

Preamble

Architecture students from UNC Charlotte took a deliberately different approach from their Clemson colleagues. Knowing that the Clemson groups were emphasizing landscape conservation and limiting development, UNC Charlotte teams targeted a much more market-oriented approach, exploring the substantial development potential of the site while remaining true to the project goals of environmental and social sustainability.

Three alternative master plans were produced at three levels of development intensity – high, medium and low. The lowest intensity plan develops only 28% of the site, leaving the remainder undisturbed, limiting building to the northern fringe of the property, where the land can be relatively easily developed. However, to attain realistic development economics, this compact proposal is designed at medium to high densities within the developed area, utilizing the minimum possible infrastructure of residential streets.

The highest intensity solution develops a much greater proportion of the property, 75%, while protecting key environmental and cultural sites. In some instances these environmental features are manipulated to maximize their development potential, but always in accordance with the Development Guidelines specified in Volume II of this report for protecting water quality and sustaining the environment.

The medium intensity master plan strikes a balance between these two poles and in public feedback sessions received the most appreciation of the three schemes. However, it suffers from high street infrastructure costs on account of the modest amount of development lining the streets. The high intensity solution, by comparison, attains a much higher development return on similar infrastructure expenditure.

All three master plans dealt with a number of key technical issues. These may be summarized as follows:

- Limited street frontage
- Difficulties with access
- Relationship to adjacent residential area
- Relationship to future thoroughfares and a new Catawba River bridge
- Maximizing the retail opportunities provided by the freeway interchange
- Planning for future transit opportunities.
- Maximizing integration of sustainable technologies



Low Intensity
Masterplan-
28% of site
developed.



High Intensity
Masterplan-
75% of site
developed.

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Limited Street Frontage

The short distance (approximately 400 ft.) of usable street frontage along Sutton Road causes severe problems for site entry in general, and for convenience retail opportunities sited there to capitalize on the freeway interchange traffic in particular. Specifically, there is little room for traffic from the interchange wanting to make a left turn into the site. The length of stacking lanes is limited, and the condition is further complicated by the fact that the proposed convenience retail development by others on the north side of Sutton Road already has an entrance road only approximately 200 feet from the interchange. This short distance is acceptable for right-hand turns but not for left hand turns across traffic. Left hand turns should be a minimum of 400 feet from the off-ramps, which pushes the site entrance road to the far western edge of the Sutton Road frontage of the Foundation's property.

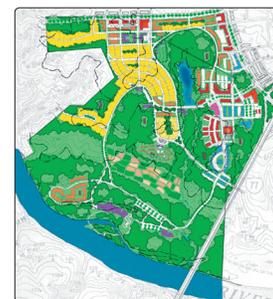
This offset junction with the access road to the future commercial development on the north side of Sutton Road at the interchange causes problems of vehicle movement that can only be resolved through detailed engineering design. It is possible that a straightforward crossroads might be possible, with the entrance into the Foundation property directly across from the access road to the northern property, but only if Sutton Road can be widened to carry two parallel left turn lanes over the shorter distance from the interchange. The Foundation would have to surrender a strip of land along its road frontage for this non-standard design to be considered. The precise dimensions of this junction and any land ceded to the local authority for road widening would necessarily be the subjects of detailed engineering design.

Difficulties With Access

A development of this magnitude requires two clear means of vehicular entrance and egress, separated from each other for ease of circulation and emergency service access. The existing semi-paved narrow residential street serving the small subdivision immediately to the north of the property and south of Sutton Road cannot be used for this purpose. Although currently used as occasional access to the site, it is clearly inadequate for heavy traffic volumes, and its use as a main access for a large development is forbidden under the York County subdivision ordinance. This lack of a second access point raises considerable site planning difficulties.

The Low Intensity master plan uses the alignment of this residential street, but upgrades and widens it to the required standards. This would mean the purchase of land from several property owners along that street, in some cases whole properties, at considerable expense and hostility from those individuals involved. This is, however, given the compact nature of this plan, a relatively self-sufficient solution that does not require any major intervention by local government (in the form of new public thoroughfares) or by other major property owners.

