

Schroader, Kathy



From: Cnty Board of County Councilors General Delivery
Sent: Tuesday, April 05, 2016 7:33 AM
To: Mielke, Tom, Madore, David, Stewart, Jeanne, Olson, Julie (Councilor), Boldt, Marc
Cc: McCauley, Mark; Tilton, Rebecca, Schroader, Kathy
Subject: FW: Comments for County Council RILB public hearing April 5
Attachments: Ag_buffering_guidelines.pdf; plng-guide-sep-ag.pdf

more for the record

From: Tim Trohimovich [mailto:Tim@futurewise.org]
Sent: Monday, April 04, 2016 3:46 PM
To: Cnty Board of County Councilors General Delivery; Cnty 2016 Comp Plan
Subject: RE: Comments for County Council RILB public hearing April 5

Dear Sirs and Madams.

Here is two of the enclosures referenced in our letter.

Tim Trohimovich, AICP
Director of Planning & Law
☐ ☐

**future
wise** ☐
816 Second Avenue, Suite 200
Seattle, WA 98104-1530
206 343-0681 Ex 118
tim@futurewise.org
connect ☐ ☐
futurewise.org

From: Tim Trohimovich
Sent: Monday, April 04, 2016 3:41 PM
To: 'boardcom@clark.wa.gov' <boardcom@clark.wa.gov>; 'comp plan@clark.wa.gov' <comp.plan@clark.wa.gov>
Subject: Comments for County Council RILB public hearing April 5

Dear Sirs and Madams.

Enclosed please find our comment letter for the April 5, Rural Industrial Land Bank public hearing. It also includes two of the enclosures. We are sending other enclosures in two separate emails. Thank you for considering our comments.

Tim Trohimovich, AICP
Director of Planning & Law
☐ ☐
**future
wise** ☐
816 Second Avenue, Suite 200
Seattle, WA 98104-1530
206 343-0681 Ex 118
tim@futurewise.org
connect ☐ ☐

/

Guidelines for Establishing Effective Buffers Between Rural Agricultural and Urban Uses

(June 6, 2006)

Prepared by the
Resource Lands Review Committee (RLRC)
of the
Rogue Valley Regional Problem Solving process

APPENDICES

APPENDIX 1 – Spray Drift Buffer Criteria	27
SECTION A – TREE BUFFERS	27
A1) Buffer Layout	
A2) Spacing and Number of Tree Rows	
A3) Tree Spacing within Rows	
A4) Tree Height at Planting	
A5) Tree Foliage Characteristics	
A6) Recommended Tree Species	
SECTION B – BAMBOO BUFFERS	34
B1) Buffer Layout	
B2) Bamboo Containment	
B3) Spacing and Number of Bamboo Rows	
B4) Bamboo Spacing within Rows	
B5) Height at Planting	
B6) Recommended Bamboo Species	
SECTION C – TRESPASS-INHIBITING SHRUBBERY	38
C1) Spacing and Number of Rows	
C2) Spacing within Rows	
C3) Foliage Characteristics	
C4) Overall Shrub Height	
C5) Recommended Trespass-Inhibiting Species	
SECTION D – SCREENING SHRUBBERY	39
D1) Spacing and Number of Rows	
D2) Spacing within Rows	
D3) Foliage Characteristics	
D4) Overall Shrub Height	
D5) Recommended Screening Shrub Species	
SECTION E – TRANSITIONS BETWEEN DIFFERENT INTENSITY BUFFERS	40
SECTION F – NOISE MITIGATION FOR SENSITIVE RECEPTORS	41
F1) Noise Zones	
F2) Minimum Criteria For Structural Noise Mitigation	
SECTION G – FENCING	44
G1) Fencing Specifications	
G2) Fencing Placement	
SECTION H – OTHER DESIGN CONSIDERATIONS	46
H1) Irrigation System	
H2) Road Placement	
APPENDIX 2 – Definitions	47
APPENDIX 3 – Model Right to Farm Restrictive Covenant	49
APPENDIX 4 – Model Agricultural Buffering Ordinance	51
APPENDIX 5 – Reference Material	51

Guidelines For Establishing Effective Buffers Between Rural Agricultural and Urban Uses

I – INTRODUCTION

Good quality rural agricultural land is a finite and steadily shrinking state and regional resource that must be conserved and managed for the long term. A crucial element of Oregon's Statewide Planning Goals and Guidelines, developed out of Senate Bill 10 in 1969, is to "preserve and maintain rural agricultural lands" (Goal 3). The Oregon Legislature subsequently adopted policies (ORS 215.243 and 215.700) to further define how to preserve "the maximum amount of the limited supply of rural agricultural land" and the Department of Land Conservation and Development has developed numerous Administrative Rules in further support. Current state policies and law overwhelmingly mirror public opinion concerning rural agricultural land, with the most common reasons for preserving farmland having to do with its significant role in diversifying the regional economy, the important contribution it makes to the area's quality of life and culture, its ability to provide wildlife corridors, the protection it can provide to riparian areas, and even the temporizing effect it can have on the local microclimate.

One unintended consequence of the clear demarcation between rural and urban uses created by the statewide land use system in Oregon is the conflict often created by the sharpness of the transition from many urban uses to farming practices. Chemical spray drift, noise, dust, odor, and chemical run-off from the rural agricultural side affect new urban residents, and sediment, stormwater run-off, residential chemical spray drift, trespass, and vandalism impact the rural agricultural side. The closer the two uses are to each other, the more dramatic and long-term the problems are likely to be.

The most effective means of lessening the potential for conflict is separating the two uses. Although there are a variety of ways in which to achieve this separation, the most elemental is distance. The greater the distance, the greater the buffering effect. Unfortunately, land is at a premium in the Rogue Valley, and buffer areas that are practical for this relatively narrow and densely populated valley will not totally eliminate all impacts of rural agricultural activities. This region does not have the luxury of setting aside 1,000 feet or more of buildable urban land to mitigate potential conflicts between urban and rural uses. The education of residents and farm operators, the employment of deed restrictions, siting requirements, construction standards, fencing, minimal separation distances, vegetative elements, and the use of best farming practices, including systems of spray notifications, are all useful mechanisms in avoiding as much conflict as possible.

II – PURPOSE

The purpose of establishing a regionally applicable set of guidelines for buffering urban development from rural agricultural lands is to provide consistent technical guidance on reducing the potential for conflict between farming activities and urban uses (principally residential and institutional development). This purpose is in accordance with the Planning Guidelines of Statewide Planning Goal 3 (Agricultural Lands), which states that urban growth should be separated from rural agricultural lands by buffer or transitional areas of open space. The guidelines in this document are intended to assist local governments, developers, landholders, and consultants in arriving at the best buffering solution for urbanizing areas in juxtaposition to rural agricultural land.

III – OBJECTIVES

These buffering guidelines seek to achieve the following objectives

- 1 To ensure the continued use of farmland for farm uses.
2. To minimize potential conflict by developing, where possible, a well-defined boundary between rural agricultural and urban uses. The best boundary will be one that provides a sound transition in both directions, from rural to urban and urban to rural
- 3 To minimize the impacts of urban development on rural agricultural production activities and land resources
- 4 To minimize the potential for complaints about rural agricultural activities from urbanized areas

IV – WORKING PRINCIPLES

The buffering guidelines herein have been developed around the following considerations

