Managing Change in Rural Manitoba

A Manual for Conservation Subdivision Design

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by Randall Arendt, FRTPI

Contents

Introduction

Manitoba's Provincial Land Use Policies, enacted in the Provincial Planning Regulation, encourage local authorities to plan rural residential and cottage development in a way that preserves the natural and rural character of an area. The Provincial Land Use Policies also support the farming community by encouraging development policies that reduce the fragmentation of the agricultural land base and protect the viability of large scale farming operations.

However, if you live in rural Manitoba or along the suburban fringe in an area with traditional land-use regulations, it is likely that your home is not far from a farm, a stream, or a woodland. It is also quite possible that many (or most) of these places will be unrecognizable 20 or 30 years from now, unless they have been protected through public acquisition or by a conservation agreement voluntarily placed on the property by its owner. This is because many municipalities have adopted conventional zoning by-laws which establish regulations for the orderly conversion of virtually all buildable land (dry, flood-free, and flat to moderately sloping), into developed properties.

Communities can achieve their conservation goals in a way that is fair to everyone involved, from landowners and developers, to neighbors and residents. This can be done by amending existing zoning bylaws in the straightforward manner as described in this manual.

Classic landscapes across rural Manitoba, such as the ones displayed on the cover, are at risk of haphazard sprawl development under current bylaws and regulations in many communities which allow or promote low-density, large-lot subdivisions. Such zoning is often based on the widespread belief that spreading development out onto two- to five-acre lots helps to preserve rural character, while in fact the opposite is true.

The good news is that practical alternatives exist. This manual describes a straightforward way in which municipalities can use the development process to protect a variety of resources -- including farmland, woodlands, natural areas, wildlife habitats, and wetlands – by ensuring that new subdivisions are designed according to specific design principles. One of the purposes of this manual is to raise awareness of this design approach among municipal officials and staff, and to spark interest in adopting planning policies and by-laws that enable this form of development in appropriate areas.

The fact is that each time a property is developed into a residential subdivision, an opportunity exists to preserve open space. Although in many municipalities this seldom happens, this situation could be easily reversed by making several small but significant changes to several basic local land-use documents: Development Plans and Secondary Plans, zoning bylaws, and development agreements.

Conservation Design Defined

Conservation design is a flexible approach to laying out rural subdivisions which maximizes the amount of open space preservation without sacrificing the total number of lots created. It is a “density-neutral” approach, meaning that it allows the same number of lots to be created as would be produced in a conventional layout (as depicted in Fig. 13 & 31 of this manual). Conservation subdivisions are low-density rural neighborhoods, often located beyond public water and sewer service in areas where land has been designated for rural residential development.

Simply stated, conservation design rearranges the development on each parcel as it is being planned so that typically half (or more) of the buildable land is set aside as open space. To preserve landowner equity and property value, the same number of homes would be built on less land, allowing the balance of the property to be permanently protected. This approach provides a fair and equitable way to balance conservation and development objectives.

Single family homes are placed on certain parts of the property in order to conserve other areas, allowing most of the land that would have been developed under traditional subdivision practices, to be protected. This approach is an enhancement of earlier “clustering” and “planned unit development” techniques both in terms of providing higher open space ratios and of conscious design practices to forge community-wide networks of open space.

Note: Since 2006, the provincial government in New Brunswick has been informing local officials, developers, and interested residents about the conservation design concept known there as “Sustainable Community Design” (SCD). Focused on protecting wetlands and other environmental resources, this effort produced a detailed 600-page workbook, numerous presentations at conferences and in municipalities, and free on-line seminars. Among the six projects that have been started as of early 2014 is Le Village en Haut du Ruisseau in the city of Dieppe, where compact design has allowed three-quarters of the 30-acre site to be preserved as open space, while accommodating 217 dwellings. It is hoped that this sustainable urban infill project, which is being built at a higher density than the pre-existing zoning had allowed, will lessen development pressure in more rural parts of the area.

Benefits of Conservation Design

Conservation design confers multiple benefits on a number of different parties and stakeholders, including residents, developers, and municipalities. They include economic benefits, recreational benefits, health and wellness benefits, and quality of life benefits, among others. One remarkable aspect is that these additional benefits accrue at no additional cost to anyone involved. In fact, conservation design has been repeatedly demonstrated to cost less to all parties, a fact that is explained below.

Economic Benefits

An increasing number of developers are beginning to understand that conserving open space and special features enhances the value of their projects as potential buyers appreciate such amenities. Conservation subdivisions generally sell very well as they have proven popular with families and individuals looking for a place in the country to live and recreate. One researcher, who examined price premiums, investment costs, and absorption rates for lots in conservation subdivisions versus those in conventional layouts, found that lots in the former command a premium, are less expensive to build, and sell more quickly than lots in conventional subdivisions (Mohamed, 2006). According to this study, lots in conservation subdivisions were approximately $7,400 less costly to create, compared with lots in conventional subdivisions, and sold twice as quickly as lots without open space. These findings are in line with those from a Colorado study of over 200 home sales in five counties, where researchers found a 20-29 percent rise in house sale prices for homes in conservation subdivisions, versus those in developments without open space (Hannum, 2012).

Conservation subdivisions can reduce the infrastructure costs of new developments, in terms of both capital and operating costs. One reason is the generally shorter length of streets that must be maintained, saving on winter snow plowing, periodic repairs, and resurfacing. Retaining local site features can also reduce costs associated with grading, drainage, and related “improvements” typically required in a new subdivision. For example, in Pleasant View, Tennessee, conservation-design saved one developer approximately $212,000 in street construction costs, while at the same time introducing significantly more quality open space into the layout. By respecting natural terrain and designing around existing site features on an 80 lot development in Nacogdoche, Texas, a conservation

design cut grading costs by 83 percent, or one quarter-million dollars, from $300,000 to $50,000. Another conservation design is credited by a developer in Carmel, Indiana as having added $20,000 to $25,000 of value to each of his 40 lots, an added value of $800,000 to $1m, while still providing for full development density.

Lots in conservation subdivisions generally sell very well. At Sugar Creek Preserve in Walworth County, Wisconsin, the developer was able to pre-sell twice the number of lots which he had expected to. One researcher, who examined price premiums, investment costs, and absorption rates for lots in conservation subdivisions compared with those in standard developments with little or no open space, found that lots in the former sold at premium prices, had lower infrastructure and grading costs, and sold faster than lots in standard developments (Mohamed, 2006).

In addition, conservation subdivisions often appreciate in value at higher rates than conventional subdivisions. Successful developers of conservation subdivisions realize that many buyers prefer to live in attractive park-like settings, and that open space views make it possible to sell lots or houses faster and at premium prices. Such homes also tend to appreciate more in value, compared with those on lots in standard "cookie-cutter" developments offering neither views nor nearby open space (Arendt 1996).

Contrasting developments with comparable house sizes, a study of subdivisions with significant open space in Hamburg Township, Michigan revealed that house prices there rose twice as fast as those in conventional subdivisions, even though lots were half the size. These results are greater than those found in some previous studies such as one conducted by the Center for Rural Massachusetts which found that, over a 21-year period, homes in a very dated cluster subdivision with relatively minimal open space appreciated 12.7 percent faster than similar homes in developments without open space. The faster-appreciating development featured 36 acres of open space with two ponds, a tennis court, a baseball diamond, a playing field/village common, and a nature trail. In contrast, the conventional subdivision offered little more than larger lots (half acre, versus quarter-acre) and a small amount of open space (Arendt, 2014).

Figures 1 and 2 - *Attractive and accessible open space is visible from the front steps of this house in London Grove Twp, PA and from the back deck of another house in the Fields of St. Croix, Lake Elmo, MN.*

Figures 3 and 4 - *Conservation subdivisions offer many opportunities to recreate and get exercise, from fishing in creeks and ponds as at the Ranch at Roaring Fork, Carbondale CO, to walking trails which are a commonly provided amenity in conservation subdivisions such as in Woodfield Village in Merton WI.*

Recreation and Physical Health Benefits

The open space that conservation subdivisions preserve and protect is often available to neighbors for informal or organized recreation, with trails that can ultimately link with open space in other similar subdivisions, creating connected networks of footpaths and conservation lands, thereby extending community greenway planning objectives. It allows greater buffers to be created along streams, around waterbodies and other sensitive areas, and next to existing parks, preserves, or other resource lands, including farmland. It can be used to protect scenic viewsheds along roads where maintaining rural character is a policy goal. And it can be accomplished at a very wide range of densities from urban to rural, in a manner that could reflect new urban design principles when applied to walkable mixed-use neighborhoods in areas with urban infrastructure (Arendt, 2014).

According to many health experts, creating and improving local opportunities for physical activity in close proximity to peoples residences could increase the number of people exercising at least three times a week by 25 percent. Even small increases in physical activity can measurably improve the health of normally inactive people. The Heart and Stroke Foundation of Canada estimates that “if all Canadians engaged in 60 minutes of physical activity per day, 33 percent of all deaths related to coronary heart disease, 25 percent of deaths related to stroke, 20 percent of deaths related to type-2 diabetes, and 20 percent of deaths related to hypertension could be avoided.” In addition, physical activity improves psychological well being, reduces depression rates, and improves stress management. Providing attractive and convenient places to walk and live could help to reduce the screen time that Canadians report spending every day, which is twice as much time as they spend in physical activity. An added benefit is the greater number of social connections that residents are inclined to make during the time they spend outdoors. If the goal is to encourage people to get off their couches or step away from their computers, providing attractive trails and walking paths can be an effective way to promote walking, running, or jogging (Arendt, 2015).

Mental Health Benefits

Although the research linking informal contacts with nature to health benefits to the mind is far from complete, many studies have shown that recuperation rates quicken for patients in hospital rooms offering a green outdoor view. Researchers have discovered physical and mental health benefits from interacting with nature such as reduced levels of attention deficit, improved cognitive ability, and reduced aggressive behavior. The issues of having children experience less exposure to nature has been articulated and developed by Richard Louv in *Last Child in the Woods*. Louv contends that children as young as five begin to exhibit symptoms of this disorder, based on research at the University of Illinois Human-Environment Research Laboratory, and that those symptoms lessen significantly after they spend time in natural settings. Moreover, it appears that students' academic performance, test scores, and critical thinking and decision making skills all tend to improve in schools with outdoor classrooms, according to findings by California's Education and Environmental Roundtable. These findings, plus additional evidence that exposure to nature stimulates creativity in children, has led Louv to inaugurate a movement he calls "No Child Left Indoors". Implementing these changes becomes easier when municipalities adopt the principles of conservation subdivisions into their plans and bylaws (Arendt, 2015). In addition, physical activity such as walking or jogging on recreational trails through subdivision open space can improve psychological well being, reduce depression rates, and improve stress management.

Environmental and Wildlife Benefits

Conservation design helps communities in a number of environmental ways. First, it allows the most suitable soils on any parcel to be used for sewage disposal with either individual or group drainfields located on-lot or in part of the common open space. It allows the development to be designed around (and not on top of) the most permeable soils on the property, which could then to be used to infiltrate stormwater and

Figures 5 and 6 - *Grassland and prairie restoration is a beneficial use for degraded farmland which has little or no ecological value. The examples shown here are from Stillmeadow in Waukesha County WI and the Fields of Long Grove in Long Grove IL. The Illinois project, from the late 1980s, was among the first conservation subdivisions in the United States to implement large-scale prairie restoration (50 acres). Seen in the foreground is a combination of native grasses and purple coneflowers.*

recharge aquifers and groundwater supplies (Planning for wastewater and stormwater are further discussed in the next section, Resolving Issues). Conservation design also enhances water quality by retaining natural riparian buffer zones alongside streams, rivers and lakes, reducing soil erosion and filtering pollution from agricultural and road runoff.

Furthermore, this design approach makes it possible to conserve significant parts of the green infrastructure, including farmland, upland forests, wooded wildlife habitat and travel corridors, historic structures, and aquifer recharge areas. Another reason conservation design is desirable is that it provides opportunities to restore degraded landscapes and habitats, from woodlands and meadows to fisheries. Lastly, historic buildings and cultural features can be designed around and preserved.

Agricultural Benefits

Although conservation subdivisions can be effective in preserving 50 percent or more of the total area of a parcel of land, conservation subdivisions are not well suited for preserving large-scale working landscapes such as commercial farmland. For this reason, conservation subdivisions should be planned in areas designated for residential uses in the local Development Plan.

In addition, when such developments are located at the outer edges of existing communities, their preserved open space can serve as a helpful buffer to separate new residents from farming operations (and vice versa). It is important to note that these conservation areas – as well as large conventional lots (a common offender) -- must be kept free of noxious weeds (as defined in *The Noxious Weeds Act*). Weed District Supervisors have the legal authority to eradicate such seeds and bill the landowner for their costs.

Conservation design in both small communities and along the urban fringe also is well suited to smaller scale or specialized agriculture, such as higher-value specialty crop farming, CSAs (community-supported agriculture operations), wholesale nurseries, and equestrian or solar operations. Where the percentage of open space preserved by the conservation design is 75 percent or more -- usually achievable when

Figures 7 and 8 - *Cropland seen from the public road bordering Farmview in Bucks County PA (left), and a tree nursery at Montgomery Farm conservation subdivision in Allen TX.*

overall densities are five or more acres per dwelling -- land can be farmed more traditionally.

A typical example of conservation design preserving farmland and various public viewsheds in suburban areas is Farmview, built by Realen Homes in the late 1980s on a 431-acre site in Lower Makefield Twp., Bucks County, Pennsylvania. Located just 30 minutes north of Philadelphia, its 310 houselots, served by public water and sewer, cover only half the property. Located in a zone where the lot size minimum was one acre, the developers were permitted lots averaging 22,000 square feet (one-half acre), with 110 feet of street frontage (instead of 160 feet), under a special cluster zoning amendment, adopted to encourage the conservation of 51 percent or more of a subdivision tract as permanent farmland. Overall density was determined by a concept plan, or "yield" plan, which showed the number of lots achievable through a conventional layout.

Other examples include the Ponds at Woodward, which has preserved a working orchard in Kennett Township, Chester County Pennsylvania, and Indian Walk and Winfield, near Doylestown in Bucks County, where arable cropland has been converted to a commercial tree nursery.

At Farmcolony near Stanardsville, Virginia, the Home Owners Association (HOA) owns about 100 acres of fields and pastures, which it leases to a local farmer on a long-term basis. These and other examples are further described in the new edition of Rural by Design (Arendt, 2015).

Since 1992 zoning in Howard County, Maryland, located in the Washington DC metro area, has required that new subdivisions of more than 20 acres in its unsewered rural conservation districts be laid out according to the principles of conservation design. This clustering provision is a by-right permitted use, simplifying the process for applicants and staff. Gross densities are one dwelling per 4.25 acres. Between 1992 and the end of 2011 more than 2,900 acres of farmland had been preserved in western Howard County through the building of conservation subdivisions.

Strong leadership by two successive planning directors in one rural county which has adopted Growing Greener principles has made all the difference in the success of its conservation design by-law, where more than 5,500 acres of land have been preserved through this simple technique over the past 12 years, about half of which is farmland.

Municipal Benefits

Municipalities can benefit from conservation design in several ways. One is the generally shorter length of streets that must be maintained, saving on winter snowplowing, periodic repairs, and resurfacing.

Another is the length of time typically required for development review and approval,when it adopts the procedures recommended in the model regulations, which often enable all parties to achieve win-win situations more quickly, with fewer and shorter meetings.

A third is a lesser demand for new municipal parks and trails when new neighborhoods are designed and provided with these recreational elements by their developers.

A fourth is a generally more pleasant appearance resulting from the conservation of farmland, woodlands, and public viewsheds.

A fifth is higher property values, which tend to rise more as the community becomes known for its amenities and better quality of life.

Figure 9 - *Naturalized green space and walking trails integrated into subdivision in Chester County, Pennsylvania*

Resolving Issues

Determining Density

There are two recommended ways to determine density, involving either arithmetical formulas or yield plans. Bylaws using the formulaic approach list percentages of unbuildable land to be subtracted from gross tract acreage to produce “net buildable acreage”, which is then divided by the standard minimum lot size in conventional subdivisions.

A simpler method of determining density is through “yield plans”, which realistically depict conceptual layouts of standard developments with little or no open space, wherein all lots conform to the usual requirements governing lot size, street frontage and the minimum amount of land suitable for yards.

In areas without sewers, applicants must provide proof that the most dubious lots contain soil suitable for septic systems. As a safeguard, municipal officials determine which lots are in the 10 percent sample to be tested. Lots failing the soil test are eliminated, and further 10 percent samplings are required until the applicant demonstrates soil suitability in all the lots within the latest sample. Of course, when the design moves into later stages, applicants must demonstrate septic soil suitability on every lot. But that would be wasteful and unnecessary for a yield plan that will never be built, and which serves only to determine a fair lot count.

Another aspect of the concept plan review is to make certain that all the proposed streets would conform to code requirements. After this analysis, the number of lots shown on the yield plan becomes the number of lots allowed in the conservation design.

