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Conservation Development in Texas: a Primer for Government Officials, Developers and Land Planners

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Conservation Development for Texans

Seeking to balance population growth with conservation of natural resources, many planners, architects, developers, and government agencies across the country have begun experimenting with the concept of conservation development. Conservation subdivisions differ from traditional subdivisions in that they attempt to preserve the most important natural features as permanently protected open space. By building homes in clusters with smaller lot sizes, developers can typically produce the same number of dwelling units as a conventional subdivision while providing permanently protected open space and generating greater cost value because of the adjacent natural areas

Conservation subdivisions can help protect the natural heritage of rural America while also expanding land development practices to incorporate the principles of regional identity, land conservation, and land stewardship. It is a way to develop natural and agricultural lands for housing in a way that permanently protects open space for future generations. Conservation development is a relatively new idea with many applications in other states demonstrating the extensive environmental and economic benefits that can be realized. With vast expanses of open space and population growth threatening wildlife and water resources, Texas has much to gain from increased implementation of the conservation development concept. However, due to regulatory barriers and lack of agreement among interested parties on the essential features of conservation development, Texans are yet to realize these benefits to any significant degree.

The Lady Bird Johnson Wildflower Center is committed to protecting and restoring native plants and healthy regional landscapes. This report offers a working definition of conservation development appropriate for Texas. It also examines model conservation subdivision ordinances developed by other states, examines the potential economic benefits, and outlines the essential features of a conservation development. We hope to encourage further discussion about how conservation development principles can be applied to benefit both people and our environment.

Executive Summary

Population growth and sprawl have caused many government agencies, land-use planners, and developers to consider alternative types of development along the urban fringes of the United States. Conservation development is a relatively new tool that can mitigate the environmental damage resulting from residential expansion. With homes grouped together on small lots, conservation subdivisions can provide significant open space that is valuable for wildlife habitat, pollution control, and other functions that undisturbed ecosystems can provide.

Conservation development is not without its critics, who lament the automobile-dependent nature of resulting subdivisions and the lack of affordable housing they often include. These criticisms should not be ignored, and it may be feasible to address some of these points in future conservation subdivision projects. Conservation development represents a compromise between imminent development driven by population growth and the need to preserve valuable ecosystems. From an environmental standpoint, it is a second-best scenario to the unrealistic case of a complete absence of residential development. Conservation development presents rural areas with an alternative to conventional subdivisions featuring wide streets, large manicured (and non-native) lawns, and extensive impervious cover.

Guided by model ordinances developed by state and regional planning agencies throughout the country and recognizing the value of conservation development, many local government agencies have implemented ordinances to encourage the practice. Several of these ordinances were reviewed in this report, demonstrating the considerable variation in how conservation development can be defined.

The primary feature of existing ordinances is a requirement that some percentage of a parcel to be developed be preserved as open space. Exact percentages and methods for calculating open space vary, but it is this provision that lies at the crux of conservation development. Most ordinances also regulate density, lot size, and other factors, maintaining as their essential purpose the clustering of homes in order to preserve a significant portion of the parcel as open space.

In addition to the environmental benefits, conservation development is often seen as an economically desirable alternative for both governments and developers. Many studies have analyzed the economic value of open space. Subsequent studies have confirmed that governments benefit from increased tax revenue due to higher property values near parks and other open space.

Studies show that in general the cost of providing services to residential areas consistently exceeds the associated tax revenue generated. At the same time, government costs of serving open space are significantly less than the revenue that these lands generate. The open space provided by conservation development can capitalize on these economic realities, lowering costs to government agencies while increasing tax revenues due to superior appreciation. Publicly accessible open space within conservation developments also can provide savings to taxpayers by reducing the demand for government-funded parkland acquisition.

Developers realize economic benefits from a reduced need for infrastructure and sale premiums that homes in conservation subdivisions often receive. Due to density-neutral provisions of most conservation subdivision ordinances, which permit the same number of units as in a conventional development, developers can retain their profit potential.

The state of Texas has yet to realize the full potential of conservation development due to various regulatory barriers and lack of agreement on its defining features. Counties that govern unincorporated areas of the state, which are most likely to benefit from conservation development due to the availability of open space and pressure to develop, have limited land use regulatory authority. County governments can implement subdivision regulations, but their flexibility in doing so is restricted by the state statute that imparts this authority upon them. The resulting regulations often require a timely special review or prohibit outright an alternative type of development such as a conservation subdivision.

The primary barrier remaining to further utilization of conservation development in Texas is the lack of a consistent definition, upon which a consensus can be formed and legislative proposals developed. Because it has not seen widespread utilization in Texas, agreement has not been reached as to what exactly constitutes a conservation development.

This uncertainty has largely prevented the accumulation of support needed among communities, government agencies, developers, and environmentalists for conservation development to evolve into a common practice in the state. This report has attempted to overcome this barrier by establishing a working definition of conservation development for Texas. This has been done by identifying its essential features, based on experiences in other states and information from experts in Texas in various fields, such as ecology, development, and law. A statewide model conservation subdivision ordinance should be developed, and could be used by policy makers to educate interested parties and to promote conservation development in Texas.

Economics of Open Space

At the crux of conservation development is the preservation of open space. Existing model ordinances generally call for the preservation of 40 to 60 percent of a parcel of land as open space, with some variation as to whether this is a percentage of the gross or of the “buildable” acres.

Some environmental features – like wetland and endangered species habitat – that are protected by government regulations prohibit building, while others, like building on steep slopes, can be very difficult or cost-prohibitive. After deducting these sensitive areas from the total acreage of a parcel, the builder is left with a portion of the land that is considered “buildable.” Some model ordinances require up to 50 percent of the buildable land to be preserved as open space. However, there are some entities that require preservation of open space based on gross acreage. There may be some middle ground between these two approaches, such as allowing some percentage of the “unbuildable” land to be included in the calculation of the total acreage of preserved open space.

Studies have shown that prospective buyers are willing to pay a premium for homes near open space, an economic benefit that developers can realize by building conservation subdivisions. Governments also benefit by superior appreciation of land values near open space, which can translate into increased property tax revenue and the provision of open space and ecological amenities for their residents. Further, the cost to governments of providing services to developments that incorporate large tracts of open space are significantly lower than those required for infrastructure-intensive conventional subdivisions.

It was long assumed that residential development represented the highest and best use of land due to the associated tax revenue flowing into government coffers.¹ This wisdom has been refuted by analyses of the economic benefits of open space, a course of study with roots in the mid-1800s concerning New York City’s Central Park. Cost of community services (COCS) analysis, which compares the tax revenue to the cost of services generated by different types of land uses, continually demonstrates the value of farmland and open space in our society.