- 1 Adequate consideration of potential conflict between existing rural agricultural zoned lands and proposed urban levels of development is necessary during development assessment. **Significant conflict is assumed to be likely in all cases where urbanization is proposed within 500 feet of Class I - IV rural agricultural land. In addition, some lesser level of conflict is assumed possible within the next 500 feet from the urban/ rural boundary.** Agricultural buffers that are appropriate to the realities of the region will not be successful in completely negating these potential conflicts, but can lessen their severity, frequency, and negative impact on both agriculture and urban quality of life
- 2 Those individuals seeking to buy, rent, or lease urban properties within 1,000 of rural agricultural land should be informed in writing of the consequences of being located within a "rural agricultural impact zone "
- 3 Local or regional long-range planning should avoid, as far as is practicable, locating urban sensitive receptors, primarily residential development, in proximity to rural agricultural land. Where urban sensitive receptors must be located near rural agricultural land, buffering mechanisms should be used to minimize potential conflicts
- 4 The central concept in buffering is adequate separation between conflicting uses. There are a number of strategies for achieving this separation through planning decisions and the use of planning controls
 - ◆ A well-designed vegetative buffering element will reduce the amount of land required for an effective buffer
 - ◆ Man-made or natural features should be incorporated in buffers whenever possible, such as infrastructure rights-of-way, roads, non-residential structures, watercourses, wetlands, ridge lines, rock outcrops, forested areas, and steep slopes
 - ◆ A buffer area can provide public open spaces or purpose-designed buffer areas (public recreational/natural areas) if the location is appropriate for satisfying a portion of the community's open space needs, the use of the buffer area as public open space is compatible with adjoining uses, the buffer area is not the community's principle provider of recreational opportunities, and the impacts from the adjoining rural agricultural use do not overly restrict the planned recreational use of the open space
 - ◆ Existing areas of rural residential zoning can provide the required buffering if and when the rural residential lots provide a minimum of 200 ft of separation between the urbanizing and rural agricultural land
 - ◆ Existing small-acreage farms (5 acres or less) can provide the required buffering if and when the small acreage farms provide at least 200 ft of separation between the nearest farmable land (including animal enclosures) on the small-acreage farm land and the nearest planned urban sensitive receptor. The owners of these small-acreage farms must agree to the use of their property as a buffering mechanism

- ◆ There is a publicly owned right of way that could be incorporated as part of the buffer
- 5 It is unreasonable for new urban uses to require a modification of rural agricultural activities practiced according to recognized industry standards, especially if those modifications would hamper efficient rural agricultural operations. The existing use has precedence
- 6 Buffering mechanisms should be provided/funded by the proponent of the urban development. The buffering mechanisms will be physically located entirely on the urbanizing property, unless
- ◆ there is a publicly owned right of way that could be incorporated as part of the buffer,
 - ◆ there is a naturally occurring area on the rural agricultural land that is permanently incapable of being farmed (rock formation, riparian area, etc), is of sufficient depth, and is contiguous with the border of the urbanizing land or a publicly owned right of way,
 - ◆ the proponent of development purchases from the farm owner an easement on agricultural land of the appropriate length and depth, and pays for the establishment of whatever vegetative buffer, fencing, or irrigation system that would have been required on the urbanizing land, or
 - ◆ title to the area providing the physical portion of the buffer is transferred to the farm being buffered. If a vegetative buffer is indicated, it is installed by the developer. Whether a vegetative buffer is installed or not, the buffer is henceforth the responsibility of the farmer, and must be maintained as a buffer as long as the property remains zoned for resource use
- 7 The buffering mechanisms must be included in the development application and must be approved by the city **before or concurrent with** final approval for the development project
- 8 The city is responsible for enforcing compliance with all matters pertaining to the implementation of planned and approved buffering plans. The city shall permit developers flexibility in scheduling the establishment of the approved buffering mechanisms due to factors such as water availability, weather, and general logistics, although the buffer plan shall establish a sequencing of buffer mechanism implementation that demonstrates completion prior to either final plat sign off or final building inspection (for larger lot buffers and in the event no land division occurs)
- 9 Although flexibility in the nature and design of buffering mechanisms can be provided for in the event of significant localized circumstances, customized (flexed) buffer designs must be at least as effective as the buffering options established herein. Proposed flexed buffer designs must be clearly justified, with the burden of proof being on the proponent of urban development to show that the flexed buffer design will not reduce the intended level of protection
- 10 Class I – IV rural agricultural land is presumed to be of “high potential impact” due to the fact that it can be and often is used for a wide variety of different rural agricultural uses, and because new and as yet unforeseen uses and practices are likely to surface in the future. Therefore, these rural agricultural lands are assumed to require buffering mechanisms that mitigate the most likely high impact rural agricultural land use, regardless of present use. The only exception to this would be those class I – IV rural agricultural lands that have a long and essentially unbroken history of rural agricultural inactivity or grazing use. These, as well as all Class VI rural agricultural lands, would be considered of “low potential impact” (see Element A - Chemical Spray Drift)
- 11 To mitigate a reduction of overall residential densities resulting from urban land dedicated to buffering mechanisms, a city shall permit the proponent of urban development to maintain planned densities through lot size averaging, clustering, planned development criteria, or similar techniques. The objective is to maintain minimum density across the development
- 12 Where conflicts already exist between rural agricultural and urban land uses, mechanisms including mediation, source controls, and public outreach are encouraged

V – APPLICABILITY OF THE GUIDELINES

Although these buffering guidelines were developed to be applied to urbanizing lands originally selected as urban reserve lands identified through the Regional Problem Solving process “NOW X 2”, they can also be applied to future urban growth boundary expansions into non-urban reserve lands, should

changing conditions cause that to occur

These guidelines can also be used by cities to buffer urban development occurring within already established urban growth boundaries from rural agricultural land outside the UGB (whether that rural land part of or not part of an Urban Reserve Area) The single greatest potential difficulty in applying these guidelines (which are generally more comprehensive than those presently in force in the region's cities) within existing UGBs is the possibility that there are single lots on the urbanizing side, not part of a larger development and less than 300 ft in depth, which could suffer disproportionately from the economic impacts of the buffer requirements In those cases, depending on the width of the lot, a proportionate buffering distance should be determined Jackson County's **Alternative Setback Reduction Rules** (Jackson County 2004 Land Development Code chapter 8, Section 8.5 3(F)) provide an example of how such a proportionate distance could be calculated An alternate means of buffering these relatively shallow parcels could be the use of a scaled-back bamboo-based vegetative buffer reduced to a minimum of 30' in width (a single rather than double row of bamboo spaced 10 ft apart at planting), with an additional 5' width for a climb-resistant fence Flexibility of this type is only permissible when applied to parcels within UGBs established prior to January 1, 2006

VI – BUFFER LONGEVITY

Depending on the location of the urbanization, whether it borders rural agricultural land that is either outside of the UGB but within an Urban Reserve, or wholly outside of an Urban Reserve, buffering mechanisms can be expected to have a shorter or longer useful life There are two categories of buffers based solely on their projected longevities – **long-term and mid-term buffers**

Long-term Buffer Buffers providing protection to rural agricultural lands outside of Urban Reserve Areas The rural agricultural lands being buffered are resource lands not identified for future urbanization in any state-recognized plan, either regional or municipal

Mid-term Buffer Buffers providing protection to rural agricultural lands within a city's Urban Reserve Area

Long-term and mid-term buffers are closely related in their requirements, and both must be designed to preserve longer-term functionality Nonetheless, because the rural agricultural land being protected by mid-term buffers is destined for conversion to urban uses within a distinct planning horizon, albeit a relatively long one, mid-term buffers must be designed for eventual conversion to urban uses The specific buffering mechanism used in a mid-term buffer will depend on a number of factors what is the most likely time period it will remain as a buffer, what are the important financial considerations affecting the proponent of development, and to what specific use will the buffer eventually be put once the rural agricultural land is urbanized – will the physical buffer eventually be converted to housing or to roads, or will it be used to provide a recreational use for the community?

For some mid-term buffers, **the simplest yet most effective solution to providing the buffer may be to defer the development of an appropriate portion of the urbanizing land bordering rural agricultural land until such time as that rural agricultural land is made urbanizable through its eventual incorporation into the UGB and subsequent annexation.**

VII – MAJOR BUFFERING ELEMENTS

For the purposes of providing options for addressing the major potential sources of conflict between rural agricultural and urban lands, these sources of conflict have been grouped as follows

Chemical Spray Drift – Principally directed at mitigating rural agricultural chemical use, but can also be effective in protecting agricultural production from careless homeowner use of agrochemicals Separation between urban and rural agricultural uses is the preferred tool,

employing either simple distance or a combination of distance and a vegetative buffer

Noise – Noise is an impact arising from rural agricultural operations. A reasonable level of mitigation can be achieved through community design and construction standards for individual structures.