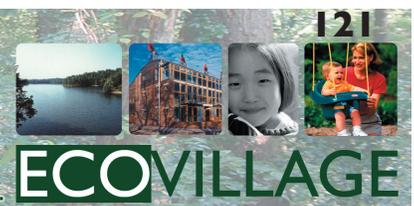
The Medium Intensity master plan takes a more radical approach that solves both the problems of access and limited street frontage on Sutton Road. It envisages the outright purchase of all properties between the northern site boundary and Sutton Road, incorporating this extra land into the overall development pattern. Property owners of these purchased single-family homes would be given the option of rebuilding on select single-family lots within the early phases of the new development. In conjunction with new



Medium
Intensity
Masterplan-
39% of site
developed.

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access points onto Sutton Road, this plan also suggests the alignment of the proposed new thoroughfare leading to a new bridge over the Catawba River along the northwestern edge of the site, providing a whole new set of access possibilities, shared with the adjacent development tract to the north west. This would be achieved at no cost to the Foundation other than a property easement for the new highway.

The High Intensity master plan indicates a third solution, namely an alternative alignment of the new thoroughfare from the new river bridge that involves the compulsory purchase by the local authority of many single-family properties in the subdivision in question. This theoretical possibility resolves the access issues with no cost to the Foundation.

The weakness of the scenarios outlined in the Medium and High Intensity master plans is that the solution to the problem of creating a second site access is only resolved by the action of outside agencies, which may be operating on a timetable unrelated to the needs of the Foundation. In reality, this difficult access issue is most likely to be resolved by collaboration on development plans between the Foundation and adjacent development interests to create new connections with Sutton Road along its length further to the northwest as part of an interconnected street network on adjoining properties.

Relationship to Adjacent Residential Area

Areas along the northern edge of the site provides some of the most easily developable land within the property, but it also directly abuts existing low-density residential development of variable quality. Development of the Foundation property will dramatically affect these existing homeowners as described above. In any development scenario, it is important that these property owners be consulted and involved in the development plan opportunities to the extent practicable. This would minimize friction and allow property owners to plan their future courses of action – hopefully in collaboration with the development opportunities of the Foundation and other developers on adjoining land.

Relationship to Future Thoroughfares and a New Catawba River Bridge

Two variations for the alignment of the proposed new thoroughfare leading to the proposed new bridge across the Catawba River are indicated on the Medium and High Intensity master plans. The Low Intensity proposal assumes an alignment further to the northwest at some distance from the Foundation property. The development opportunities and ease of access to the site that are afforded by the new highway suggest that it will be to the Foundation's longer term advantage to lobby for the new road to run along the northwestern boundary of the property as indicated in two of the three plans.

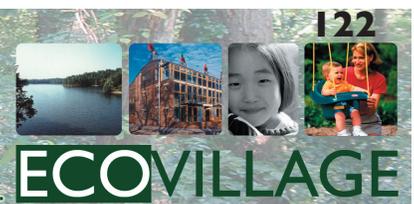
Maximizing the Retail Opportunities Provided by the Freeway Interchange

There are natural development opportunities for convenience retail that accrue to the part of the site in the northeastern corner adjacent to the freeway interchange. This retail experience could be expanded to serve also as an introductory experience for the museum and the site in general.

There is an important distinction between convenience retail of the type associated with freeway interchanges and more "destination-oriented" retail that could occur on adjacent parts of the project site. This destination retail is likely to take its place as part of a mixed-use "urban village" that also involves offices and residential

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development. This kind of development can most easily create the appropriate ambience for this type of ‘lifestyle’ retail. Appropriate retailers might be bookstores, nature and environment themed outlets such as The Nature Company, health food supermarkets and restaurants featuring organic produce, along with the usual mix of coffee shops and wine bars. Variations on this theme are illustrated in each master plan, along with versions of a retail fast food court for freeway travelers combined with a visitors’ center for the museum, modeled on a “motorway services center” in Oxford, England (illustrated earlier in this volume).