The earliest study of the impact of open space on property values was probably Frederick Law Olmsted's analysis of properties surrounding New York City's Central Park in the 1870s.² Olmsted tracked property values of homes near the park between 1856 and 1873 finding that the properties he studied that were situated in proximity to the park increased in value by a total of \$236 million, over four times the rate of appreciation of other properties in the city. Olmsted concluded that in 1873 alone, income from property tax on homes in these neighborhoods exceeded the interest costs on park acquisition and improvements by over \$4 million. While this study did not take into account many other factors that could have contributed to increasing property values in New York City, it provided one of the first estimates of the economic value of open space.

Texas A&M University professor John L. Crompton reviews many of these studies, including that of Olmsted and others published through the 1990s. In reviewing the literature in the field, Crompton seeks to test the "proximate principle," which states that there exists a capitalization of park land into increased property values of nearby landowners.³ In other words, do parks increase proximate land values to generate additional property tax revenue?

Crompton finds overwhelming support for the proximate principle, with 20 of the 25 studies reviewed lending empirical support to the positive impact of parks on property values. While Crompton indicates that a generalization about the magnitude of the proximate principal is not possible due to the variation in the usage and design of the parks included in the studies, he uses a general guideline of "a positive impact of 20% on property values abutting or fronting a passive park area."⁴

A study conducted by the Georgia Institute of Ecology sought to determine whether the surrounding landscape affected housing prices in two counties near Atlanta. Using local tax assessor data for 3,000 homes in the two-county area (excluding the City of Atlanta) the study also took into account structural factors including living area, age of the house, and lot size. The authors found that the presence of pine forests and large pastures in the surrounding area are associated with increased home prices. This analysis corroborates the findings of numerous earlier studies indicating that people are willing to pay a premium for homes located in close proximity to open space.⁵

Economic Value of Ecological Health

Research shows that other aspects of housing features that are present in conservation development also warrant higher property values. A statistical analysis conducted by two researchers at the University of Maryland, College Park, showed that improved water quality also can translate into higher property values. The study analyzed waterfront homes near the Chesapeake Bay sold between 1993 and 1997 to determine whether higher concentrations of fecal coliform bacteria would diminish property values. After controlling for many contextual factors, including lot size, commute times, and distances to large cities and sewage treatment plants, it was found that homeowners had a statistically significant willingness to pay for improved water quality. The authors estimated that a decrease of 100 counts per 100 milliliters in fecal coliform bacteria concentrations would increase the total value of the 41 parcels analyzed by approximately \$230,000, or about 2 percent of total assessed valuation.⁶

Additionally, government agencies spend large sums of money, often through the issuance of general obligation bonds, for open space and park land acquisition. In addition to the recreational opportunities provided to citizens, one increasingly common reason for this activity in Texas is to preserve water quality and aquifer recharge. Both the cities of Austin and San Antonio have implemented ambitious land acquisition projects for water quality protection. San Antonio has spent nearly \$6 million in land acquisition of over 9,000 acres, and Austin has spent over \$65 million in protecting over 15,000 acres. In both cases, most of the land acquired lies above the environmentally sensitive Edwards Aquifer, and likely would have been developed into conventional subdivisions or commercial buildings with large swaths of impervious cover. It is possible that conservation development could have represented an alternative to costly land acquisition, protecting water resources and other environmental values while providing recreational opportunities at no cost to taxpayers.

The Economic Value to Governments

The American Farmland Trust (AFT) has developed a method of analyzing the cost of community services (COCS) of various types of land uses, a process designed to educate the public and policy makers on the value of land conservation. For the purpose of the COCS assessment, the AFT groups land into three categories: residential (including farmhouses), commercial/industrial, and farm/forest/open space). The tax revenue generated by each type of land is then compared to the municipality's cost of providing government services, such as schools, law enforcement, fire protection, and road maintenance.⁷

COCS analyses conducted across the country consistently show that the costs of providing services to residential areas exceed the tax revenue municipalities and counties receive from their residents. Alternatively, due to the relatively low maintenance needs of farmland or open space, these types of land usually cost governments less than the tax revenue that they generate. A recent COCS study of Hays County, Texas, revealed that for each dollar in tax revenue generated, services provided to residential development were costing the County \$1.26. The cost of providing services to farmland, forestland, and open space was only \$0.33 for each dollar in tax revenue. A study of 71 municipalities throughout the United States conducted in 2000 using the AFT's methodology supports this conclusion. In every case, the costs to serve residential development exceeded tax revenue, while the opposite was true for farmland, forestland, and open space. The average cost of services per dollar of tax revenue for residential land was \$1.22; for farmland, forestland, and open space it was \$0.38.⁸

A 1995 report by the National Park Service outlines several other areas in which governments can realize cost savings attributed to the presence of trails or open space:⁹

- **Hazard Mitigation.** The risk of property damage costs and loss of life from natural disasters such as flooding, landslides, and earthquakes can be reduced by maintaining sensitive environmental areas for open space or recreational purposes. An example in the report cites a parcel of hillside land in California that was proposed to have homes constructed on it, but was instead purchased by the Trust for Public Land to become part of a regional park. Devastating financial losses were avoided after heavy storms caused severe landslides that would likely have destroyed many of the homes had the land been developed.

- **Pollution Control.** Natural systems that contain plants and trees can mitigate water, air, and noise pollution. Especially effective at reducing pollution are wetlands, which act as natural filtration systems and improve water quality. A wetland swamp in South Carolina served the water quality functions that otherwise would have required a \$5 million water treatment plant. Greenbelts can effectively reduce noise pollution by providing a buffer between the source and recipient, and by vegetation's natural ability to absorb and refract sound. Finally, trees and plants control air pollution through photosynthesis, in which carbon dioxide is removed from the air and oxygen is released. The economic value of air pollutant removal by trees in Chicago was estimated by a 1991 account at \$1 million per year.
- **Health Care Costs.** Use of a trail or greenbelt can improve physical fitness and health. Obesity is becoming a very serious health problem in the United States. The federal Centers for Disease Control estimated that health care costs attributable to treatment of overweight and obese people were over \$78 billion in 1998.¹⁰

By building a conservation subdivision, developers can provide taxpayers with the benefits of open space at no public cost. Conservation development also can reduce government costs by relieving pressure on local jurisdictions to spend tax revenues on public parkland. This effect can be particularly beneficial if the conservation development provides open space in areas already identified by a regional plan as desired locations for land conservation.

Any policy that has the potential to both increase tax revenue and decrease the cost of services deserves serious consideration by government agencies, especially in times of budget shortfalls. Increased property values and associated tax revenues generated by open space, combined with the potential for substantial cost savings over traditional methods, generate significant incentives for local governments to pursue policies aimed at increasing the use of the conservation development concept.

