latitude, provides abundant sunshine and little wind. Spring is an unpredictable and widely varied season, often referred to as 'mud season', as May and June, which account for most of the region's annual rainfall, immediately follow the spring snowmelt runoff. Summers are typically very dry, and pleasantly warm with cool nights; for this season a well-designed building with adequate natural ventilation need not have air conditioning. Fall is also often temperate, although the early onset of winter is not uncommon. Intelligent building design can readily use the natural climatic cycle to great advantage.

Densification potential

Modest densification measures can go a long way towards maintaining the essential character of the community as it grows. The largest city in Montana, Billings, currently has slightly over 100,000 people spread over a very large land area, and the entire state has less than 900,000 people (Epple, 2001). Bozeman and its environs could have absorbed over 200,000 people over the past 40 years with minimal physical impact if the measures recommended in this study had been in place. The resulting scale and physical character of new development would have resembled the much-loved historic district, the city limits could have remained exactly the same as they are today, and no further extension of roads or utilities would have been necessary. It is obviously too late to fully develop the Bozeman area to these target densities, but it is clear that a population of 100,000 could still be comfortably accommodated by establishing growth policies favoring infill development, mixed-use prototypes, adaptive re-use and densification of existing properties, with specific incentives for denser development within the existing city limits. The surrounding valley, foothills and mountainsides which are either undeveloped land, national forest or farmland could be reserved for watershed and aquifer recharge, sustainable agriculture and timber production, viewshed, recreational uses and limited development compatible with those uses.

'Ranchettes' and large plot development: alternatives

Many Montana ranches have been divided into 20 acre plots as a result of a well-intentioned but ill-advised state law initially intended to control the proliferation of rural subdivisions. These tiny 'ranchettes' chop up the expansive Montana landscape into a fenced grid of plots, which ignore topography,

ecology and viewshed. New developments closer to town tend to subdivide former valley and foothill ranches into large lots, usually 2–5 acres in size (0.8–2 hectares), which are too big to mow and too small to plough. The area immediately surrounding Bozeman has its share of these wasteful and ecologically disastrous developments.

This study recommends two alternative means of developing the urban periphery and existing highway corridors without continuing to devastate the physical landscape and the ecology. The first is a high-density prototype, which might resemble a large resort ranch, providing up to 80 individual condominium housing units of varying size and cost, on 160 acres of land, achieving the typical large plot subdivision density of 1 unit per 2 acres. Residents would share stables, garages, corrals and other community buildings, which could easily be designed to occupy less than 10% of the total land area, with roads, corrals and garden areas taking up no more than another 10%, thus leaving approximately 130 acres in open range and/or recreational preserve.

A second lower-density prototype would cluster up to eight totally private single-family units, with shared stables and corrals sited sensitively on 160 acres of land, achieving the typical 'ranchette' density of 1 unit per 20 acres, but leaving over 90% of the site in open space. Both of these proposals cluster the buildings compactly on the landscape, offering a far more intelligent approach to ecological/environmental concerns, a protected viewshed, shared resident access to and use of the entire common land area, efficient road and utility maintenance, and a presence in the landscape recalling the traditional ranch clusters which dot the larger Montana landscape.

Single-family development: alternatives

Historical precedents and existing conditions

This next group of low-density prototypes was designed to infill a typical Bozeman city block, or to create new blocks of approximately the same size. The proposals provide alternatives to existing historic typologies, which develop greater densities without a negative impact on neighbourhood scale or character. The typical single-family residential block in the historic district and other older neighbourhoods in Bozeman includes 10 or 12 homes fronting on the original railroad town street grid, each backed up to a mid-block