
2. Use of roads, drainage canals, compatible utility or service areas and utility corridors as part of the required setback is encouraged.
3. Buffer widths may be increased if a determination is made by the County that other non-residential uses will create a conflict to the adjacent agricultural operations.

Guideline: Creative project design and the use of additional buffering strategies and techniques may permit a reduction of the recommended setbacks. The project applicant, with input from the Agricultural Commission, the U.C. Agricultural Extension Office and possibly other qualified consultants*, may be requested to provide scientifically-valid recommendations regarding the specific buffer proposed. The County and other recommending agencies will also consider the type of development proposed, the natural features of the site, and will also consider compatible ancillary land uses which may be located in and adjacent to the buffer and which will not impact agriculture or other adjacent land uses.

(*Consultants may include experts or professionals with experience relating to the proposed buffer type, including, but not limited to: Resource Ecologists, Biologists, Farm Advisors, Licensed Pest Control Advisors, Landscape Architects, Agricultural Production Experts).

5.1.5 Land Use and Other Buffer Options

Standard: In addition to setbacks, other land uses which create a buffer should be considered. These include: greenbelts/ open space, large parcels (ranchettes) park and recreation areas, roads, waterways, vegetative screens, and organic farms. These buffering options may be used in any combination to most effectively reduce conflicts anticipated from adjacent incompatible uses. (Refer to Figure 2)

Guideline: Consider a required buffer area as an opportunity to include compatible land uses into the buffer area. Compatible uses include industrial uses, most commercial uses, park and recreation uses, wetlands/habitat areas, open space, and residential areas (parking areas, landscaped areas etc.)

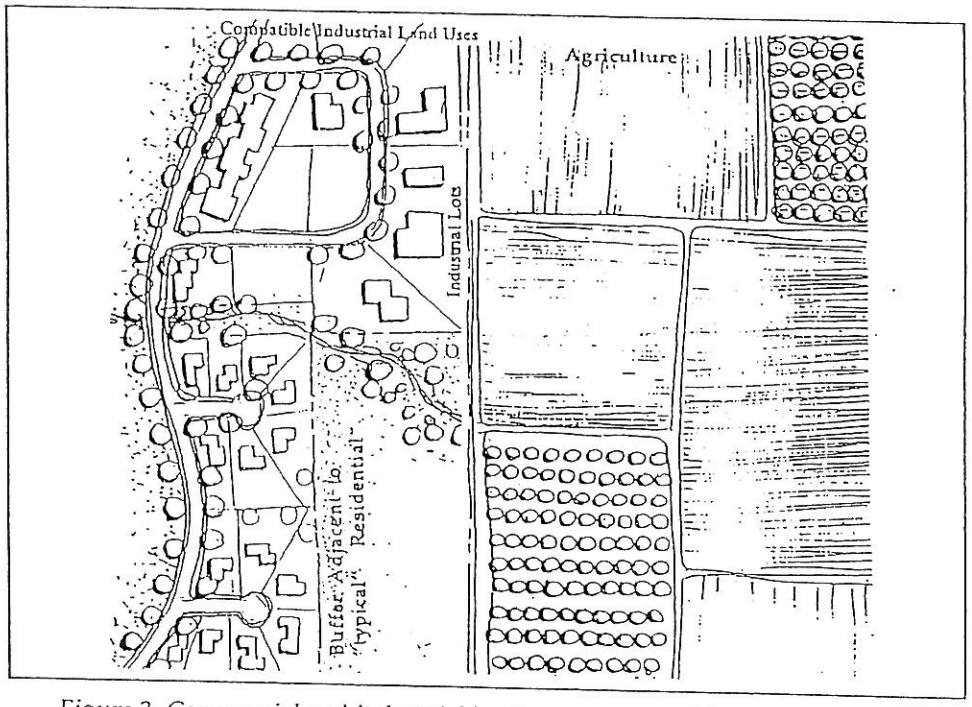


Figure 2: Commercial and industrial land uses are generally compatible with agriculture

5.1.6 Maintenance

Standard: All buffers will have an ongoing, reliable, maintenance program for the buffer which includes a funding program and may include vector controls. The proposed buffer maintenance program will be submitted along with the project's application.