Benefits to Developers from Conservation Development

Developers can directly benefit from conservation development by capitalizing on the proximate principle and the comparatively lower cost of providing services to subdivisions with large tracts of open space. Following are some of the specific ways in which these benefits are realized:

- **Lower Infrastructure Costs.** A development with a large tract of open space – particularly with clustered housing – reduces the need for infrastructure such as grading and street pavement. Replacing paved area with open space that provides natural flood protection through absorption of water can also reduce the need for large and costly stormwater management facilities.¹¹ Terry Mitchell, a central Texas developer, estimates infrastructure costs of one project with significant open space to be up to 30 percent less than a conventional subdivision.¹²
- **Marketing.** Realtors selling homes in conservation subdivisions can market the homes as environmentally friendly with proximity to open space that many people desire. As a result, homes in conservation subdivisions often sell much faster than their counterparts in conventional developments.
- **Sale Premiums and Appreciation.** Because of the marketing advantages mentioned above, homes in conservation subdivisions usually sell at a premium above the market price of a comparable home in a conventional subdivision. Furthermore, conservation subdivisions often experience more appreciation in value over time. Following are two examples from a study conducted by the University of Massachusetts in 1990.¹³
 - ◆ A review of two subdivisions in Amherst, Massachusetts, built in the 1960s with similar style homes and comparable selling prices demonstrates the effect of superior appreciation. One of the subdivisions was built in the conservation style with preserved woodlands, meadows, and active recreation facilities, and the other was a conventional subdivision. In 1968 the conservation subdivision homes sold for an average of \$600 more (2.3%), a difference that increased to an average of \$17,000 by 1989 (12.7%).

- ◆ The conservation subdivision Meriam's Close near Concord, Massachusetts, was built in 1979 with 86 percent of the acreage set aside for recreation and preserved natural areas. Sale prices for homes in the Meriam's Close development were compared to other homes in Concord that were sold in 1980 and resold between 1980 and 1988. This analysis showed that the average selling price in 1980 for a home in Meriam's Close was \$34,400 more (33.7%) per unit. Homes in the conservation subdivision appreciated at an average annual rate of 21.4 percent compared to 18.4 percent for other homes, selling for a premium of \$115,000 (45.6%) percent in 1988. Premiums were placed on conservation development despite the fact that the lot sizes of the homes in Meriam's Close averaged about one-fifth of the lot size of other homes in Concord.

The following table summarizes three case studies reviewed to demonstrate the potential economic benefits to developers of building conservation subdivisions.

Conservation Development Case Study Summary

Project	Acreage	Open Space	Dwelling Units	Economic Benefits
Prairie Crossing, Grayslake, Illinois	677	70%	359	30%-33% sales premium over homes in the area between 1999 and 2003.
Fields of St. Croix, Lake Elmo, Minnesota	241	60%	115	Initial sales successful with no advertising; re-sales generated profits of up to \$100,000 after four years.
Rocky Creek Ranch, Travis County, Texas*	468	74%	230	Theoretical conservation subdivision alternative would save over \$1 million in infrastructure, \$1 million in landscape irrigation, and almost \$300,000 in storm-water management costs compared to a conventional development on the property.

*Hypothetical conservation subdivision alternative for the Rocky Creek Ranch Property not yet developed.

Based on a study by Kent Butler and Andrew Karvonen at the University of Texas.

Potential Economic Risks to Developers

Up to 80 percent of the costs of developing a subdivision are fixed. This includes the cost of raw land, utilities, entry roads, and parks or other amenities.¹⁴ Therefore, the key to the economic success of conservation subdivisions is to build enough units to compensate for the substantial fixed costs, reducing the overall cost per unit. One way to achieve this is to maintain total housing density for the entire project at least equal to the level that would have been permitted in a conventional housing development. This often translates into significantly higher density on some areas of the property in return for no density in other areas.

Potential Pitfalls of Conservation Development

Critics argue that conservation subdivisions usually have the same density, appraisal process and financing as conventional developments and simply represent another form of sprawl. In addition, they ascertain that since conservation subdivisions rarely incorporate mixed-use elements, residents remain dependent on automobiles for travel to grocery stores, schools, and restaurants. Further, they argue that if these developments border conventional residential areas conservation subdivisions provide limited environmental benefits by failing to establish extended natural corridors. Mixed-use neighborhoods with small lots, affordable housing, and access to different modes of transportation, it is argued, offer the best alternative to sprawl.¹⁵ The Wisconsin Department of Natural Resources suggests that provisions for affordable housing, including multi-family units, should be incorporated into conservation subdivision ordinances.¹⁶ This statement echoes the sentiments of many critics of conservation development who feel that the homes are only affordable to the wealthy. This is a valid criticism, as discussed earlier, homes in conservation subdivisions often garner premium sale prices compared to typical homes. The issue is addressed in some ordinances that give bonuses to developers that provide affordable housing within conservation subdivisions.

While these are all valid points, conservation subdivisions represent a more feasible alternative to sprawling development in rural areas than dense mixed-use neighborhoods. Those moving to the rural fringe usually seek open space for purposes of recreation or a living room view and are unlikely to accept a dense urban-like setting outside of the city. The market for homes in conservation subdivisions across the country has shown that the model can work economically, while at the same time providing an alternative to the environmental damage caused by uncontrolled sprawl.

Theory and Models for Conservation Development

The concept of conservation development has been widely discussed for at least a decade. Randall Arendt, a land-use planner, author and lecturer, pioneered the effort of bringing the benefits of conservation development to the attention of communities, government officials, and developers in the early 1990s. Arendt defines a conservation subdivision as development where “half or more of the buildable land area is designated as undivided, permanent open space. This result is typically achieved in a density-neutral manner by designing residential neighborhoods more compactly, with smaller lots for narrower single-family homes.”¹⁷

Arendt likens conservation development to subdivisions built around golf courses, which provide some of the same open space values, but feature manicured greens that don’t support native plants or wildlife habitat. He suggests building more golf course developments, but without the golf courses, “substituting community greens for putting greens, and greenways for fairways.”

In his 1999 book *Growing Greener: Putting Conservation into Local Plans and Ordinances*, Arendt lays out a four-step process to help municipalities achieve successful conservation subdivision designs:

1. **Community Assessment.** Analysis of development trends is conducted to determine the long-term results of existing ordinance provisions.
2. **Conservation Planning.** A map of potential conservation lands is prepared to guide decisions related to preserving an interconnected open space network.
3. **Conservation Zoning.** Municipalities adopt zoning ordinance provisions that encourage developers to preserve at least 50 percent of a subdivision as open space.
4. **Designing a Conservation Subdivision.** This includes four steps: (1) Identifying land that should be permanently protected; (2) Locating the sites of individual houses; (3) Designing street and trail alignments; and (4) Drawing in lot lines.