An alternative method of determining density is available to applicants who do not wish to submit yield plans. This alternative involves a special formula to calculate the actual buildabilty of a parcel. It is recommended that the formula in the model bylaw contained in this manual should be fine-tuned locally by municipal officials to ensure that it is fair and equitable. At times this involves field-testing by applying it to previously approved subdivisions to ascertain if the formula would yield about the same number of lots that had been approved. The objective is to calibrate a formula that will produce density-neutral results, compared with conventional layouts.

Incentivizing through Differential Densities

In areas where developers are very conservative and generally unwilling to experiment, content with continuing to build neighborhoods without open space amenities, density bonuses are sometimes offered to encourage them to follow conservation design principles. However, many developers are reluctant to change their design approach from what they have successfully followed for decades, unless a very substantial bonus is offered. But large bonuses make it very difficult to set aside much unconstrained (buildable) acreage as permanent conservation land.

In addition, political risks accompany large bonuses, because many residents are uncomfortable with the municipality adding to the number of homes that can be built. Unfortunately, such objectors fail to appreciate the fact that preserving farmland or other environmental resources is absolutely critical for the community to retain its rural character which, once lost to conventional “wall-to-wall houselots” on any given tract, is gone forever. Advocates of conservation design understand that it is virtually impossible to retrofit greenways, trails, parks, and neighborhood playing fields into a developed pattern of conventional subdivisions.

Some of these can and will become public space; others will be reserved for neighborhood residents. Density bonuses be successful in municipalities with very low density zoning, because larger bonuses would not undermine the rural character in such situations. One example is Gallatin County, Montana (surrounding the City of Bozeman) where ranchland is zoned for 20-acre lots. In that low-density context, substantially increasing lot yield has been politically acceptable because large acreages can be permanently preserved, even with large density bonuses of 50 percent. Under this option, in which density bonuses are determined by a sliding scale, lots may be no larger than one acre in area, with the remaining land permanently protected from development.

In one example the regulations allowed a developer with 120 acres to increase his lot count from six to nine, preserving 116 acres that have become a sanctuary for elk during the spring calving season. In one case, a developer with 120-acres created nine one-acre lots (a 50 percent bonus), allowing the remaining land (about 116 acres) to be protected as an area used by elk every spring for calving.

In municipalities where any density bonuses are politically unacceptable, utilizing the opposite approach, such as employing density disincentives can actively discourage landowners and developers from ignoring a conservation design option and dividing their property into large lots that effectively destroy rural resources. Under this approach, contained in the model regulations in this manual, full density is awarded for following conservation design principles, but significantly fewer lots are given for conventional large-lot proposals that preserve little or no open space.

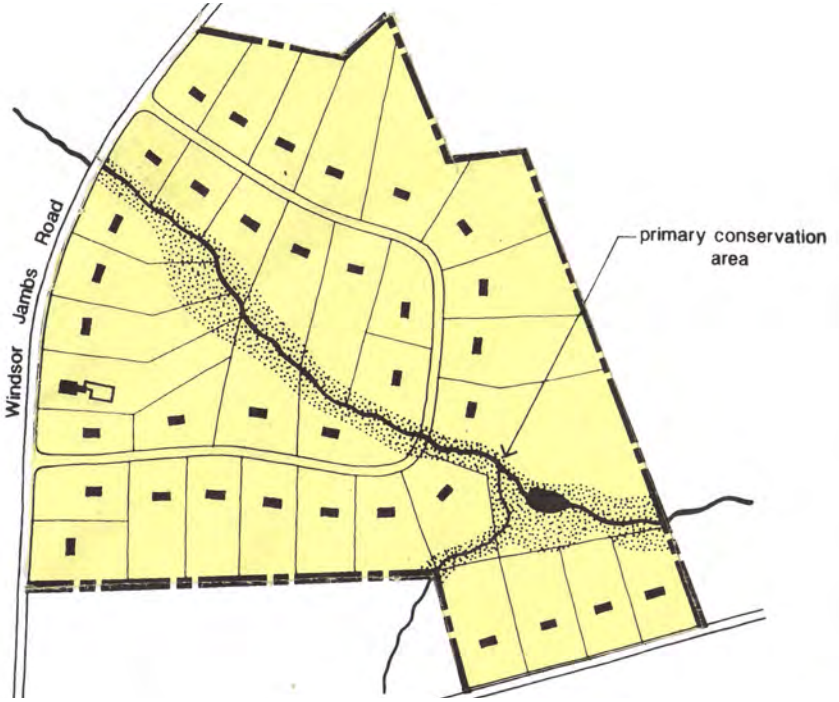
Figures 10, 11, and 12 - *In the below set of three sketches, the sketch to the far left, with 18 lots and 50 percent open space, would be the "by-right" example which many municipalities might establish as their typical desired result, or "default position". Developers not interested in creating a conservation design neighborhood would have the option of creating nine larger lots with no open space, illustrated in the middle sketch. The municipality might also offer a third option, the sketch on the right, with a density bonus up to 36 lots, for example, provided that 70 percent of the land is conserved. Lot sizes would vary accordingly. In the below illustrations, they range from four acres in the middle sketch, two acres in the left sketch and one acre on the right sketch.*

Requiring Two Sketch Plans

In order that the different results obtainable through conventional and conservation design be more clearly understood by all parties at the beginning of the process, some municipalities require that applicants submit two conceptual sketch plans that can be compared and evaluated.

For example, in Orange County, North Carolina, where few developers opted for conservation design when it was offered as an alternative in a new bylaw, officials revised zoning to require that applicants submit a conservation design, allowing them to provide a standard plan as well, if they desire.

Staff recommends the layout it determines best complies with the bylaw's intent and requirements, almost always the conservation design, and the planning board makes the final decision, usually concurring with staff. This could be a useful approach for Manitoba municipalities to adopt if developers do not propose conservation subdivisions on their own, particularly in certain districts where this design technique is imperative to attain the goals and objectives of a Development Plan or Secondary Plan.



Figures 13 and 14 - *When municipalities require that two sketches be submitted illustrating the differences between taking a conventional approach and implementing conservation design they retain control of their destiny and can select the layout that best implements official goals and policies as expressed in their Development Plans and Secondary Plans. Requiring two sketches, with the municipality choosing between them, becomes even more important when development regulations are not structured to strongly discourage conventional plotting, either through density disincentives or classification as a conditional use (Source: Arendt, 1996).*

Stormwater Opportunities

Experience shows that the best planned results occur when stormwater management solutions are integrated in the site planning process from the very outset, identifying, reserving, and designing around the most favorable locations for stormwater infiltration based on permeability, soil type, and elevation. Infiltration and recharge are easily achievable in conservation subdivisions where large open space areas are identified, which is step one of the four-step design process outlined in this manual. With more compact neighborhood design, less land is transformed from permeable farm and forest to development sites and pavement.

Figures 15 and 16 - *Infiltration meadows (left) at the Fields of St. Croix in Lake Elmo, MN, north of St. Paul, and a constructed wetland at Assiniboine Landing in Winnipeg (right) filter and cleanse stormwater, providing ecological values to the subdivision not otherwise achieved.*

Improved stormwater management techniques, known as “low-impact development”, or LID, can save money, particularly in neighborhoods with open space because they utilize natural infiltration areas such as swales and rain gardens designed to receive and absorb runoff, compared with conventional stormwater systems relying on curbs, gutters, catchbasins, pipes, and large detention basins.

Typically planted with native species grasses, shrubs, and trees, these “biorentention areas” beautify the landscape and increase marketability, livability and quality of life. The best results are achieved when engineers, soil scientists, and landscape architects collaborate on the design with their complementary skills. LID generates less runoff than conventional engineering solutions by trimming street width and landscaping green space with native plants and trees to improve natural hydrology. Instead of piping water away, LID captures and treats stormwater close as possible to wherever rain falls to the ground, thereby reducing pollution damage to watercourses and waterbodies. The infiltration achieved through LID can also recharge aquifers and protect seeps, springs, wetlands, aquatic habitat, and drinking water supplies (Arendt, 2015).

The best soil for infiltration percolates easily but not rapidly. Soils that are too loose, such as sand and gravel that provide poor filtration, or too dense and tight, such as silts and clays that impede filtration, must be modified to provide adequate filtering. Not surprisingly filtration rates required for septic system drainfields are similar to those recommended for stormwater facilities. These better soil types should therefore be mapped early in the project design process, so they can be reserved for infiltration purposes and not graded, compacted or built upon. Soils inappropriate for filtration are typically supplemented with surface drains and replaced by engineered soil mixtures, typically including sand, compost, and topsoil (Arendt, 2015). According to the US EPA, applying LID techniques can improve environmental performance and reduce project costs for site grading and preparation, stormwater infrastructure, site paving, and landscaping. LID approaches have enabled total capital costs of some projects to be reduced by 15 to 80 percent.

Wastewater Alternatives in Areas Without Central Sewers

Although many believe that the smaller lots in conservation subdivisions make them more difficult to develop in areas without sewers, the opposite is actually true. This is because the flexibility provided by the design of conservation subdivisions, which allows septic system filter beds to be located on the best soils on any given parcel, makes them superior to conventional layouts in their ability to provide for adequate sewage disposal. Here are two examples:

Utilizing the Best Soils

With conservation design, the most suitable soils on the property are identified from the start, so that the smaller houselots can be located to take the best advantage of them. If one part of a property contains deeper, better drained soils, homes should be sited there instead of being spread out on larger, typically two-acre lots, with some of those lots located entirely on mediocre soils that barely manage to meet minimal standards for septic system approval.

Regulatory Discussion

It should be noted that current provincial regulations governing wastewater treatment and disposal for individual homes do not allow individual homes and their septic systems to be located on the smaller ,typically one-acre, lots in conservation subdivisions, and require all houselots to be at least two acres in size in unsewered areas. For this reason, holding tanks are required for homes in conservation subdivisions with lots less than two acres in area, particularly where local soil conditions are not ideal for on-site disposal.

For example, holding tanks are required in the Red River Corridor Designated Area under the Onsite Wastewater Management Systems Regulation (The Environment Act), and also in areas with certain types of soils, pursuant to the Nutrient Management Regulation (The Water Protection Act). To deal with the uncertainties surrounding wastewater treatment issues in conservation subdivisions, the Red River Planning District has been recommending that all developments of this type be serviced by holding tanks, which will facilitate connections to low-pressure municipal wastewater services planned to be provided in future years (Henderson, 2013).

Locating Individual Systems Off-Lot and Within Open Space

Many people also believe that when lots become smaller, central water or sewage disposal systems are required. That view overlooks the practical alternative of locating individual wells and/or individual septic systems within the permanent open space adjacent to the more compact lots typical of conservation subdivisions, as shown in Figures 17 and 18.

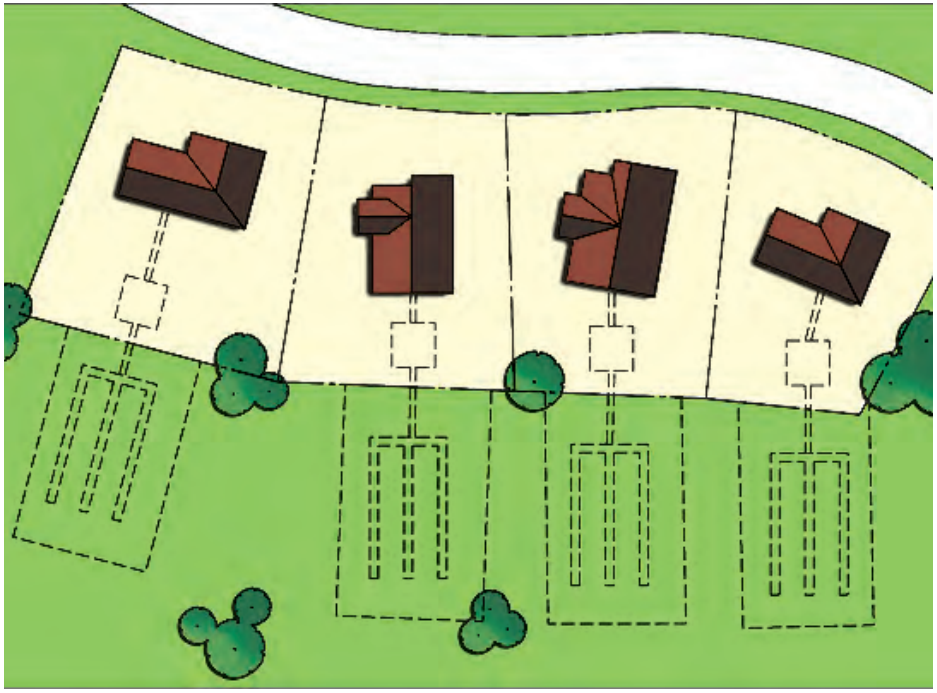
There is no technical engineering reason to require that adsorption beds must be located within each houselot. Current provincial legislation allows wastewater systems serving multiple homes to be situated in off-lot locations, pursuant to the application for or receipt of an Environmental Act License.

When designing for shared wastewater systems in the common open space, it is essential that the final approved subdivision plan clearly indicate which parts of the undivided open space are designated for wastewater disposal, with each lot's disposal area graphically indicated through dotted lines extending out into the conservation land. These filter beds can be located under conservation meadows in the same way they typically occupy positions under suburban lawns.

As a precautionary measure, standard maintenance practices should be followed so that septic tanks serving individual off-lot drainfields will be pumped out on a regular basis to ensure that the accumulated sludge never rises to a level where it can flow into and clog the filter beds. This inexpensive, preventive maintenance greatly extends the life of adsorption systems.

In Manitoba, septic systems are approved on the basis of the volume of wastewater generated. Onsite wastewater management systems with a daily flow of less than 10,000 liters are reviewed under the Onsite Wastewater System Management Regulations. Larger systems with greater flows are reviewed under the licensing process of *The Environment Act*. Communal sewage systems also are an option to service multiple homes within a subdivision. For example, in 2013 the

Figures 17 and 18 - *A practical alternative to central water or sewage disposal facilities involves individually-owned wells and/or septic systems located within conservation areas, in places specifically designated for them on the final plan. Pictured on the right is a meadow at Long Hill Farm in Guildford CT, where off-lot septic drainfields are situated. (Source: Natural Lands Trust)*



Rural Municipality of Pipestone received a license to install a secondary wastewater treatment system to support a 16-lot subdivision in the Village of Cromer. This includes a pretreatment system discharging into a community tile drain field. Although the development has a conventional layout, the ability to use such systems in conservation subdivisions, with their smaller lots, makes this approach feasible in Manitoba.

Open Space Ownership, Management, and Protection

Various options exist for managing and protecting open space in conservation subdivisions, including one or a combination of the following: municipal ownership, condominium corporation, homeowner association, or a conservation organization.

Municipalities have the authority to create public reserves under *The Planning Act.* The act enables 10 percent of the land to be dedicated for public reserve purposes without compensation, in addition to land not suitable for building sites. This could apply in situations where the conservation land in a new subdivision can form part of a community open space trail network or it has been identified as a good location for a neighborhood park. All public reserves must be accurately delineated on the plan, with dimensions and distances measurements, as per *The Real Property Act*.

Setting aside more than 10 percent of developable land, as would be typical in conservation subdivisions, requires further negotiation with the landowner/developer of the property. One example of using municipal ownership in Manitoba to drive such a development is Assiniboine Landing, located in the Rural Municipality of Headingley. It integrates single family housing within an area that seeks to preserve and restore ecosystems, historic landscapes, and natural beauty. A total of 18 acres of forest and grasslands have been protected in a public reserve owned by the RM.

Another protection measure is for the municipal council to use Development Agreements to set conditions, including permitted and prohibited uses on the open space, which it may do in development applications involving Conditional Uses such as PUDs or rezoning. A further approach would be for the municipal council to place the conservation land within a highly restrictive zoning district, but that could be impractical and also less permanent, due to potential changes by future councils.

When property is being developed as a condominium under *The Condominium Act*, the condominium corporation has ownership and control of the common open space. Condominium Plans are registered against the title to legally define the location of bare land condominium units as well as common elements within the development. All units of a bare land condominium have individual title that also includes an undivided interest in the common element, usually specified as a percentage of interest in the whole. Use of the common open space would be controlled by the condominium corporation board, and use restrictions would be written into individual property titles for each condo owner.

Homeowner associations also can play a major role in protecting the open space in a conservation subdivision. Assiniboine Landing integrates both public reserves and mandatory landscaping requirements for homeowners to maintain their own properties to support the natural processes and wildlife. Membership in the homeowners association should always be a precondition of purchasing a lot in the conservation subdivision.

Two basic requirements have ensured that this arrangement has worked well in other jurisdictions: membership is automatic upon property purchase, and associations have the authority under their by-laws to place liens on members for nonpayment of dues. Due to peer pressure, this rarely occurs. Collecting past dues before a property can be resold ensures that associations are never short-changed .

Conservation easements are another mechanism for protecting the environmental values of open space within a conservation subdivision. These agreements are legal contracts, registered on title, between the landowner and a third party with whom the landowner agrees to restrict the use of land, or to a set of management practices that have beneficial impacts to habitat on the landowner's property. The owner receives financial compensation for this through the granting of an income tax receipt or cash payments from the third party. Landowners continue owning their property and can pass it along to heirs, or they can sell it to others or donate it to conservation organizations.