Sediment and Stormwater Run-off – These impacts arise from both the urban and agricultural sides, and can severely impact rural agricultural operations as well as urban health and livability. These negative impacts can be avoided or significantly reduced by appropriate erosion prevention and control measures during construction, and by an adequate stormwater master plan for the development that takes into account impacts from and on the adjoining rural agricultural land.

Trespass and Vandalism – Trespass and vandalism are considered by most farmers to be the most serious issue facing agricultural operations in proximity to urban areas. Climb-resistant fences and/or trespass-inhibiting shrubbery are means of reducing these impacts, as is placing the buffer into private ownership (the option of allowing larger urban lots with strict setback requirements).

Odor – One of the less important agriculture-related impacts in the Rogue Valley. Unless there are compelling, site specific reasons why this would be especially critical (such as the presence of a livestock feed lot), the occasional issues with odor should be sufficiently addressed by requiring that the owners, renters, and those leasing urban properties within 1,000 ft of rural agricultural land receive notice through an explicitly worded restrictive deed covenant of the negative impacts to which they will likely be exposed as a result of living within 1,000 ft of farm land (see Appendix 3).

Dust, Smoke, and Ash – Like odor, a less important agriculture-related issue in this region, and, like odor, addressed by the use of a restrictive deed covenant.

ELEMENT A – Chemical Spray Drift

Problem Overview

The off-target movement of rural agricultural chemicals can be a cause for concern to urban residents in proximity to farming areas based on fears of exposure, and/or due to associated odors. Currently there is no acceptable ambient air standard for rural agricultural chemical spray drift, which, along with noise and dust, is considered a common by-product of farming practices under Oregon's Right to Farm statute.

In Oregon, research and field trials have shown that spray drift from orchard airblast type sprayers over open ground can cover distances up to 500 feet, with most falling to earth within a 200 to 300 foot distance (less when applied under optimal conditions). Spray drift from tractor-mounted boom-type sprayers is usually significantly less. Although these Rogue Valley guidelines assume that farmers, as well as their employees and contractors, will use rural agricultural chemicals in accordance with reasonable and practicable measures as set out in the EPA-approved label and pesticide regulations of the state of Oregon, chemical spray drift can and will be affected by a variety of factors:

- chemical composition/formulation,
- method of application/release height,
- use of surfactants or other spray additives,
- spray technology,
- applicator experience,
- frequency of application,
- ability of target vegetation to capture spray droplets,
- target structure;
- weather conditions,
- microclimate,
- topography, and
- natural and man-made landscape features.

Major Buffer Design Considerations

There are several major considerations affecting the design of buffers meant to mitigate chemical spray drift:

- ◆ Whether the adjoining agricultural land qualifies as "high potential impact" or "low potential impact",
- ◆ Whether the buffer will incorporate a vegetative element or not, and
- ◆ If a vegetative element is included in the buffer, whether it is designed to buffer "existing higher intensity" or "existing lower intensity" agricultural land.

Differing Levels of Potential Impact - The majority of the Class I – IV rural agricultural land to be buffered is considered to be of "high potential impact" due to the fact that it can be and often is used for a wide variety of different rural agricultural uses, and because new and as yet unforeseen uses and practices are likely to surface in the future. Nonetheless, there is a recognition that some rural agricultural land, by virtue of suitability and history, is of comparatively "low potential impact". The standards for buffering these rural agricultural lands are lower, based primarily on the reduced impacts of the rural agricultural practices on these lands – 50 to 100 ft. of separation between usable farmland and sensitive receptors, no vegetative buffers required, and just 50 ft. of separation for commercial and industrial uses, also without a requirement of vegetative buffers.

When is Rural Agricultural Land Considered of "Low Potential Impact"?

Rural agricultural lands can be considered of low potential impact if they

- 1) are composed of greater than 50% Class IV soils, can demonstrate an unbroken or essentially unbroken 25-year history of rural agricultural inactivity (fallow land) or grazing use, **and** which have one or more of the following (as determined by a certified soil scientist)
 - ▶ greater than 50% hydric soils,
 - ▶ greater than 50% shallow soils (surface to bedrock or permanent cemented hardpan) of less than 2 ft in depth
- OR
- 2) are composed of greater than 50% Class VI or worse soil
- OR
- 3) are outside of an irrigation district's zone of influence (defined as the area within an irrigation district's present boundary, as well as areas presently lying outside, which cannot be considered ineligible on reasonable technical grounds – as determined by the most appropriate irrigation district - for a future expansion of an existing irrigation district)

Buffers Without Vegetative Elements - Buffers without vegetative buffers rely on sheer distance to control spray drift. In general in the Rogue Valley, in open ground conditions (without a vegetative buffering element), minimally effective buffers between urban sensitive receptors and high potential impact rural farmland should separate the two uses by between 100 and 200 ft. For non-sensitive receptors (commercial, professional, and industrial), that distance can be between 50 and 100 ft. While more land is necessary for a buffer without a vegetative element than for a buffer with one, the cost and complications associated with vegetative buffers, plus the long-term maintenance, can be avoided. Additionally, future urbanization is simplified.

There is flexibility in what can be included in a buffer to satisfy the required linear distances. For non-vegetative buffers, distance can be achieved by including one or more of the following components:

- ▶ Developable land devoted to buffering use,
- ▶ Man-made or natural features, such as infrastructure rights-of-way, roads, non-residential structures, watercourses, wetlands, ridge lines, rock outcrops, forested areas, and steep slopes;
- ▶ Non-farmable areas of the farmland being buffered (including yards, storage areas, roads, and all structures),
- ▶ Publicly owned land without significant present or projected public use (as determined by the public entity owning the land);
- ▶ Existing developed rural residential, rural commercial, or rural industrial parcels, within the urban reserve, and of at least 200' in depth as measured from a shared property line with EFU-zoned land (these parcels to be used for buffering, if contiguous with the urban reserve/rural border, must be at least 300 ft in depth to ensure future developability),
- ▶ A purchased easement (at least 200 ft in depth) on agricultural land,
- ▶ A portion (at least 200 ft in depth) of the proponent of development's land temporarily withheld from development to provide a mid-term buffer. This temporarily withheld land (which could be zoned under any of the county's designations) would be eligible for development upon the annexation of the rural agricultural land it buffers,

Buffers With Vegetative Elements - Research and field trials have shown well-designed vegetative buffers can be effective in capturing up to 80% of pesticide spray drift from an application upwind of even a single row of appropriate species of trees. The better designed the planting, the better the protection, and the more likely the effectiveness of the planting would be able to withstand the damage or death of individual trees. Where a vegetative buffer element can be satisfactorily established and maintained, or where one exists that is of acceptable width, composition, density (or optical porosity), and location, a minimum total width of 75 ft to 100 ft for urban sensitive receptors, and 50 ft for commercial and industrial uses, will suffice.

A major advantage to the proponent of development in establishing a vegetative element is the ability to halve or more than halve the separation distance (50, 75, or 100 ft instead of 100 to 200 ft.), which represents a savings to development. There can be further cost reductions in plant materials, labor, and material depending on whether the vegetative element is designed to buffer "existing higher intensity" or "existing lower intensity" agricultural land.

Existing Higher Intensity

Rural agricultural land would qualify for an "existing higher intensity buffer" if it includes existing plantings (or scheduled plantings within one year of projected buffer completion date, as determined by documented consultation with the owner/operator of the farming operation) of long-term crops with a height at maturity exceeding 4 ft. In the Rogue Valley, these are primarily vineyards and orchards (fruit or nut trees), but may also include other higher intensity crops as determined by the local Extension Service or the Oregon Department of Agriculture Design Summary (see Sections A and B of Appendix 1 for full details).