Edward T. McMahon, a nationally renowned authority on sustainable development, land conservation and urban design, and a senior resident fellow at the Urban Land Institute, has pointed out the ability for conservation organizations to use conservation development to reduce the consumption and fragmentation of open land in the United States. McMahon pointed out that the amount of developed land increased by 34 percent between 1982 and 1997, a rate that far exceeded population growth during that period. Given the reality of impending development in rural areas, McMahon identified two main points that planners should address: (1) How development can be done in the most environmentally sensitive manner possible and (2) How planners can use development as a tool for conservation. Furthermore, he noted that most housing units are being built in “greenfield locations,” and very few of these are being constructed within conservation subdivisions, which he defines as “planned communities that have land conservation as a central organizing principle underlying their design.”¹⁸

Conservation Development Ordinances

Various state government and regional planning agencies have taken the initiative to provide guidelines, in the form of model ordinances, for local governments to implement conservation development within their jurisdictions. The tables that follow summarize six model ordinances and four ordinances actually adopted by local governments. The United States Environmental Protection Agency’s (EPA) Open Space Development model ordinance was developed for use in any locality throughout the nation. Three statewide models are reviewed (Wisconsin, Minnesota, and Georgia), in addition to two examples of model ordinances developed by regional planning agencies. Most model ordinances warn local governments against adopting the language as it is, suggesting that local geography, natural- and historic resources, and other unique conditions must be considered. While the ordinances reviewed in this section contain many similar provisions aimed at achieving conservation goals – such as clustering of homes and minimum open space requirements – no two are identical.

Model Ordinances

Entity	Min. Parcel Size	Open Space Req.	Min. Lot Size		Density	Mgmt/Ownership of Open Space	Comments/Other Provisions
Randall Arendt	N/A	50% of buildable land. No more than 50% of open space should be used for active recreation.	N/A		Depends on underlying zoning for conventional subdivision. Density bonuses for establishing an endowment for maintaining open space, providing public access to open space and providing affordable housing	Open space may be owned by: 1. Homeowners' Assoc. 2. Condo agreement 3. Easement for public use. 4. Non-profit Conservation Org.	Arendt's model ordinance is more focused on the process of conservation development than most others, providing guidelines for preliminary plans, consultations between interested parties, and analysis of existing features of the property that should be conserved.
U.S. EPA	5 acres	35%-50% of buildable area.	May be reduced to 25% of base density but no smaller than 1/8 acre.		Depends on underlying zoning for conventional subdivision.	Open space may be owned by: 1. Homeowners' Assoc. 2. Conservation Org.	Makes conservation development a "by right" type of development. (www.epa.gov/owow/nps/ordinance/mol3.htm)
Wisconsin (University of Wisconsin Extension)	20 acres	60% (Waterways, floodplains, wetlands must not exceed 50% of open space)	1 acre-waste treatment on site; 1/4 acre for waste treatment off site		Depends on underlying zoning for conventional subdivision. Up to 20% density bonus if certain conditions are met.	Open space may be owned by: 1. Homeowners' Assoc. 2. Condo Assoc 3. Non-profit 4. Conservation Org. 5. City or County 6. An individual Written plan required to manage open space in perpetuity.	Wisconsin's model ordinance is one of the most comprehensive and includes restrictions on impervious cover (35%), vegetation buffers near waterways, number of units in each housing cluster, street configuration and resource inventory requirements.
Minnesota (Minnesota Environmental Quality Board)	40 acres. May be 20-40 acres if conditions are met.	50% (Wetlands, floodplains must not exceed 50% of open space).	1 acre-indiv. welland septic; 1/2 acre – common utilities (SF), 8,000 s.f./unit (MF)		Max density: 6 units/40 acres.	Open space may be owned by: 1. Gov. Agency 2. Non-profit	Requires buffer zones of 100 ft. around ag. areas and restrictions on non-impervious cover.

Entity	Min. Parcel Size	Open Space Req.	Min. Lot Size		Density	Mgmt/Ownership of Open Space	Comments/Other Provisions
Georgia (University of Georgia Institute of Ecology)	N/A	40% (Primary conservation areas must be in open space. 25% of open space must be buildable).	Depends on underlying zoning.		Depends on underlying zoning for conventional subdivision.	Homeowners' Assoc.	Report by UGA mentions barriers similar to those seen in Texas: "...most local governments do not provide the flexibility to build anything other than conventional subdivisions..." States that the conservation development option should be available as a "use by right in all residential zoning districts."
Southeast Wisconsin Regional Planning Commission	35 acres	60%	40,000 s.f.-waste treatment onsite; 20,000 s.f. off-site/centralized.		1 unit/5 net buildable acres (Contains a calculation of net buildable acres). Also contains a "density exchange" option.	Open space may be owned by: 1. Homeowners' Assoc. 2. Condo Agreement 3. Public Agency 4. Conservation Org. 5. Original Landowner 6. Any other entity approved by community governing body.	Mandatory conservation development ordinance. Conventional subdivisions would require rezoning. Also contains detailed provisions on buffer zones, landscaping, setbacks, and allowable uses of developable land and open space.
Connecticut (Capitol Region Council of Governments)	20 acres	60%	5,000 s.f. for SF, MF or townhouses; 10,000 s.f. for all others		4 units/acre.	N/A	Contained in a model ordinance for village development as an "optional cluster."

Adopted Ordinances

Entity	Min. Parcel Size	Open Space Req.	Min. Lot Size		Density	Mgmt/Ownership of Open Space	Comments/Other Provisions
Fulton County, GA	N/A	40% (50% of mandatory conservation areas and active recreation areas may be counted as open space).	4,000 s.f.		80% of underlying zoning. Density bonus for each acre of open space above 40%. Density bonus also allowed if additional land within 1 mile of development is purchased for preservation. Density capped at 95% of underlying zoning.	Open space may be owned by: 1. Homeowners' Assoc. 2. Conservation Org. 3. Land Trust 4. Fulton County	
City of Lake Elmo, MN	40 acres	50% of buildable land.	N/A		16 units/40 acres. Density bonus for restoration of historic structures.	Homeowners' Assoc.	Adoption of this ordinance by the City of Lake Elmo was inspired by the original design for the Fields of St. Croix conservation subdivision. Allows up to 25% of a development to be townhouses.
City of Bluffdale, UT	20 acres	15% -- May include sensitive (steep slopes, wetlands, flood-plains).	10,000 s.f.		Depends on underlying zoning. Density bonus up to 35% if open space exceeds 15% and other conditions are met.	Open space may be owned by: 1. Homeowners' Assoc. 2. Conservation Org. 3. Land Trust 4. Gov. Agency 5. Individual	Requires open space to be contiguous, regulates setbacks.
City of Farmingdale, UT	N/A	10%-40% depending on zoning (from residential to low density ag.)	5,500-14,000 s.f. depending on zoning (from residential to low density ag.)		Depends on underlying zoning. Density bonus of up to 20% depending on amount of land preserved.	Open space may be owned by: 1. Homeowners' Assoc. 2. Conservation Org. 3. Land Trust 4. Gov. Agency 5. Individual	Provides two options for conservation development (basic and enhanced) depending on the amount of open space preserved. Larger density bonuses and smaller lot size minimums allowed for enhanced option.

Legal Barriers to Conservation Development in Texas

Conservation development represents a promising tool to accommodate population growth in unincorporated areas of Texas while protecting the environment. However, the state faces significant barriers to more widespread implementation of the conservation development concept. The main barriers are the perceived inadequacy of the regulatory authority of Texas counties and the lack of a consistent definition of conservation development.