Conservation easements can be the responsibility of an eligible conservation organization, municipality, conservation district, or nonprofit corporation such as the Nature Conservancy of Canada. The Manitoba Heritage Habitat Corporation (MHHC) may enter into conservation agreements under *The Conservation Agreements Act*, for lands with significant natural ecosystems, wildlife or fisheries habitat, or rare or endangered plants or animal species, but not farmland. Whichever group is selected, it must be able to monitor the conservation areas annually, so they will remain protected and not become compromised (Henderson, 2013).

It is also important to adopt management plans for conservation areas, as a condition of municipal and provincial approval of these subdivisions. Regarding maintenance and liability concerns, the model regulations require applicants to submit management plans for municipal review and approval to clarify the responsibilities of caring for the conservation land. Management plans are described in more detail in the final section of this manual.

Liability concerns can also be addressed through insurance policies, for example, held by the homeowner association. Experience in other jurisdictions demonstrates that the number of accidents occurring in such areas tend to be minimal, and the kinds of accidents involved are generally very minor, leading to insurance premiums that tend to be low.

Building Support Through Public Engagement

There are a number of ways that municipalities can help to build public interest in, and support for, conservation subdivisions, which generally require regulatory changes.

One is to invite the public to attend a open house forum type meeting where they would be asked to rate several dozen visual images in terms of their desirability. Those images would show a variety of photos and drawings illustrating contrasting developments, some with large lawns and no open space, the others with views of open space taken from decks or patios, including conservation areas with cropland, horse pastures, wildflower meadows or prairie restorations, and people enjoying walking trails.

Engaging participants, both existing residents of the area and potential buyers, in this matter of an initial basic community design charette is a key step in the design and development process. It allows attendees to contemplate and visualize the layout of the proposed subdivision and

Figures 19 and 20 - *Many community residents can easily imagine themselves living in conservation neighbourhoods such as these, where homes overlook restored prairie at the Fields of Long Grove, Long Grove IL (left) or wetland meadows at The Pines in North Oaks, MN (right).*

various forms of community development and living they might not have otherwise considered. Attendees would rank each photo on a scale of -10 to +10 and at a follow-up meeting the results would be shown, in ascending order of preference. Comments would be discussed and concerns would be addressed, perhaps by a land-use professional well-versed in conservation design.

Another approach would be to ask such a professional to present a PowerPoint on the subject of Conservation Subdivision Design to the general public and interested developer parties, perhaps followed by a hands-on design exercise where attendees would sketch a conceptual layout using the four-step design process outlined in this manual. This type of direct engagement allows for a better level of understanding and acceptance to be created which will ultimately serve to increase the chances of success for the new proposal.

Following the example set by several states in the US, notably Massachusetts, Pennsylvania, and North Carolina, one idea possibly worth exploring might be for the provincial government to train and designate a small number of land-use professionals to conduct such visual surveys or workshop presentations in individual or neighboring municipalities.

As a further follow-up, municipal officials could invite landowners and developers to a special meeting where this design concept would be further discussed, prior to scheduling a series of workshop meetings at which model regulatory language would be discussed and where potential bylaw changes would be drafted.

Ultimately it is securing the buy in of the general public, land owners and the professional development community that is the end goal of the public engagement process as these groups will generally be the biggest challenges to securing the necessary changes required to the legislative policy within the municipality, and to the developmental patterns and practices normally utilized by development companies. Public consultations are the opportunity to get everyone working together.

Identifying and Overcoming Perceived or Real Barriers to Conservation Development

Municipal Attitudes and Practices

Landowners and developers interested in conservation design cannot proceed unless the municipality is also interested, and has adopted regulations permitting this option.

One of the purposes of this manual is to raise awareness of this design approach among municipal officials and staff, and to spark their interest in adopting the model regulatory language contained in the appendix. If open space conservation is a priority for communities, buy-in from the elected officials is needed for the effort to succeed, including leadership during the bylaw amendment process.

Review Process Difficulties

The lack of an easy path for applicants in the review can be a formidable barrier. Just having a bylaw providing a conservation design option is never sufficient.

That option must be a permitted use, not involving a conditional use or special permit process, which will deter applicants due to generally longer processing times and very uncertain outcomes for developers, due to the broader discretion these processes give to municipal officials.

Developer Misperceptions

Some developers mistakenly believe that their costs would be higher in conservation subdivisions, which usually leads them to reject the idea or to ask for density bonuses.

However, increasing density can be problematic at standard suburban densities, as discussed above, and is in fact not as necessary as some might believe due to developer benefits inherent in the conservation design process such as lot size flexibility, substantially lower grading costs, potential for less infrastructure expense, and faster lot sales and price premiums.

The only cost that could be higher in conservation subdivisions is the expense of installing a package wastewater treatment system, an upfront cost they must recover through lot or house sales, compared with individual homeowners installing their own septic systems. However, to the extent that individual drainfields can be located in part of the common open space, developers bear no additional costs (Allen, et al., 2011)

Consumer Misperceptions

Many potential homebuyers who wish to live in a rural setting mistakenly believe that a multi-acre houselot is the answer. However, when that lot is only a couple of acres in size, and is surrounded by other similarly-sized lots, low-density suburbia results, with lots that are “too large to mow and too small to plough”.

When potential buyers tour conservation subdivisions and literally see the rural views preserved from their windows, and take a few minutes to walk along a trail system that a savvy developer has created from the beginning, many decide that this option gives them the best of all worlds: less yard maintenance and greater recreational opportunities.

Multiple Landowners

Assembling sufficient land to subdivide is a challenge many developers must deal with, whether they build subdivisions with conventional large-lots or utilize conservation design. In both cases, they must strike a deal with multiple landowners, unless they are able to locate a parcel that is sufficiently large without being supplemented by neighboring properties.

One advantage of conservation design is that an owner can sometimes continue to own and live in his/her existing home, allowing the developer to transfer his/her potential density to other neighboring parcels which would become the development area(s) for the total number of homes permitted under the bylaw.

In this way the one or two original land owners could “have their cake and eat it too”, by receiving compensation for those development rights while continuing to enjoy living on their rural parcel which would become part of the permanently protected “non common” open space within the conservation subdivision, not accessible by neighbors, but preserved as part of their viewshed.

Role of Municipalities and Planning DIstricts

Municipalities and planning districts can play several roles in promoting conservation design. They include updating Development Plans and Secondary Plans, amending zoning bylaws, and improving subdivision regulations, as discussed below.

Municipal Planning and Regulation: An Overview

The typical first step in the municipal conservation planning process involves preparing a Map of Potential Conservation Lands for the municipal area, which would reflect stakeholder consensus and identify a shared goal that local land-use bylaws and development plans should be carefully crafted to implement.

The second step should typically focus on the specific procedures for analyzing each proposed subdivision site, and the methodology for preparing a conservation-based site development plan wherein the conservation areas will be related to the Map of Potential Conservation Lands. After securing agreement on the overall goal and on the principal methodology involved in achieving that goal, the municipality will be better equipped to deal with the more detailed work involved in the accompanying zoning revisions which are often more challenging politically.

Apart from the logic that this progression offers, another advantage is that the dimensional details of the zoning will be seen in a broader perspective as the fairly minor items that they actually are. When viewed in the context of a community-wide open space strategy for protecting resource lands, the relative insignificance of these details will hopefully become apparent. When local officials deal with zoning provisions in the abstract, they tend to place more emphasis on such details than is warranted, and often spend extended periods debating the merits of this number or of that dimension.

By working from the “big picture” of Potential Conservation Lands, to the intermediate level of the methodology involved in analyzing and laying out subdivision development proposals, and before getting into the minutiae of the zoning standards, local officials and residents are often more productive and better satisfied with the ultimate results. Ultimately this will lead to a greater buy in of the conservation subdivision design from both local officials and residents, which is always a welcome thing.

Updating Development Plans and Secondary Plans

Note: In 2013 the Selkirk and District Planning Area, now known as the Red River Planning District, brought forward a development plan amendment to introduce conservation design. The Red River Planning District was the first Manitoba planning authority to incorporate conservation design into it’s Development Plan.

As mentioned above, the key to conserving an interconnected network of open space is to prepare a resource inventory which forms the basis of the Map of Potential Conservation Lands, outlining areas which are recommended to be developed and areas recommended to be conserved on each parcel of land. Some of the background data needed for preparing this resource map might already be contained in the existing Development Plan or Secondary Plan.

In Manitoba, provincial Land Use Policies encourage the identification and protection of critical and significant habitat on private lands. These include, for example, habitat important to migratory species and habitat important for maintaining wildlife population in a local area, such as woodland or areas with an appropriate mix of wooded and open land, as well as wetlands and areas of unbroken native prairies.

Ideally, nine kinds of resources or special features should be shown on

a base map of existing roads and parcel ownership lines.

They are:

- wetlands and their buffers
- floodways and land subject to flooding
- moderate and steep slopes
- groundwater resources and their recharge areas
- woodlands
- productive farmland
- significant wildlife habitat
- historic, archaeological and cultural features
- scenic viewsheds from public roads

This map typically colours a variety of resource lands in various shades of green. Possible categories might include:

Primary Conservation Areas

Are lands subject to flooding, steep slopes, wetlands, submerged lands, or otherwise unbuildable under existing law

Secondary Conservation Areas

Are stream corridors, other land subject to flooding, moderately steep slopes, woodlands and hedgerows, fields, meadows and pastures with soils rated prime or of provincial importance, fields, meadows and pastures in the public viewshed as seen from existing roads, historic structures and archaeological, noteworthy rock formations, established trails or farm lanes, etc.

Existing Protected Areas

Are covered by a conservation easement and include public parks, provincial forests, ecological reserves, land designated under *The Wildlife Act* as a refuge, special conservation areas and wildlife management areas. Proposed future acquisitions can/should be rendered in a hatching of the same colour.

The purpose of dividing these resources into three broad categories is to acknowledge major differences between them.

The first category, Primary Conservation Areas, is deemed to be inherently unsuitable due to extremely severe environmental constraints.

The second broad category, Secondary Conservation Areas, contains resources that are either significant at some level or are at least notable and worthy of consideration for conservation wherever possible. This map should be drawn on, or overlain by, another map showing tax parcel boundaries, to ensure that no more than half of the buildable area in any single ownership is shown as potential conservation land.

The third category, Existing Protected Lands, forms the core areas around which the municipality's future network would grow.

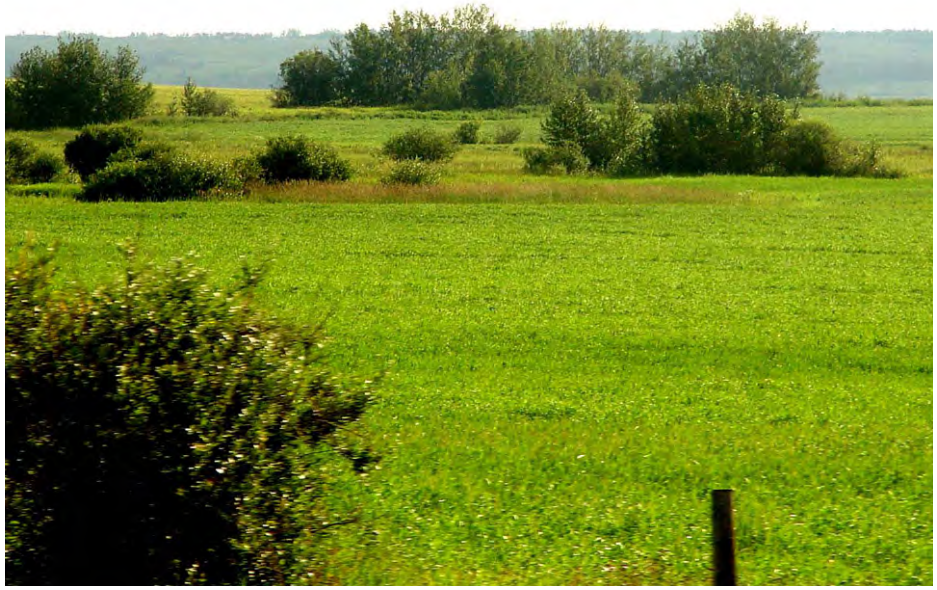
It should be emphasized that there is a commitment to allow landowners to develop their properties to whatever legal density is permitted under the zoning bylaw, and that none of the conservation areas would necessarily become either public or publicly accessible, unless the developer and the municipality agree this should happen.

This kind of resource base map should be supplemented by several pages of text describing its function and significance. Also, several additional pages should augment the text, providing further observations and policy recommendations about certain zoning and subdivision bylaw changes needed to make the conservation subdivision design process operational.

Such wording would create the legal foundation for the specific kinds of development plan policies and zoning bylaw language recommended in this manual.

Figure 21 (this page) - *This photo depicts a combination of Primary and Secondary Conservation areas. The image consist of Primary Conservation areas, such as unbuildable wetlands and land subject to flooding in rural Manitoba, while also depicting Secondary Conservation areas, such as uplands used for crops or woodlots.*

Figures 22, 23, 24, and 25 (opposite page) - *Manitoba's landscapes are varied, and range from the cultural landscape of farmsteads with their barns and granaries to cropland and natural areas including streams and woodlands, such as the community of poplars shown on the top right.*



Improving Subdivision Regulatons to Enable and Encourage Conservation Subdivisions

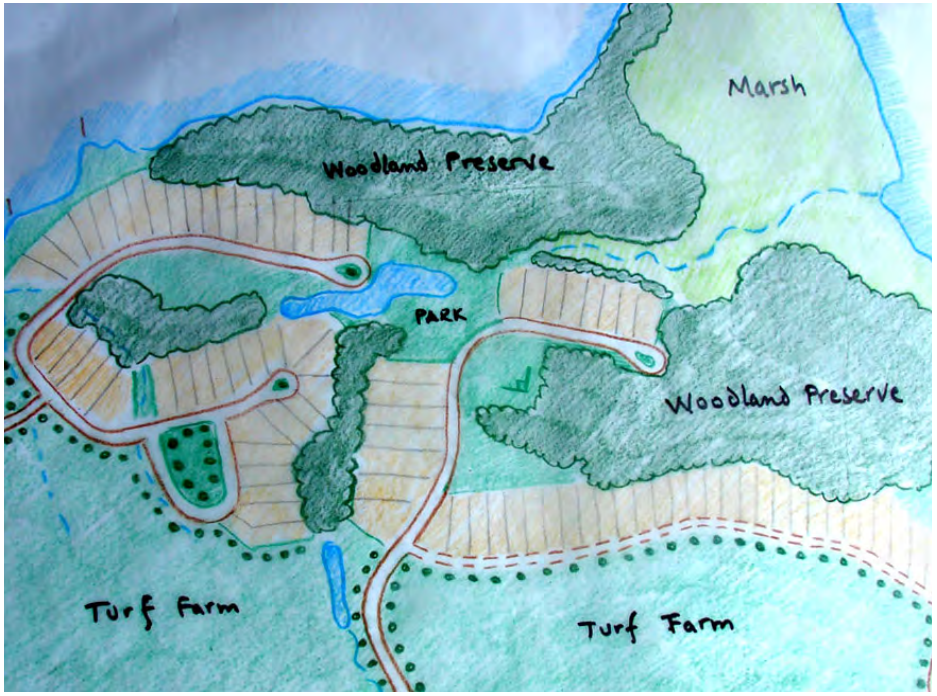
After completing the “greener visions” map of potential conservation lands in an updated Development Plan or Secondary Plan, the most appropriate next step is to draft possible revisions to the Subdivision Regulations, under which most of the critical layout decisions are taken by developers and their site designers. The highlights of this approach would include the following elements:

Existing Resources/Site Analysis Map

This kind of detailed map is basic for all subdivisions and should be as detailed as possible to provide sufficient information to prepare good layouts, and for reviewing them intelligently. The ER/SA Map provides a greater amount of essential information than is typically required for conventional subdivisions, and more thoroughly documents the location of many site features, ranging from those deemed to be critical to those considered to be noteworthy. It is typically prepared by a physical planner or landscape architect for the landowner or developer, and sometimes includes recommendations from historic preservation specialists and/or conservation biologists. Detailed information on the ER/SA Map, often drawn to a scale of one inch equals 100 or 200 feet, enables the site designer, the developer, and local officials to render much better-informed decisions. An increasing number of developers are beginning to understand that conserving open space and special features enhances the value of their projects, because buyers appreciate such amenities. This is arguably the most important document in the subdivision design process, as it provides the factual foundation upon which all design decisions are based.

Site Visit

With the detailed ER/SA Map in hand, staff and officials should walk the property to recommend which features should be designed around and preserved. Without the benefit of experiencing the property in a three-dimensional manner at a very early stage in the process, even before a Sketch Plan is submitted, rather than viewing a two-dimensional abstraction in a meeting room, it is extremely difficult to offer informed suggestions as to the preferred locations of conservation areas and development areas, and to evaluate the proposed layouts. The site walk should become a standard operating procedure, and part of the job



description for all relevant staff and officials. It should ideally occur at the beginning of the process, prior to Sketch Plan submittal. Sometimes those who walk the property remain together to spend several more hours sketching a conceptual layout that designs development areas around the special features identified during the walk. This kind of immediate feedback and design work generally leads to a smoother and speedier review process.