Guideline: The design of the buffer and materials used (i.e. landscaping, etc.) can significantly effect the overall cost of maintenance. The maintenance program will consider the method of maintenance, the frequency and how the on-going funding for the maintenance program will be derived.

5.1.7 Conversion

Standard: When development is proposed on one or more parcels located outside of the Yuba City Sphere of Influence (as of 9/1/98), the development project may include conditions or policies indicating that the buffer restrictions may be removed if all of the adjacent parcels have been irreversibly converted to non-agricultural uses. For development projects located within the Yuba City Sphere of Influence, the project shall include a strategy or plan on how the buffer area will be converted to an urban use if all of the adjacent parcels have been irreversibly converted to non-agricultural uses.

Guideline: 1) Existing agricultural uses located in the Yuba City Sphere of Influence should generally be considered to be non-permanent. Where a development project is located in the urban area and is situated adjacent to an existing agricultural use, the County will favorably consider reducing the required buffer distance. In some cases, where the County finds that an agricultural use in the urban area may impede the normal path of development, the buffer requirement may be eliminated or significantly reduced at the option of the County. 2) For development projects located on the north or south boundary lines of the Yuba City Sphere of Influence, , the County may require a buffer distance which exceeds the distances found on Table 1-1. This is to provide additional "insulation" for agricultural parcels located immediately outside of the urban boundary and will result in a more permanent urban boundary line. 3) For development projects located within the Yuba City Sphere of Influence and where a buffer conversion plan is required by the County, the buffer conversion plan shall include a strategy for providing utilities, street access and other infrastructure to the buffer area should it be developed.

6.0 Examples of Buffers

Projects requiring buffering from existing agricultural uses should include a comprehensive review of the current and future trends in the area. Buffers should be considered a dynamic feature that should be capable of being modified to fit the present and future situation.

6.1 Greenbelts/Open Space

In large master planned projects that abut agricultural properties, wetlands, wildlife habitat, greenbelts or open space corridors can be effective buffers. Buffers or greenbelts can be heavily landscaped or remain natural. Greenbelts can contain much of the open space that may otherwise be included on the interior of the project. A reorientation of the project towards the exterior of the site with the use of a greenbelt

