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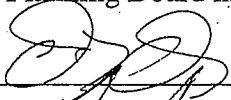
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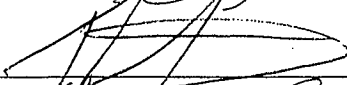
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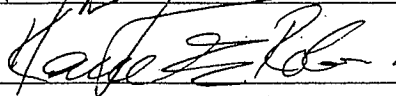
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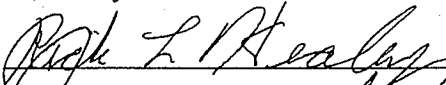
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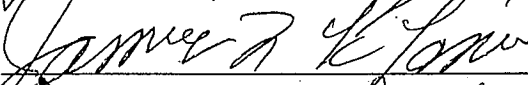
In accordance with New Hampshire RSA 674:4, Master Plan Adoption and Amendment, and New Hampshire RSA 675:6, Method of Adoption, the Rochester Planning Board, having held a duly authorized public hearing on the Rochester Land Use Master Plan Chapter on August 20, 2001 hereby certifies that the Land Use Master Plan Chapter was duly adopted by a majority of the Planning Board members on November 19, 2001.

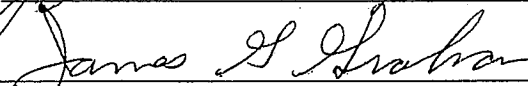
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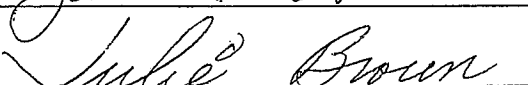
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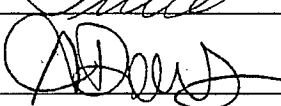
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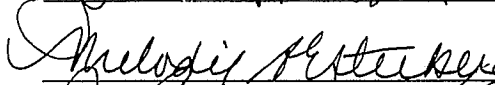
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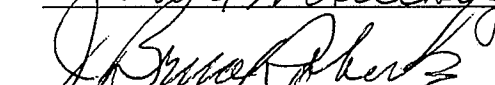
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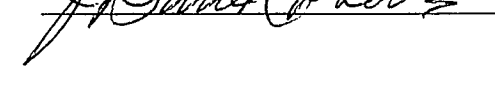


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PREFACE

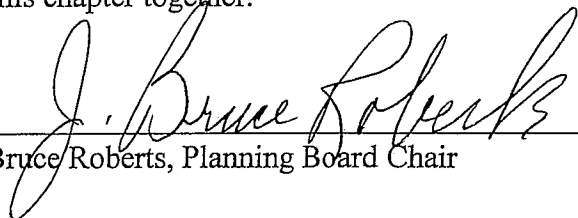
The development of the Land Use Chapter of the Master Plan has been a challenging, but rewarding process. The final product is an excellent document, one which represents a consensus among the numerous stakeholders in the City. This chapter is by no means a boilerplate document; it was specially tailored to Rochester's unique circumstances and we believe it is an innovative and state of the art plan.

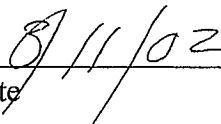
A central goal of the plan is to address the problem of sprawl by recognizing three basic development approaches and accommodating those approaches where, and as appropriate. In core, or "urban", areas we seek to protect existing downtowns and neighborhoods and to encourage the creation of new "traditional type" neighborhoods, that is neighborhoods which are well designed, walkable, and mixed use, with a high level of infrastructure and services.

In the outlying, or "rural" areas, we hope to preserve natural open space consistent with protecting full development rights by fostering "conservation subdivisions". This pattern of development (an improved version of what we used to call clustering), allows for the same density but encourages protecting the portions of the land with the highest ecological values.

A middle tier, or "suburban" area, will be designated to support "the American dream", i.e. the development of new medium and low density single family homes for those who seek this type of housing.

Beyond that, I believe there are many recommended strategies contained in this plan which will significantly enhance the quality of development, the effectiveness of the review process, and the character of our fine city. My thanks for the fine work of the Planning Board, City Council, Land Use Committee, Planning and Development Department, and Appledore Engineering, in putting this chapter together.


Bruce Roberts, Planning Board Chair


date

INTRODUCTION

This section of the Master Plan is an update to the Land Use chapter of the 1982 Master Plan (the last Master Plan developed in 1992 did not have a Land Use chapter). The purpose is to foster harmonious development patterns which will promote health, safety, order, convenience, beauty, livability, property values and the general welfare, consistent with state of the art planning principles and techniques. This chapter assesses current land use and land use regulations in the City of Rochester, evaluates goals and concerns of the community related to land use, formulates a vision for the future development of the city, and offers recommendations for realizing this vision. This document was prepared in accordance with NH RSA 674:2-4

Community Forums

On September 30, 1999 the City sponsored a kickoff Community Forum for the general master plan update. This meeting was followed by a Community Forum focused on Land Use on October 28, 1999. Participants in the Forum were divided into five groups to discuss broad topics identified in the first forum. These included Zoning, Open Space, Neighborhoods, Community Character, and Commercial Design. For more information see *Appendix 1 - Land Use Forum Results*.

Community Survey

The Planning and Development Department prepared a Community Survey on the full range of Master Plan topics - Land Use, Transportation, Natural and Cultural Resources, Economic and Community Development, and City Services. Approximately 1,125 surveys were mailed to specific people¹ and 453 were returned/submitted. See *Appendix 2 - Master Plan Survey - Land Use Results*.

Land Use Committee

The Planning Board established a Land Use Master Plan Committee to work with Michael Behrendt, Chief of Planning for the City's Planning Department and Jack Mettee, a consultant with Appledore Engineering, to develop a draft Land Use Plan. The Committee unanimously endorsed the draft document on February 14, 2001. The plan was then presented to the public at two Community Workshops held at the Rochester Public Library on February 27 and March 1 to solicit public input. Relatively few substantive public comments were received and then the Committee once again endorsed the draft plan at its final meeting on March 7.

GOALS AND OBJECTIVES

Goal 1: Provide for a balanced and sustainable pattern of land use that meets the many needs of the City's stakeholders.

Objective 1: Direct growth into areas of the City that will minimize environmental impact.

Objective 2: Direct growth in a manner that is consistent with the capacity of the City's municipal services.

Objective 3: Promote a variety of residential opportunities throughout the City.

Objective 4: Provide opportunities for business growth, particularly within existing commercial and industrial areas, but also beyond current areas, where appropriate.

Objective 5: Buffer incompatible uses from one another.

Objective 6: Minimize costs for expansion of infrastructure.

Goal 2: Enhance the quality of development throughout the City

Objective 1: Improve the quality of commercial, institutional, and multifamily development in terms of landscaping, parking, buffering, signage, lighting, and other site design issues.

Objective 2: Encourage architectural design that is compatible with the traditional character of the City.

Objective 3: Foster attractive development at key gateway locations into the city.

Objective 4: Develop regulations that mitigate adverse impacts such as noise, glare, odors, vibration, and undue traffic generation.

Objective 5: Impose only very selective restrictions on the design of single family homes, i.e. only those which will substantially contribute to the public interest while imposing minimal burdens.

Goal 3: Preserve ecological resources and the rural and scenic character of Rochester

Objective 1: Preserve important cultural features such as historic structures, stone walls, significant archaeological sites, historic graveyards, country

roads, fields and meadows, and other valuable open space areas.

Objective 2: Preserve fragile natural resources including ponds, streams and rivers, wetlands, flood plains, steep slopes and rock outcrops, prime agricultural lands, valuable woodlands, unusual stands of trees, individual specimen trees, and wildlife habitats.