Sketch Plan Overlay Sheet

Apart from the ER/SA Map, the Sketch Plan is the second most important document in the subdivision process, for both conventional and conservation subdivisions, where the "bones" of the development are laid out permanently. This is where the overall concept is outlined, showing areas of proposed development and areas of proposed conservation. Sketch Plans should be required to be prepared by a landscape architect or physical planner working with a civil engineer.

The Sketch Plan should be drawn to scale on white tracing paper as an overlay sheet to be lain on top of the ER/SA Map that everyone can clearly see to what extent the proposed layout avoids potential conservation lands. Ideally the proposed development "footprint" on the Sketch Plan should dovetail and not intrude upon the resources documented on the Existing Resources/Site Analysis Map. This section of the bylaw should also provide more criteria for staff to follow, so that everyone knows the parameters for evaluating the Sketch Plan. The review process for Sketch Plans should identify and document their shortcomings, which should then be communicated to the applicant, so that these deficiencies can be corrected prior to submitting the Preliminary Plan.

Figures 26 and 27 (preceding page) - *Site walks are an essential part of the conservation design process, as there is no substitute for experiencing a property three-dimensionally and first-hand. As it is impossible to truly understand the opportunities for conservation and development without walking a property, this should be a requirement that all planning commission members must meet.*

Figures 28 and 29 (this page) - *Sketching often begins while walking in the field and then progresses on any handy flat surface, such as the tailgate of the client's pickup truck. A completed hand-drawn sketch, ready to give to the project engineer to take to the next level with his computer programs, is shown.*

It is important to note that the number of houselots shown on Sketch Plans is arrived at through procedures such as “yield plans” and arithmetical formulas, as described in the section on Determining Density, in the chapter on Resolving Issues.

It is absolutely essential that a conceptual step occur before the applicant spends large sums on preparing any substantially-engineered drawing. Once a certain layout has been heavily engineered, at very considerable cost, applicants are understandably reluctant to modify their drawings in any substantial way. After agreement is reached at the conceptual stage, the applicant moves to the more detailed Preliminary Plan, with the full benefit of the site analysis, site visit, and concept review to prepare him for the next stage where serious engineering money is spent.

Four Step Design Process

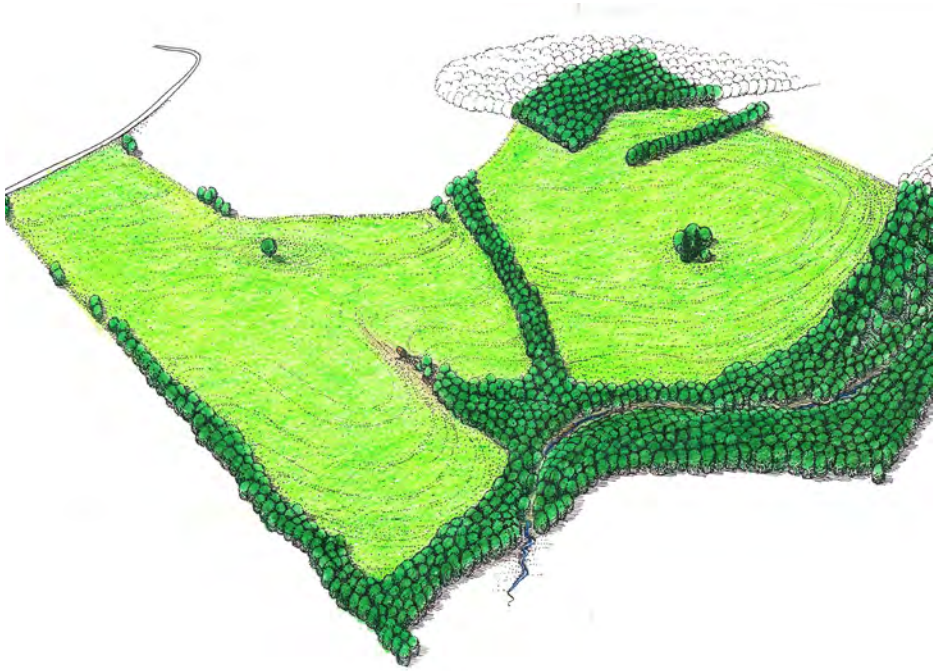
The most effective methodology for producing subdivision layouts centered around the principle of land conservation is illustrated below.

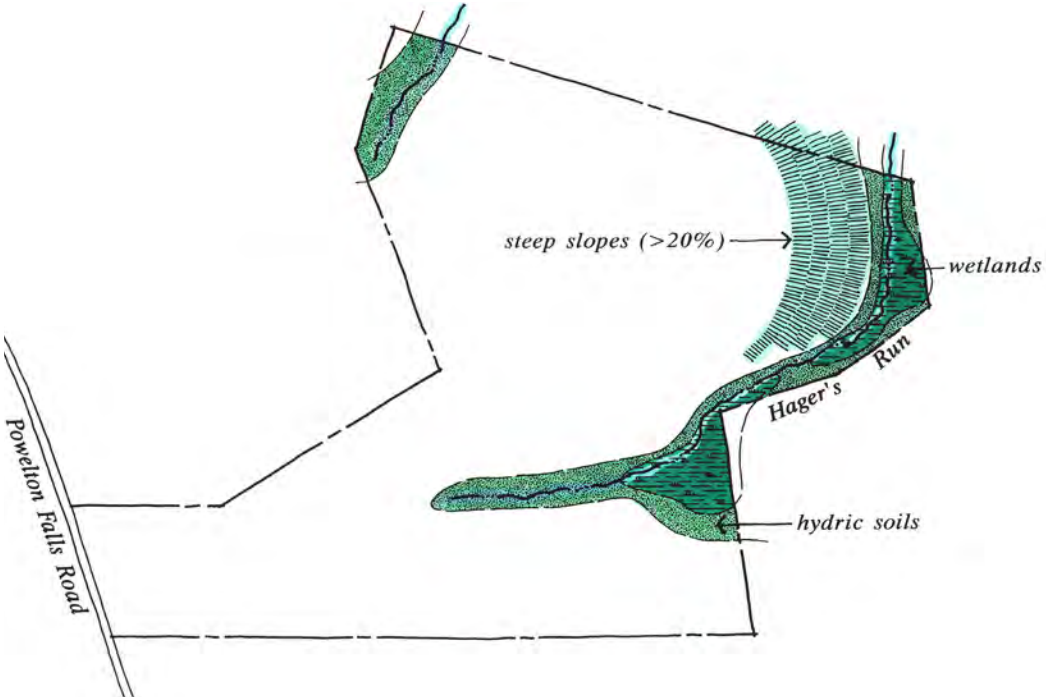
It begins by determining the open space during the first step. If this is done, and if the bylaw requires that a significant proportion of the unconstrained land be designated as open space, it is nearly impossible to produce a truly inferior or simply conventional plan.

The logical second step, after locating the open space areas, is to select house locations, with homes positioned to take maximum advantage of the open space.

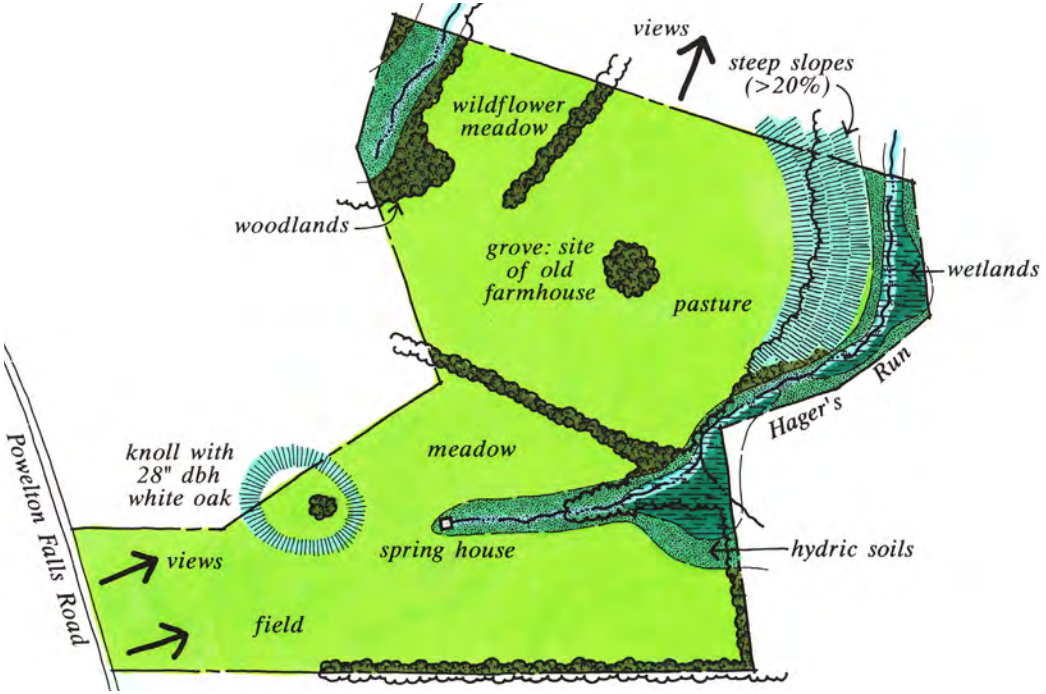
The third step involves “connecting the dots” by aligning the streets and trails to serve the new homes.

Drawing in the lot lines, Step Four, is the least significant part of the process. One of the greatest weaknesses of most subdivision bylaws is that the open space is not defined in this manner, and therefore tends to become a collection of whatever bits and pieces of land that have proven difficult or challenging to develop. The other common failing of such provisions is that they often require deep perimeter buffers around the proposed development, as if it were a gravel pit or junk yard. This practice inadvertently leads to very poor layouts in which a substantial percentage of the total open space is consumed by this excessive separation, particularly needless when new single-family developments are being “buffered” from existing single-family developments.





Figures 30 and 31 (preceding page) - *Site Prior to Development and "Yield Plan". The property before development, shown in Fig. 30, is about 85 percent upland, almost all of which is farmland, the remainder being wooded wetlands and floodplain forest. The conventional layout of 32 houselots (Fig. 31) also serves as a "Yield Plan", demonstrating the number of houselots the property would ordinarily support in a standard plan with no usable open space.*



Figures 32 and 33 (this page) - *Step One, Identifying Primary Conservation Areas and Secondary Conservation Areas. The first design step is to identify Primary Conservation Areas (Fig. 32) comprising unbuildable wetlands, land subject to flooding, and steep slopes, and Secondary Conservation Areas (Fig. 33) including those unprotected natural and cultural features that are desirable to conserve.*

Figure 34 - *Potential Development Areas - By delineating all the conservation areas as the first step, one also defines "Potential Development Areas," which occupy the balance of the site, sufficient land 32 lots in this example.*

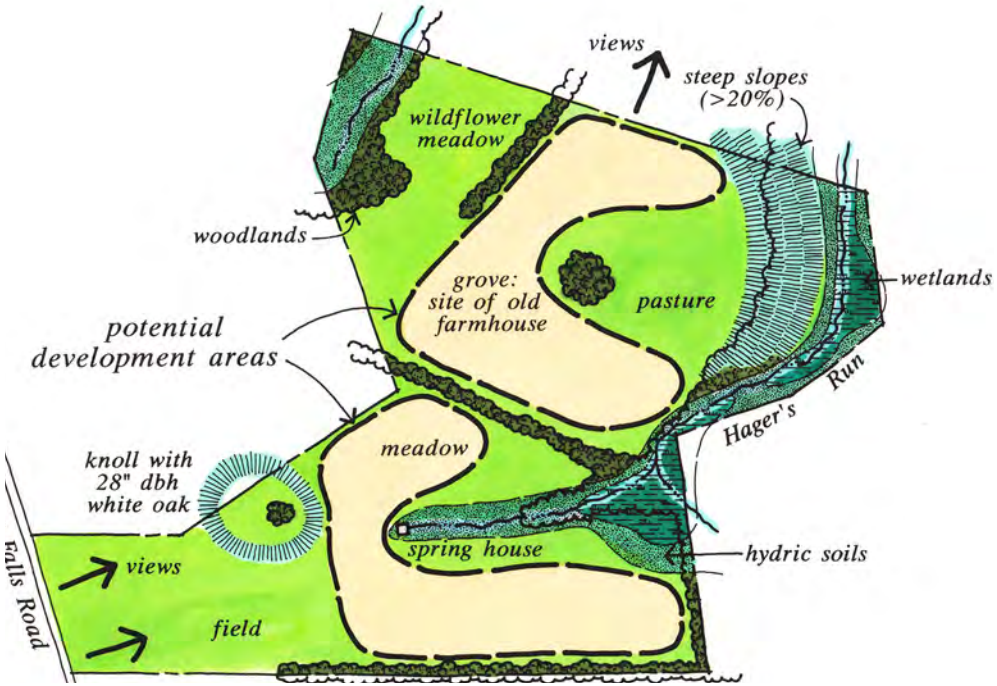
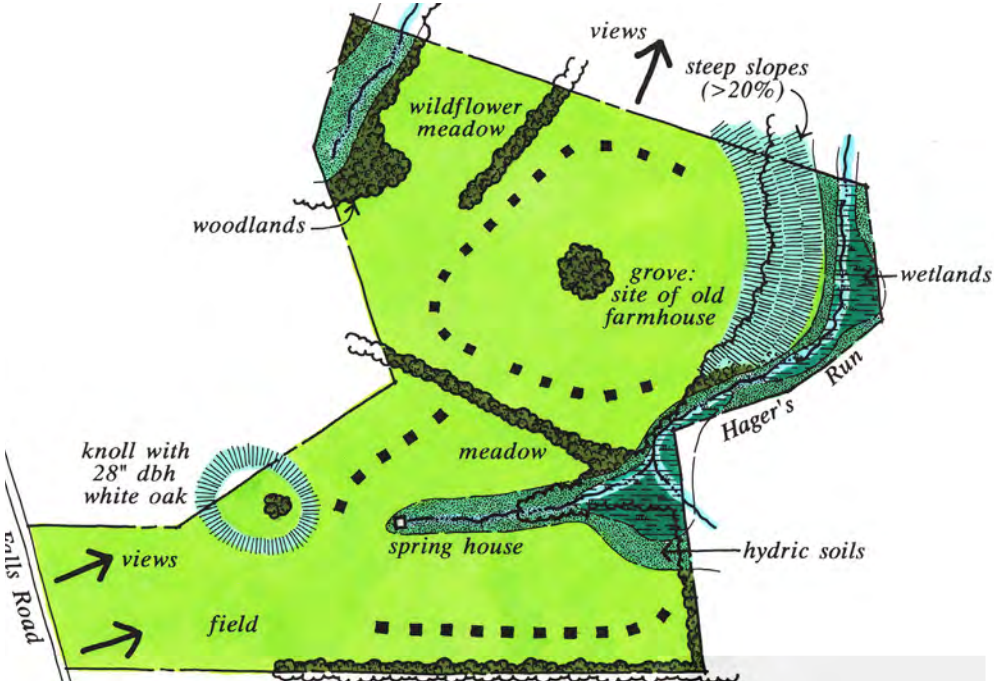


Figure 35 - *The second step is locating the approximate sites of individual houses which should be placed not far from the conservation areas for marketing and quality-of-life reasons, with homes backing up to protected woodlands or treelines for privacy or looking out onto a central common or wildflower meadow. Care must be taken to ensure that stormwater management or sanitary sewer facilities do not intrude into fragile conservation areas such as woodlands. In a full-density plan, the number of house sites will be the same as that shown on the "Yield Plan", 32 lots, in this example.*