Planning for Future Transit Opportunities

Any sustainable development must incorporate a coherent transit policy designed to provide convenient alternatives to automobile use. The geography of the Fort Mill area means that light rail connections to the site are not likely any time in the foreseeable future, although one master plan indicates the potential for future rail transit to depart from the anticipated route along old freight tracks a mile or more to the east and instead be incorporated in the planning of the new Catawba River bridge and associated thoroughfare.



A more likely scenario involves the development of Bus Rapid Transit serving the Fort Mill / Rock Hill area. This technology would allow direct links with the project site under a number of different route configurations, and potential connections to future rail or express bus service to Charlotte. The most likely focal point on the site for this kind of transit is in the mixed-use urban village development located, in its various forms in the northeastern quadrant of each development plan. This transit hub could also serve as the boarding point for shuttle buses to the museum to reduce car trips through the site.

Design Guidelines

All three master plans were developed in conjunction with the Development Guidelines prepared by UNC Charlotte students and comprising Volume II of this report. These Guidelines aim to facilitate high quality development of the land without compromising its ecosystems and to promote environmental and social sustainability. This is achieved in part by changing the normal design conventions for street and storm water drainage infrastructure encouraging on-site infiltration and cleansing rather than off-site discharge of pollutants into natural ecosystems. A similar philosophy applies to waste “grey” and “black” water treatment systems such as the “living machine” described earlier in this document.

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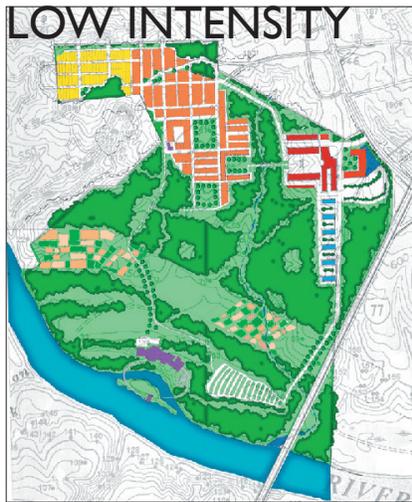
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Comparison of Scenarios, Facts & Figures



DEVELOPMENT

Percent of Site Developed: 28 %

INFRASTRUCTURE

Major Streets: 9,350 ft
 Neighborhood Streets: 11,700 ft
 Alleys: 5,700 ft

Estimated Cost Infrastructure:
 \$ 6,745,056

BUILDING

Residential

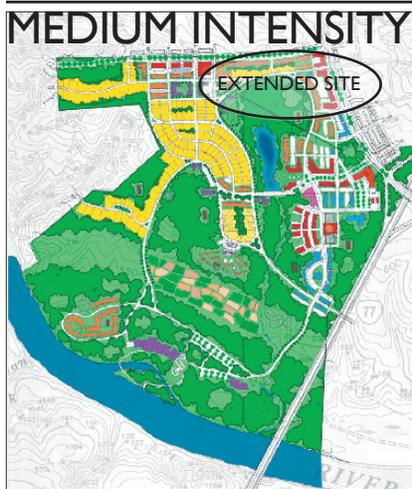
Gross Density: 3.43 units/acre
 Net Density: 22.83 units/acre

Total: 1,371 units

Commercial

Retail: 127,181 sq ft
 Office: 875,822 sq ft

Estimated Tax Value:
 \$ 139,709,590



DEVELOPMENT SITE---EXTENDED SITE

Percent of Site Developed: 37%-----39 %

INFRASTRUCTURE

Major Streets: 1,600 ft-----1,600 ft
 Neighborhood Streets: 36,800 ft-----41,300 ft
 Alleys: 4,300 ft-----4,300 ft