Objective 3: Protect the quality of Rochester's existing and potential drinking water supplies through aggressive management of the use of land and activities that could impair these resources.

Objective 4: Preserve scenic areas and "viewsapes".

Objective 5: Preserve Rochester's agricultural economy and land areas through appropriate land use regulations recognizing that farming is a special use that merits sensitive treatment.

Objective 6: Where feasible, preserve large, contiguous tracts of undeveloped land

Goal 4: Protect and enhance the character of Rochester's downtowns, village centers, and neighborhoods.

Objective 1: Strengthen the vitality of Rochester's three traditional downtowns.

Objective 2: Encourage infill, redevelopment, and incremental expansion of the downtown with commercial and mixed uses in a manner compatible with the traditional downtowns.

Objective 3: Promote time tested, traditional planning approaches, where appropriate, to enhance the quality of both existing and new neighborhoods.

Objective 4: Promote diverse, attractive, pedestrian oriented neighborhoods.

Objective 5: Assertively manage the automobile in terms of the design of roads, sites, buildings, and parking areas, as appropriate, to minimize adverse impacts upon the character of the built environment.

Objective 6: Protect residential areas from the impacts of incompatible uses.

Goal 5: Promote positive planning principles and techniques

Objective 1: Encourage compact development patterns in proximity to, and surrounding, appropriate centers.

- Objective 2: Encourage nodal commercial patterns rather than strip development.
- Objective 3: Promote an overall pattern of development that is orderly and contains a discernible, meaningful structure.
- Objective 4: Where appropriate, link adjoining developments with roads, paths, and utilities.
- Objective 5: Encourage development that is responsive to the broad public interest, well designed, and harmonious with its surroundings.

Goal 6: Craft ordinances, regulations, policies, and procedures that promote clarity, efficiency, economic value, responsibility, and equity in the development process.

- Objective 1: Recognize and respect property rights of land and business owners.
- Objective 2: Support and enhance property values
- Objective 3: Allow for optimal flexibility for developers who seek innovative approaches in a responsible manner.
- Objective 4: Develop regulations that are clear, concise, detailed, and comprehensive.

BACKGROUND INFORMATION

An understanding of the City's existing land uses, current zoning, growth trends, natural resources, water resources, and infrastructure is useful to determine the opportunities for and constraints to development.

The City is developing the Master Plan sequentially, a chapter at a time, rather than simultaneously. Therefore, some background analysis within this chapter of other elements that would ordinarily be addressed in separate chapters - natural resources and infrastructure - is in order. The City elected to craft two chapters in this first year of the Master Plan, Land Use and Transportation. There is a strong connection between Land Use and Transportation so an inspection of the Transportation chapter will also help illuminate the Land Use issues.

Land use is a broad topic. To some extent every aspect of City Planning pertains to land use. The thrust of this chapter is issues that are appropriately addressed through *land use regulation* (as well as some measures to better manage the private development of land). Therefore, elements closely related to the goals of this chapter will be addressed in other chapters. For example, a recommended action by the City would likely be to acquire certain valuable properties or development easements to serve the goal of conserving open space. Since that particular action is not regulatory in nature it will be addressed in a subsequent chapter on Natural and Cultural Resources.

Existing Land Use

Historically, the City developed around the central downtown and the two villages of East Rochester and Gonic, each of which is located close to the Cocheco or Salmon Falls River. The City grew along major corridors such as routes 125, 108, 11, and 202 which extend out of the core in a semi-radial fashion. Beyond the core areas the City consists of a number of traditional, tightly woven residential neighborhoods ringing the core; suburban subdivisions and townhouse and apartment complexes; commercial corridors along the state routes; industrial parks; and rural areas that are marked by agriculture, open fields, and forests. Large tracts of rural land still exist to northwest around Meaderboro Road, the southeast around Pickering Road, and the southwest round Salmon Falls Road. See *Map 1 - Land Use (Existing)*.

Rochester consists of 29,045 acres or about 45.4 square miles. Over the past 50 years the amount of developed land has increased significantly. A study conducted by the New Hampshire Agricultural Experiment Station at UNH in 1978² determined that the developed area in Rochester increased from 1,461 acres in 1953 to 4,588 acres in 1974, a 21% increase. The 1982 Master Plan described Rochester as being densely developed relative to the rest of New Hampshire, although the urban or built up area at that time accounted for only 5,600 acres or 20% of the City's total area. According to the land use mapping program for the region in 1992 conducted by the Strafford Regional Planning Commission (SRPC), approximately 7,300 acres of Rochester had been "built-up". This figure represents about 25% of Rochester's area (including water), a 30 % increase in ten years.

See *Map 1 - Land Use (Existing)* which is based on the interpretation of 1992 aerial photography by the SRPC. These land use categories are based on a land use system from the US Geological Survey that has been adopted by the New Hampshire statewide geographic data base system (GRANIT). *Table 1 - Land Use Acreages* delineates the acreage of the various land uses³. This table is based on the City Assessor's land use classifications for each lot of land in the City. It differs from GRANIT classifications which are based upon aerial photographs.

Residential

Residential development encompasses the largest amount of developed land in Rochester. In 1990 there were 11,076 housing units in the City. By 1998 there were an additional 891 units or 11,967 in total, representing an increase of approximately 8%⁴.

Single family

Single family development has steadily increased since 1980. By 1990 there were 5,129 units and by 1998 there were 5,457, an increase of 328. Single family uses tend to be concentrated on the edges of the urban core in locations such as the Franklin Street-Portland Street corridor and the Washington Street-Walnut Street-North Main Street corridor.

Mobile homes

Of the increase from 1990 to 1998 over half of the units (463) were mobile homes. This continued a trend that was noted in the 1982 Master Plan which indicated that between 1970 and 1980 over 600 mobile homes were added to the housing stock. Most of the mobile homes are located in mobile home parks that are typically located on the edges of the more highly developed areas of the City.

The remaining residential areas tend to be scattered throughout the City adjacent to the major arterial roadways. There is a significant concentration of residential development south of the urban core between Lowell Street and Old Dover Road north of Tebbetts Road.

Commercial

Most of Rochester's commercial development is located in the core areas or along arterials such as Route 125, North Main Street, and Route 11. The Lilac Mall with over 200,000 square feet of retail space is located on Wakefield Street. Since Wal-Mart, with approximately 125,000 square feet, opened on Route 11 development activity on that corridor has grown.

Table 1 - Land Use Acreages

Land Use	Acreage	Percent
Single family	9,781	36.2%
Multi-family	2,057	7.6%
Mobile home parks	1,033	3.8%
Retail/commercial	531	2.0%
Office	120	0.4%
Industrial	1,307	4.8%
Institutional	2,197	8.1%
Utilities	480	1.8%
Recreation	475	1.8%
Vacant	<u>9,045</u>	<u>33.5%</u>
Total	27,026	100.0%

Source: City of Rochester GIS Program

Industrial

Most of the industry is located in industrial parks or areas adjacent to arterial roads, particularly the Spaulding Turnpike and Route 125 north and south of the City. The parks/areas include:

Granite State Industrial Park - a 100-acre park located off Route 108 that includes the world headquarters of Prime Tanning, Albany Techniweave, Salmon Falls Precision Fabricators.

Ten Rod Road Industrial Park - a 93-acre site located adjacent to the Spaulding Turnpike at exit 14 that includes the world headquarters of Cabletron.