Developers in Texas are anxious to take advantage of the favorable economics, but some have experienced regulatory barriers that inhibit their ability to receive timely approval of conservation subdivision plans. A similar situation existed in Georgia until the state General Assembly passed an open space law paving the way for local governments to pursue regulations that encourage conservation development. Texas lawmakers might review Georgia's experience and consider legislative options at the state level that would promote more widespread use of the conservation subdivision model.

In Texas, development is regulated at three levels: State (Constitution/Statutes), County and City (within city limits/in ETJ). There are currently large discrepancies in how counties interpret and apply the authorities granted them by the State. This results in highly variable subdivision regulations from one county to the next. Ultimately, understanding what counties are legally able to regulate is what will be most beneficial in promoting conservation development practices in Texas.

Municipal Land Use Governance in Texas

Municipalities in Texas have comprehensive zoning authority, allowing them to regulate land use within their jurisdictions, including but not limited to the height of buildings; size of yards; population density; the location and use of buildings for business; residential or other purposes; and use of groundwater by persons other than public utilities.

In places of designated historic, cultural, or architectural importance, cities may also regulate the construction, reconstruction, alteration, or razing of structures.¹⁹ Municipalities also can adopt rules governing subdivisions of land to promote the health, safety, morals, or general welfare of the city.²⁰ A plat is a legal document that contains a map of the property and infrastructure improvements to be made by the developer. Current law requires a plat to be filed if the owner proposes to divide the tract of land within a city into two or more parts for a subdivision, including additions to a municipality, or to lay out suburban, building or other lots, streets, alleys, squares, parks, or other areas dedicated to public use. To receive approval for a new subdivision, a plat must conform to the municipality's general plan and any other rules promulgated by the municipality related to development of subdivisions.²¹ In certain areas of Texas, applicants may be required to identify water and sewer facilities that will serve the subdivision and execute a bond prior to plat approval by a municipality.²²

The authority granted to municipalities in Texas to regulate land use allows them the flexibility needed to permit and promote conservation subdivisions. However, large tracts of undeveloped land that can best realize the benefits of conservation development are typically not abundant within city boundaries. Acknowledging this emphasizes the importance of land use governance in unincorporated areas of the state, where environmental values of unimproved land stand to gain the most from conservation development.

County Land Use Governance in Texas

Texas counties have no home-rule authority, meaning that they are only granted those powers expressly delineated in the state constitution or under state law. In general, county governments cannot adopt zoning ordinances, with exceptions made for certain natural or historic features, such as the Padre Island beachfront and the El Paso Mission Trail Historical Area.²³ Regulation of subdivision development in unincorporated areas is accomplished by counties through statutory plat approval provisions. Current law requires a plat to be filed in unincorporated areas if the owner proposes to divide a tract into two or more parts to lay out: (1) a subdivision of the tract; (2) lots; or (3) streets, alleys, squares, parks, or other areas dedicated to public use.

Before approving a plat, the county may (but is not required to) order a developer to meet certain conditions related to rights-of-way on roads within the subdivision, drainage, and identification of water sources for the new homes.²⁴ One of the main components of conservation subdivisions is a system of roads that are often narrower than those in a conventional development. Narrower roads not only help maintain lower infrastructure costs, but also serve water protection and other environmental purposes. Under current state law, a county that opts to regulate rights-of-way within a subdivision must require streets to be a minimum of 40-feet wide for internal roads and at least 50-feet wide for main arteries.²⁵ Because of these statutory restrictions on road widths, conservation developments proposing narrow roads may not comply with county regulations and could require a special review process, which can impose costly delays on developers.

Recent interpretations of existing county law suggest that counties have more regulatory authority than most are currently exercising. In addition to provisions allowing them to regulate subdivisions as described above, counties have authority to adopt ordinances necessary for participation in the National Flood Insurance Program.²⁶ This is a voluntary program that makes federally backed flood insurance available to citizens and businesses in communities that adopt ordinances designed to reduce flood damage.²⁷ Texas participates in the program by granting cities and counties the authority for, among other provisions: (1) “making land use adjustments to constrict the development of land which is exposed to flood damage and minimize damage caused by flood losses”; and (2) “guiding the development of proposed future construction, where practicable, away from a location which is threatened by flood hazards.”²⁸

Though not yet tested in the courts, this statute could provide significantly greater authority to counties in regulating development. For example, one issue that would be appropriate to regulate under these provisions is a limitation on impervious cover. In addition to adverse affects on water quality and water supply, large amounts of impervious cover increase the risk of floods. Therefore, it would be appropriate for counties to limit impervious cover based on their authority under the above-referenced flood protection statute.

State laws, such as flood protection statutes, may provide counties with some of the authority needed to more thoroughly regulate development within their jurisdictions. Other opportunities for regulation are in water protection, specifically groundwater. Some Counties in areas that are identified by the Texas Commission on Environmental Quality (TCEQ) as Groundwater Management Areas are enabled to regulate items affecting water quality and groundwater recharge. Several counties have used this legislation to restrict minimum lot size in a way similar to that exercised by municipalities.²⁹

Recognizing the need to plan for growth in unincorporated areas in fast-growing regions, the Texas Legislature enacted Senate Bill 873 in 2001, giving certain counties authority to regulate development in unincorporated areas for the promotion of health, safety, morals, or general welfare of the county. However, the statute prohibits these counties from regulating the use of a building or property for business, industrial, residential, or other purposes. The ability of counties to regulate land use was expanded by SB 873 beyond the road width and drainage provisions of statutory subdivision regulations, but the law still prohibits counties from exercising any zoning authority. The law applies to counties with populations over 700,000 and neighboring counties within the same Metropolitan Statistical Area, as well as counties of over 150,000 people along the Texas-Mexico border.³⁰ These conditions apply to 30 counties in the state, including many counties in the rapidly growing area of the Texas Hill Country.³¹

In short, SB 873 allows specific counties to adopt certain specific subdivision regulations that had previously been reserved for municipalities. These include specifying right-of-ways, major thoroughfares, minimum lot frontages, reasonable setbacks, developer participation contracts, and the ability to enact other regulations relevant to responsible development. According to one assessment, the new provision expands county regulatory authority in various ways: first, it eliminates the four-year limitation period on set-back requirements; second, it authorizes these counties to contract with a developer for public infrastructure related to subdivision without complying with the sealed bidding procedure; and third, the new statute provides authority to require a certificate of plat compliance before utility hook-up.³² The bill specifically prohibits a county from regulating land use (zoning), height or bulk of buildings, or density.