Estimated Cost Infrastructure:
 \$ 11,859,768 - - - \$ 13,176,504

BUILDING SITE---EXTENDED SITE

Residential

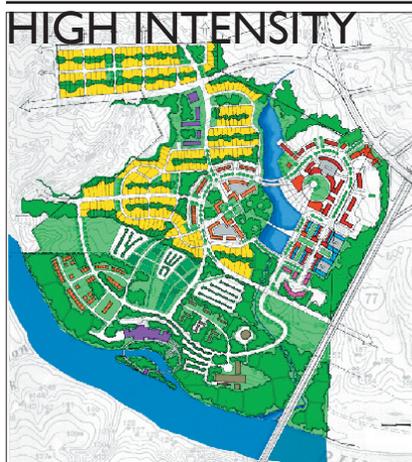
Gross Density: 1.81-----2.07 units/acre
 Net Density: 9.03-----9.54 units/acre

Total: 722-----897 units

Commercial

Retail: 248,900-----248,900 sq ft
 Office: 663,000-----784,500 sq ft
 Hotel: 181-----181 rooms

Estimated Tax Value:
 \$ 118,514,000 - - - \$ 139,962,000



DEVELOPMENT

Percent of Site Developed: 75 %

INFRASTRUCTURE

Major Streets: 20,400 ft
 Neighborhood Streets: 22,500 ft
 Alleys: 0 ft

Estimated Cost Infrastructure:
 \$ 12,875,209

BUILDING

Residential

Gross Density: 2.96 units/acre
 Net Density: 9.86 units/acre

Total: 1,183 units

Commercial

Retail: 968,000 sq ft
 Office/Research: 1,170,000 sq ft
 Hotel: 497 rooms

Estimated Tax Value:
 \$ 229,557,000

Note: These are infrastructure costs according to traditional construction methods
 Note: These are typical post development tax values and do not include land

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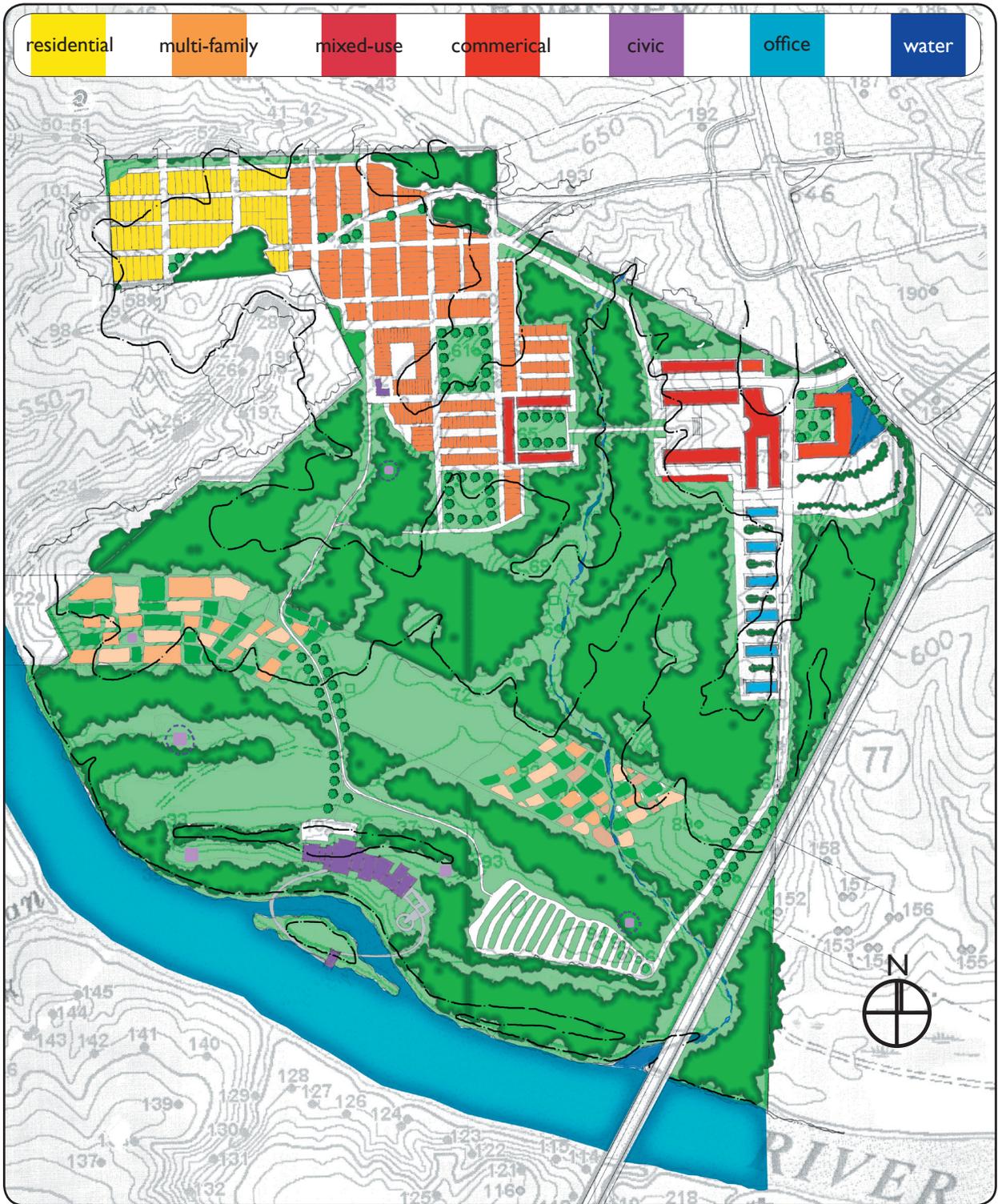