Hampshire Northcoast Industrial Park—a 24-acre park on the north side of Rochester located off Milton Road that houses Eastern Propane's fuel farm and serves as the staging area for NH Northcoast Railroad.

Allen Street/Mt. Waldo Industrial Park - a new 23-acre site located near the downtown adjacent to the railroad tracks. Presently, the only tenant is Wit-Way Plumbing Supply.

Waste Management

There are 365 acres devoted to a landfill and waste management facility located in the southern corner of Rochester off of Rochester Neck Road. The Turn Key Landfill is operated by Waste Management, Inc. The facility is well managed and has excess capacity for a number of years. The long-term use and management of this property once the landfill has reached capacity is an important issue.

Agriculture

According to the GRANIT system 1,843 acres or 6.3% of the land area is in agricultural use. A number of farms located off rural collector roads such as Salmon Falls Road and Ten Rod Road. There are 32 working farms in the City:

- 12 primarily hay operations,
- 9 vegetable/greenhouse farms,
- 6 livestock farms (beef, pigs, goats),
- 2 horse and crop farms,
- 2 orchards, and
- 1 dairy and crop farm

Transportation

Approximately 600 acres of land in the City is devoted to transportation use. Much of this is composed of major roadways, including the Spaulding Turnpike and its associated interchanges.

Vacant Tracts

The GRANIT system shows 17,357 acres equal to almost 60% of the City's area to be forested. This is nearly double the amount of land shown as vacant according to the Assessor's records. This implies that a good portion of the acreage classified under other uses is actually wooded and undeveloped. For example, this could include passive recreational areas, institutional lands, sections of mobile home parks designated as open space.

There is forested land through much of the City outside the three urban centers. The largest concentrations are situated between major arterial roadways. Furthermore, the GRANIT system has also classified 1,100 acres of land as undeveloped brush. This category frequently includes areas that were in agricultural use in the recent past.

Given the number of large lots in the city there is potential for significant future development. Of the 10 acre lots classified as being developed (single family, multifamily, etc.) it is likely many could be subdivided and further developed.

- There are a total of 543 lots over 10 acres in size (*developed* and *vacant*) = 21,462 acres
- There are 206 vacant lots over 10 acres in size = 7,654 acres
- There are 222 total lots in current use = 5,135 acres

Miscellaneous

These include government and institutional uses, schools, mixed uses, cemeteries, and mining and gravel operations.

Current Zoning

An overview of the current ordinance follows. The purpose of including this section even though a comprehensive rezoning is anticipated is to identify issues, explore land use concerns, point out areas to be sensitive to in drafting a new ordinance, and elucidate why a new one is needed. The City's current Zoning Ordinance includes the zoning districts as follows. See *Table 2 - Current Zoning* (note that the total acreage for the City differs from that given elsewhere as different sources are used for calculating it). See *Map 2 - City of Rochester Zoning Map (Current)*.

These districts are sometimes referred to as "base districts" in contrast to "overlay districts" which prescribe special provisions above and beyond uses, setbacks, lot sizes, etc. The present ordinance also includes the following overlay districts:

Airport Approach;
Regulatory Flood way;
Wetland Conservation;
Aquifer Protection; and
Special Downtown.

Agriculture

This district encompasses the largest land area in the City and resembles a typical New Hampshire rural residential zone. It occupies an outermost ring of the City. Agriculture permits single and two family dwelling units, mobile homes, limited commercial and quasi-industrial uses, and, of course, agriculture. Institutional uses such as a government buildings, cemeteries, and convalescent homes are permitted by special exception. It is the only district that permits cluster subdivisions. Conflicts can occur when agricultural activities - particularly maintenance of livestock - occur in proximity to residential uses.

The minimum lot sizes are 20,000 square feet with water and sewer, 30,000 square feet with water or sewer, and 40,000 square feet (a “builder’s acre”) with neither water nor sewer. These dimensional requirements are not sufficiently differentiated from Residence 1 provisions and fail to protect open space. Much of the development that has occurred is small subdivision of 2, 3, or 4 medium sized lots along collector roads or small cul de sacs located off collector roads with 8 or 9 lots.

Residence 1

This district is the most restrictive (some say “sacrosanct”) in that it permits only single family homes along with home occupations, family day care, farms, schools, and churches. For the most part it occupies a central ring

beyond the core and inside of Agriculture. The minimum lot sizes are 10,000 square feet with water and sewer, 30,000 square feet with water or sewer, and 40,000 square feet with neither water nor sewer. This is the same density as Agriculture except that smaller lots are permitted when both utilities are present.

The district is composed of single family dwellings with a few exceptions/conflicts:

- North Main Street contains some multifamily and commercial uses
- A number of variances have been granted along Rochester Hill Road/Route 108 for medical, office, and health care uses adulterating the single family character. The quality of development along this corridor should remain high as it is considered a scenic road and an important gateway to the City.
- Significant truck traffic moves through the R1 neighborhood on Railroad Avenue to reach an Industry 2 use at the end of the road.

Residence 2

The Residence 2 district allows multifamily uses and encompasses most of the older built up core sections of Rochester. The district includes a mix of housing types including conversions of large older single family houses to multifamily uses and group homes. Low traffic impact commercial uses are scattered throughout the district. The minimum lot sizes are 6,000 square feet with water and sewer, 30,000 square feet with water or sewer, and 40,000 square feet with neither water nor sewer. R2 includes a large tract of undeveloped land on the southwest side Whitehall Road and land along Salmon Falls Road which are beyond the urban core areas generally designated for this type of multifamily district. It is unclear what the rationale was for

Table 2 - Current Zoning

<u>Zone</u>	<u>Acreage</u>	<u>Percent</u>
<i>Agriculture</i>	17,820	60.9%
Residence 1	4,958	17.0%
Residence 2	1,862	6.4%
<i>Total Residential</i>	6,820	23.4%
Business 1	100	0.3%
Business 2	642	2.2%
<i>Total Commercial</i>	742	2.5%
Industry 1	352	1.2%
Industry 2	1,965	6.7%
Industry 3	629	2.2%
Industry 4	689	2.4%
Industry 4A	217	0.7%
<i>Total industrial</i>	3,852	13.2%
<i>Hospital</i>	15	0.7%
Total	29,242	100.0%

Source: City of Rochester GIS Program

zoning these areas R2.

While the intent of R2 was probably to encourage vibrant neighborhoods through mixed use the relatively high density multi-family allowance has created incompatible development. In many cases, multifamily developments have been dropped in the middle of architecturally harmonious, older single and two family areas harming the neighborhood character and streetscape due to poorly designed, overscaled, blocky buildings with a large expanse of parking in the front. In some such cases abutters request a stockade fence be built on both sides of the property to screen it from their single family residences. This is a sign that something in the zoning is awry. Well considered zoning and development will encourage more seamless blending of adjacent buildings so that such screening is usually not necessary. (See section on *Traditional Neighborhood Development* about the preferred strategy to accomplish mixed use.)

Business 1

The Business 1 district encompasses downtown Rochester, downtown Gonic and an area along Washington Street. It appears that this district was originally intended to be used for core downtown areas and Business 2 for highway commercial based upon the Zoning Map. While Business 1 is somewhat more restrictive than Business 2 in terms of permitted uses there is not very much difference, i.e. it does not appear to be tailored to the downtown.

There are significant conflicts between the automobile oriented development on the southeasterly side of Washington Street with the single family neighborhood on the northwesterly side of the street. It is uncertain why downtown and Gonic were zoned Business 1 but the center of East Rochester was zoned Business 2. All three areas should have a similar designation.