Tree-based buffer – 3 rows

Bamboo-based buffer – 2 rows (20 ft between rows, 10 ft. between plants)

Existing Lower Intensity

Rural agricultural land would qualify for an "existing lower intensity buffer" if it includes fallow land, land of potential high impact presently being used for grazing, or crops of any type with a height at maturity below 4 ft. In the Rogue Valley these are primarily row crops and hay fields, and all uses other than those falling under the definitions of "Existing Higher Intensity" Design Summary (see Sections A and B of Appendix 1 for full details).

Tree-based buffer – 2 rows

Bamboo-based buffer – 2 rows (20 ft between rows, 15 ft. between plants)

While the presumption is that any rural agricultural lands of high potential impact could establish crops and institute practices of higher intensity in the future (such as orchards), and thus buffers appropriate for these lands must all eventually be capable of buffering higher intensity rural agricultural practices, present use is a good indicator of near-future practices. Existing higher intensity practices require a more robust buffer earlier than lower intensity uses, while buffers designed for initial lower intensity will suffice to serve less intense uses during their early development. At or near functional maturity, lower intensity buffers will also suffice to provide adequate mitigation of spray drift from higher intensity uses (should those eventually occur).

The primary advantage in allowing these initial differences in buffer design is a reduction in short-term (and some long-term) costs. In tree-based buffers, it is a reduction of one row of trees, from three rows in the higher intensity buffer to two rows in the lower intensity buffer (although spacing between trees is reduced slightly in the two-row buffer). In bamboo-based lower intensity buffers, there is a reduction of approximately 35% in the initial plant material required by allowing greater spacing between plants.

For tree-based vegetative elements of buffers of any intensity, the requirements can be partially or fully satisfied by existing areas of trees and brush, as long as their buffering effect is essentially the same as that intended by the requirements in Appendix 1. If the characteristics of the existing vegetation do not meet the requirements in Sections A – D of Appendix 1, and so cannot substitute in full or in part for an adequate vegetative buffer, then the area can either be incorporated into the buffer design at half its "value" (for example, a 20 ft wide riparian area would be calculated as 10 ft of vegetative buffer), or it can be left out of the vegetative element and calculated at its original width (20 ft of existing vegetation would be considered as 20 ft of bare land)

Due to the fact that structures, solid walls, and other impermeable or very dense objects force air flow around or over themselves, these are not considered substitutes for vegetative buffer elements – in fact, depending on their location and characteristics, their effects may actually be counterproductive

In all cases, and under all conditions, the vegetative buffer must be designed, installed, and signed off on by licensed or certified professionals such as landscape architects, landscape contractors, arborists, irrigations systems contractors, and reforestation experts. Each buffer should be designed with consideration for the unique characteristics of each site, especially aspect, existing vegetation, soil quality and depth, topography, adjacent land uses, and the microclimate. Also important will be the local availability of plant materials and the use of native plants

Element A – Chemical spray drift

Objective: To locate new urban development so that the impact of rural agricultural chemical spray drift on health and amenity is avoided and complaints from residents regarding the use of rural agricultural chemicals is minimized

Performance Criteria: Urban development to be located or incorporate measures such that chemical spray drift does not adversely affect community public health and safety, and does not lead to significant levels of complaints concerning adjacent rural agricultural operations

Solution Options

HIGH Potential Impact Agricultural Land SENSITIVE Receptors

(1) 100 ft of separation between the outermost urban sensitive receptor and the nearest farmable rural agricultural land, with an adequate tree-based vegetative buffering element. The buffer must incorporate the criteria in Appendix 1, with the appropriate design keyed to the adjoining present use – higher or lower intensity. The vegetative element must be located between the urban sensitive receptors and adjacent rural agricultural land, preferably closer to the spray source than the receptor. The buffer can include or be entirely composed of rural agricultural land on which an easement has been purchased, and on which no agricultural activity that could lead to complaints from adjoining urban uses would be allowed.

The buffer must be

- provided with a suitable watering system,
- composed of plant species that will not harbor pests or diseases damaging to the local agriculture (Appendix 1, the Extension Service, or the Oregon Departments of Agriculture or Forestry are the primary sources of information for determining this),
- acceptable to the owners of the adjoining rural agricultural land,
- provided with a legally enforceable long-term maintenance plan, and
- composed of native or locally acclimatized plants to the extent practicable

or:

(2) 75 ft of separation between the outermost urban sensitive receptor and the nearest farmable rural agricultural land, with an adequate bamboo-based vegetative buffering element. The buffer must incorporate the criteria in Appendix 1, with the appropriate design keyed to the adjoining present use –

higher or lower intensity. The vegetative element must be located between the sensitive receptor and adjacent rural agricultural land, preferably closer to the spray source than the receptor. The buffer can include or be entirely composed of rural agricultural land on which an easement has been purchased, and on which no agricultural activity that could lead to complaints from adjoining urban uses would be allowed.

The buffer must be

- provided with a suitable watering system,
- composed of plant species that will not harbor pests or diseases damaging to the local agriculture (Appendix 1, the Extension Service, or the Oregon Departments of Agriculture or Forestry should be the primary sources of information for determining this),
- acceptable to the owners of the adjoining rural agricultural land,
- provided with a legally enforceable long-term maintenance plan, and
- composed of native or locally acclimatized plants to the extent practicable.

or:

(3) 200 ft of separation between the outermost urban sensitive receptor and the nearest farmable rural agricultural land without the presence of an adequate vegetative buffering element. The buffer can include or be entirely composed of rural agricultural land on which an easement has been purchased, and on which no agricultural activity that could lead to complaints from adjoining urban uses would be allowed.

or:

(4) 100 ft of separation with a vegetative buffer between the outermost sensitive receptor and the nearest farmable rural agricultural land through setbacks on larger individual urban lots adjoining the Urban Reserve Boundary where buffering is anticipated to be long-term. Lots should be designed to provide the appropriate separation, while allowing sufficient area available for normal residential use, and shall be possible only if their use will not cause the development's average density to drop below the zone's minimum. Additionally, this option shall be subject to the following:

- A minimum building setback of 100 feet from the agricultural land, within which structures such as living quarters, decks, patios, gazebos, carports, pools or children's play areas cannot be located. Fences may be located within this area, as may garages or storage outbuildings, provided they do not include workshop or living spaces.
- Except for fences and garden-related apparatus, no structures shall be located within 50 feet of the adjacent agricultural land. This area shall otherwise contain only a vegetative buffer of trees that meets the density and size requirements for lower intensity specified in Appendix 1. The buffer must be composed of plant species that will not harbor pests or diseases damaging to the local agriculture (Appendix 1, the Extension Service, or the Oregon Departments of Agriculture or Forestry are the primary sources of information for determining this), and must be provided with a suitable watering system. To the extent practicable, the buffer should be composed of native or locally acclimatized plants. Maintenance of the vegetative buffer is the responsibility of the urban property owner.
- The vegetated buffer shall be planted no later than the final inspection.
- An adequate watering system shall be installed no later than the final inspection.
- A fence with a minimum height of six feet and meeting the minimum specifications in Section G of Appendix 1 shall be constructed along the property line separating the urban and rural properties. The fence shall be constructed prior to final inspection. Maintenance of the fence is the responsibility of the urban property owner.
- The larger lots must be part of a development large enough that the loss in density can be compensated for in another portion of the development. In no circumstances shall the larger lot buffers cause the overall density of the development to fall below the minimum zone density.
- At the time of subdivision, restrictive covenants and/or plat notes shall provide notice of the above setbacks and buffering requirements through a statement similar to the following: "Lots _____ adjoin an Urban Reserve Boundary, separating urban and agricultural land. In order to preserve and protect the viability of the adjacent agricultural land, these lots are subject to additional restrictions as follows: (reference to restrictions if a plat note or actual restrictions here if in covenants) ..." Covenants shall also include the following: "These provisions are regulations of the City of _____, who may take enforcement action relative thereto. They may be modified or eliminated only through the recording of document(s) signed by appropriate representatives of the City of _____."