Low Intensity Master Plan

green strategies

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green buildings



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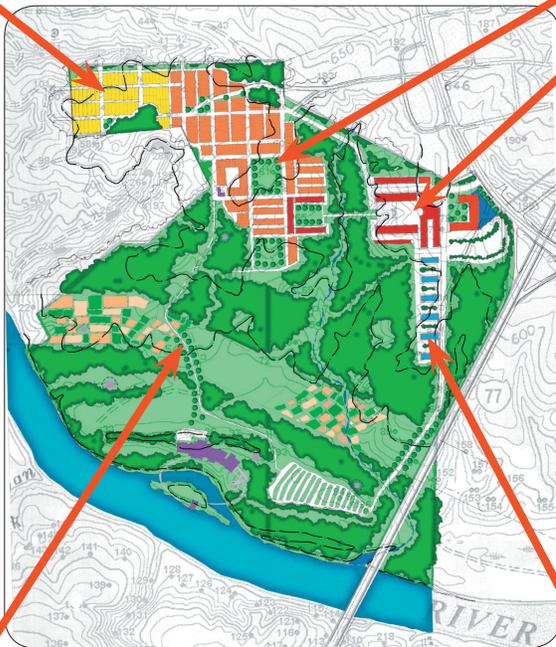
green buildings