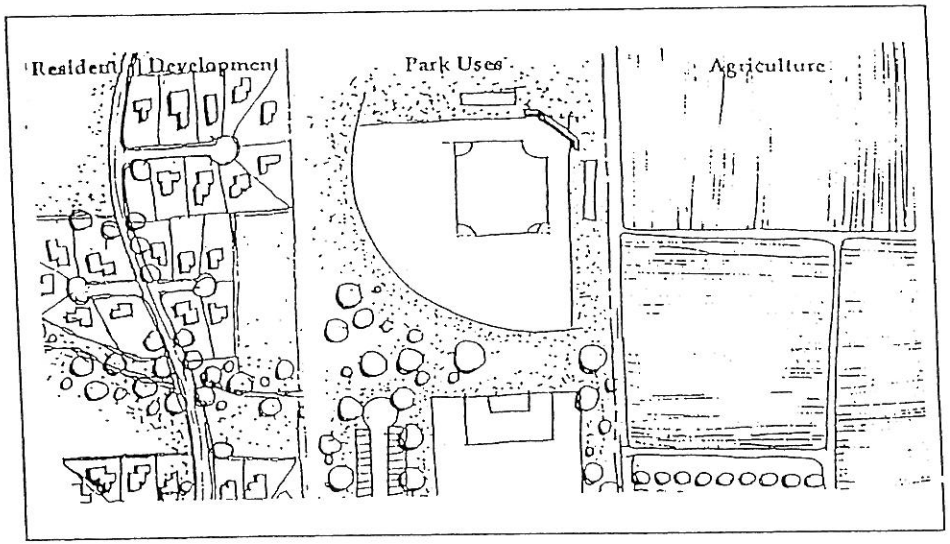


Figure 3: Park and recreation uses are encouraged within most buffers

as a buffer for the agricultural use can have many benefits. The greenbelt may need to contain additional protections such as a fencing, a wall or tree hedgerow to prevent residents or pets from wandering into the active farmland.

6.2 Park and Recreation Areas

A required buffer may double as a park or recreation area thus serving the need to both buffer and provide recreation areas for the project. The park could be a passive design, or active, depending on the circumstances of the site and the sensitivity of the surroundings. Connections to existing or planned trails can add other benefits to the area within and surrounding the proposed development project. Note that certain park activities may be incompatible with adjacent agricultural areas if/when agricultural spraying occurs, etc.(Refer to Figure 3)

6.3 Roads

Road alignments placed at the edge of a subdivision or development project can be an effective buffer. Lots can be created on one side of the road with the farmland on the other.

6.4 Waterways

In some instances, a project may be adjacent to a waterway such as a canal, stream or levee system. These barriers create a natural boundary, require little or no maintenance and are visually pleasing. Waterway buffers will normally be preexisting to the project in most instances. A development project may propose a lake, pond or drainage facility as part of the project to meet the drainage and aesthetic objectives of the project; these

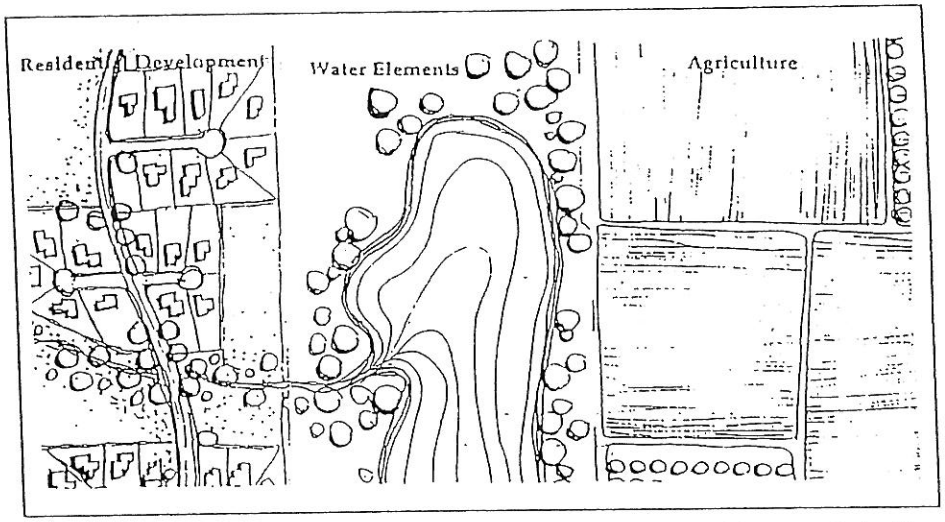


Figure 4: Water features and reservoirs provide excellent utility uses in buffer areas