_____ and Jackson County Modifications may occur only if appropriate to reflect changed regulations of the city, and termination shall take place only if the subject lots no longer adjoin agricultural land "

HIGH Potential Impact Agricultural Land

NON-SENSITIVE Receptors

(1) 50 ft of separation between the outermost urban industrial or commercial structure or area of regular concentrations of individuals on industrially or commercially zoned land and the nearest farmable rural agricultural land. A vegetative buffer designed for lower intensity use must be included within the buffer. The buffer can include or be entirely composed of rural agricultural land on which an easement has been purchased, and on which no agricultural activity that could lead to complaints from adjoining urban uses would be allowed. The buffer must incorporate the criteria in Appendix 1, and must be

- provided with a suitable watering system,
- composed of plant species that will not harbor pests or diseases damaging to the local agriculture (Appendix 1, the Extension Service, or the Oregon Departments of Agriculture or Forestry should be the primary sources of information for determining this),
- acceptable to the owners of the adjoining rural agricultural land,
- provided with a legally enforceable long-term maintenance plan, and
- composed of native or locally acclimatized plants to the extent practicable

or:

(2) 100 ft of separation between the outermost urban industrial or commercial structure or area of regular concentrations of individuals on industrially or commercially zoned land and the nearest farmable rural agricultural land. The buffer can include or be entirely composed of rural agricultural land on which an easement has been purchased, and on which no agricultural activity that could lead to complaints from adjoining urban uses would be allowed.

LOW Potential Impact Agricultural Land

SENSITIVE Receptors

(1) 100 ft of separation between the outermost urban sensitive receptor and the nearest portion of low potential impact land suitable for any rural agricultural use. The buffer can include or be entirely composed of rural agricultural land on which an easement has been purchased, and on which no agricultural activity that could lead to complaints from adjoining urban uses would be allowed.

or:

(2) 50 ft of separation between the outermost urban sensitive receptor and the nearest portion of low potential impact land suitable for any rural agricultural use through setbacks on larger individual lots immediately adjacent to the rural farmland being buffered. The lots must be of sufficient size to allow a minimum setback of 50 ft, within which structures such as living quarters, decks, patios, gazebos, carports, pools or children's play areas cannot be located. Fences may be located within this area, as may garages or storage outbuildings, provided they do not include workshop or living spaces.

LOW Potential Impact Agricultural Land

NON-SENSITIVE Receptors

(3) 50 ft of separation between the outermost urban industrial or commercial structure or area of regular concentrations of individuals on industrially or commercially zoned land and the nearest portion of low potential impact land suitable for any rural agricultural use. The buffer can include or be entirely composed of rural agricultural land on which an easement has been purchased, and on which no agricultural activity that could lead to complaints from adjoining urban uses would be allowed.

ELEMENT B – Noise

Problem Overview

There are several sources of noise generally associated with rural agricultural activity in the Rogue Valley that may lead to land use conflict. These are noises associated with intensive livestock facilities, constant or very long-term noise from fixed installations (e.g. pumps, refrigeration and processing plants), and occasional or intermittent noise from tractors, wind-generating frost control equipment, spray equipment, and other machinery. Of these, the most important are occasional or intermittent noises from wind machines, tractors, and spray equipment (especially airblast sprayers).

The recommendations that follow are designed to mitigate the most serious noise impacts, but will not fully resolve the issue. Noise from rural agricultural activities, especially the relatively occasional noise from wind machines, tractors, and spray equipment are part of the reality of rural life. Individuals choosing to live in proximity to rural agricultural land must understand that this proximity exposes them to inconveniences that are endemic to the area in which they have chosen to live.

Many noise-generating activities associated with agriculture are intermittent and may affect a particular adjacent residence for only a few hours several times a year (e.g. wind machines in orchards, bird cannons in berries or grapes). **However, it should be noted that many farm activities require operation of equipment in the evening or very early morning hours due to crop or livestock conditions or critical temperature and wind condition parameters that, despite the personal wishes of the farmer, effectively dictate the necessity and timing of such activities.** It should also be noted that the nighttime or very early morning operation of rural agricultural equipment on a given parcel can and will differ from year to year, depending on climatic conditions and the type of crop.

Due to the comparatively intensive settlement of the Rogue Valley, and the high level of urban intrusion into rural agricultural areas, the most effective and basic means of mitigating for noise—through separation distances that might have to measure in the several thousands of feet—is not feasible. On the other hand, noise from rural agricultural operations is one of the most controversial and polarizing issues within the residential/rural agricultural interface, and must be addressed as an issue in effective buffer designs. A reasonably effective, financially feasible means of buffering for noise in the Rogue Valley must be a compromise between cost and results.

Assumptions

One strategy in addressing the issue of noise is a strong, explicit restrictive deed covenant directed at the owners of urban land in proximity to rural agricultural land. As stated previously, individual urban land owners must be informed, in detail, of the range of impacts they will be exposed to living within 1,000 feet of rural farmland, with noise being one of the most potentially significant of these. This notification is critical because noise from rural agricultural operations cannot be cost-effectively mitigated to the degree that spray drift can, and therefore will likely remain a contentious issue in the future in some parts of the valley.

One major reality of cost-effective noise buffering is a focus on “interior noise exposure” as the measure of noise level acceptability, rather than a combination of interior and exterior and/or day and night noise levels. The control of interior noise levels is practical with the use of strategies such as structure orientation, construction standards, noise mitigating materials, the distribution of rooms within the house, the use of auxiliary structures such as garages to block sound, and the use of terrain and natural features to affect the intensity of sound that reaches and is transmitted through the structure. While it is true that some of these, such as the orientation of structures, and the use of terrain and natural features of the area can also mitigate exterior noise levels, the effect will probably

not be as consistent across a property or in all situations

The major reason that mitigating for exterior noise levels is not feasible is the cost-benefit of addressing rural agricultural noises that are intermittent at best, usually not exceeding 150 – 200 hours per year, and that are inherently and technically difficult to address. The few potential strategies to address exterior noise – distance, barriers, and reduction of source machine output - all present significant constraints to reasonable mitigation.

Relying on distance is not a viable option for much the same reason that it wasn't the mechanism of choice for spray drift – too land intensive. To achieve an exterior noise level of just a typical quiet daytime urban area would require approximately 1,500 ft. It could take another 500 ft. or more to reach the level of a quiet urban nighttime.

An alternative to distance in mitigating exterior noise levels would be a sound barrier of the type used alongside highways. Not only are the aesthetic drawbacks of such construction considerable (especially since most people locating on the urban fringes are doing so because of the attraction of the rural landscape), but the cost of such walls would be considerable. In addition, they are only effective if they interfere with the line of sight of receptor and source — taller buildings from the urban side, wind machines from the rural side, and significant slopes on either side would reduce the effectiveness of the barrier. Finally, because of its height and lack of permeability, a sound barrier could actually be counterproductive for spray drift mitigation.

The last major potential mechanism in noise mitigation would be the reduction of the source machines' output. To date, the only real effective means of mitigating noise source directly is the construction of a containment building, such as a pump house or a building for a generator, for fixed noise producers. Because the most significant agricultural noise producers are not small, fixed machines, but rather are large and fixed (such as a wind machine) or mobile (such as a tractor with or without spray equipment), the potential for direct noise mitigation is not significant.

The main advantage of using interior noise levels as a measure of adequate noise mitigation is the fact that the vast majority of complaints about rural agricultural noise occur when that noise is generated at night and in the early morning, between the hours of 10:00 PM and 6:00 AM, at which time potential complainants are invariably attempting to sleep. This means that the individuals to be buffered from the noise are usually in a controllable space that is relatively easily engineered. The main disadvantage of relying on interior noise levels is the human factor. For a noise mitigation strategy that incorporates a number of measures to reduce the total sound transmission into a living space to be effective, people must cooperate. Just one open window can defeat even the costliest noise mitigation measures. Nonetheless, it is a reasonable assumption that individuals with full knowledge that they are choosing to live in an area in which they will be exposed to certain noise levels on an intermittent basis (at any time of night and day), and who are provided with the means (such as their windows) to mitigate these occasional unacceptable levels of noise, should be expected to do so when it becomes necessary.