Townhomes



Apartments



Pedestrian Market Square



Community Use of Power Easement



Ecological Office Building

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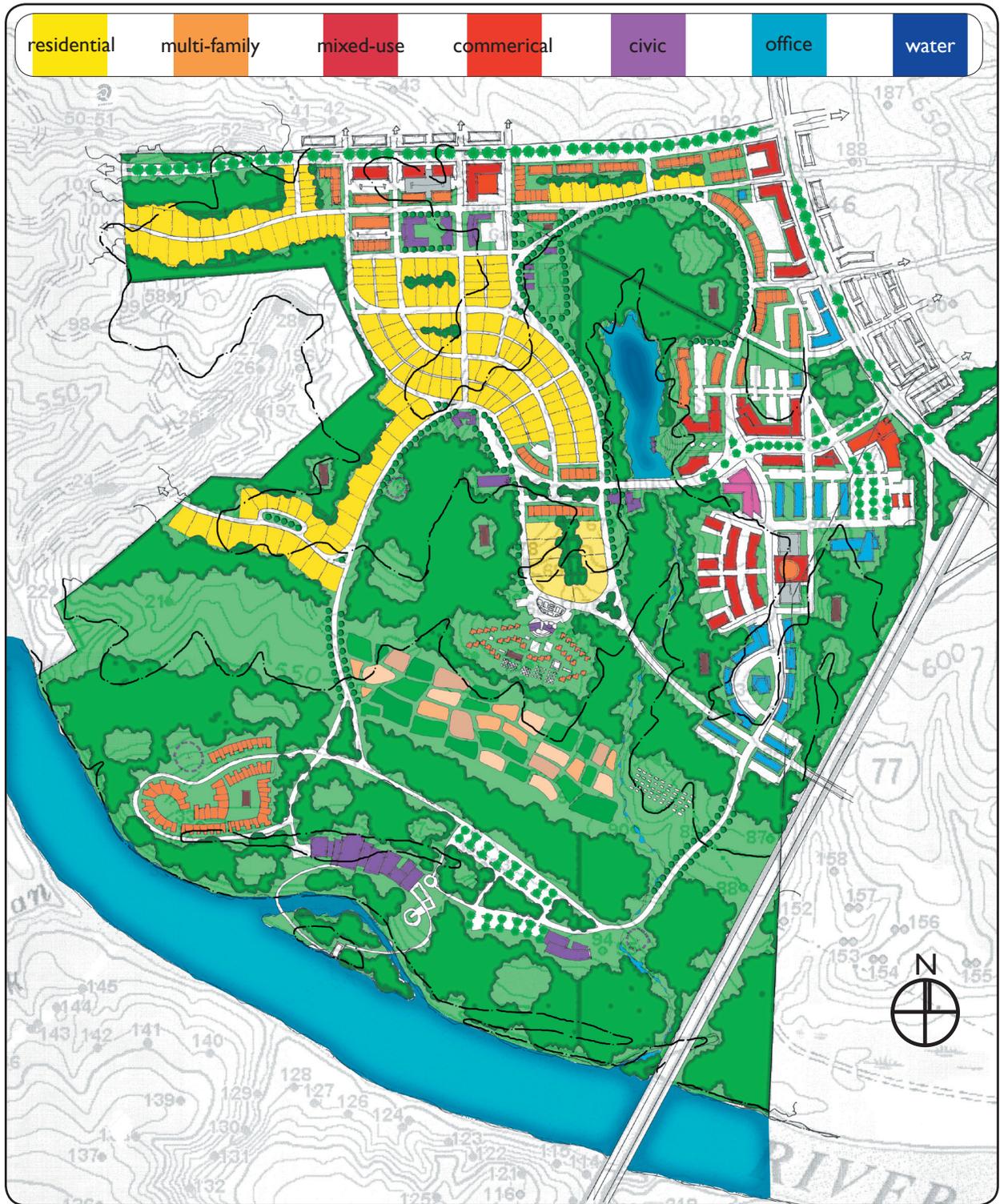
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Medium Intensity Master Plan