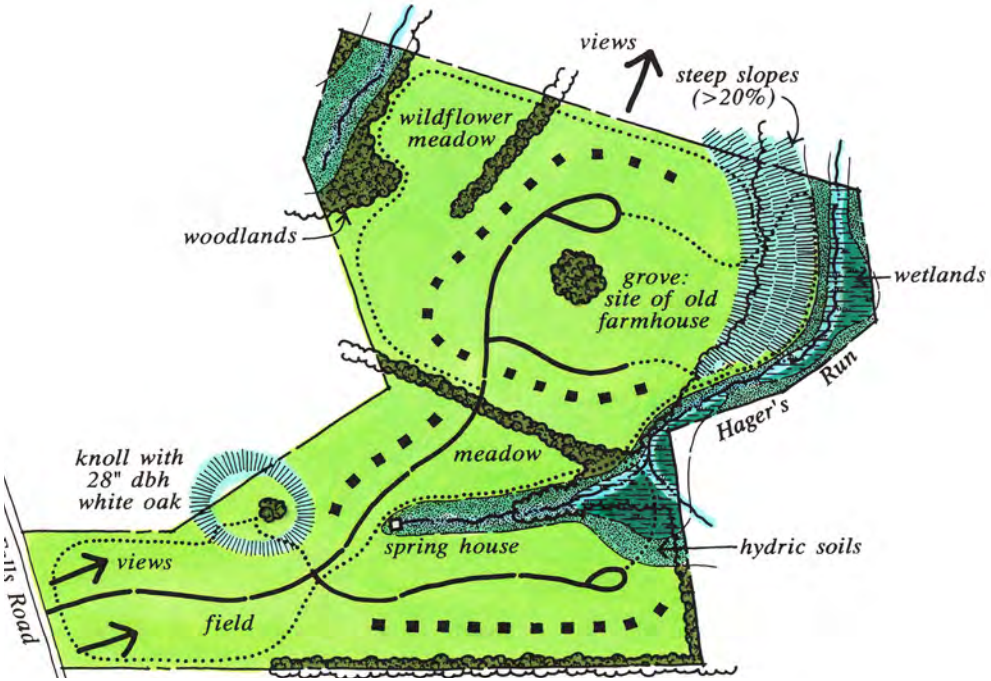


Figure 36 - *Designing Streets and Trails. The third step involves aligning local streets to serve the 32 homes and informal footpaths connecting different parts of the neighborhood, providing recreational opportunities while helping to build community among residents.*

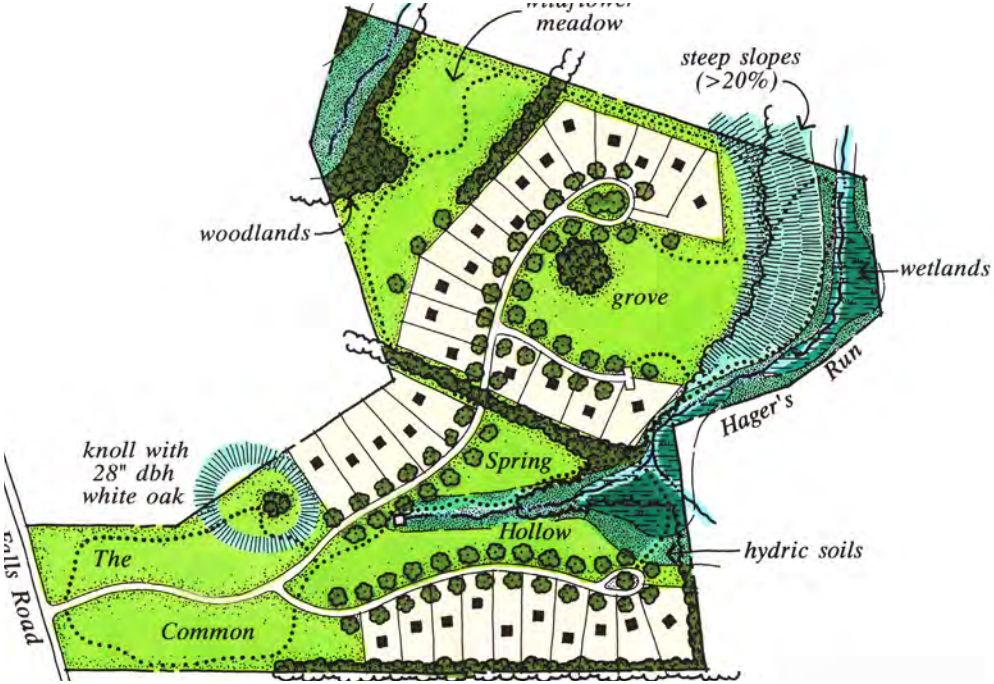
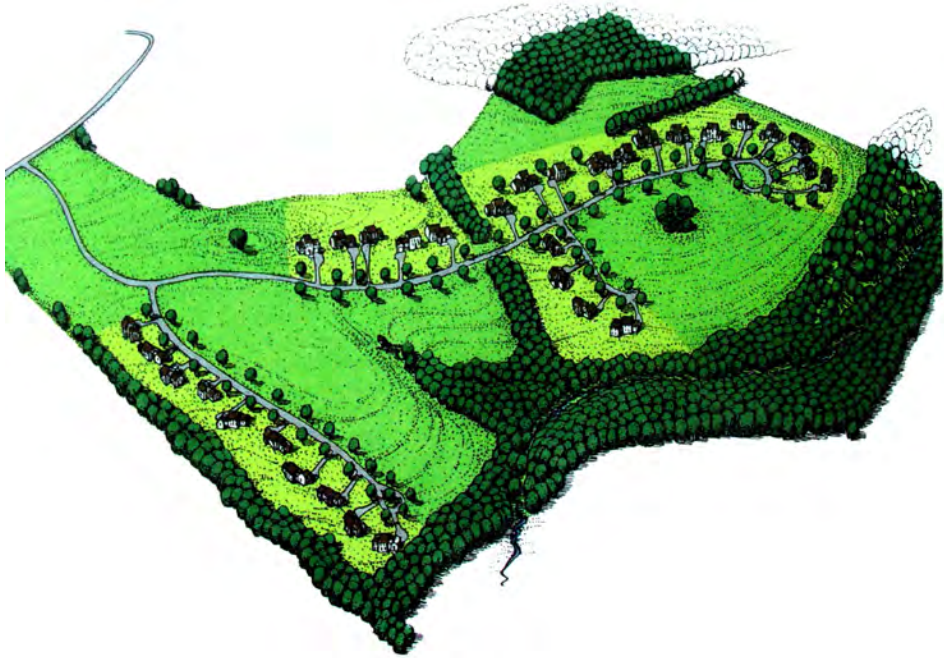


Figure 37 - *The last step involves drawing in the lot lines, perhaps the least important part of the process. Successful developers of conservation subdivisions realize that many buyers prefer to live in attractive park-like settings, and that open space views make it possible to sell lots or houses faster and at premium prices. Such homes also tend to appreciate more in value, compared with those on lots in standard "cookie-cutter" developments offering neither views nor nearby open space*

Figure 38 - *Aerial views contrasting differences of Conventional and Conservation Designs. The dramatic differences between these two design approaches are illustrated here. In the standard layout, every acre of land is converted to suburban houselots or streets, filling the once-rural public viewshed from the road bordering the property, and eliminating any future rural or recreational uses are shown here in Figure 39, below.*

Figure 39 - *The final version of the conservation design helps protect the community's rural character and permanently preserves half the upland acreage, which can be used as conservation meadows hospitable to a range of native flora and wildlife, which are also able to incorporate rain gardens to recharge local aquifers. It also preserves open views from every house, and offers opportunities for a trail network.*



Amending Planning By-Laws to Accommodate or Encourage Conservation Subdivisions

As noted earlier, landowners and developers interested in conservation design cannot proceed unless the municipality is also interested and has adopted by-laws permitting this option and outlining the standards that differ substantially from those for conventional subdivisions.

Development Plans should include policies that encourage and support conservation design approaches. These documents should establish criteria for when and where this form of development will be encouraged and outline the key steps in the process, including standards to be further refined in the zoning by-law and development agreements. It should also contain specific standards regarding the quality, quantity, and configuration of the required open space.

The key to conserving an interconnected network of open space is to prepare a resource inventory which forms the basis for the community-wide Map of Potential Conservation Lands. This map outlines areas which are recommended to be developed and areas recommended to be conserved on each parcel of land and should be referenced or attached to the development plan by-law.

Zoning Permitted Use Classification

A common mistake is to categorize conservation design as a conditional use, on the basis that they require greater municipal control. Sufficient controls can be effected through a number of design standards which do not deter developers the way a conditional use classification does. Such a classification generally creates longer review processes, allows the municipality greater discretion in setting conditions of approval and in rejecting development applications. These uncertainties act as a powerful disincentive, and should instead be applied as a means to discourage conventional layouts which thwart key Development Plan or Secondary Plan goals and policies by converting resource lands into large-lot developments with no open space.

Previous Page - *By following these design steps, applicants and officials can reach faster agreement while also reducing potential neighbor opposition, as logic of the design process and its results are easily appreciated. Adopting conservation design as a permitted use in local regulations can ensure this kind of rural subdivision becomes widely implemented, and that new, greener neighborhoods be designed with the central principle of protecting open space.*

Enabling conservation subdivisions by making them a permitted use in residential zones rather than a conditional use would also increase certainty for the developer and reduce processing times for conservation subdivisions. In areas where conservation subdivisions are only encouraged but not required, conventional layouts could be classified as conditional uses.

Note: For municipalities that want to actively discourage conventional layouts because they do not implement Development Plan principles very well, the following could be helpful. As the conditional use process is generally longer and less certain, such classifications could actively discourage developers from proposing large-lot layouts.

Open Space Criteria

Zoning should set minimum percentages of unconstrained land to be preserved permanently through conservation design. Those percentages usually rise and fall as the underlying density changes. For example, in a zone where the standard lot size is two acres, 50 percent of the land can usually be conserved. The open space percentage generally rises to 65 percent with three-acre zoning and to 75 percent with four-acre zoning. In areas with urban services such as public water and sewer, where lot sizes might be 15,000 sq. ft., 40 percent of the land could be conserved by allowing or requiring 8,000 sq. ft. lots. However, in districts where lots sizes are usually 10,000 sq. ft., only 30 percent of the land is easily saved, by reducing lots to 6,500 sq. ft. In such situations, the best results are achievable when conservation design is blended with the “new urbanism” to create a traditional street-and-block pattern relieved with greenways, playingfields, and neighborhood greens.

Differential Densities Encourage Conservation Design and Discourage Conventional Layouts

It is important that municipalities structure the various density levels in their bylaws not only to encourage conservation design which better implements key comprehensive goals relating to resource lands and open space, but also to actively discourage conventional large-lot plotting, which divides these important lands into a suburban checkerboard pattern with no further agricultural or ecological value.

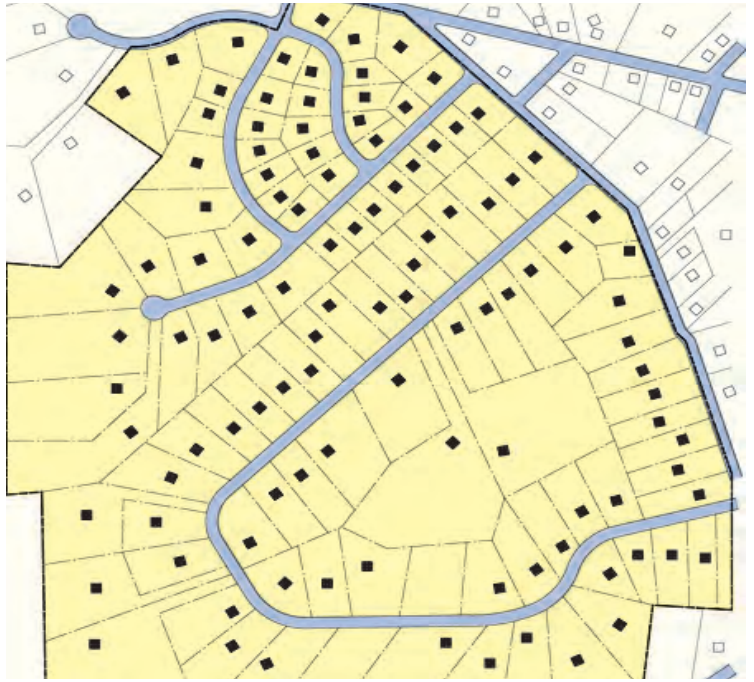
Ensuring Permanent Protection of Conservation Lands

The most effective way to ensure that conservation land in a new subdivision will remain undeveloped forever is to place a permanent conservation easement on it. Such easements run with the chain of title, in perpetuity, and specify the various conservation uses that may occur on the property. These restrictions are separate from zoning bylaws and continue in force even if legal densities rise in future years. Easements are typically held by land trusts and units of government. Since political leadership can change over time, land trusts are the most reliable holder of easements, as their mission never varies. Restrictive covenants are, by comparison, not as effective as easements, and are not recommended for this purpose. Easements can be modified only within the spirit of the original agreement, and only if the co-holders agree. In practice, while a proposal to erect another house or a recreational building on the open space would typically be denied, permission to create a small ballfield or a single tennis court in a corner of a large conservation meadow or former field might well be granted.

Design Approaches in Serviced Areas

As mentioned above, when conservation design is proposed for districts with utilities and correspondingly higher densities, the percentage of open space declines. But its quality can be maintained at a high level, taking the form of greenways, recreational sports fields, and neighborhood greens.

At these more suburban densities the most pleasing results can be achieved by blending conservation design with “new urban” design principles featuring much narrower lots, regular block patterns often with rear-access lots served by laneways, mixed uses, and open space positioned in visually prominent locations such as “terminal vistas” and along the outside edge of curving streets. Also, the four-step design process works a bit differently, with steps two and three reversed: streets are drawn in step two, and houses are sited in step three.



Figures 40 and 41 - *This pair of drawings illustrates how a conventional proposal for village infill (top) was redesigned by the author (at the request of municipal officials in West Bradford Twp., Pennsylvania) to create a walkable mixed-use neighborhood with a retail component along the main road at the top. Note that the parking has been internalized behind the frontage buildings and that the neighborhood is provided with multiple greens and playingfields that also form “terminal vistas” at street ends or along the outside edges of road curves.*

Standards for Configuration of the Open Space

When drawing boundaries of conservation lands in Step One of the four-step design process, care must be taken to include the most significant resource lands, as prioritized in the bylaw. Two other rules apply: The first is to delineate blocks of resource land, avoiding the tendency to create elongated or narrow strips, except when providing footpath connections between housing areas and the open space. The second is to design the conservation area so that it could potentially connect with a larger system of resource lands on adjoining and nearby properties.

Standards for Open Space Management Plans

Another key aspect of successful conservation design is the adoption and implementation of management plans detailing the stewardship responsibilities of the entities ultimately owning the open space. The local planning authority should bind the developer and the successor such as the condominium corporation, through a conservation agreement, easement, or a development agreement containing a physical plan of the lands to be protected.

A typical management plan identifies different kinds of conservation areas, from pastures and ballfields to woodlands and abandoned farmland that is reforesting, and describes management approaches for each. After specifying how each party will maintain each area, and how frequently, individual tasks are enumerated and prioritized, by season. Although most tasks typically involve periodic monitoring, invasive vegetation removal, and routine maintenance, some involve restoration. Conservation meadows typically require only annual mowing, but ballfields and neighborhood greens need to be mowed weekly. Woodlands generally require the least maintenance, trimming bushes along walking trails, and removing invasive vines around the outer edges where greater sunlight penetration speeds their growth. Depending on the size, use and configuration of the open space, it may be leased to local farmers, who agree to modify some of their practices to minimize impacts on nearby residents.

Ownership Options:

Four basic options exist for ownership of the conservation land, which may be combined within the same subdivision where that makes the most sense. All open space shall be permanently restricted from future development through permanent conservation easements or agreements recorded in the Land Titles Office. These easements or agreements should be held by land trusts or conservation agencies of the state or local government, and are not recommended to be held by the elected officials of the county or municipality.

Individual Landowner

At its simplest level, the original landowner, a farmer, for example, can retain ownership to as much as 80 percent of the conservation land to keep it in the family. At least 20 percent of the open space should be reserved for common neighborhood use by subdivision residents. That landowner can also pass this property on to sons or daughters, or sell it to other individual landowners, with permanent conservation easements running with the land and protecting it from development under future owners. The open space should not, however, be divided among all of the individual subdivision lots as land management and access difficulties are likely to arise.

Homeowners' Associations

Most conservation land within subdivisions is owned and managed by homeowners' associations (HOAs), such as the one at Assiniboine Landing near Winnipeg. A few basic ground rules encourage a good performance record. First, membership must be automatic, a precondition of property purchase in the development. Second, zoning should require that bylaws give such associations the legal right to place liens on properties of members who fail to pay their dues. Third, facilities should be minimal, ball fields and trails rather than clubhouses and swimming pools,in order to keep annual dues low. And fourth, detailed maintenance plans for conservation areas should be required by the municipality as a condition of approval. The municipality has enforcement rights and may place a lien on the property should the HOA fail to perform their obligations to maintain the conservation land.

Land Trusts

Although homeowners' associations are generally the most logical recipients of conservation land within subdivisions, occasionally situations arise where such ownership most appropriately resides with a land trust, such as when a particularly rare or significant natural area is involved. Land trusts are private, charitable groups whose principal purpose is to protect land under its stewardship from inappropriate change. Some of them are national in scope, such as the Nature Conservancy of Canada.

while most are regional or local. Their most common role is to hold conservation agreements or fee simple title on conservation lands within new developments and elsewhere in the community, to ensure that all restrictions are observed. Landowners agree to limit or give up some uses and in return are paid or receipted for placing the agreement on his or her land. Landowners can continue owning their property and can pass it along to heirs, or they can sell it to others or donate it to conservation organizations

To cover their costs in maintaining land they own or in monitoring land they hold easements on, land trusts typically require some endowment funding. When conservation zoning offers a density bonus, developers can donate the proceeds from the additional “endowment lots” to such trusts for maintenance or monitoring.