Noise Levels and Buffering Strategies

In all circumstances in which buffering from chemical spray drift is required, noise mitigation is indicated for urban sensitive receptors within the first 500 feet of the rural/urban boundary. These 500 feet are divided into four Noise Zones (see section F of Appendix 1 for details). Each Noise Zone specifies Sound Transmission Class (STC) ratings for the exterior envelope sufficient to mitigate agricultural noise to an approximate interior nighttime level of 45 d(B)A. For all noise mitigating solution options, an agricultural noise source of 90 dB(A), of mid to higher frequencies, is used as the most likely higher-level rural agricultural noise. The agricultural noise source is assumed to be located

25 ft from the rural/urban boundary, and is assumed to have attenuated (lessened) to 90d(B)A at the urban/rural boundary. The use of this noise standard of 90 dB(A) compares favorably with readings conducted in the Rogue Valley on the most commonly complained-about noise producers—tractors, airblast sprayers, and wind machines.

Element B – Noise from rural agricultural activities

Objective: To mitigate the interior noise impacts of rural agricultural activities

Performance Criteria: Sensitive receptors to be located or incorporate measures such that rural agricultural noise does not adversely affect community public health and safety, and does not lead to significant levels of complaints concerning adjacent rural agricultural operations

Solution Options

HIGH or LOW Potential Impact Agricultural Land

SENSITIVE Receptors

(1) Construction and placement of urban sensitive receptors within 500 ft of the rural/urban boundary will comply with the following criteria for the acoustic design of the exterior building envelope and for the ventilating system and its parts (see details in Section F of Appendix 1)

Noise Zone 1	0 to 50 ft from rural/urban boundary	no new sensitive receptors
Noise Zone 2	51 to 175 ft from rural/urban boundary	exterior walls = STC-45 exterior windows = STC-38 exterior doors = STC-33 roof/ceiling assembly = STC-49 ventilation = see F2 in Appendix 1 for details
Noise Zone 3	176 to 375 ft from rural/urban boundary	exterior walls = STC-40 exterior windows = STC-33 exterior doors = STC-33 roof/ceiling assembly = STC-44 ventilation = see F2 in Appendix 1 for details
Noise Zone 4	376 to 500 ft from rural/urban boundary	exterior walls = STC-35 exterior windows = STC-28 exterior doors = STC-26 roof/ceiling assembly = STC-39 ventilation = see F2 in Appendix 1 for details

or:

(2) Design measures from a qualified acoustic consultant will be incorporated in community and individual structure design to achieve a sound transmission loss sufficient to reduce exterior noise levels to a maximum of 45 dB(A) within sensitive receptor structures. A standard agricultural noise source of 90dB(A) of mid to higher frequencies, measured at the rural/urban growth boundary, and originating 25 ft into the rural property, is assumed.

ELEMENT C – Sediment and Stormwater Run-off

Overview

Urban development affects land surface characteristics and the hydrological balance, with the impacts often occurring on farmland located lower in the landscape. The increase of impermeable surfaces and changes to drainage patterns can accelerate soil erosion, siltation and sedimentation, and increase the risk of flooding. Techniques to alleviate conflict due to downstream effects of residential development highlight suitable erosion, sediment, and stormwater control during the construction and operational stages of a development.

Buffering Considerations

Whenever possible, the 50 to 200 ft. width of the spray drift buffers should be considered an important option for mitigating sediment and stormwater run-off. Options can include provisions for erosion controls during the construction and operation phases of the development, and permanent management of stormwater run-off. If the use of the buffer areas is not possible, all erosion control and permanent stormwater management must take place within the built portion of the development. **Ongoing maintenance and enforcement must be identified and incorporated into the conditions of approval prior to the start of construction.**

Element C – Sediment and stormwater run-off from development

Objective: To design new urban development so that the impact of run-off and sediment from urban development areas onto rural agricultural land is minimized.

Performance Criteria: Urban development to be located or incorporate measures to minimize the impact of urban-derived sediment and storm water run-off onto rural agricultural land.

Solution

HIGH or LOW Potential Impact Agricultural Land SENSITIVE or NON-SENSITIVE Receptors

Urban development proposals to include the following

- (1) Urban development proposals to include the following
an erosion control and prevention plan for the construction and operation phases of the development that meet current federal, state, and local standards, especially as concerns the conveyance of stormwater run-off from all hard surfaces (including roads, roofs, driveways etc.) to stable waterways, and measures such as water detention and retention implemented within the buffer area and/or the built area to reduce peak flow during runoff events to levels acceptable for the existing stream.

ELEMENT D – Trespass and Vandalism

Overview

One of the most damaging effects of urban proximity to farmland is the issue of trespass and vandalism. Trespass is important not just because it is the necessary precursor to vandalism, but because of the significant liability issues connected with the accidental exposure of trespassers to chemicals and the danger of heavy machinery. Vandalism itself may be the single most common reason given by many agriculturists with land adjacent to urban areas for claiming that their land is no longer agriculturally viable. Interestingly, vandalism is often highest in areas with elevated levels of complaints from nearby residents about noise and chemical spray.

Buffering Considerations

Although important in creating a physical separation between development and rural agricultural land, the width of the spray drift buffers themselves, even with a vegetative element, will not prevent trespass. In fact, without the inclusion of some element to frustrate trespass, buffers could be the object of vandalism themselves, thus potentially compromising their ability to appropriately mitigate spray drift. Unless there is a significant natural barrier to trespass incorporated into the buffer, such as a steep draw, a deep, permanent creek, a very dense, established stand of blackberries, a cliff, or something similar, a fence or other man-made barrier will have to be incorporated. As specified in Section G of Appendix 1, the recommended man-made barrier is a minimum 6 ft chain link fence designed to be difficult to scale. If the fence is to be added to a larger lot residential setback buffer, it may be of other materials, but must be of the same minimum height and must be climb resistant. With the residential setback buffers, the fence is to be established at the urban/rural property line, with all other non-vegetative, non-setback buffers the fence should be on the development/buffer boundary (or, if there is some community use of part of the buffer, then between the community use and the rest of the buffer), and with vegetative buffers, on the development side of the vegetative element (or, if there is some community use of part of the buffer, then between the community use and the rest of the buffer). See Section G of Appendix 1 for potential fence placements. In lieu of a fence, trespass-inhibiting shrubs may be planted. These shrubs would become part of the buffer, and would have to be established at the same time the buffer is.

Element D – Trespass and vandalism from urban development

Objective: To provide protection for rural agricultural land from trespass and vandalism

Performance Criteria: Natural or man-made barriers to be incorporated in buffers to provide protection for rural agricultural land from trespass and vandalism originating from urban development

Solution Options

HIGH or LOW Potential Impact Agricultural Land

SENSITIVE or NON-SENSITIVE Receptors

(1) Incorporate significant natural barriers in buffer areas,

or:

(2) Establish a minimum 6 ft climb-resistant fence of durable materials either on the rural/urban property line of residential setback buffers, on the buffer/development boundary of non-vegetative, non-setback lot buffers (or, if there is some community use of part of the buffer, then between the community use and the rest of the buffer), and with vegetative buffers, on the development side of the vegetative element (unless there is an agreed-upon need for access to the vegetative element from the development side). See Section G of Appendix 1 for details

or:

(3) Establish a planting of trespass inhibiting shrubs. These shrubs can be incorporated in a vegetative element, or can be stand-alone. They must adhere to the criteria in Section G of Appendix 1.

ELEMENT E – Odor

Overview

Odor has been determined to be of lesser importance in the majority of cases in the Rogue Valley. Odor in rural areas can arise from use of rural agricultural chemical sprays, fertilizers, effluent disposal, intensive livestock operations, and composting plants. Such odors can have a negative impact on urban residential quality of life, but rarely have the potential to affect public health. Confined animal feeding operations (CAFOs) are subject to their own set of regulations.