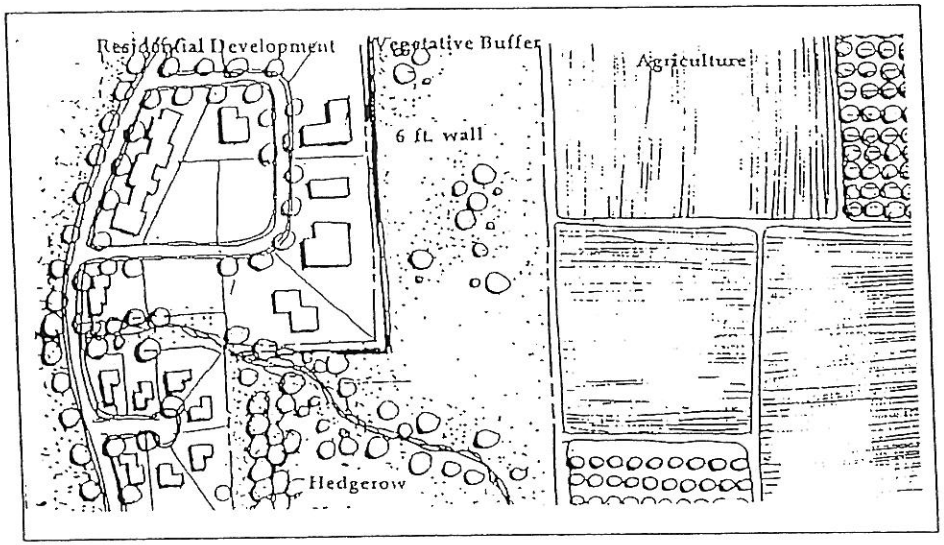


Figure 5: Walls, hedgerow plantings and other barriers provide additional buffering

facilities may also be included in the buffer area. (Refer to Figure 4)

6.5 Barriers and Vegetative Buffers

A wall or fence may provide a simple solution to buffer conflicting land uses. Problems of trespassing, vandalism, litter, theft and dogs can be reduced by insertion of fences and walls. A wall or fence in combination with landscaping can reduce the negative effects of walls as plain barriers. Trees, shrubs or natural landscaping is usually preferred over just walls.

In some areas, hedgerows can be used to separate parcels effectively. A hedgerow is a densely-planted vegetative barrier that provides buffering in both vertical as well as horizontal elements. The width will vary by crop type and project design. Hedgerows usually have minimal maintenance and can be incorporated along with other buffer features. Examples of hedgerows: Natural grass strips, tree windbreaks, forests, agricultural plantings which are compatible with the adjacent areas, etc. (Refer to Figure 5)

6.6 Agricultural Easements

Agricultural easements are a relatively new concept that allows a property owner to reserve the use of their property specifically for agriculture. Agricultural easements can either be granted for a specific term or may be permanent. A property owner may impose an agricultural easement on a property which will then reserve the property to an agricultural use for the term of the easement. An agricultural easement may include a buffer area which provides for the setbacks and insulation from adjacent uses as recommended in these guidelines. Since an agricultural easement is relatively permanent, they should only be implemented in locations where agricultural uses are deemed to be viable for at least 20 years or more.