Business 2

Whether intended or not the B 2 district is a highway oriented zone generally laid out in corridors or "strips" along Route 125 south and north of the downtown, the southerly section of Farmington Road, Highland Street in East Rochester, and South Main Street. A large development tract known as "the Rock Pile" in the southwesterly quadrant of Exit 13 and downtown East Rochester are also zoned B2. Generally, the zoning designation has not promoted harmonious development particularly on Route 125, South Main Street around the Common, and in downtown East Rochester.

Industry 1

The Industry 1 district is intended to be a less intensive industrial zone. Two areas are designated I1: one parcel is a mile long strip 250 feet north of Eastern Avenue; a second is approximately 1,500 feet from NH Route 11 and behind the Wal Mart site. Both of these tracts are largely landlocked. The City seeks to develop a loop road (see *Transportation Plan*) to provide access to the land located off Route 11. A residential designation would appear to be preferable for the strip on the north side of Eastern Avenue because most would be accessed from Eastern Avenue, most are too small for industrial use, and residences on Eastern Avenue could be adversely impacted by industrial use.

Industry 2

The Industry 2 district encompasses numerous high quality industrial parks for some of Rochester's most prominent industries including the Granite State Business Park, Ten Rod Road Industrial Park, Nadeau Drive, Northcoast Drive, Jarvis Avenue, and the Allen Street Industrial Park. Most of the industrial land in the City is zoned I2.

The I1 and I2 districts are identical except that I2 allows junkyards and gravel plants by special exception whereas I1 does not. The I2 district does not require any front or side setbacks. The rationale for this is unclear. Certainly, industrial districts - except perhaps older mill buildings in core areas - should provide adequate front, side, and rear setbacks.

Industry 3

The Industry 3 district, the most versatile district, allows the full range of both commercial and industrial uses. It encompasses seven areas including a large tract on NH Route 11, primarily on the westerly side, including Wal Mart; land in the greater downtown area east of Columbus Avenue; land adjacent to NH Route 125 between Rochester Neck Road and Isinglass Road; and a tract off Milton Road much of which is wetland.

There is potential for incompatible land uses in the downtown I3 district. Miniwarehouses were recently approved at a downtown gateway location. There are also conflicts between the recycling facility located on Wallace Street in the downtown area and neighboring uses, though that facility is long standing. A more streamlined commercial designation is probably in order for the Route 11 corridor to encourage high value commercial uses seeking high visibility.

Industry 4 and 4 A

These districts were specially crafted to accommodate the Turnkey Landfill operated by Waste Management Inc. on Rochester Neck Road. There is only one I4 and one I4A in the City, both of which are situated around that property.

Hospital

This is the only specialty zoning district in Rochester. There is one small Hospital district which accommodates Frisbie Memorial Hospital. Naturally, private medical offices and other health services have sought to locate near the hospital but all of the surrounding land is zoned R1. There are a number of nonconforming such uses located in the R1 district south of Frisbie on Rochester Hill Road.

Growth Trends

Map 3 - Existing Structures shows the footprints of all buildings in the City. Most development is concentrated in the center of the City with numerous older extensive residential subdivisions beyond the downtown. Secondary centers are, of course, located around downtown East Rochester and Gonic.

The most significant development outside of these core areas is in the southerly quadrant of the City roughly bounded by Route 202/Washington Street on the west and Route 108 on the east.

In the northerly quadrant, Route 125/Milton Road is intensively developed. The easterly quadrant - defined largely by Salmon Falls Road and Whitehall Road - and the westerly quadrant - encompassing Route 202A, Ten Rod Road, Four Rod Road, and Estes Road - remain largely rural without significant development. One particular pattern of development is prominent - the frontage along virtually every collector and arterial road has been at least partially subdivided and built upon in a strip fashion while many large areas beyond the frontage remain undeveloped.

Over the ten years from 1990 to 2000 the Planning Board approved:

- 743 new subdivision lots
- 404 new multifamily and mobile home units
- 2,180,944 square feet of new commercial building space (equivalent to approximately 50 acres of building)

In fiscal year 1992 the value of gross construction in the City was \$15,500,000. In fiscal year 2000 the value of gross construction in the City was \$39,300,000. From 1990 to 1997 an average of 95 dwelling units (including single family, two family, multifamily, and mobile home) were constructed each year. From 1998 to 2001 the average was 160 units each year.

Natural Resources

Geology

Rochester lies in the southeastern corner of the state in a transitional area between southern seaboard lowlands and the New England uplands to the north and west of the City. Most of Rochester has a gently rolling topography. The highest points are over 400 feet above sea level, including Gonic Hill located near Tebbetts and Rochester Hill Roads, Hayes Hill located at the end of Hussey Road off Washington Street, and Chesley Hill located near Chesley Hill Road.

The surficial geology (see definitions below) of Rochester is primarily characterized by large areas of glacial till. Along the Cocheco and Salmon Falls Rivers and other major streams, stratified drift deposits are found as well as alluvial deposits (floodplain deposits). The following are common geologic features in Rochester:

- *Bedrock outcrops/ledge* are composed of metamorphic rocks located close to or above the surface of the ground. This formation presents a constraint to development, particularly where septic systems or foundations are involved. Blasting is often necessary to build structural foundations and footings. Bedrock geology can be important consideration in determining future land use suitability. Where bearing strength is high, most types of development can be supported. The bedrock in Rochester is fairly uniform in strength, and the bearing strength of all the formations is adequate for most types of development. Alternatively, bedrock at or near the surface can pose a constraint to development.
- *Unstratified drift or glacial till* is composed of an unsorted mix of sand, silt, clay, gravel and boulders that overlays much of the bedrock in Rochester. These deposits can limit

percolation for proper siting of septic systems and do not generally hold sizable supplies of groundwater.

- Stratified drift is composed of fine sands and gravel. In Rochester these deposits are generally associated with the Cocheco and Salmon Falls Rivers. They provide suitable sources for drinking water supplies and sand and gravel deposits. Wastewater from septic systems might not be retained in the soil long enough to ensure proper treatment. Where potable groundwater is present, caution is necessary in the regulation and design of septic systems to prevent ground water contamination, particularly near the aquifer.
- Wetland deposits occur in low, poorly drained areas along watercourses. These areas typically contain high water tables and may have water ponded at the surface. Wetland resources are usually associated with these deposits.

Soils

Rochester has several distinct soil groups, which range from areas with underlying sand and gravel in the low lying plains and terraces along the Cocheco and Salmon Falls Rivers, to areas of underlying glacial till of varying elevation and bedrock depth. Soil types are derived from the

Strafford County Soil Survey produced from the USDA Natural Resources Conservation Service in 1973. See *Table 3 - Rochester Soil Types* for respective acreages and *Map 4 - Soil Conditions*. Also, see *Appendix 3 - Rochester's Soils Groups*.

One of the most important soil groups is prime agricultural soils. These are high quality soils that allow for a sufficient growing season and moisture supply to

produce a high crop yield. The loss of remaining prime agricultural soils to development is a concern for maintaining a viable agricultural community in Rochester. Local land use policies could provide protection for this resource base.