As it is apparent that each county attorney and city official interprets the language of the law differently, the authority granted in SB 873 is today still up for debate. SB 873 specifically states that, *“The commissioners court may adopt rules governing plats and subdivisions of land within the unincorporated area of the county to promote the health, safety, morals, or general welfare of the county and the safe, orderly, and healthful development of the unincorporated area of the county.”* This is nearly identical to the language and controls that a municipality can exercise over subdivisions or other planned development within their extraterritorial jurisdictions (ETJs). Jeff Barton, a former Hays county commissioner (1992-1998), has researched this provision of SB 873. He concludes that this is the same wording used in the Local Government Code that gives cities the power to regulate their ETJs, and it should therefore give the same powers to those 30 counties affected by SB 873. Others, like Rob Edwards (legislative aid to the author of the bill, Senator Jon Lindsay) thinks Barton’s interpretation is “a pretty good stretch... I’m not sure some of those members who voted for it would necessarily agree with that.”³³ The extent of this authority, however, has not yet been tested in the courts.

Under SB 873, Travis County has implemented requirements that developers dedicate land for parks or pay fees to the county in lieu of establishing parkland as a condition of plat approvals. Additionally, the county has also mandated that floodplains be left in their natural state, although this requirement likely would have been permitted under floodplain protection provisions that counties can impose under state law related to the National Flood Insurance Program.

Most important to the prospects for future conservation development, SB 873 may have given affected counties the ability to provide alternatives to existing subdivision regulations, such as permitting narrower roads. As a result, Travis County is now considering a conservation development ordinance that would create a by-right option to conventional subdivisions, including a provision for narrower roads that would not require the developer of a conservation subdivision to obtain a variance.³⁴

The perceived lack of authority by county governments potentially hinders them from encouraging more developers to build conservation subdivisions. Some possible remedies to this situation are currently being explored, as the efforts of Travis County show. It is possible to invoke the authority of a state flood protection statute and SB 873 in order to enable Texas counties greater land use planning ability. This suggests that the regulatory framework exists to enable and encourage conservation development in unincorporated areas of the county. While this progress is encouraging, the lack of a consistent definition of conservation development continues to impede local planning efforts.

A Definition of Conservation Development for Texas

Conservation development seeks to reduce our ecological footprint by preserving significant, contiguous open spaces amid groups of clustered homes, which enhance sustainability through water conservation and energy efficient practices.

This definition can be used as a reference guide by interested parties in developing policies that enable a more consistent and predictable application of the conservation development concept. There is no universal approach to implementing conservation development. Policy makers at a local level should consider legal, environmental, and geographic conditions unique to their jurisdictions to establish a regulatory framework that encourages conservation development. The following criteria can be drawn from in developing regulations that would fit this definition of conservation development.

Criteria for Conservation Development in Texas

Previous sections of this report have demonstrated the potential economic and environmental value that conservation development can produce. Regulatory barriers in Texas have been shown to hinder more widespread use of conservation development throughout the state. While some of these challenges are being addressed, the lack of a consistent definition of conservation development in Texas continues to inhibit the practice from gaining increased acceptance among developers, government agencies, environmentalists, and other stakeholders.

In a recent *Austin American-Statesman* article regarding a proposed development in the Texas Hill Country, George Cofer, executive director of the Hill Country Conservancy, voiced the frustration of many who support the conservation development concept; “There’s no mutually agreed-upon definition of what conservation development is. It’s like asking, ‘What is smart growth? What is affordable housing?’”³⁵

The following elements are suggested as criteria for conservation development in Texas. While incorporating all these elements would be ideal, it is likely that few developments could achieve all of these criteria. The next step in fully defining conservation development would be to develop a way to compare or rate conservation developments based on how close they come to achieving these ideals.

A Voluntary Alternative Conservation development should be established in county and municipal regulations as a by-right voluntary alternative to conventional subdivisions. This would allow regulated conservation development to proceed without special review by local approving authorities, but it would not replace conventional residential development

as a practice mandated by law. Given the potential economic benefits for developers, it is anticipated that many would take advantage of this alternative if it were available to them and if the risk of untimely delay through the regulatory process was reduced. Taking into account the considerable benefits to local governments, primarily in the reduced cost of public services required by subdivisions with more open space, these authorities have the incentive of encouraging developers to utilize this alternative.

Minimum Parcel Size In the absence of a county conservation plan to guide the creation of open space, there should be a minimum parcel size of 25 acres on which conservation subdivisions can be built in order to realize the ecological benefits of preserving open space. It is difficult on smaller parcels to preserve the significant amounts of land needed for wildlife habitat corridors and water resource protection, values that drive the ecological motivation for conservation development. However, because topographical features vary across the state, there may be critical environmental features on smaller sites that make a conservation subdivision a feasible alternative. In addition, sites of less than 25 acres should be considered when the preserved land would be contiguous with open space on adjacent properties.

Ecological Analysis The first step in the process of planning a conservation subdivision should be a thorough ecological assessment of the parcel to be developed. This will provide the information needed regarding the features that should be preserved as open space. The assessment should identify sensitive environmental features, including but not limited to wildlife habitat, sensitive and valuable ecosystems, waterways, steep slopes, and viewsheds. In addition to “unbuildable” land, this analysis should identify other areas that have ecological value, such as prairies or agricultural land that should be preserved and might have been built upon otherwise. The ecological analysis is integral to the developer’s ability to meet open space requirements in a way that generates optimal environmental protection. This assessment should be conducted by a consultant that has the expertise necessary to identify all critical environmental factors present on the site beyond those that are regulated under current law.

Open Space Any regulation governing conservation development should have as its primary goal setting aside a significant portion of a subdivision as open space. Earlier sections of this report have detailed the environmental and economic value of open space. From wildlife habitat to protection of water resources, open space supports numerous ecological functions. It also has been shown that governments and developers can realize economic benefits from preserving natural areas. A reasonable level of open space in a conservation subdivision is between 40 and 60 percent of the parcel’s gross area, with not more than half of the preserved lands being drawn from “unbuildable” lands. Unbuildable lands can be reasonably defined as those that are situated within buffer zones around waters of the United States mandated by the U.S. Army Corps of Engineers pursuant to the

Clean Water Act; having slopes greater than 25 percent; or lying within the 100-year flood plain delineated by the Federal Emergency Management Agency.

Recognizing a portion of the unbuildable lands as a partial credit toward preserved open space serves to help level the economic playing field between sites with a high percentage of “unbuildable” land and those that are entirely buildable. Still, to ensure that more than just “unbuildable” lands are preserved, “unbuildable” lands should not comprise more than 50 percent of the total preserved open space. In addition, the open space should be contiguous, with preserved buildable land adjacent to the “unbuildable” land, establishing a corridor that can provide the maximum benefit to wildlife and other natural resources. To the extent possible, the preserved land should be contiguous with any open space on neighboring parcels. Active recreation facilities within the open space, such as ball fields, should be limited to 25 percent of the total open space area due to their high water use, intensive use of non-native grasses, and the minimal ecological value that they produce.