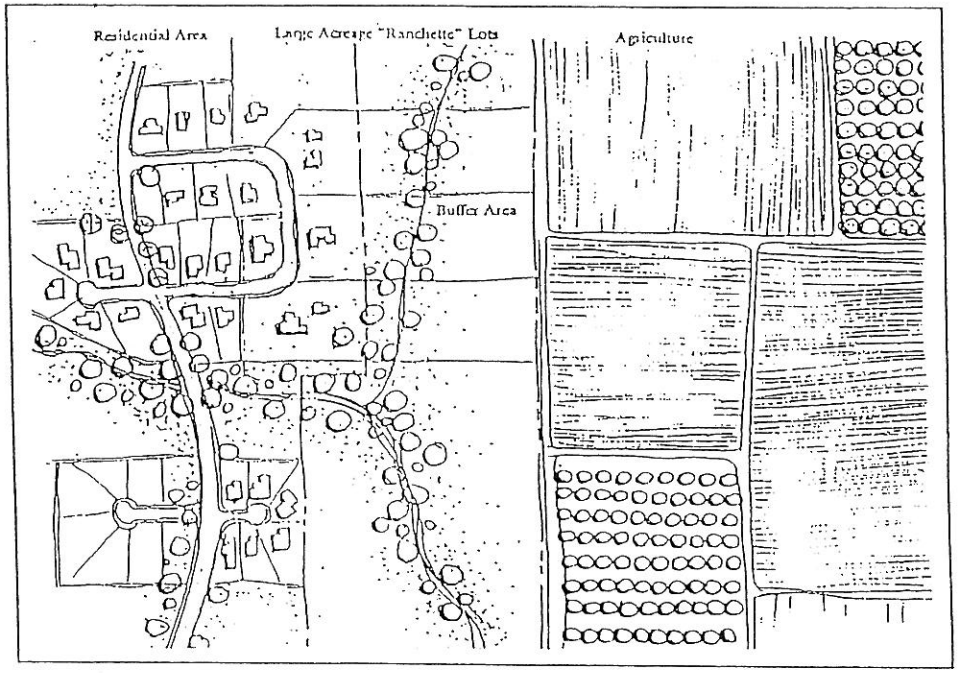


Figure 6: Large acreage "ranchette" lots provide excellent buffering for agriculture

6.7 Setbacks

Different agricultural activities have different buffering requirements. Agricultural production practices, spraying requirements and tillage practices vary considerably by type of crop and

buffer distances would vary accordingly. Table 1-1 includes the recommended buffering distances for the County. Future sensitive land uses which may be located adjacent to or in the vicinity of existing agricultural uses may need additional buffering. One method is to require additional setback distances from the agricultural parcels. Sensitive uses include, but are not limited to schools, daycare centers, medical care facilities and certain "clean" electronics manufacturing and industrial uses.

6.8 Ranchettes

Ranchettes are larger residential lots in the range of 3 to 10 acres in size. A series of ranchette lots can be placed on the outside of an subdivision project as a means to buffer adjacent agricultural land. The ranchettes will create a type of transition zone between the agricultural area and the high density subdivision lots. (Refer to Figure 6)