Table 3 - Rochester Soil Types

Soil Type	Acreage	Percent
Wetland	6,709	23.1%
Deep, well drained stony	6,497	22.4%
Sandy to gravelly	6,433	22.2%
Seasonally wet	4,184	14.4%
Shallow to bedrock	2,706	9.3%
Deep, well drained stony with hardpan	1,861	6.4%
<u>Other</u>	<u>655</u>	<u>2.3%</u>
Total	29,045	100.0%
Prime agricultural	9,670	32.6%

Source: *Strafford County Soil Survey*

Slope

The slope or steepness of land is defined as the ratio of rise in vertical elevation to horizontal distance. For example, a 10 foot rise over 100 feet is a 10% slope. Slope is important for several reasons. Slope corresponds to the potential for surface runoff and erosion. Soil depth also is generally thinner as the slope increase, thereby decreasing the capacity of the land to filter septic. Typically, construction costs of development increase with slope.

Slopes can be determined from USGS topographic maps or the *Strafford County Soil Survey*, prepared by Natural Resources Conservation Service, by soil series. The most suitable slopes for development are from 0 to 12%. Very little land in Rochester is over 15% slope. The steepest areas are in the north and northwest sections of the City and along the major rivers. The flattest areas in Rochester are also along the terraces associated with the Cocheco, Salmon Falls and Isinglass Rivers.

Flora and Fauna

The New Hampshire Natural Heritage Inventory (NHI) finds and tracks New Hampshire's rare plants and exemplary natural communities and facilitates their protection. Natural communities are special types of forests, wetlands, and grasslands that are distinctive communities found in few places. The identification of these resources on a property does not limit the landowner's use of the property. NHI is not a regulatory agency, but rather works collaboratively with landowners and municipalities to protect these resources. Because of vulnerability of these resources, NHI does not disclose their exact location but rather provides a general location map. NHI can be consulted on specific development projects to determine the exact location of species.

The NHI has identified four natural communities in Rochester - two terrestrial (forested) and two palustrine (wetland) natural communities. NHI identified ten rare plant species and four rare bird species in Rochester.

Water Resources

Rochester is rich in water resources. There are about 716 acres of surface water in the community (Strafford Regional Planning Commission, *Strafford Region Natural Resource Inventory, 1998*). Two of the region's major rivers flow through the city. There are significant recharge sites for ground water areas (aquifers) and numerous small ponds.

Large surface water bodies are susceptible to development within their watersheds. Regulatory measures such as minimum shoreline set backs and conservation districts can help preserve these resources. Some members of the Land Use Committee stated that the quality and quantity of groundwater and surface water was one of the biggest concerns in the city.

Rivers and Streams

Rochester is located in the Piscataqua watershed, one of three watersheds in the 16 town southeast New Hampshire region, which flows southerly to Great Bay.. The city is divided into two subdrainage areas of the watershed, the Salmon Falls River and the Cocheco River. The Salmon Falls River drains the eastern portion and the Cocheco River the western portion of the city. The Isinglass River flows into the Cocheco River. The Salmon Falls drainage area covers 11.9 square miles in Rochester, about 1/4 of the city's area. It is generally to the east of Route 108 in the southern portion of the city and to the east of the Spaulding Turnpike in the northern portion of the city. The remainder and majority of the city is in the Cocheco River drainage area covering about 33.5 square miles in Rochester.

There are smaller streams, tributaries of the two large rivers, which drain smaller areas. These

streams are not monitored by the State but could be monitored by trained volunteers. The main streams in Rochester, Axe Handle Brook, Clark Brook, Heath Brook Howard Brook, Rickers Brook, Tates Brook, and Willow (also known as Wardley) Brook. The Cocheco, Salmon Falls and Isinglass Rivers are Class B rivers that are considered acceptable for fishing, swimming and other recreational purposes and for water supply after adequate treatment.

Salmon Falls River

The river's headwaters are in Wakefield and adjacent parts of Maine. It flows south eventually emptying into the Piscataqua River and Great Bay. It flows along the eastern border of the city, and also functions as the New Hampshire and Maine state border. It is one of the City's most significant water resources. In 1998, state monitoring measurements indicated that the overall health of the river was good, with the exception of increased bacteria levels in two areas.

Cocheco River

The river's headwaters are also in Farmington, flowing south to eventually empty into the Piscataqua River and Great Bay. It flows nearly through the center of the City from the boundary with Farmington to the Dover city boundary. It is also one of the City's most significant water resources. In 1998 there were no water quality violations. The Cocheco River Watershed Coalition monitors nine sites and investigates potential threats to the three tributaries of the Cocheco River through stream walk surveys and water quality sampling.

Isinglass River

The Isinglass River is located in the very southern reaches of Rochester, extending into Barrington. In 1998 there were no water quality violation. The Isinglass is considered a healthy river.

Lakes and Ponds

Rochester has several small ponds and shares a lake with a neighboring community. These surface water resources provide habitat for aquatic species and other wildlife, provide recreational opportunities and add to the aesthetic quality of the community. Rochester's surface waters include Baxter Lake, which straddles the border with Farmington; the Rochester Reservoir which straddles the border with Barrington; Hanson Pond, also known as Squanamagonic Pond; and Little Long Pond which also straddles the border with Barrington. The NH Department of Environmental Services monitors the quality of major surface waters, including Baxter Lake and Rochester Reservoir.

Baxter Lake

Baxter Lake, also known as Meaders Pond or Rickers Pond, is an artificial lake located in both Rochester and Farmington. It is 119 acres and has 23,622 feet of shoreline. Baxter Lake is a healthy water body by NH DES standards.

Rochester Reservoir

Most of the tributaries to the 27 acre Rochester Reservoir are located in Barrington and Strafford; a small part of the watershed is in Rochester. This drinking supply source is classified by the State as a Class A water source, i.e., suitable for drinking water.

Groundwater

Groundwater makes up the subsurface link in the hydrologic cycle. A recharge area land surface that contributes water to an underground. Development within a recharge area can directly affect the quantity and quality of the ground water supply. Consequently, such uses should be carefully managed. See *Map 5- Stratified Drift Aquifers* and *Appendix 4 - Rochester's Aquifers*.

Uses that can pose a threat to water resources include hazardous waste sites, other waste disposal sites, uses with inadequate erosion controls, pesticide disposal, and substandard septic systems, among others. The Bureau of Hazardous Waste in NHDES maintains a statewide inventory of sites that could pose a treat to water resources. In February, 2000, the agency listed 16 sites in Rochester, eight of which were closed and not considered a continued threat to the environment.

There are approximately 79 additional sites included in the Site Remediation and Groundwater Hazard Inventory list including lined wastewater lagoons, existing landfill or closed landfills, sites with septic disposal problems, areas with leaking underground storage tanks, stump dumps, solid waste transfer stations, rapid infiltration basins, fuel oil sites, and locations of known oil spills or releases.

The Emery & Garrett study of groundwater also identified potential threats to groundwater for each of the five primary sites for future municipal groundwater well sites.

Wetlands

Wetlands in Rochester were mapped using wetland soils (hydric soil category) by the US Natural Resources Conservation Service. This classification does not identify wetlands by type or value. Further documentation of wetland values enable wetland types to be evaluated by quality allowing for appropriate protection. In 1995 the Rochester Conservation Commission inventoried the freshwater wetlands in Rochester based upon soils and vegetation. In a draft report, the *Rochester Freshwater Wetlands Project*, 115 freshwater wetlands were identified, ranging in size from 5 to 620 acres. There are approximately 2100 acres of these valuable freshwater wetlands.

Wetlands occur mostly in natural drainage areas and are best left undisturbed in their natural state. They are valuable to the community for absorbing stormwater and preventing downstream flooding, providing habitat for fish and wildlife, providing groundwater recharge to aquifers and acting as a surface water filter by trapping sediment and other pollutants.