Municipality or Other Public Agency

In special situations a local government might desire to own part of the conservation land within a new subdivision, such as when that land has been identified in a municipal open space plan as a good location for a neighborhood park or for a link in a community trail network. Developers can be encouraged to sell or donate certain acreages to municipalities through additional density incentives, although the final decision would remain the developer’s.

Combinations of the Above

Conservation land within new subdivisions could involve multiple ownerships, including (1) “non-common” open space such as cropland retained by the original farmer, (2) common open space such as ballfields owned by an HOA, and (3) a trail corridor owned by either a land trust or by the municipality.

Figures 42 and 43 - *Early evening sunlight in mid-June casts a magical glow and creates arresting reflections, as seen from Saskatchewan Avenue in Assiniboia, just north of Headingley. Conservation subdivision design seeks to preserve classic prairie landscapes such as these, for residents to enjoy from their homes or from trails crossing the open space. As more municipalities move to adopt the design principles contained in this manual, a greater number of Manitobans will have the opportunity to live in new neighborhoods reflecting such planning methods. By protecting working landscapes from development and utilizing conservation design as a means of preservation an opportunity is created for immersion into the natural environment without ever having to leave the comfort of a home or neighborhood.*

Appendix A: Demonstrations of Conservation Design in the Manitoba Context

Example .1 - Typical Site in Rural Manitoba

To demonstrate the principles of Conservation Subdivision Design, examples have been drawn on two different sites. This first design example presents us with a typical 100 acre property in rural Manitoba. Initial concept sketches were prepared by the author with the first sketch in the design process (top right) demonstrating the existing rural features and natural character, such as flood plains, forest groves and farm houses, currently present on site. The second sketch in the design process (bottom right) demonstrates how 40 single family lots could be created and integrated into the existing unaltered landscape in a way that respects both the area's rural character and environmental resources on the particular property.

Of the site's 100 acres available for development, 10 acres would be considered wet, those located along the long wooded swale, plus another tributary swale. As well, another 9.2 acres are considered flood prone, leaving a net total of 80.75 buildable acres. Dividing the buildable acreage (80.75 acres) by two yields 40 lots, which is the arithmetical formula provided for in the model bylaw. The bylaw also makes allowances for density to be calculated using a Yield Plan if desired. The open space within the design covers a total of 59.63 acres, and is comprised of 19..25 acres of the land determined to be wet and/or flood prone, plus half of the 80.75 acres of buildable land that is remaining after calculating total lot yield via the arithmetical formula. Of the open space, or conservation lands, about 55 acres total are arable and suitable for agricultural use, including the flood prone acreage.

The overall development parameters used in this case were conventional lots based on a two acre zoning density. However, in a conservation design, these lots can be reduced in size to about 1/2 acre if they are serviced by public water and on-lot septic systems, or holding tanks. Such a lot size should be adequate in terms of making allowance for

Figures 44 and 45 - *The existing features are shown in Fig. 46 and consist of a wooded swale with its smaller tributary swale (both in dark green), plus a farmhouse and several large individual trees nearby (just below the .center of the property). Land subject to periodic flooding is shown in blue hatching. The concept plan (Fig. 47) minimizes impact on the area's rural character by setting homes back from the two bordering roads by several hundred feet (on orange-coloured lots), and preserving most of the remaining buildable land for agriculture, wildlife, and recreational trails (shown in light green).*

permitted systems, but adjacent farmland could also be used to make up any shortage if either individual off-lot septic drain fields, or community drain fields, are desired or necessary to use.

In addition to preserving roughly 60% of the site through conservation design as permanent open space, the plan also features the following:

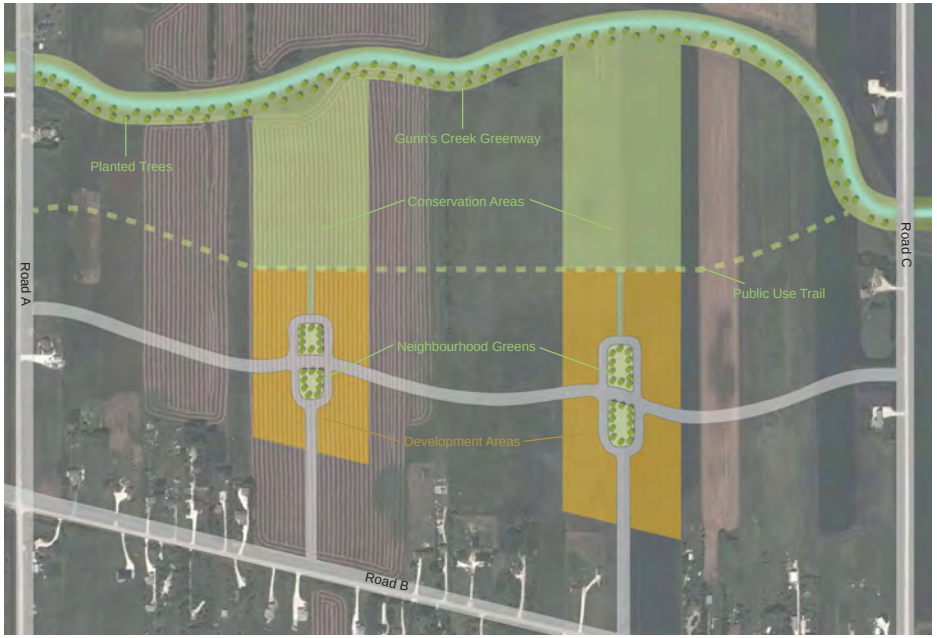
- two means of access, for public safety
- traffic calming street design, with two full stops along the main street
- two internal “greens” for public use
- lots oriented to facilitate views of conservation areas and solar gain
- flag lots to demonstrate feasibility and usefulness
- Cul-de-sac traffic islands

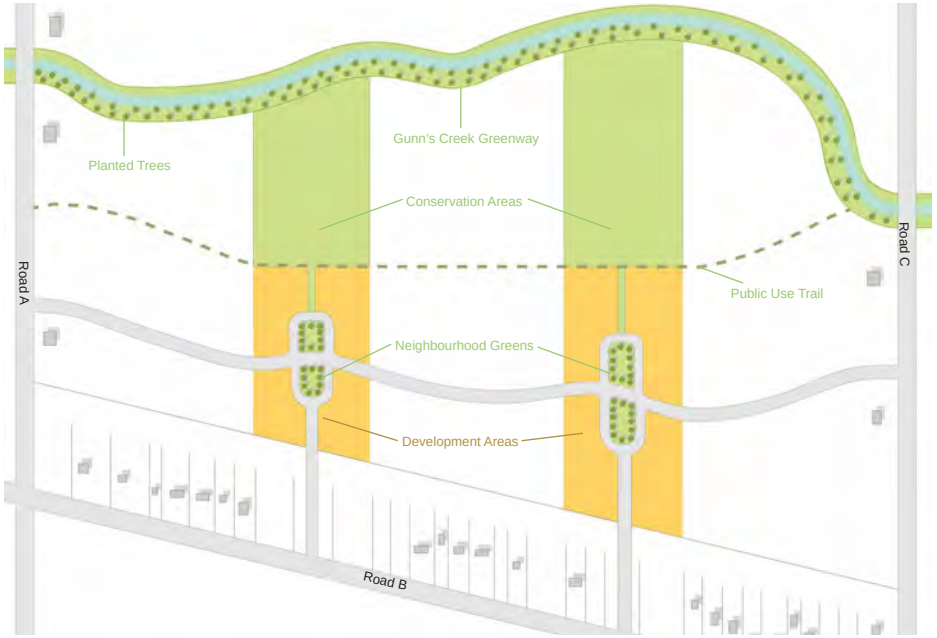
Comparison With the Yield Plan

The Yield Plan (bottom figure) shows 38 lots, meaning that when a developer is able to choose the arithmetical formula in the model bylaw to determine his density, an option that is permitted, he would in this case gain two lots, representing a five percent increase or bonus. Although the length of street is roughly equivalent in both designs, actual construction costs would be greater for the conventional layout due to the need for a stream crossing.

The long cul-de-sacs would also create a potential access issue for emergency vehicles if the single access street becomes blocked for any reason. In addition, sales value of the 16 lots directly abutting existing public roads is likely to be significantly less than the sale value of any of the lots in the conservation design, which would create an attractive parklike setting for every one of the homes. Lastly, both the rural character and all the environmental resources on the property would be compromised by the conventional layout, which lines the two existing roads with houses and driveways, and extends lot lines across the wooded stream corridor and the floodplain.

Figure 46 and 47 - *The Yield Plan (bottom figure) shows a development potential of 38 lots, each of which has at least one acre of dry upland that is neither wet nor subject to periodic flooding. A developer could, in this case, increase his lot count by five percent by utilizing conservation design, applying the arithmetical formula method for determining density permitted in the model bylaw. In addition to preserving rural character, his lots would also become more marketable and profitable by designing around and preserving value-adding environmental features.*





Figures 48 and 49 - *These images illustrate a potential site design for property containing long "river lots" found in St. Clements. By clustering lots in yellow areas, this approach enables much of the backland to be preserved, with the open space (green) connecting to a potential greenway corridor along the drainage swale (blue).*

Example.2 - RM of St. Clements

This site was chosen to illustrate how conservation design could be accomplished on narrow historic river lots found in the south of the RM of St. Clements. During the first phase of development, lots would continue to be laid out along Road B, meeting the two-acre minimum requirement, requiring lot widths to be 65-70 ft. This would enable existing lots to be further subdivided into thinner strips. A strip of land with appropriate width should be reserved for accessing the backland.

New streets leading from Road B to access the backland would terminate in large neighborhood greens, perhaps a little over one acre in area. Until sewers arrive, the land around those greens would be developed with two-acre lots, some of which would be pie-shaped. If they are developed during the interim period prior to sewers, homes should be sited in the same off-center manner described above, so that those lots could later be easily subdivided into 60-foot wide village lots served by sewer. Again, house siting should consistently favor one side of the two-acre lots, to create even spacing between homes during the interim period. The edges of the greens should be planted with shade trees, optimally 40 feet apart, as soon as the greens are established. Half the land beyond 500 feet back from Road B, would be developed in this way. The remaining half would become a long contiguous conservation area.

The neighborhood greens would ultimately be bisected by the new east-west collector street shown on the Secondary Plan. Lots around the greens would allow for a pedestrian way connecting the greens to the Gunn's Creek Greenway Corridor lying beyond the protected open space which will occupy the land between the lots and that corridor. This conservation land could be managed for agriculture, perhaps specialty crops, or could be allowed to naturalize and create new habitat. If the community needs land for new playing fields, recreational uses could be a third possibility (but without night lighting for games and practices).

The greenway would ideally extend far beyond Road A on the west and Road C on the east, becoming the gem of St. Clements in due course, as envisioned in existing conceptual plan , with trails for different kinds of users. The importance of coordinated shade tree planting, at least along the southern side of the path, and beginning as soon as possible, can hardly be overstated.

Appendix B: Examples of Conservation Design in the Canadian Context

Canadian Examples of Conservation Design

Note: This appendix was produced by staff at the Manitoba Department of Municipal Government to present a number of examples of developments within Canada that incorporate various percentages of open space. Although these are not all conservation subdivisions in the sense that this term is defined in this manual, they provide a useful context for understanding how a number of neighbourhoods have been built with permanent open space in Canada.

Le Village en Haut du Ruisseau, Dieppe, New Brunswick

Three-quarters of this 25-acre site, originally zoned for just five homes, is being preserved as permanent open space, through compact residential layouts, while accommodating 100 dwellings for a total of 227 units. This sustainable urban infill project, which is being built at a far higher density than the pre-existing zoning had allowed, has received an award from the Gulf of Maine Council on the Marine Environment, as well as a Sustainable Communities Award, and an Environmental Excellence Award for Greater Moncton.

The creation of this development, which is known as Le Village en Haut Ruisseau, was the result of a partnership between the Province of New Brunswick, the City of Dieppe and a local developer. A conservation design approach was utilized in order to promote an enhanced tax base as well as to achieve social and environmental benefits for the city and residents alike.

The development site covered approximately 10 hectares and is located close to the urban core of Dieppe. Although it was originally designated and zoned for low density development the city of Dieppe wanted to utilize revenue from the subdivision to pay for the services and expenditures that the development would ultimately produce.

Numerous design studies were performed and site plan concepts created in conjunction with the Dalhousie School of Planning and other local school groups. The numerous design options explored through these various iterations enabled the number of units to increase from an original yield of just 5 homes to 100 homes while preserving a total of 76% of the site as green space, in comparison to the 35% that a standard layout would have preserved. The project incorporated best management practices for stormwater management such as constructed wetlands, swales and rain gardens, and includes a large planned ecological park within the preservation area. The natural spaces that were preserved served to provide protection for wildlife habitats and wetlands as well as providing space for bike and pedestrian trails.

By choosing to build in an unconventional yet more highly sustainable pattern of development the developer was able to attain a higher level of density (6.8 units/acre) for a total of 217 units, instead of the initial 5 units (.16 unit/acre). Estimated revenues from this chosen style of development for the developer increased from $2.5 million to $40 million, while tax revenue for the City of Dieppe increased from $40,000 to $620,00 per year while essentially providing the same level of services and infrastructure as originally planned for the 5 unit development.

Scafe Hill, District of Highlands, Victoria, British Columbia

The District of Highlands, located near Victoria, British Columbia addresses most of its subdivision development through unique zoning provisions when possible. Due to existing zoning requirements the subdivision of Scafe Hill in Highlands was originally planned as a standard 15 lot subdivision with a minimum lot size of 12 hectares, or 29.6 acres, with no planned public green space.

However, as a result of environmentally sensitive areas discovered onsite during preliminary site investigations, and due to the extremely high cost of servicing associated with such a traditional large lot subdivision, it was concluded that unique cluster development zoning should be utilized on the proposed site, as opposed to the standard existing low density zoning designation. As a result of this new cluster zoning practice being utilized the developer was able to increase the density of the proposed development from 15 lots to 26 lots, at an average size of 1.5 hectares (3.7 acres) per lot, thereby positively increasing his return on development.

A total of 145 hectares (358.3 acres), or residual lands not utilized in subdivision, were able to be conserved for both resident and public use, serving to provide valuable amenities such as wildlife habitat and walking/cycling trails. Conservation lands were also added to a pre-existing regional park. In the end more than 90% of land was able remain in its natural state with landowners, the municipality, and a conservation trust registering joint conservation covenants on the newly created lots to protect smaller environmental features.

Deer Mountain Estates, Strathcona County, Alberta

More compact clustered development has been promoted by Councils of Strathcona County, Alberta, for many years now in an effort to lessen the encroachment of housing developments onto prime agricultural and environmentally sensitive lands in the community located just east of Edmonton. Deer Mountain estates is a 53 lot conservation subdivision that was created with a minimum parcel size of 2 hectares (5 acres) in order to adhere to the clustered development desires of the County.

By utilizing the principles of conservation based design and through working in conjunction with one another, the developer and County were able to come to agreeance on a plan that would preserve 43% of the property as it existed in its natural state. Conservation easements were then utilized to protect the open space and preexisting wildlife corridors around the development perimeter.

Each individual lot that was created contains a 50m (164ft) conservation covenant that requires all vegetation within it to be retained in its natural state unaltered. This generally provides a nice transition space between private individual lots and the outlying public spaces that frame the development. An additional 7.8 hectare (19.2 acre) wetland marsh area that was preserved for stormwater retention and infiltration was also put into protection as a Public Utility Lot.

By using areas of the development that were preserved in their natural state as part of the conservation design process the developer was able to add valuable amenities such as cycling and walking trails, rain gardens, and an abundance of naturalized public space to his subdivision which ultimately aided in the lots selling both more quickly and expensively.

Assiniboine Landing, Headingley, Manitoba

Assiniboine Landing in Headingley, Manitoba, could be considered the first subdivision in the province to utilize the principles of conservation design in order to preserve existing natural features, as some of the project's main objectives included a focus on preserving and restoring prairie grasslands, river bottom forest ecosystems and historic Manitoba prairie landscapes.

In all a total of 52 acres, with 18 acres of forest and prairie grasslands, are protected in public reserve within the development for use by residents. This public reserve contains Manitoba landscape staples such as hardwood forests and shelterbelts comprised of maple, ash, basswood, and bur oak, as well as prairie grasslands and wetlands maintained in their natural state to act as areas of stormwater retention and infiltration.

In order to protect the natural environment investments of the residents of Assiniboine Landing a homeowners association was formed, the Assiniboine Landing Homeowners Association (ALHA). All property owners within Assiniboine Landing receive automatic membership in the association with an end goal of having residents aid in ensuring the on-going compliance with the conservation covenants, conditions, and restrictions that ultimately protect the quality, character, and property values of the community itself. The ALHA was both managed and funded by Qualico Developments, the company responsible for the construction of Assiniboine Landing, until all development was completed. At that time operation was transferred to the residents of Assiniboine Landing to assume management of the organization.