Density and Lot Size In most areas of the country, maximum density within a conservation subdivision depends on the underlying zoning of the governing body’s regulations. Most conservation subdivision ordinances have provisions allowing for lot sizes that are smaller than those in conventional developments to allow for preservation of open space without reducing the total number of lots. In Texas, where counties have no zoning authority, density and minimum lot size are constrained by the physical limitations of the land, or may depend on the area needed for utilities such as septic systems and water wells. The number of lots developed on a property may need to be limited to protect water and other resources. However, if the maximum density is too low, it may become economically infeasible for a developer to build a conservation subdivision. To be successful, a conservation development must seek to balance environmental needs with the developers need to realize profit.

Because conservation development is a voluntary option, if this balance is not achieved the developer is likely to abandon plans for conserving land and may build a conventional subdivision with very little open space and extensive impervious cover. However, if too much density is allowed, then significant environmental degradation can result. The Wisconsin Department of Natural Resources indicates that model conservation subdivision ordinances should put more emphasis on the goal of protecting natural resources.³⁶ This can be achieved by placing reasonable limitations on density of conservation subdivisions. Because the practice of using high-density areas to keep overall density equivalent to a traditional development can result in localized water quality issues on the site, clustered housing must be used in conjunction with best-management practices for water quality.

Impervious Cover Total impervious cover of a conservation subdivision should be limited to a maximum of 15 to 25 percent of the gross site acreage. Impervious cover, such as roads and structures, prevent rain water from recharging aquifers and can increase the risk of floods. A limitation on impervious cover would reduce the overall human footprint on the environment, an essential objective of conservation development. As mentioned earlier, counties in Texas may currently have the authority to regulate impervious cover based on state flood protection statutes.³⁷ Awarding additional impervious cover bonuses, that is, allowing developers to exceed a specific impervious cover limit, is a potential way to reward certain choices that a municipality our county would like to encourage but lacks the authority to regulate.

Narrow Roads In addition to open space, another important feature of conservation development is the presence of relatively narrow roadways. In conservation subdivisions, which are typically built in more rural areas with less traffic, construction of wide streets is often unnecessary. Narrower roads can serve to slow traffic and increase safety in clustered development areas. They are also important in limiting impervious cover, protecting water resources, and reducing developers' infrastructure costs compared to conventional subdivisions. As discussed earlier, Texas state law requires minimum road widths in unincorporated areas of counties that invoke their authority to regulate development of subdivisions. These provisions can inhibit the development of conservation subdivisions designed with narrow roads, either by prohibiting them outright, or by requiring them to receive timely special consideration similar to a city's variance process. Several alternatives exist to better recognize the environmental and economic benefits of narrow roads in conservation subdivisions. These include: (1) amending state law to give counties more flexibility in regulating road widths; (2) asking that counties consider foregoing their authority to place restrictions on infrastructure as a condition of plat approvals; (3) giving counties affected by SB 873 the ability to amend subdivision regulations, allowing a conservation development alternative with narrow roads, a process currently underway in Travis County; or (4) giving counties the ability to adopt an ordinance allowing narrow roads based on flood protection provisions of Texas state law related to participation in the National Flood Insurance Program.

Viewshed & Cultural Practice Protection Open space in a conservation subdivision should be designed to provide the maximum protection possible to scenic views, which typically requires a prohibition on building on ridgelines. When designing roads within conservation subdivisions, engineers and planners should seek to retain views in a manner similar to meeting the criteria for designation as a scenic byway under the federal National Scenic Byways Program.³⁸

To receive this designation, a roadway must have: (1) scenic, natural, recreational, archaeological, historic, or cultural value; (2) community support; and (3) a corridor management plan for preservation of the roadway's intrinsic values. While these are more stringent requirements than roads within conservation subdivisions should face, this program serves a useful guide to plan for the preservation of scenic views.

In addition to preserving land for its ecological and recreational values, many conservation developments may choose to preserve the rural character of their region by preserving the farming and ranching practices once common in the area. Conservation developments in other states have often preserved working farms and ranches as the heart of their developments.³⁹ Architect and planner Clark Stevens refers to land conservation as a way to preserve "storied land," or "land that's ecologically and culturally significant to the communities of humans, animals, and plants that it sustains. That sustenance is spiritual as well as economic and physical".⁴⁰

Landscaping Conservation subdivisions should be landscaped with native plants that are compatible with the ecology and regional character of the area. This will allow the area within the conservation development to resemble as closely as possible the natural state of the land. Native landscaping will serve to help re-create the ecology of the land that prior to European settlement supported a complex natural system.

Building Standards Buildings within conservation subdivisions should be constructed to operate with the maximum possible efficiency of resource use. Developers should follow the environmental and energy efficiency guidelines established by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system. In addition to the environmental benefits of designing homes in this fashion, following LEED guidelines can serve as a marketing tool for prospective buyers interested in living in a home that conserves water, energy, and other resources.

Utilities Conservation subdivisions should be designed to take advantage of water conservation measures for which technology already exists, such as rainwater harvesting, graywater re-use (eg. water from bathroom sinks, showers and washing machines used for irrigation), and reduced-flow toilets. LEED standards could be productively applied here as well, and would provide recognition to the developer for innovative approaches.

Long-term Maintenance of Open Space Prior to construction, an agreement should be reached establishing the terms necessary to maintain the open space in perpetuity. Most conservation subdivision ordinances permit several options for ownership of open space, including a homeowners association, government agency, a non-profit conservation organization, or a land trust. Land trusts are often the most appropriate entity to manage open space due to their experience in land stewardship and monitoring and their commitment to conservation.⁴¹ Regardless of ownership, a funding source for the long-term maintenance of open space should be identified.

Creating Models It would be possible to draw from these criteria a set of standards that, if met, would allow a subdivision to be marketed as a conservation development. A model for this type of program is the United States Green Building Council's Leadership in Energy and Environmental Design (LEED) system, a rating system created to evaluate the environmental performance and energy efficiency of buildings. This program contains consistent measures that enable buildings to be objectively evaluated and rated on a scale of silver, gold, or platinum, depending on how many of the environmental requirements are met. A similar rating system, driven by a consistent definition of conservation development, would allow subdivisions to receive a rating based on the amount of open space provided, the particularly sensitive environmental features preserved, and other factors described in the previous sections.

Endnotes

¹ Miistakis Institute for the Rockies, Annual Report (Calgary, Alberta, Canada, 2003), p. 9.

² Tom Fox, *Urban Open Space: An Investment that Pays* (New York: Neighborhood Open Space Coalition, 1990) pp. 9-11.