Flood plains

There are approximately 2,794 acres of flood plains in Rochester (SRPC, *Strafford Region Natural Resource Inventory, 1998*). Flood plains are located adjacent to rivers, streams and surface water bodies. Rochester's 100-year flood boundaries are mainly associated with the Cocheco, Salmon Falls and Isinglass Rivers. These areas are susceptible to flooding during periods of excessive storm water runoff. Flood plains are important in that they accommodate excessive water during flooding thereby protecting adjacent properties and downstream areas. They also provide critical habitat to wildlife. Wetlands are often connected to floodplain areas.

The Federal Emergency Management Agency (FEMA) prepared Special Flood Hazard Area maps, which were revised in September, 1982 as Flood Insurance Rate Maps (FIRM). The maps identify the 100-year flood areas. Areas in the 100-year floodplain may be eligible for federally subsidized flood insurance. The maps also serve as a planning tool to establish a district that would limit certain land uses. The City's present zoning ordinance regulates activities in floodplain areas.

Infrastructure

The provision of water and sewer service has a direct impact on the density and type of land use that can be accommodated. Such services allow development at densities above the natural carrying capacity of land and water resources. In addition, the capacity of the City's wastewater treatment plant and the type of allowable discharges influence the type and amount of commercial and industrial growth the city will experience. Rochester's zoning ordinance pegs permitted density to the presence or absence of municipal water and sewer service.

Infrastructure improvements and expansion should be executed consistent with the City's future land use plan so that growth can be managed in an orderly fashion. See *Map 6 - Utility Service Areas*.

Water Service

All of the City's water comes from the Berry River watershed which is located in the communities of Barrington, Farmington, Strafford, and Rochester. The water supply includes three reservoirs that total 500 million gallons of water - Stafford Dam, Round Pond and the City reservoir. The City's water treatment plant produces an effective safe yield water supply of between 2.8 and 3 mgd. The city's usage is 2.5 to 3 mgd so the plant is operating at or near capacity (though the Department of Public Works can increase capacity somewhat through different methods). During the dry summer of 1999, the total capacity in the reservoirs dropped to 120 million gallons, about 40 days worth of supply. The Rochester CIP identifies the need for additional future water demand in the range of 2 mgd. (The water service issue will be examined in greater detail in an upcoming Master Plan chapter on Public Facilities.)

The City has one large water user - Lydall, Inc. Since the City is operating close to capacity it would be prudent to consider *very carefully* any new large water user such as a brewery potentially seeking to locate in the City. Alternatives to develop additional supply to produce 5 mgd include:

- Increasing water storage in the present system by raising the pond level (but there could be problems with filling of wetlands, building dams).
- Developing the Salmon Falls River as a source and building an accompanying treatment facility
- Developing a new groundwater source.
- As a back up measure, Rochester could interconnect with the City of Somersworth.

The City's system serves the more densely developed parts of Rochester. There are presently no plans for expansion of the system but possible extensions of service area include:

- NH Route 11 to the Farmington Town line.
- Old Dover Road to a mobile home park (likely via a connection with Somersworth)

Sewer Service

Thanks to a new upgraded facility with tertiary capability Rochester's wastewater treatment facility has a capacity of five million gallons per day (5 mgd). This was an increase of 2 mgd from the former capacity. The City has implemented an incentive program to encourage residents and businesses not currently connected to the system, to tie into it. Over the next five years, the City's Public Works Department seeks to connect all residential and commercial properties within the sewer service area. These connections may consume approximately 20% (.4 mgd) of the new capacity. (The sewer service issue will be examined in greater detail in an upcoming Master Plan chapter on Public Facilities.)

The overflow capacity for very short term emergency situations is about 10 mgd. Current use is approximately 1.6 mgd. This was reduced from about 2.5 mgd after the Public Works Department fixed some leaks and addressed other problems in the system. Thus, the system is using about 1/3 of the capacity now but there are numerous approved development projects located in the sewer service area which will be connecting.

The size of the new plant was established by the flow level (low flowage formula) of the Coheco River. Thus, the City could not increase capacity beyond 5 mgd unless another program was established such as piping to the Salmon Falls River, utilizing innovative disposal methods such as spray effluent, or changing the limitations on the City's permit. There are other constraints in the system including a very old 22" brick pipe in Gonic through which most of the City's sewage flows. There are no plans to expand the system now. The City is in a healthy position in terms of capacity but should be careful in connecting major new users in the future.

All sludge is kept in the lagoons. The City has never had to remove any. Rochester signed an agreement with Waste Management that that company would take the City's sludge in the future if it were necessary.

The City's sewer system serves the more densely developed part of Rochester. Certain areas in are restricted because of the size and capacity of the sewer pipes, pump stations, and siphons serving the area. The City contracted with an engineering firm to prepare construction plans for the extension of sewer lines along NH Route 11 beginning at Wal-Mart to the Rochester/Farmington town line. The City also plans to evaluate extending lines in the following areas:

- Chestnut Hill Road from the Community Center to Lydall Way.
- An existing mobile home park built over sandy soils next to the Coheco River.
- Along Whitehall Road approximately 1000 feet to a new subdivision.

Road System

Transportation planning is a fundamental component in planning for growth. This master plan has a separate chapter devoted to Rochester's transportation system (see *Transportation*)

Chapter). By considering the effects of the transportation on land use and vice versa the City can ensure that its roads can handle projected growth while maintaining a reasonable level of service.

Rochester's arterial roads allow relatively easy access into and through the City from several directions. Access from the Spaulding Turnpike or other arterials, such as Routes 125, 108, 11, and 202, is an important factor in site selection for shopping centers, office parks, and industrial facilities. While the Ten Rod Road Industrial Park is well-designed and located its particular siting relative to the Turnpike has resulted in some traffic problems during rush hour. There is relatively little congestion around Granite State Park but perhaps its distance from the Turnpike has affected its build out rate.

The City's automobile oriented commercial uses have mostly located along arterials due to high traffic counts and high visibility. However, these roads can be unsafe and inefficient due the proliferation of curb cuts and turning movements. These strip commercial areas can also be unattractive due to the cacophony of signs, parking, lighting, and franchise style architecture.

There are several significant road projects in various stages that will enhance capacity and therefore impact development patterns, including the following:

Spaulding Turnpike Widening

The Turnpike will be widened to four lanes (two lanes in both directions) between exits 11 and 16. Engineering and final design are scheduled for 2000 with construction expected to take 4-5 years starting in July, 2001. This project will reduce congestion on the Turnpike and allow easier access to various parts of the City including industrial areas.

NH Route 108

Improvements are planned to this corridor and to the following intersections - Columbus Avenue, Commons Street, Franklin Street, and Whitehall Road.

NH Route 125

Improvements are planned for the following intersections - Hancock, Portland, Summer, Wakefield.

Opportunities and Constraints

Natural resources are important in estimating a community's capacity for growth and development. They can provide both opportunities and constraints for growth. For example, steep slopes and wetlands are less suitable for development while better drained, flatter areas are generally more suitable for development. On the other hand, such areas may be associated with groundwater aquifers that require careful management.

While areas of relatively high topographic relief are considered a visual asset, they are also attractive for development. Due to their sensitivity development must be carefully regulated to minimize visual impact and erosion. Alternatively, low lying areas are typically associated with

water resources such as river corridors, and may be prone to flooding, and contain deposits of sand and gravel or rich farmland soils.

The present Zoning Ordinance determines density to a large degree by the presence or absence of water and sewer. While these services are important factors they should not be the primary determinant of density; other larger scale land use, resource, and planning objectives should be.