One of the primary objectives identified at the onset of the subdivision design process was how to best manage the relationship between the established home sites and the pre existing parkland ecosystems on site that provide critical habitat connections between the desired naturalized neighborhood nodes. This objective was met by establishing landscape design criteria that took into consideration such factors as building footprints and driveway location, manicured yard boundaries, the transition between the natural border of the properties and established grasslands and attention to the riparian river forest. The ALHA also aids in offering guidance to residents in regards to the Assiniboine Landing Design Process and Architectural Standards that have been established

In order to ensure that the intended spirit and purpose of the community is preserved the ALHA requires that all homeowners provide a detailed landscaping plan to the association for any work proposed within the established setbacks or near lot lines. Requirements and restrictions for fencing have also been put in place with any proposed improvements or construction not listed by the ALHA having to be approved prior to construction. Also, any development proposed within the riverbank riparian zone is also subject to approval from 2 levels of government as well as Qualico developments and the ALHA. It is because of these established criteria and the associated preservation of the existing onsite natural features that allow Assiniboine Landing to achieve their goals.

Appendix C: Model Bylaw Provisions for the Province of Manitoba

Model Provisions for Manitoba

The model by-law presented in this appendix is based on the conservation subdivision design approach described in the narrative portion of this manual.

The wording here presents a mandatory approach, in which conventional subdivision plans that divide an entire property into houselots and streets would no longer be acceptable. Instead, all new subdivision plans must be prepared using the open space design approach.

A local government may, however, prefer an optional approach where the developer is given a choice. In such instances, the developer is usually required to submit both a conventional subdivision plan and a conservation design layout. The municipality or planning board then selects the plan that best implements principles in the approved Development Plan or Secondary Plan. This approach enables local governments to remain true to their planning policies when processing applications for new development.

A third approach is for the local government to adopt disincentives in the ordinance to discourage the use of conventional subdivision plans and to encourage conservation subdivision designs. As an example, a developer might be permitted to create only a certain percentage (e.g., half) of the allowable number of building lots if he/she elects to use the conventional approach (imposing a 50 percent “density penalty”). On the other hand, the use of the open space design approach would permit the developer to achieve the maximum allowable density. The decision regarding which approach to use is an example of the choices that each local government has in adapting these model regulations.

The model represents a starting point, and, regardless of the provisions ultimately adopted, they too should be viewed as “a beginning”. To acquaint land owners, developers, surveyors, and land planners and designers with the open space design process, a series of educational workshops should be held either before or immediately after ordinance adoption. As subdivision plans are approved, they should be evaluated to determine if the goals of the open space design process are being achieved. As conditions warrant, the ordinance provisions may be “fine tuned” to achieve the desired result.

Conservation Subdivision Design
Section 1 - General

1.1 Purposes

The purposes of conservation subdivision designs are to preserve agricultural and forested lands, wildlife habitat or corridors, natural and cultural features, and rural community character that might be lost through conventional development approaches. To accomplish this goal, greater flexibility and creativity in the design of such developments is encouraged and required. Specific objectives are as follows:

• To preserve areas with productive soils for continued agricultural use.

• To encourage the maintenance and enhancement of habitat for various forms of wildlife and to create new woodlands through natural succession and reforestation where appropriate.

• To minimize site disturbance and erosion by retaining existing vegetation and avoiding development on steep slopes.

• To preserve open land, including those areas containing unique and sensitive features such as natural areas and wildlife habitats, slopes, streams, wetlands, and land subject to flooding.

• To preserve scenic views and elements of the municipality’s rural character, and to minimize perceived density by minimizing views of new development from existing roads.

• To preserve and maintain historic and archaeological sites and structures that serve as significant visible reminders of the municipality’s cultural and architectural history.

• To provide for the active and passive recreational needs of local residents.

• To provide greater efficiency in the siting of services and infrastructure by reducing road length, utility runs, and the amount of paving for development.

• To create compact neighborhoods accessible to open space amenities and with a strong identity.

1.2 Applicability

Conservation subdivision design is permitted in all residential zoning districts, but only upon approval of a Preliminary Subdivision Plan by the Planning Board. All such plans shall comply with the requirements and standards specified herein and in all respects with other applicable codes and by-laws to the extent that they are not in conflict with these provisions.

Conservation subdivision design shall also be required in the following zoning districts, and/or within the following overlay districts: (to be completed by each municipality).

Section 2 - Open Space Standards

2.1 Minimum Required Open Space

At least sixty percent (60%) of the unconstrained (buildable) land area in the conservation subdivision shall be set aside as protected open space. Unconstrained lands are lands that do not lie within "Primary Conservation Areas", as described below. Unconstrained lands also exclude the rights-of-way of high tension electrical transmission lines, and the rights-of-way of existing or proposed streets, which therefore may not be counted toward meeting minimum open space requirements. Except under the "Estate Lot" provisions, this open space shall remain undivided, and may not be incorporated into individual houselots.

Note: In areas with very low rural density of more than two acres per dwelling, open space percentages greater than 60% are easily achievable and highly recommended. On the other hand, in serviced locations with public water and sewer, where densities might be several dwellings per acre, open space percentages might dip to 35 or 40%.

2.2 Types of Open Space

The types of open space conserved through conservation design shall be consistent with the following standards:

Open space shall be comprised of two land types: "Primary Conservation Areas" and "Secondary Conservation Areas", and shall be configured in contiguous parcels greater than 20 acres in area to create or maintain interconnected networks of conservation lands, to the greatest extent that is practicable. The development area will form the backbone of any open space plan included in the overall design of the subdivision.

A. Primary Conservation Areas form the core of the open space to be protected. They are the first type of open space to be designated to satisfy the minimum open space requirement and consist of the following site features:

Wetlands, including, but not limited to, streams, creeks, ponds, reservoirs, sensitive areas and adjoining land areas identified as part of a site analysis conducted by a registered engineer, land surveyor, landscape architect, architect or land planner.

Land subject to flooding and alluvial soils identified as part of official provincial or federal floodplain maps.

Steep slopes, defined as those greater than 25 percent, identified as part of a site analysis conducted by a registered engineer, land surveyor, landscape architect, architect or land planner and calculated using topographic maps created on the property.

Value for Calculating Permitted Density

Because they represent sensitive environmental features and/or significant cultural resources considered unbuildable in a legal or practical sense, Primary Conservation Areas receive only partial credit toward meeting the minimum open space requirement. Specifically sixty percent (60%) of the acreage within Primary Conservation Areas may be counted toward the density calculations. However, land that is submerged for more than six months of the year, or' that lies within the rights-of-way of existing or proposed streets, or within rights-of-way for high-tension electrical transmission lines, shall not be so included.

B. Secondary Conservation Areas consist of unconstrained land that would otherwise be suitable for building and include the following site features:

Woodlands, including forest land for the planting and production of trees and timber, where management practices such as selective timber harvesting and wildlife enhancement are employed. Such woodlands may consist of hardwood, pine, and/or mixed pine-hardwood forests.

Farmland, whether actively used or not, including cropland, fields, pastures, and meadows.

Natural areas, and wildlife habitats and corridors identified as part of an inventory prepared by a provincial agency, the Nature Conservancy of Canada or a local land trust.

Slopes of 15 to 25 percent which require special site planning due to their erosion potential, limitations for septic tank nitrification fields, and terrain or elevation changes. Such areas may be suitable for building but higher site preparation and construction costs are to be expected.

Historic and/or archaeological sites.

Public and/or private recreation areas and facilities (excluding golf courses and playingfields with night lighting) Active recreation areas represent a kind of development in which natural lands are cleared, graded, and managed for intensive uses, thereby reducing the wildlife habitat or natural resource value.

For this reason, only half (50%) of the land in this category may be credited toward meeting the minimum open space requirement:

“Passive recreation areas” such as pedestrian, bicycle, and equestrian trails, picnic areas, community commons or greens, and similar kinds of areas, whether public or private. Land in this category receives full credit toward meeting the minimum open space requirement.

Scenic views, especially of natural and cultural features from designated scenic road corridors, including “views from the’ road” as well as views outward from potential home sites.

Value for Calculating Permitted Density

Because they consist of unconstrained land that would otherwise be suitable for building, 100 percent of the land within Secondary Conservation Areas shall be included in the acreage used to calculate permitted density, except as noted above for certain recreation facilities. For design purposes, such density credit may be applied to other unconstrained parts of the site. Secondary Conservation Areas may contain land used for onsite sewage disposal, including nitrification fields and fields used for “spray irrigation” (sometimes called “land treatment”). Unless specified otherwise, these lands may also be counted toward meeting the minimum open space requirements for conservation subdivisions.

2.3 General Location Standards

A. Undivided Preserves - Both Primary and Secondary Conservation Areas shall be placed in undivided preserves which adjoin housing areas that have been designed more compactly to create larger conservation units that may be enjoyed by all residents of the subdivision. Safe and convenient pedestrian access to the open space from the development area(s) shall be provided, except in the case of farmland or other resource areas vulnerable to trampling damage or human disturbance.

Where undivided open space is designated as separate non-contiguous parcels, no parcel shall consist of less than three (3) acres in area, nor have a length-to-width ratio in excess of 4: 1, except such areas that are specifically designed for neighborhood commons or greens, playfields, buffers adjacent to wetlands and watercourses, wildlife corridors, or trail links.

B. Interconnected Open Space Network - As these standards are implemented, the protected open space in each new subdivision should be consciously designed to adjoin each other, so that they may ultimately form an inter-connected network of Primary and Secondary Conservation Areas across the municipality.

2.4 Ownership and Protection of Open Space

Conservation land within a conservation subdivision may be owned and/or administered by any of the following four methods, either individually or in combination. Regardless of which entity owns the conservation land, all open space shall be permanently restricted from further subdivision through permanent conservation easements or agreements recorded in the Land Titles Office. These easements or agreements should be held by land trusts or conservation agencies of the state or local government, and are not recommended to be held by the elected officials of the county or municipality.

There are four ownership options:

1) Fee simple dedication to the municipality, the provincial agency, or another unit of government.

2) Fee simple dedication to a private nonprofit land conservancy.

3) Ownership by a condominium or homeowner association where specific development restrictions and maintenance requirements are included as part of its by-laws. Such land shall also be protected through permanent conservation easements, as described below.

4) Up to 80 percent of the conservation land within a conservation subdivision subject to easement may be designated for individual private ownership, such as by the original farmer or landowner, the developer, or another private entity that maintains the open space for the uses permitted in this ordinance. The remaining conservation land shall remain undivided for the enjoyment of the residents, and this remainder shall consist of land that is not wet or submerged, not steep (i.e., with slopes less than 25 percent), and not within the rights-of way of high-tension electrical transmission lines.

All conservation land shall be permanently protected through conservation easements dedicated to the municipality, the provincial agency, another unit of government, or a private nonprofit land conservancy. Such easements shall apply to land owned by a condominium' association, land owned by other private entities managing the land for open space purposes, and to land dedicated to units of local government. Land dedicated to units of local government shall be eased to a private land trust or conservancy organization because, over time, the conservation and development philosophies of elected officials are subject to change.

Maintenance of Conservation Areas

Natural features shall be maintained in their natural condition, but may be modified to improve appearance, function, or overall condition, as recommended by experts in the area being modified. Permitted modifications may include:

Reforestation, Pasture or cropland management, Buffer area landscaping, Streambank protection, and/or Wetlands management.

Unless accepted for dedication or agreed to by the municipality, provincial agency, another unit of government, or a private nonprofit land conservancy, the cost and responsibility of maintaining open space and facilities located thereon shall be borne by the property owner and/or condominium association. Management Plans are required for all open space within conservation subdivisions specifying maintenance responsibilities, and on what schedule.

Section 3 - Design Guidelines

Determining Density or Lot Yield

Overall density shall be based upon the minimum lot size requirements of the zoning district in which the conservation subdivision is to be located, or on the basis of a "Yield Plan" consisting of conventional lot and street layouts which conform to the municipality's regulations governing lot dimensions, land suitable for development, and street design. Although such plans shall be conceptual in nature and are not intended to involve significant engineering or surveying costs, they must be realistic. Potential building lots and streets must not be shown in areas that would not ordinarily be permitted in a conventional plans For example, Yield Plans would include, at minimum, basic topography, wetland locations, land subject to flooding, and slopes exceeding 25 percent in defining areas unsuited for development.

On sites not served by public sewerage or a centralized private sewage treatment facility, soil suitability for individual septic systems shall be demonstrated. In areas of the site considered to be marginal for such systems, a small percentage of lots (10 to 15 percent) shall be tested. The local government shall select the lots for such testing. If tests on the sample lots pass the percolation test, the applicant's other lots shall also be deemed suitable for septic systems for the purpose of calculating total lot yield. However, if any of the sample lots fail, several others shall be tested, until all the lots in a given sample pass.

Note: A second option for determining density is to apply an arithmetical formula to the project acreage. Under that approach, wetlands and land subject to periodic flooding would be subtracted to produce a figure reflecting Net Buildable Acreage. Dividing that figure by the usual minimum lot size normally required in the zoning district (say, two acres), produces the permitted lot count.

3.2 Existing Features/Site Analysis

Since it forms the basis of the open space design process, an Existing Features/Site Analysis Map analyzing each site's special features is required for all proposed subdivisions. The Map shall identify, at minimum, those natural, historic, and cultural features listed in Sections 2.2.b and 2.2.c without distinction as to whether they are Primary or Secondary Conservation Areas.

3.3 Design Process

Conservation subdivisions shall be designed around both the Primary and Secondary Conservation Areas, which together constitute the total required open space. The design process should therefore commence with the delineation of all potential open space, after which potential house sites are located. Following that, access road alignments are identified, with lot lines being drawn in as the final step. This “four-step” design process is further described below:

Open Space Designation: During the first step, all potential Conservation Areas, both Primary and Secondary, shall be identified, using the Existing Features/Site Analysis Map. Primary Conservation Areas shall consist of those features described in Section 2.2.b. above. Secondary Conservation Areas shall comprise at least half of the remaining land and shall include the most sensitive and noteworthy natural, scenic, and cultural resources as described in Section 2.2.c. above. Guidance as to which parts of the remaining land to classify Secondary Conservation Areas shall be based upon:

- On-site visits
- The Open Space Standards contained in Section 2 above; and
- The Evaluation Criteria contained in Section 4 below.

House Site Location: During the second step, potential house sites are tentatively located. The proposed location of houses within each lot represents a significant decision with potential impacts on the ability of the development to meet the Evaluation Criteria contained in Section 4 below. Generally, house sites should be located no closer than 100 feet from Primary Conservation Areas. Such sites may be situated 50 feet from Secondary Conservation Areas to permit the enjoyment of scenic views without negatively impacting Primary Conservation Areas.

Street Alignment and Trail Networks: The third step consists of aligning proposed streets to provide vehicular access to each house in the most reasonable and economical manner, and in laying out a network of informal trails connecting neighborhood areas with open space features within the conservation lands. When lots and access streets are laid out, they shall be located in such a way that avoids or at least minimizes impacts on both Primary and Secondary Conservation Areas. To the greatest extent practicable, wetland crossings and streets traversing slopes over 15 percent shall be strongly discouraged, unless such streets link one buildable portion of a site with another when no other means of access is available

Street connections shall generally be encouraged to minimize the number of new cul-de-sacs to be maintained and to facilitate easy access to and from homes on different parts of the property and on adjoining parcels. Where cul-de-sacs are necessary, those serving six (6) or fewer homes may be designed with “T-turnarounds” facilitating three-point turns. Cul-de-sacs serving more than six homes shall generally be designed with a central island containing indigenous trees and shrubs, either conserved or planted All cul-de-sacs should provide trail access to the open space and/or other nearby streets. The creation of single-loaded residential access streets is encouraged to maximize the number of homes in new developments that may enjoy views of open space. To make this approach economical, narrower lots as well as flag lots, both of which help to make the street system more efficient, are permitted in conservation subdivisions

Drawing in the Lot Lines: The fourth step consists of drawing in lot lines around potential house sites. Each lot must contain a buildable area of sufficient size to accommodate a single-family detached dwelling and customary accessory uses, including, but not limited to, storage buildings and garages, patios and decks, lawns, and driveways. If sufficient space is not available on the lots, individual wells and septic systems may be located within the undivided conservation lands, according to an Environmental Act License.

Note with Respect to Village Design: For open space subdivisions built at higher than rural densities in areas with public water and sewer, the sequence of steps is: conservation areas; streets, squares, and trails; house sites; and lot lines. In this denser development form, the location of streets and squares becomes elevated in importance, after the identification of Primary and Secondary Conservation Areas.

House positions are of lesser importance, as they become the supporting elements within a larger streetscape. Squares and greens shall be generally laid out so that they form “terminal vistas” at the ends of streets, or at the ends of the sight-lines which are terminated by bends in the streets.

Section 4 - Evaluation Criteria

For any given site, resources may vary widely in importance; e.g., a natural area compared to a historic site. Likewise, for each type of resource, there may be examples of greater or lesser significance; e.g., a notable example of local vernacular building traditions versus a much altered older home. Priorities for conserving such resources should therefore be based upon a thorough site analysis and an understanding of what is more special, unique, environmentally sensitive, and or historic as compared with other similar features or different types of resources.