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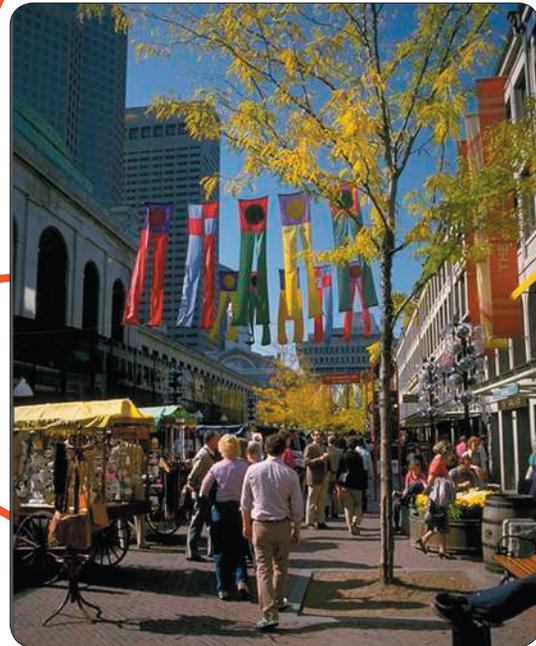
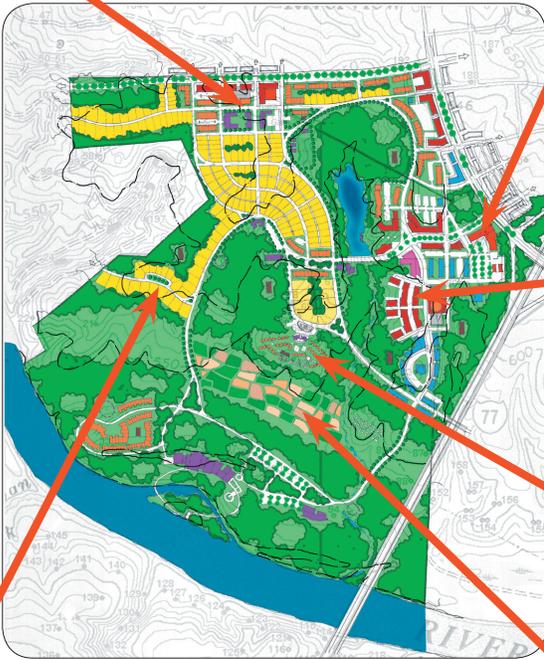
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Mixed-Use Center