There are areas in Rochester that present difficulties for development and which should be sensitively managed for the benefit of the community. These include wetlands, flood plains and shorelands, steep slopes, aquifer recharge areas, sensitive species and plant communities, "unfragmented" or contiguous woodland/forest areas, and public and protected lands. Cultural and historic sites were not considered since, outside of core areas, these resources tend to be small, scattered individual sites.

Of the 29,080 acres of land in Rochester, about 10,305 acres of land are limited in terms of development capacity and thus worthy of some higher level of management. Plus, there are another approximately 400 acres of City-owned property or conservation lands that are partially protected from development. At present, there is about 8,009⁵ acres of land already developed as well as significant land areas devoted to roads, railroad corridors, and utility rights-of-way. This leaves about 10,366 acres of land most suitable for development. Therefore, very roughly 1/3 of the City is developed, 1/3 is relatively unsuitable for development, and 1/3 is suitable for development. See *Map 7 - Development Constraints*.

DEVELOPMENT ISSUES

A number of concerns related to land use and development were raised by citizens during the community forums. Highlights included the following:

- Better enforcement of the zoning ordinance
- Protection of wetlands and aquifers
- Limiting development in rural areas
- Conservation of open space
- Protection of scenic views
- Enhancement of neighborhood character
- Downtown revitalization
- Historic preservation
- Better building design
- Buffering of parking lots

In the second forum dedicated to Land Use participants were placed in various groups and selected their top goals. See *Appendix 1 - Land Use Forum Results* for complete lists of issues raised at that forum. Also, see *Appendix 2 - Master Plan Survey - Land Use* for responses to a range of land use questions.

Community Cornerstones

The Land Use Committee did an exercise to identify what it considered Rochester's Community Cornerstones. Community cornerstones are specific things that make a community special. They can include buildings, natural features, institutions, businesses, local traditions, special events, historic sites, recreational facilities, even individuals. The final list (top vote getters) endorsed by the Committee (listed in alphabetical order) consisted of the following 13 items:

- The Cocheco River
- The Commons
- Downtown
- The Rochester Fairgrounds
- Gonic Mill
- Hanson Pines
- Our historic cemeteries
- The Isinglass River
- The Rochester Opera House
- Our rural character
- The Salmon Falls River
- Spaulding High School
- The view from Rochester Hill

Other items mentioned by committee members but not selected included Baxter Lake, the bicycle race, Cabl.

Christmas Parade, the Congregational and Methodist Churches, the Lilac Family Fun Festival, the Maple Str Living Facility (historic house in center of Gonic), Meaderboro Road, the North Main Street Bridge, Roches Rochester Country Club, the Rochester Fair, The Rochester Library, Roger Allen Park, the Route 11 Corridor Falls Road, Skyhaven Airport, Squanamagonic Park, Thompson Center Arms, Turnkey Landfill, and Walnu Church.

Growth

Citizens were asked in the survey their feelings about the current rate of growth in the city for residential, commercial, and industrial uses, respectively. Generally, respondents thought that the rate of residential growth is about right while slightly favoring slower growth. Respondents thought that more rapid growth was desirable for commercial and industrial uses.

While a number of citizens have stated a desire for more growth, particularly commercial and industrial expansion, growth simply for the sake of growth is often not in a community's best interest. Unmanaged growth often results in traffic congestion, loss of open space and natural resources, loss of community character, and increased taxes⁶.

"Growth" refers to a quantitative not a qualitative condition. Growth means more houses, more dwelling units, more commercial square footage. It says nothing about the character of those additional units. There is favorable growth and unfavorable growth. Growth tends to be favorable if:

- It is environmentally benign
- It produces economic benefits to the community
- It is attractive, well designed, and well located
- It does not overly utilize limited resources and infrastructure (such as water supply)
- It proceeds at a steady, manageable rate. Some believe that the development that occurred in Rochester in the late 1980's was not favorable because the City could not manage its fast pace.
- It is consistent with the community's positive character and image

This brings us to what is actually the centerpiece of this Master Plan chapter. The City should work to minimize, if not eliminate, unfavorable growth, and to encourage, and even celebrate the favorable growth, particularly where it is well designed and considerate of the community's land use goals. Unfortunately, much of the contemporary development in the nation today could reasonably be characterized as negative growth. It can also be called "sprawl".

Sprawl

Sprawl is a destructive development pattern that consumes large amounts of natural open space and at the same time draws energy out of existing urban centers and imposes an incompatible automobile oriented form. It is characterized by a low density where the various land uses are aggressively segregated from one another such that people are dependent upon the single occupancy vehicle for virtually all transportation.

In traditional communities there is a distinct contrast between: a) the "urban" center - city, town, village, neighborhood - which is tightly knit, diverse, pedestrian oriented, often architecturally pleasing, and vital and b) the "rural" outlying areas in which open space and natural features prevail but where human settlement in the form of farms or hamlets fits in harmoniously.

A 27 member Growth Management Committee formed by the NH Office of State Planning in August 1999 described sprawl as a pattern of land use characterized by:

- "Inefficient, lower-density use of land resources than seen in earlier development periods.
- Automobile dependency, traffic congestion, and higher highway expenditures.
- Development inconsistent with existing community design characteristics, in zones of single-use, rather than mixed-use."

H. Bernard Waugh, Jr., former New Hampshire Municipal Association staff attorney, said of sprawl and defined it thus:

"Sprawl isn't just an urban woe. And it serves no useful purpose to distinguish 'urban sprawl' from 'rural sprawl'. Indeed the hallmark of sprawl is precisely that it blurs the distinctions between urban and rural. It's neither! Close-knit old urban neighborhoods can be things of beauty, as much as undeveloped farmland. Sprawl is the ugly in between - not people oriented enough to feel urban, but not open enough to feel rural!...[sprawl can be defined as] inflation, over time, in the amount of land area consumer per unit of human activity, and in the degree of dispersal between such land areas...Extreme examples of this can be found in the metropolitan New York area where populated area (acreage) has grown at 8 times the rate of the population..."

Increasingly over the last 50 years this new, third type of development, sprawl, or it might be called "conventional suburban development", has resulted in a monochromatic pattern of medium and large lot subdivisions situated on overly wide streets devoid of trees or other amenities. Commercial uses are all too often relegated to unsightly highway strips with overly large signage competing for motorist's attention. This pattern of development often obliterates both the rich urban places and the beautiful rural places.

Related to sprawl is strip commercial development defined by Ross Moldoff, Salem City Planner, as follows: "Strip development is a linear pattern of retail businesses and other uses along a road corridor characterized by one story commercial buildings surrounded by parking lots, with significant amounts of pavement visible from the roadway, multiple driveways, large signs, and a dependency on automobiles for access and circulation."

This is not to say that conventional suburban development is all bad. After all, the large house on the large lot is the American dream! And this is what many people seek. Furthermore, others argue that sprawl is not a bad thing and that our nation's predominant form of development has brought us great prosperity and a high quality of living. Nonetheless, it is estimated that only about 25% of households in the United States consist of a father, mother, and 1 or more children, the type of family which many assume prefers the conventional suburban style home.

About 75% of households are thus “nontraditional”, consisting of a single person, a couple without children, or multiple related or unrelated persons in a group houses⁷. Ironically, many of these types of households (and others) are most comfortable in the *traditional* setting.

Neighborhood Character

One may think of the myriad charming places that Americans admire and love to visit, some of which command very high real estate prices, for example: Portsmouth, Peterborough, Wolfeboro, downtown Newmarket, Hopkinton, Frankestown, much of rural New Hampshire, Ogunquit, York, Portland, Boston’s neighborhoods, Charleston, and Savannah.