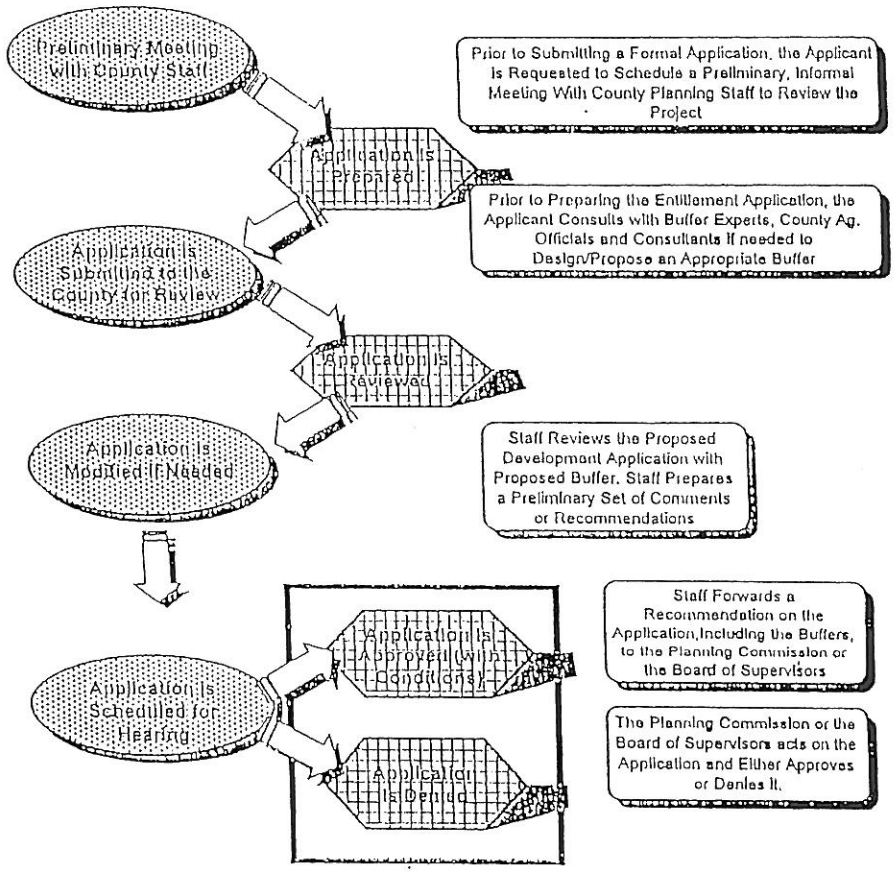
6.9 Certified Organic Farms

Farms certified as California Certified Organic Farms (CCOF) can be used to buffer various types of development projects. A Certified Organic Farm could be located on an independent parcel adjacent to a development project or, the development project proponent could establish the organic farm. Impacts from any adjacent residential uses may still occur to the organic farm area. Also, operational impacts such as dust and machinery noise from the organic farm to adjacent residential areas may still occur.

7.0 Implementation

Where a development project is proposed adjacent to an existing viable agricultural use, or an agriculturally-zoned parcel, the required buffer should be designed by the project

General Development Application and Buffer Review Process



applicant/developer as part of their project. The project, including the proposed buffer types, setback distances and other elements, will be reviewed by County staff through the normal type of review process that each project receives. The Planning Commission or the Board of Supervisors will, as required in the County Code, review the project and make a determination regarding the application, including the proposed buffer(s). The Planning Commission or the Board will make the final determination regarding the project application, and they may require modifications as they see appropriate.

7.1 Maintenance Program

A maintenance program for all proposed buffers is required to be developed by the project applicant and submitted to the County for review. The program, in the form of a draft report, shall be submitted with the development project application at the time of project submittal to the County. The program shall include provisions for short and long term maintenance of the buffer, financial arrangements to pay for maintenance, technical issues to be considered in maintenance, such as drainage, and lastly a provision for review by the County to determine the effectiveness of the buffer. As part of the maintenance program, the County will require a confirmation of maintenance for an appropriate term for the proposed buffer. Confirmation may be provided, for example, by a 1 to 2 year renewable maintenance contract, formation of a Property Owners Association responsible for maintenance, or other responsible entity such as an assessment district which is charged with the on-going maintenance of the buffer. The County will consult with the County Agricultural Commission, the U.C. Agricultural Extension Office and any other agency or other consultants as necessary to determine if the proposed maintenance program is adequate.

Appendix

A. Agency Assistance

1. The Sutter County Resource Conservation District (SCRCD) can assist in the technical aspects of the project design, maintenance program development and incorporation of buffers that will be effective. The SCRCD can assist in biological evaluation of the site, technical considerations and incorporation of conservation measures.

2. The Sutter County Agricultural Commissioner is a Board-appointed position responsible for fostering and assisting with agricultural production in the County. Pesticide management and permitting is one of the responsibilities of the Ag. Commissioners' Department. Burn permits for agricultural burning are also issued by the Commissioner.

3. Private-industry professionals can provide a range of services to assist in the buffer design process. Arborists, Resource Ecologists, Licensed Pesticide Control Advisors and Landscape Architects are a few of the consultants who generally have the expertise to assist in determining an appropriate buffer design as well as the required maintenance program.

1996 Guidelines for Orderly Development

Preface:

In a cooperative effort to guide future growth and development, the cities, County and Local Agency Formation Commission have participated in the creation of these "Guidelines for Orderly Development." The following guidelines are a continuation of the guidelines which were originally adopted in 1969, and maintain the theme that urban development should be located within incorporated cities whenever or wherever practical.

The intent of these guidelines is to clarify the relationship between the cities and the County with respect to urban planning, serve to facilitate a better understanding regarding development standards and fees, and identify the appropriate governmental agency responsible for making determination on land use requests. These guidelines are a unique effort to encourage urban development to occur within cities, and to enhance the regional responsibility of County government.