Odor is often a major factor in many complaints about off-site chemical spray drift where there is actually no real toxic exposure. Some rural agricultural chemicals contain markers (strong odors) to allow easy identification, so it is these markers or mixing agents that are often detected at some distance from the target area and cause concern, even though in many instances only extremely low levels of the active ingredients may be present. Residents' association of the odor with the chemical is sufficient to raise fears of exposure.

Factors affecting complaints from odor are influenced by the frequency, intensity, duration and offensiveness of the odor. An objectionable odor may be tolerated if it occurs infrequently at a high intensity, however, a similar odor may not be tolerated at lower levels if it persists for a longer duration or more frequently. In addition, tolerance of rural agricultural odors is highly subjective and varies greatly among individuals.

Odor can be emitted from a variety of sources and is dispersed by the atmosphere, and typically seems worse during hot weather. Ground level concentrations of odor have been reported as being inversely related to wind speed and atmospheric conditions, i.e. the lower the wind speed and the more stable the conditions, the higher the concentration. The subjective nature of conflict resulting from exposure to odor makes the determination of design goals difficult. Unlike chemical spray drift that is in the form of liquid droplets, odors are in the form of gases and can thus travel and be detected at greater distances. Other than relying on the restrictive covenant, no feasible cost effective measures are available to the developing urban areas for mitigating most odor issues.

Element E – Odor

Objective: Odor as a by-product of rural agricultural operations will have a minimal negative effect on rural agricultural operations.

Performance Criteria: Awareness of the probability of rural agricultural operations causing odor, and of their right to do so under Oregon law, will be emphasized.

Solution

HIGH or LOW Potential Impact Agricultural Land

SENSITIVE or NON-SENSITIVE Receptors

- (1) All urban properties within 1,000 ft of rural agricultural lands will have a restrictive covenant attached to their deeds clearly stating that urban residents in proximity to rural agricultural land will likely be exposed to a variety of odors from agricultural operations.

ELEMENT F – Dust, Smoke, and Ash

Overview

Dust, smoke, and ash, like odor, have been determined to be of lesser importance in the Rogue Valley. Although some rural agricultural activities, including cultivation prior to planting, tractor and transport movements, crop harvest, legal frost protection heaters, and prescribed fires for disease control can generate dust, smoke, and ash, this is considered to be of little importance as a rural/urban antagonist in the Rogue Valley. As with odor, above, the inclusion of the probability of exposure to dust, smoke, and ash in the restrictive covenant is considered sufficient mitigation.

Element F – Dust, smoke, and ash

Objective: Dust, smoke, and ash, as a by-product of rural agricultural operations will have a minimal negative effect on rural agricultural operations.

Performance Criteria: Awareness of the probability of rural agricultural operations causing dust, smoke, and ash, and of their right to do so under Oregon law, will be emphasized.

Solution

HIGH or LOW Potential Impact Agricultural Land

SENSITIVE or NON-SENSITIVE Receptors

- (1) All urban properties within 1,000 ft of rural agricultural lands will have a restrictive covenant attached to their deeds clearly stating that urban residents in proximity to rural agricultural land will likely be exposed to dust, smoke, and ash from agricultural operations.

Buffering Design Criteria Summary Tables

HIGH Potential Impact Agricultural Land

SENSITIVE Receptors (all residential uses, hotels, motels, schools, places of worship, medical centers, etc)

	CHEMICAL SPRAY DRIFT				TRESPASS AND VANDALISM	NOISE			SEDIMENT / STORMWATER RUN-OFF	ODOR, DUST, SMOKE, & ASH
	tree-based buffer	bamboo buffer	larger lot tree-based buffer	non-vegetative buffer	fencing / shrubbery	noise zone 2 criteria	noise zone 3 criteria	noise zone 4 criteria	erosion control and prevention plan	restrictive deed covenant
Option 1										
0 to 100 ft	✓				✓				✓	
101 to 175 ft						✓			✓	✓
176 to 375 ft							✓		✓	✓
376 to 500 ft								✓	✓	✓
500 to 1000 ft									✓	✓
Option 2										
0 to 75 ft		✓			✓				✓	
76 to 175 ft						✓			✓	✓
176 to 375 ft							✓		✓	✓
376 to 500 ft								✓	✓	✓
500 to 1000 ft									✓	✓
Option 3										
0 to 100 ft			✓		✓				✓	✓
101 to 175 ft						✓			✓	✓
176 to 375 ft							✓		✓	✓
376 to 500 ft								✓	✓	✓
500 to 1000 ft									✓	✓
Option 4										
0 to 200 ft				✓	✓				✓	
201 to 375 ft							✓		✓	✓
376 to 500 ft								✓	✓	✓
500 to 1000 ft									✓	✓

NOTES

- The distances in this chart are linear distances from the rural/urban boundary, and assume that all buffering takes place on urbanizing land. If all or part of a buffer is located on rural land, distances will be measured from the beginning of the buffer, and not from the beginning of the boundary.
- Vegetative buffer elements will be maintained and protected through a variety of different agreements. If a restrictive covenant is used for this purpose, it would be in addition to the restrictive covenant used to mitigate odor, dust, smoke, & ash, chemical spray drift, and noise.
- Noise Zone 1 does not appear in this chart because no new sensitive receptors are permitted in that zone.
- Larger lot tree-based buffers are only allowed on urban lands adjacent to the outermost urban reserve boundary.

HIGH Potential Impact Agricultural Land NON-SENSITIVE Receptors (commercial, industrial)

	CHEMICAL SPRAY DRIFT		TRESPASS AND VANDALISM	SEDIMENT / STORMWATER RUN-OFF	ODOR, DUST, SMOKE, & ASH
	tree or bamboo-based buffer	non-vegetative buffer	fencing / shrubbery	erosion control and prevention plan	restrictive deed covenant
Option 1					
0 to 50 ft	✓		✓	✓	
51 to 175 ft				✓	✓
176 to 375 ft				✓	✓
376 to 500 ft				✓	✓
501 to 1000 ft					✓
Option 2					
0 to 100 ft		✓	✓	✓	
101 to 175 ft				✓	✓
175 to 375 ft				✓	✓
376 to 500 ft				✓	✓
501 to 1000 ft					✓

NOTES

- The distances in this chart are linear distances from the rural/urban boundary, and assume that all buffering takes place on urbanizing land. If all or part of a buffer is located on rural land, distances will be measured from the beginning of the buffer, and not from the beginning of the boundary.
- Vegetative buffer elements will be maintained and protected through a variety of different agreements. If a restrictive covenant is used for this purpose, it would be in addition to the restrictive covenant used to mitigate odor, dust, smoke, & ash, chemical spray drift, and noise.

LOW Potential Impact Agricultural Land

SENSITIVE Receptors

(all residential uses, hotels, motels, schools, places of worship, medical centers, etc)

	CHEMICAL SPRAY DRIFT / TRESPASS AND VANDALISM		TRESPASS AND VANDALISM	NOISE			SEDIMENT / STORMWATER RUN-OFF	ODOR, DUST, SMOKE, & ASH
	non-vegetative buffer	larger lot non-veg buffer	fencing / shrubbery	noise zone 2 criteria	noise zone 3 criteria	noise zone 4 criteria	erosion control and prevention plan	restrictive deed covenant
Option 1								
0 to 50 ft		✓	✓				✓	✓
51 to 175 ft				✓			✓	✓
176 to 375 ft					✓		✓	✓
376 to 500 ft						✓	✓	✓
501 to 1000 ft								✓
Option 2								
0 to 100 ft	✓		✓				✓	
101 to 175 ft				✓			✓	✓
175 to 375 ft					✓		✓	✓
376 to 500 ft						✓	✓	✓
501 to 1000 ft								✓

NOTES

- The distances in this chart are linear distances from the rural/urban boundary, and assume that all buffering takes place on urbanizing land. If all or part of a buffer is located on rural land, distances will be measured from the beginning of the buffer, and not from the beginning of the boundary.
- Vegetative buffer elements will be maintained and protected through a variety of different agreements. If a restrictive covenant is used for this purpose, it would be in addition to the restrictive covenant used to mitigate odor, dust, smoke, & ash, chemical spray drift, and noise.
- Noise Zone 1 does not appear in this chart because no new sensitive receptors are permitted in that zone.
- Larger lot tree-based buffers are only allowed on urban lands adjacent to the outermost urban reserve boundary.