In evaluating the layout of lots and open space, the following criteria will be considered as indicating design appropriate to the site's features and meeting the intent of these standards. Whereas diversity and originality in lot layout are encouraged, it is recognized that not all objectives may be achieved on a given site. Each applicant must therefore endeavour to achieve the best possible relationship between development and preservation objectives. In evaluating the relative significance of different categories of site features, or of individual features within certain categories, applicants shall consider recommendations by the Planning Department or District, during and after the On-Site Visit which precedes submission of the Concept Plan.

4.1 General Criteria

The following criteria apply to all conservation subdivisions:

• Protect and preserve all wetlands, land subject to flooding, riparian areas, and steep slopes from clearing, grading, filling, or construction except as may be approved by the municipality.

• The shape of the open space shall be reasonably contiguous, coherently configured, and shall abut existing or potential open space on adjacent properties. Long narrow segments must be avoided except in the case of trail or stream corridors, or landscape buffers adjoining street rights-of-way and/or neighborhood boundaries.

• The pedestrian circulation system shall be designed to assure that pedestrians can walk safely and easily on the site, between properties and activities or special features within the neighborhood open space system. All roadside footpaths should connect with off-road trails, and link with existing or potential open space on adjoining parcels.

• Landscape common areas (neighborhood greens), cul-de-sac islands, and both sides of new streets with native species shade trees and flowering shrubs with high wildlife conservation value.

4.2 Forest Land/Natural Areas Conservation

Where the primary goal of the conservation subdivision is to conserve forest land and/or natural areas and wildlife habitats, the following criteria apply:

• Dwellings should be located in unwooded parts of the site away from mature forests, natural areas, and/or wildlife corridors.

• To the greatest extent practicable, development should be designed around existing hedgerows and treelines between fields or meadows. The impact on larger woodlands (greater than five acres), especially those containing mature trees, natural areas, and/or wildlife corridors should be minimized.

• When any woodland is developed, care shall be taken to locate buildings, streets, yards, and septic disposal fields to avoid mature forests, natural areas, and/or wildlife corridors.

4.3 Farmland Conservation

Where the primary goal of the conservation subdivision is to conserve farmland, the following guidelines apply:

• Locate building lots in forested areas away from existing pastures, cropland, feedlots, and similar uses.

• If development must be located on open fields or pastures because of greater constraints on other parts of the site, dwellings should be sited in locations at the far edge of a field, as seen from a public road.

• Identify the most productive portions of existing pastures and cropland, and locate building lots on less productive land.

• Buffers shall be provided between houselots and cropland or pastures, to reduce the potential for conflict between residents and farming activities. Such buffers shall generally be 75 feet in width and shall be managed to encourage the growth of successional woodland.

4.4 Conservation of Scenic Views

Where the primary goal of the conservation subdivision is to conserve scenic views, the following guidelines apply:

• Leave scenic views and vistas unblocked or uninterrupted, particularly as seen from public roadways. Consider “no-build, no-plant” buffers along public roadways where views or vistas are prominent or locally significant. In wooded areas where enclosure is a feature to be maintained, consider a “no-build, no-cut” buffer created through the preservation of existing vegetation.

• Where development is located in unwooded areas clearly visible from existing public roads, it should be buffered from direct view by a vegetative buffer or an earth berm constructed to reflect the topography of the surrounding area, or located out of sight on slopes below existing ridge lines.

• Protect rural roadside character and vehicular carrying capacity by avoiding development fronting on existing public roads; e.g., limiting access to all lots from interior rather than exterior roads.
• Protect rural roadside character and scenic views by providing conservancy lots (e.g., six acres or more in size) adjacent to existing public roads.

• Avoid siting new construction on prominent hilltops or ridges, or so close to hilltops and ridges that rooflines break the horizon (unless such buildings can be effectively screened or buffered with trees).

4.5 Historic and Archaeological Features

Where the primary goal of the conservation subdivision is to conserve historic and archaeological sites and structures, the following guidelines apply:

• Design around and preserve sites of historic, archaeological or cultural value so as to safeguard the character of the feature(s), including fences and walls, farm outbuildings, burial grounds, abandoned roads, and earthworks.

• New streets, driveways, fences, and utilities must be sited so as not to intrude on rural, historic landscapes. Wherever possible, driveways are to follow existing hedgerows, fence lines, and historic farm drives.

• New developments must include plantings which reflect natural and historic landscape materials, and are in harmony with the character of the area.

• Building designs and styles used in new construction should be compatible with the architectural style of historic buildings located on or adjacent to the site, especially in terms of scale, height, roof shape, and exterior materials.

4.6 Recreation Provision

Where the primary goal of the conservation subdivision is to provide recreation and parks facilities for neighborhood residents and/or the general public, the guidelines contained in the municipal parks and open space plans shall apply.

Section 5 - Water Supply & Sewage Disposal

5.1 Alternative Options

Water supply and sewage disposal facilities to serve conservation subdivisions may be provided through the use of various alternatives, including:

• Individual wells and septic tanks located either on each lot or in off-lot locations within undivided open space areas designated for such uses on the Final Plan ,pursuant to an Environmental Act License, , and protected through recorded easements; or

• A community water supply and/or sewage disposal system designed, constructed, and maintained in conformity with all applicable state, federal, and local rules and regulations; or

• Connection to a water supply and/or sewage disposal system operated by a municipality, association, or water or sewer authority. System extensions are permitted only in
accordance with applicable water and sewer, and land use policies and shall be sized only to serve the conservation subdivision for which the system is extended; or

• A combination of the above alternatives.

Section 6 - Density Bonuses

The maximum number of building lots or dwelling units in a conservation subdivision shall not exceed the number that could otherwise be developed by the application of the minimum lot size requirement and/or density standard of the zoning district or districts in which the parcel is located. However, increases in the number of building lots or dwelling units are permitted through one or more of the following options:

6.1 To Encourage Additional Open Space

A. A density increase is permitted where more than fifty percent (50%) of the unconstrained land area in a conservation subdivision is designated as permanent, undivided open space. The amount of the density increase shall be based on the following standard:

For each additional acre of protected open space provided in the Open Space Development, one (1) additional building lot or dwelling unit is permitted.

B. In lieu of providing additional open space in the conservation subdivision, the applicant may purchase in fee simple or less than fee (e.g., development rights) land separate from the conservation subdivision which is comprised of Primary and/or Secondary Conservation

C. For land purchased in less than fee, a conservation easement shall be recorded which restricts the development potential of the land. The conservation easement shall be dedicated to the municipality, the provincial agency, another unit of government, or a private nonprofit land conservancy.

6.2 To Encourage Public Access

Dedication of land for public use, including trails, active recreation, and municipal spray irrigation fields, may be encouraged by the municipality, which is herein authorized to offer a density bonus for this express purpose. This density bonus, for open space that would be in addition to the basic public land dedication mentioned above, shall be computed on the basis of one dwelling unit per three acres of publicly accessible open space. The decision whether to accept an applicant's offer to dedicate open space for public access shall be at the discretion of the municipality, which shall be guided by recommendations contained in existing and future recreation plans, particularly those sections dealing with trail connections, greenway networks, and/or recreational facilities.

6.3 To Encourage Maintenance Endowments

The municipality may allow a density bonus to generate additional income to the applicant for the express purpose of endowing a permanent fund to offset continuing open space maintenance costs. Spending from this fund would be restricted to expenditure of interest, in order that the principal may be preserved. Assuming an average interest rate of five (5) percent, the amount designated for the Endowment Fund should be twenty (20) times the amount estimated to be needed on a yearly basis to maintain the open space. On the assumption that additional dwellings, over and above the maximum that would ordinarily be permitted on the site, are net of development costs and represent true profit, 75 percent of the net selling price of the lots should be donated to the Open Space Endowment Fund for the conservation lands within the subdivision. Such estimates should be prepared by an agency or organization with experience in open space management acceptable to the municipality. This fund shall be transferred by the developer to the designated entity with ownership and maintenance responsibilities, such as a condominium association, a land trust, or a unit of local government.

6.4 To Encourage Affordable Housing

A. A density increase is permitted where the conservation subdivision provides on-site or off-site housing opportunities for low or moderate income families. Density increase shall be based on following standards:

Note: For each affordable housing unit provided in the conservation subdivision, one (1) additional building lot or dwelling unit is permitted. Affordable housing is defined as units to be sold or rented to families earning 70 to 120 percent of the area median income, adjusted for family size.

B. In lieu of providing affordable housing units in the conservation subdivision, the applicant may donate to the municipality land separate from the conservation subdivision with suitable soils or access to public water and sewer for the purpose of developing affordable housing. The donated land shall contain at a minimum the land area needed to develop the total number of bonus units in accordance with the zoning requirements of the district in which the donated land is located, together with a minimum of twenty (20) percent open space land, at least half of

Section 7 - Application and Approval Process

7.1 Concept Plan

A. Pre-Application Consultation: To promote better communication and avoid unnecessary expense in the design of acceptable subdivision proposals, each applicant is encouraged to meet with the Planning Department prior to filing out an application for conservation subdivision approval. The purpose of this informal meeting is to introduce the applicant to the provisions of the conservation design by-law and discuss his/her objectives in relation thereto.

B. On-Site Visit: Prior to the submission of a subdivision application, the applicant should endeavor to schedule a mutually convenient time to walk the property with the Planning Department staff. The purpose of this visit is to familiarize the Planning Department staff with the property's special features, and to provide them an informal opportunity to offer guidance to the applicant regarding the tentative location of Secondary Conservation Areas, and potential house locations and street alignments. Prior to scheduling the on-site visit, the applicant shall have prepared the Existing Features/Site Analysis Map as outlined below.

C. Public Information Meeting: After consultation with the applicable planning department, the applicant should endeavor to hold a public open house to present the details of the plan to the community. It is recommended that the applicant work with a consultant to facilitate the event. At the meeting, the planning department staff will explain the subdivision approval process, and the applicant will be available to answer questions about the proposed subdivision.

D. Application Requirements: Applications for conservation subdivision approval shall be submitted to the Planning Department after the pre-application consultation and the open house has occurred. In addition to the standard application requirements of each approving authority, a sketch of the proposal demonstrating compliance with applicable Conservation Design By-laws* shall be provided and include the following:

- An Existing Features/Site Analysis Map;
- A Yield Plan; and
- A conservation subdivision layout plan

Approving authorities should have a checklist in place for potential applicants to assist in ensuring the proposal is in compliance with applicable zoning by-laws relating to conservation design.

E. Planning Department Review Procedures: The Planning Department staff shall review the application as it would for any subdivision under The Planning Act and provide its recommendation, including a written analysis of the proposal; its general compliance with the Development Plan, Secondary Plan where applicable requirements of the conservation design by-law, other by-laws; and the concerns of citizens expressed at the Public Open House.

F. Public Hearing: After the Planning Department has prepared a report on the Conservation Design subdivision proposal a formal public hearing before the local Council shall occur as per section 169 of The Planning Act.

G. Review By Council: As with most subdivision applications, review and approval by the local Council is required after the public hearing and prior to receiving conditional approval from the approving authority. During this review Council will consider the information presented to them by the Planning Department, the applicant, government agencies and the Public. Council can make a decision to reject, or approve the application subject to conditions.

H. Planning Board/Approving Authority Conditional Approval: After the Public Hearing and decision of Council, the approving authority shall make a decision within 60 days of Council decision. Much like Council, the approving authority can decide to deny the application or approve it with conditions. If approved with conditions, the applicant has two years from the date of approval to complete the conditions.

Section 8 - Specifications For Concept Plans

8.1 Components of Concept Plan

The Concept Plan required by Section 7 shall consist of three parts:

- An Existing Features/Site Analysis Map;
- A Yield Plan; and
- A conservation subdivision plan layout.

The Concept Plan shall be prepared according to the "four-step" process

for designing open space subdivisions described in Section 3.3 above. In addition, the Concept Plan shall be prepared by a team including at least a civil engineer or registered land surveyor, plus either a landscape architect or a land use land planner experienced in open space design.

Each map or plan shall be drawn in black ink or pencil to a scale of not less than two hundred (200) feet to the inch. The scale chosen shall be large enough to show all required detail clearly and legibly.

8.2 General Information

Each map or Plan required in Section 8.1 above shall contain the following general information:

A. A sketch vicinity map showing the location of the subdivision in relation to the existing street or highway system;

B. The plotted boundaries of the tract from titles or maps of record and the portion of the tract to be subdivided;

C. The total acreage to be subdivided, including assessment parcels and roll numbers, block and lot number reference;

D. The name, address and telephone number of the subdivider or owner and the person responsible for the subdivision design;

E. Scale, approximate north arrow and date of plan preparation; and

F. Name of subdivision.

8.3 Existing Features/Site Analysis Map

As determined from readily identifiable on-site inventories, aerial photographs, maps of record, Provincial/Federal resource maps, and local planning documents and inventories, the Existing Features/Site Analysis Map shall contain the following information:

A. Primary Conservation Areas: Identification of physical resources associated with the site which restrict its development potential or contain significant natural and/or cultural resources,including:

• Topographic contours at ten-foot intervals, showing rock outcrops and slopes of seven and one-half percent (7.5%) to fifteen percent (15%), and more than fifteen percent (15%).

• Soil type locations and characteristics relating to seasonal high water table and depth to bedrock.

• Hydrologic characteristics of the site, including drainage tributaries, surface water bodies, land subject to flooding, and wetlands.

Secondary Conservation Areas: An Identification of the significant site elements on buildable portions of the site, including:

• Vegetation of the site, defining approximate location and boundaries of woodland areas, and, wherever possible, vegetative association in terms of species and size. Information from aerial photographs shall be acceptable at the Concept Plan stage.

• Current land use and land cover (cultivated areas, pastures, etc.), existing buildings and structures, and burial grounds.

• Natural areas, and wildlife habitats and corridors.

• Historic and archaeological sites, especially those listed on the Canadian Register of Historic Places or included on Manitoba's Provincial Heritage Sites List designated as a local historic landmark, and/or located in a local historic district.

• Scenic views onto the site from surrounding roads as well as views of scenic features from within the site.

B. Transportation and Utility Systems: Identification of facilities associated with the movement of people and goods, or the provision of public services, including:

• Railroad and street rights-of-way.

• Easements for vehicular access, hydro and gas transmission lines, and similar uses.

• Public and private water and sewer lines and storm drainage facilities.

8.4 Yield Plan

The Yield Plan shall contain the following information:

A. In addition to basic topography, the location of areas unsuited for development, including wetland locations, land subject to flooding, and slopes exceeding 25 percent;

B. The proposed arrangement of lots, including size and number, and streets within the subdivision, including right-of-way widths; and

C. The location of soils suitable for individual septic systems as determined by Manitoba Conservation and Water Stewardship.

- A map showing the location of soil types suited for septic systems. This map shall be prepared in consultation with the Environmental Officer of the Environmental Health Division of the Health Department.

- In reviewing the soils data in relation to the layout of the proposed lots, the municipal Planning Department may require the applicant to present the results of the preliminary soil suitability analyses conducted on a 10% to 15% sample of the proposed lots as required in Section 3.1.

8.4 Conservation Subdivision Plan

The conservation subdivision plan shall contain the following information:

A. The proposed arrangement, size and number of lots within the subdivision.

B. The proposed street layout within the subdivision, including road and right-of-way widths, and connection to existing streets.

C. The location, type, and area of the open space proposed in the subdivision, including open space to be preserved as part of large Estate lots or conservancy lots, at least ten acres in area :

- In a separate lot or lots under the ownership of a condominium association.

- As part of individually owned lots through a conservation easement applicable to multiple lots.

- In a separate lot or lots through dedication for public use, such as a park site, to a unit of local government, provincial government or a private land conservancy.

D. The location of proposed water supply and sewage facilities, including:

- Well sites for individual or community water systems.

- Septic tanks and individual or shared drainfields (located either on-lot or off-lot in common areas), or package treatment facilities as approved

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About the Author

Randall Arendt is a land-use planner, site designer, author, lecturer, and an advocate of “conservation planning”. He received his B.A. degree from Wesleyan University (magna cum laude and Phi Beta Kappa) and his M.Phil. degree in Urban Design and Regional Planning from the University of Edinburgh, Scotland, where he was a St. Andrew’s Scholar.

He is the founder and president of Greener Prospects, a national consulting practice focusing on conservation planning and design. He also serves as the Senior Conservation Advisor at the Natural Lands Trust in Media, Pennsylvania, and is the former Director of Planning and Research at the Center for Rural Massachusetts, University of Massachusetts at Amherst, where he taught in the graduate program of the Department of Landscape Architecture and Regional Planning as an Adjunct Professor

In 2003 he was elected a Fellow of the Royal Town Planning Institute in London, and in 2004 he was elected as an Honorary Member of the American Society of Landscape Architects. In 2005 the American Institute of Architects gave him its Award for Collaborative Achievement. In 2008 he received an Honorary Degree in Landscape Planning and Design from the Conway School of Landscape Design, in Conway, Massachusetts.

More information can be found at www.greenerprospects.com.

Email at rgarendt@comcast.net.