These guidelines facilitate the orderly planning and development of Ventura County by:

- Providing a framework for cooperative intergovernmental relations.
- Allowing for urbanization in a manner that will accommodate the development goals of the individual communities, while conserving the resources of Ventura County.
- Promoting efficient and effective delivery of community services for existing and future residents.
- Identifying in a manner understandable to the general public the planning and service responsibilities of local governments providing urban services within Ventura County.

General Policies

1. Urban development should occur, whenever and wherever practical, within incorporated cities which exist to provide a full range of municipal services and are responsible for urban land use planning.
2. The cities and the County should strive to produce general plans, ordinances and policies which will fulfill these guidelines.

Policies Within Spheres of Influence

The following policies shall apply within City Spheres of Influence (Spheres of Influence are created by LAFCO, as required by State law, to identify the probable boundaries of cities and special districts, realizing that spheres may be amended from time to time as conditions warrant):

3. Applicants for land use permits or entitlements for urban uses shall be encouraged to apply to the City to achieve their development goals and discouraged from applying to the County.
4. The City is primarily responsible for local land use planning and for providing municipal services.
5. Prior to being developed for urban purposes or to receiving municipal services, land should be annexed to the City.

6. Annexation to the City is preferable to the formation of new or expansion of existing County service areas.

7. Land uses which are allowed by the County without annexation should be equal to or more restrictive than land uses allowed by the City.

8. Development standards and capital improvement requirements imposed by the County for new or expanding development should not be less than those that would be imposed by the City.

Policies Within Areas of Interest Where a City Exists:

The following policies apply within Areas of Interest where a City exists, but outside the City's Sphere of Influence (Areas of Interest are created by LAFCO to identify logical areas of common interest within which there will be no more than one City):

9. Applications for discretionary land use permits or entitlements shall be referred to the City for review and comment. The County shall respond to all comments received from the City.

10. The County is primarily responsible for local land use planning, consistent with the general land use goals and objectives of the City.

11. Urban development should be allowed only within Existing Communities as designated on the County General Plan.

12. Existing Communities as designated on the County General Plan should financially support County-administered urban services which are comparable to those urban services provided by Cities.

Policies Within Areas of Interest Where No City Exists:

13. The County is responsible for land use planning and for providing municipal services.

14. Urban development should only be allowed in Unincorporated Urban Centers or Existing Communities as designated in the County General Plan.

15. Urban development in Unincorporated Urban Centers should only be allowed when an Area Plan has been adopted by the County, to ensure that the proposed development is consistent with the intent of the Guidelines.

Definitions for Implementing Guidelines for Orderly Development:

"Urban Development"

Development shall be considered urban if it meets any of the following criteria:

- It would require the establishment of new community sewer systems or the significant expansion of existing community sewer systems;

- ❑ It would result in the creation of residential lots less than two (2) acres in area; or
- ❑ It would result in the establishment of commercial or industrial uses which are neither agriculturally-related nor related to the production of mineral resources.

"Existing Community":

Existing Community is a land use designation of the County General Plan which identifies existing urban residential, commercial, or industrial enclaves located outside Urban designated areas (i.e., cities or Unincorporated Urban Centers). An Existing Community may include uses, densities, building intensities, and zoning designations which are normally limited to Urban designated areas but do no qualify as Unincorporated Urban Centers. This designation has been established to recognize existing land uses in unincorporated areas which have been developed with urban building intensities and urban land uses; to contain these enclaves within specific areas so as to prevent further expansion; and to limit the building intensity and land use to previously established levels.

"Unincorporated Urban Center":

Unincorporated Urban Center is a term of the County General Plan which refers to an existing or planned urban community which is located in an Area of Interest where no city exists. The Unincorporated Urban Center represents the focal center for community and planning activities within the Area of Interest, and may be a candidate for future incorporation.