Welcome Center and Freeway Services



Pedestrian Street Market



Ecological Single-Family House



Organic Community Gardens



Cohousing

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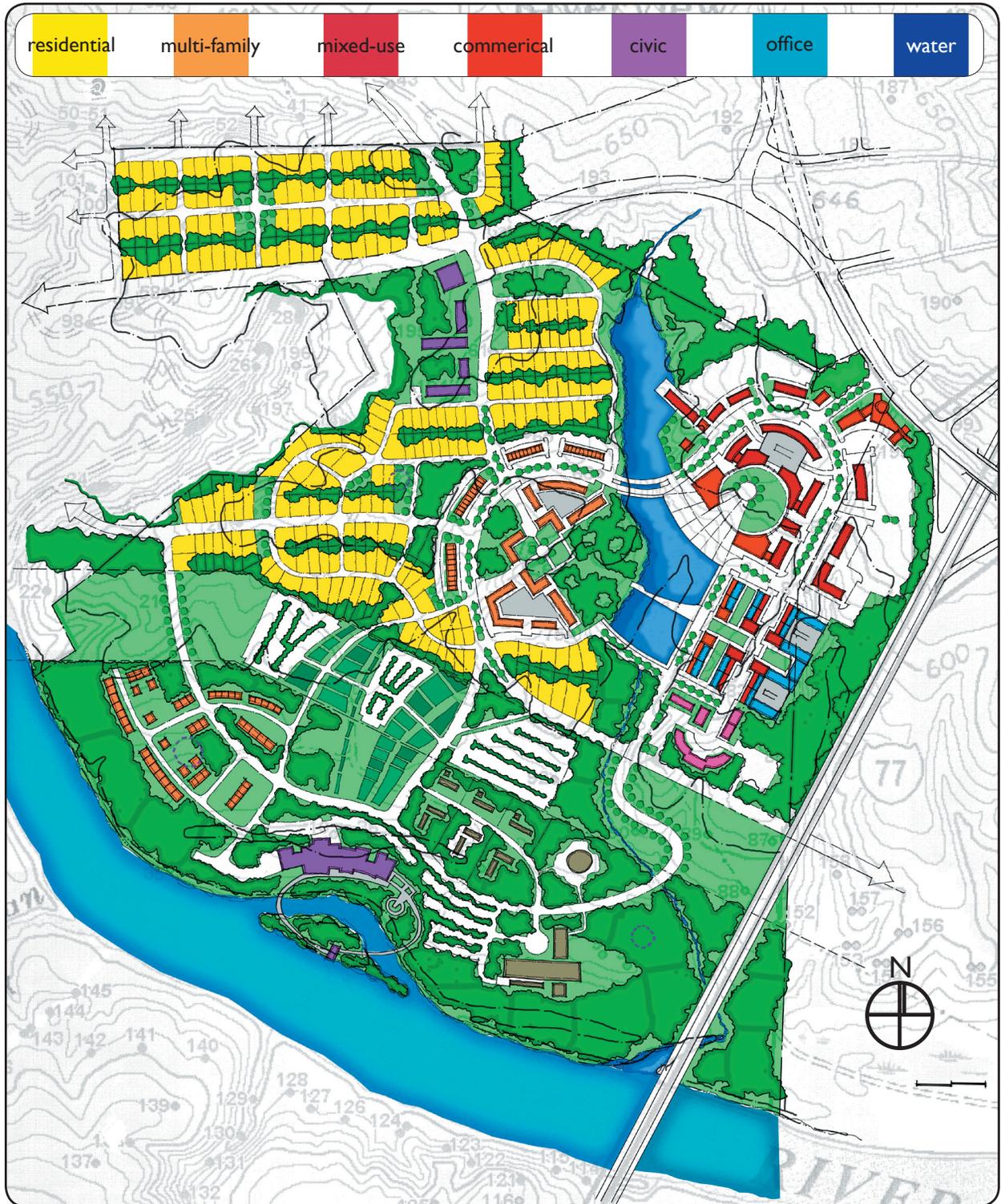
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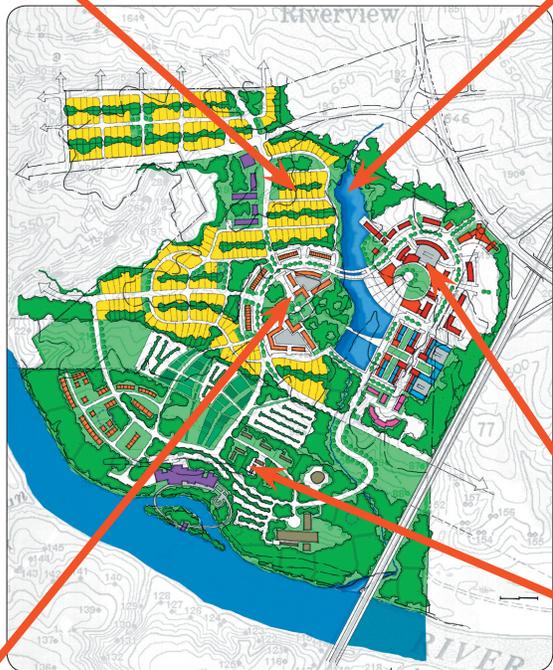
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Medium Density Single-Family Housing



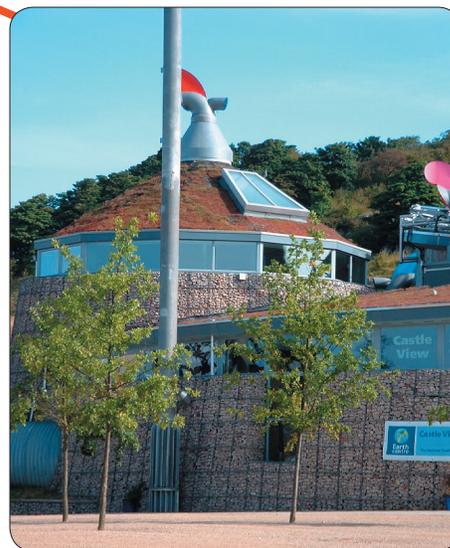
Lakeshore Housing



Mixed-Use Urban Village



High Density Apartments



Ecological Conference Center

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