³ John L. Crompton, *The Impact of Parks and Open Space on Property Values and the Property Tax Base* (Ashburn, Va.: National Recreation & Park Association, 2000), p. 1

⁴ John L. Crompton, *The Impact of Parks and Open Space on Property Values and the Property Tax Base*, p. 62. A "passive park" is one without recreational facilities for organized sports. Providing empirical support for the proximate principle, a study of three neighborhoods in Boulder, Colorado, demonstrated that home prices decreased with increasing distance from a greenbelt. Overall, it was found that the price of homes decreased by a statistically significant \$4.20 for every foot of walking distance that one moved away from the greenbelt. One neighborhood included in the study consisting of 36 homes located at the base of several wooded mesas in the foothills of the Rocky Mountains provides even more compelling evidence for increased property values near open space.. The results of the study showed that in this neighborhood, which features multiple rock outcroppings that provide views of the Boulder Valley, the price of a dwelling unit decreased by \$10.20 for every additional foot that it was situated away from the greenbelt. For additional information on this see Mark R. Correl, Jane H. Lillydahl and Larry D. Singell, "The Effects of Greenbelts on Residential Property Values: Some Findings on the Political Economy of Open Space," *Land Economics*, vol. 54, no. 2 (May 1978), pp. 211-213.

⁵ Nanette Nelson, et al., *Estimating the Economic Benefit of Landscape Pattern: An Hedonic Analysis of Spatial Landscape Indices and A Comparison of Build-Out Scenarios for the Protection of Ecosystems* (Athens, Ga.: University of Georgia, March 2004).

⁶ Christopher G. Leggett and Nancy E. Bockstael, "Evidence of the Effects of Water Quality on Land Prices," *Journal of Environmental Economics and Management*, vol. 39, issue 2, (March 2000), pp. 121-144.

⁷ American Farmland Trust, *Assessing the Cost of Community Services*. Online: <http://www.farmland.org/consulting/assess.htm>. Accessed: April 6, 2005. The AFT stresses that this is not a forecasting tool since it is based on past expenditures and revenues for sustaining each type of land use, but can be useful in increasing public awareness on the economic benefits of open space and farmland preservation.

⁸ John L. Crompton, *The Impact of Parks and Open Space on Property Values and the Property Tax Base*, pp. 75-77. A limitation of the COCS methodology is apparent in the three broad categories of land use. Significant variation occurs within each category, which may create misleading generalizations. Another criticism of the current COCS process is that it does not consider the “multiplier” effect of residents who contribute to the economic base of a community. These critics indicate that a broader economic impact model should be incorporated into future COCS analyses. For more information on this see University of Illinois Extension, Local Community Resources. Online. Available at: <http://www.urbanext.uiuc.edu/lcr/LGIEN2000-0011.html>. Accessed: April 20, 2005.

⁹ National Park Service, *Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors*, Fourth Edition, Revised (1995).

¹⁰ United States Department of Health and Human Services, Centers for Disease Control and Prevention, *Overweight and Obesity Economic Consequences*. Online. Available: http://www.cdc.gov/nccdphp/dnpa/obesity/economic_consequences.htm.

¹¹ Randall Arendt, *Growing Greener: Putting Conservation into Local Plans and Ordinances* (Washington, D.C.: Island Press, 1999), p. 88.

¹² Email from Terry Mitchell, Momark Development, “Questions on Conservation Development,” to Gabriel Tiffany, March 12, 2005.

¹³ Jeff Lacy, *An Examination of Market Appreciation for Clustered Housing With Permanent Open Space*, 1990. Online. Available: <http://www.umass.edu/larp/crm/Lacy/LacyMarket.html>. Accessed: April 6, 2005.

¹⁴ Email from Terry Mitchell, Momark Development, “Questions on Conservation Development,” to Gabriel Tiffany, March 12, 2005.

¹⁵ 1000 Friends of Wisconsin, “Conservation Subdivision: Sorting Out a Mixed Bag,” 1000 Friends of Wisconsin Newsletter, vol. 4, no. 2 (2000). Online. Available: <http://www.1kfriends.org/newsletters/Vol4Num2.shtml>. Accessed: April 6, 2005.

¹⁶ Wisconsin Department of Natural Resources, Department of Natural Resources Position on “Cluster Development.” Online. Available: http://dnr.wi.gov/org/es/science/landuse/tools/position_paper.pdf. Accessed: April 8, 2005.

¹⁷ Arendt, *Growing Greener*, p. 6.

¹⁸ Edward T. McMahon and Michael Pawlukiewicz, *The Practice of Conservation*

Development: Lessons in Success, Urban Land Institute Land use Policy Forum Report in Partnership with The Conservation Fund (Chicago, Ill., December 2002), p. 3.

¹⁹ Texas Local Government Code, ch. 211, sec. 211.003.

²⁰ Texas Local Government Code, ch. 212, sec. 212.002.

²¹ Texas Local Government Code, ch. 212, sec. 212.010.

²² Texas Local Government Code, ch. 212, secs. 212.0105-212.0106.

²³ Texas House Research Organization, *Do Counties Need More Powers to Cope With Urban Sprawl?*, focus report no. 77-26 (Austin, Tex., November 6, 2002), p. 2.

²⁴ Texas Local Government Code, ch. 232, sec. 232.003.

²⁵ Shoulder-to-shoulder width required to be at least 32 feet on collectors and main arteries, and at least 25 feet on other roads.

²⁶ Texas Water Code, ch. 16, sec. 16.3145.

²⁷ Federal Emergency Management Agency, National Flood Insurance Program. Online. Available: <http://www.fema.gov/fima/nfip.shtm>. Accessed: April 6, 2005.

²⁸ Texas Water Code, ch. 16, sec. 16.315.

²⁹ Texas Local Government Code, ch. 35 sec. 35.007.

³⁰ Texas Local Government Code, ch. 232.

³¹ House Research Organization, 2002, p. 5.

³² “County Regulation of Subdivisions,” developed by Bickerstaff, Heath, Smiley, Pollan, Kever & McDaniel, L.L.P., p. 3-4.

³³ *San Antonio Express News*, “Vague law possibly empowers counties: A consultant thinks legislation might have granted city-like authority”, 12/29/02

³⁴ Interview with Tom Nuckols, Transaction Attorney, Travis County Attorney’s Office, Austin, Texas, March 30, 2005.

³⁵ "Subdivision Touted as Conservation," *Austin American-Statesman* (December 13, 2004), p. B-1.

³⁶ Wisconsin Department of Natural Resources, Department of Natural Resources Position on "Cluster Development." Online. Available: http://dnr.wi.gov/org/es/science/landuse/tools/position_paper.pdf. Accessed: April 8, 2005.

³⁷ Tom Nuckols, Travis County Attorney's Office, Interview 3/30/05.

³⁸ Scenic America, The National Scenic Byways Program: Balancing Economics and Preservation. Online. Available: <http://www.scenic.org/scenicbyways/balancing.htm>. Accessed: April 6, 2005.

³⁹ For instance, see *Prairie Crossings in Illinois*.

⁴⁰ Sullivan, C.C. "Conservation Development is not an Oxymoron." (*Architecture*, v 93, i8), p. 37.

⁴¹ Email from Robert Levite, Green Valley Institute, "Partnerships for Conservation Subdivisions," to LANDTRUST-L@LISTSERV.INDIANA.EDU, March 14, 2005.

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