LOW Potential Impact Agricultural Land NON-SENSITIVE Receptors (commercial, industrial)

	CHEMICAL SPRAY DRIFT / TRESPASS AND VANDALISM	TRESPASS AND VANDALISM	SEDIMENT / STORMWATER RUN-OFF	ODOR, DUST, SMOKE, & ASH
	non-vegetative buffer	fencing / shrubby	erosion control and prevention plan	restrictive deed covenant
Option 1				
0 to 50 ft	✓	✓	✓	
51 to 175 ft			✓	✓
176 to 375 ft			✓	✓
376 to 500 ft			✓	✓
501 to 1000 ft				✓

NOTES

- The distances in this chart are linear distances from the rural/urban boundary, and assume that all buffering takes place on urbanizing land. If all or part of a buffer is located on rural land, distances will be measured from the beginning of the buffer, and not from the beginning of the boundary.
- Vegetative buffer elements will be maintained and protected through a variety of different agreements. If a restrictive covenant is used for this purpose, it would be in addition to the restrictive covenant used to mitigate odor, dust, smoke, & ash, chemical spray drift, and noise.

VIII – DEVIATING FROM THE GUIDELINES

Should the proponent of development elect to pursue a buffer design that proposes less linear separation or less of a vegetative element than specified in the minimally acceptable solutions, or that differs materially in other ways (other than increasing the linear distance or the amount of vegetative element) the buffer would be considered a “flexed” design

When is a Buffer Design Not Considered Flexed?

A buffer design is not considered flexed when existing elements consistent with the purpose of the buffer are incorporated in the buffer

For buffers without vegetative buffer elements, the requirements of linear distance can be achieved by elements such as the following

- Man-made or natural features such as infrastructure rights-of-way, roads, non-residential structures, watercourses, wetlands, ridge lines, rock outcrops, forested areas, and steep slopes
- Non-farmable areas of the farmland being buffered (including yards, storage areas, roads, and all structures),
- Publicly owned land without consistent present or projected public use (as determined by the public entity owner)
- An easement on agricultural land purchased by the proponent of development,
- Rural residential, commercial, or industrial land without a significant history of complaints related to adjoining farm use, whose owners agree in writing to the use of their land as part of the required buffer area, and
- Other open areas (except undeveloped rural residential, commercial, or industrial parcels) that are considered appropriate to the purpose of the buffer

For buffers with vegetative elements, the requirements can be partially or fully satisfied by existing areas of trees and brush, as long as their buffering effect is essentially the same as that intended by the requirements in Appendix 1. If the characteristics of the existing vegetation do not meet the requirements in Appendix 1, and cannot substitute in full or in part for an adequate vegetative buffer, then the area can either be incorporated into the buffer design at half its “value” (for example, a 20 ft wide riparian area would be calculated as 10 ft of vegetative buffer), or it can be left out of the vegetative element and calculated at its original width (20 ft of existing vegetation would be considered as 20 ft of bare land).

Whenever the proposed buffer design varies from the minimum buffering options described in these guidelines, the proponent of development is responsible for the preparation of a Conflict Assessment and Buffer Study (CABS). If no material variation is sought from the minimum buffering guidelines, the CABS is not necessary.

What must be included in the CABS?

The CABS must

- a Determine the present and likely future agricultural land use activities with the potential of causing problems for adjacent urban development. The determination of likely agricultural practices should be based on factors such as soil type, topography, parcel size, shape, and location, infrastructure, microclimatic conditions, regional rural agricultural practices and crops, and the farming history of the parcel and surrounding similar parcels
- b Determine how the proposed urban development will likely impact the management and

operation of nearby farmlands. All owners of resource land within 1,000 ft of the land proposed for development will be interviewed, and full transcripts of those interviews will be attached to the CABS.

- c. Identify the elements that may cause conflict and the extent of the conflict, from both the urbanizing as well as from the rural agricultural. The elements should be quantified, where possible, in terms of frequency and duration of activities to determine the element's impacts. As part of this evaluation, the CABS must consider the likely future uses determined in (a) above. The buffering mechanisms that are proposed must be sufficient to accommodate these potential future uses. NOTE: The current financial viability of a particular crop will not be considered an important limiting factor in determining potential future use.
- d. Propose a set of buffering measures that will achieve acceptable buffering outcomes – these may include, but not be limited to, the siting of residences, size and geometry of lots, separation widths, communal open space, vegetation, natural landscape features, acoustic features, etc.
- e. Propose the means by which the proposed buffering measures will be monitored and maintained. This should include responsibility for implementing and maintaining specific features of the buffer areas to ensure continued effectiveness. Acknowledgment of the authority responsible for ensuring compliance with any agreement will be plainly cited.
- f. Establish a timeline for the development that establishes when the buffer will be installed. It shall be assumed that the buffer will be established prior to either final plat sign off or final building inspection (for larger lot buffers and in the event no land division occurs).

The CABS must be prepared by appropriate experts under contract with the proponent of development, and upon completion of a final draft, must be submitted to the owners and operators of rural agricultural land within 1,000 ft of the boundary between the rural and proposed urban uses. These owners and operators will be given a month to provide input on the CABS, and such input will be attached to the CABS. All costs incurred in the preparation of the CABS will be the responsibility of the proponent of development. The non-refundable base fee for the CABS, payable to Jackson County to offset the costs of the Agricultural Buffering Committee, is \$1,000. Starting in 2010, this base fee will be increased annually for inflation or as deemed appropriate by the Jackson County Commissioners to offset real costs.

The draft CABS must be reviewed and a recommendation forwarded to the appropriate city planning commission by the Agricultural Buffering Committee, which will be comprised of appropriate experts appointed by the Jackson County Board of Commissioners. The Agricultural Buffering Committee shall be considered an ad hoc advisory committee to the city planning commission in whose jurisdiction the development is proposed.

The Agricultural Buffers Committee

The 10 to 15 members of the Agricultural Buffering Committee shall have expertise in as many of the following fields as possible:

Soil Science; Agronomy, Dendrology and/or Forestry, Agrochemicals, Landscape Architecture, Animal Husbandry, Orchard Management, Horticulture, Farming, Ranching, and Parks and Recreation.

In addition, there shall be a permanent member of the Jackson County Planning Department or Planning Commission, and an open non-voting position to be filled on an as-needed basis by a member of the affected city's planning department or planning commission. The Committee shall elect co-chairs from the non-jurisdiction membership.

Should the Agricultural Buffering Committee fail to recommend the CABS, a mediated solution between the city, county, proponent of development, and the co-chairs of the Agricultural Buffering Committee will be required before the planning and application process can proceed. The proponent is responsible for meeting the expenses of the mediation process. If a mediated settlement is not successful, the Agricultural Buffering Committee will forward a negative recommendation on the CABS to the city planning commission with the Committee's recommended changes to the flexed buffer design.

Should the Agricultural Buffering Committee, in the course of its review of the flexed buffer proposal, require expert assistance, the proponent of development will be notified of the cost of that technical assistance. The proponent of development may suggest an alternative to the identified technical assistance, but the Committee will make the final selection. If the proponent of development does not agree to the cost of the technical assistance, the flexed buffer design will receive a negative recommendation without any further analysis.

Should the city decide to favor the proponent's flexed design over the recommendations of the Agricultural Buffering Committee, a major regional review would then be triggered under the guidelines set forth in the Greater Bear Creek Regional Problem Solving Plan Stakeholders Agreement.