Sadly, all too many cities and towns across the country have made it virtually impossible if not illegal to recreate special places such as these. Many zoning ordinances, site plan and subdivision regulations, and building practices have focused on enhancing the expediency of automobile travel over the quality of life of the people who inhabit our public spaces.

Traditional planning, also called neo-traditional planning, the New Urbanism, or traditional neighborhood development (or TND) seeks to change the way we have been building in order to foster a special sense of place through the creation of real neighborhoods and not merely “subdivisions”. It can be described as follows⁸:

“New urbanist work differs most dramatically from conventional development practice in that its fundamental building block is not the single-use pod, but the mixed-use neighborhood. Instead of constructing metropolises out of housing subdivisions, shopping centers, and office parks, the new urbanists construct villages, towns, and cities out of neighborhoods. The neighborhood is carefully defined as compact, walkable, and diverse, containing a wide range of activities and housing types within an interconnected network of pedestrian-friendly streets. It is recognized not as a new invention, but rather as the fundamental form of human settlement throughout history. Indeed, it is by emulating historical places that the new urbanists were able to reintroduce the neighborhood into American planning practice.”

The following table identifies key differences between traditional neighborhood development (TND) and conventional suburban development (CSD).

Table 4 - TND vs. CSD

<u><i>Traditional Neighborhood Development</i></u>	<u><i>Conventional Suburban Development</i></u>
Public realm and community space	Private realm
Neighborhood parks, greens, squares	Large private lots
Conservation of large tracts	Large private lots
Diversity	Homogeneity
Interconnected street network	Cul de sacs and collector roads
Modified grid	Meandering streets
On street parallel parking	Off street parking lots
Pedestrian oriented and human scale	Oriented to ease of movement for automobile
Buildings oriented to street	Buildings turning away from the street
A mix of uses	Separation of uses

A mix of housing types
Concern for civic art and design
Emphasis on architecture

Separation of housing types
Concern mainly with engineering and utility
Commercial buildings often functioning as
advertising for national chains

See *Figure 1 - Sprawl vs. Traditional Town* (by Andres Duany and Elizabeth Plater-Zyberk). In the sprawl image on top all uses are segregated and travel from one to any other requires a car trip on the main collector road causing congestion. In the image on the bottom a range of uses are mixed within a neighborhood. One can easily walk, bicycle, or drive on local roads to numerous destinations without having to use the collector road. As Andres Duany says, all of the parts of a neighborhood are present in both situations. But a community is like an omelet. It is not intended that one keep the eggs, cheese, onions, and spices separated from one another.

Ironically, citizens today often object strenuously to mixed use, and rightfully so. Within a single family neighborhood if one inserts a poorly conceived multifamily development or retail establishment that is designed for the convenience of the automobile, indeed, it will not fit in. The overscaled buildings, large parking lagoons, and conspicuous signage will depress values of adjoining property.

A mix of use must be accomplished carefully through well considered design and regulation. For example, within successful traditional neighborhoods buildings for all uses - single family, multifamily, and commercial - are harmonious in scale, mass, form, roof type, orientation to the street, treatment of parking, etc. so that they produce an engaging composition, "variety within unity". Nonetheless, uses other than single family should be carefully sited - perhaps at street corners, on streets parallel to the single family streets, on main thoroughfares, fronting a public space such as a green or square.

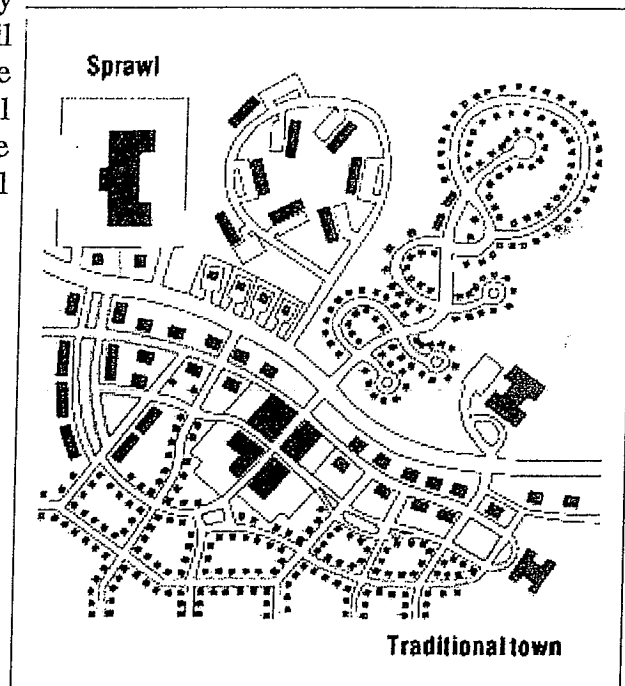


Figure 1 - Sprawl vs. Traditional Town

Traditionally, affordable housing was supplied organically. Lower priced units were woven into the community rather than segregated in projects:

- as accessory units to single family homes, such as over the garage or as "in-law" units
- in downtowns above shops
- in small 2 or 3 family buildings
- in smaller houses or on smaller lots that blend in with their larger neighbors
- on neighboring streets

Of course, traditional planning approaches are not for everyone. When asked in the Community

Survey which type of development people preferred to live in more chose a conventional suburban development than a traditional neighborhood development⁹. The survey also asked whether people supported some mix of uses within mainly single family areas. A strong majority support home occupations; by a margin of better than 2 to 1, respondents supported home based child day care; respondents were evenly split regarding accessory apartments; and by a margin of better than 2 to 1 respondents supported small corner stores (although, admittedly small corner stores would not be viable in many situations).

Based on national surveys and the strong success of new urbanist developments across the country there appears to be a healthy market for these projects and there are certainly public benefits for encouraging them¹⁰.

For more background on Traditional Neighborhood Development see *Appendix 5 - The Second Coming of the American Small Town*. This excellent article by Andres Duany and Elizabeth Plater-Zyberk is included in full. (See section on *Traditional Neighborhood Development* under Action Plan for information on implementation.)

Land Conservation

Smart Growth

Conservation of natural and cultural resources is very important to the citizens of Rochester. In the Community Survey, out of nine categories - quality of rivers, streams, and ponds; health of swamps, bogs, and wetlands; groundwater as potential water supply; forested areas; open fields; agriculture; stone walls, archaeological sites; wildlife habitats; and historic buildings and sites - respondents rated every one of these as very important, important, or somewhat important, with the largest percentage in each category calling it very important. The resource most often identified as "Not important" was "stone walls, archaeological sites" which was rated as such by only 6% of respondents.

Many experts agree that the best way to manage growth is to encourage compact development with corresponding open space around it (this general form of development has been labeled "Smart Growth"). This describes a transect with high density at the center and low density at the fringe. Ideally, this two part complementary form of development would occur at every macro and micro level - in multi-state regions, in metropolitan areas, within each city and town, and within certain individual developments.

Interestingly, many communities across the country have attempted to address sprawl by requiring *large lots* (be they ½ acre, 1 acre, or 3 acre). This has had the unintended consequence of actually promoting sprawl by forcing the consumption of more land than would otherwise have been developed and not protecting any open space at all! The better approach is to provide for relatively *small lots* laid out close together and to preserve a significant portion of land adjoining those lots. This type of development used to be called a "cluster" but that first generation of open space development was ineffective.

Current City regulations require only a minimum amount of open space be set aside when land is subdivided and this requirement has rarely been implemented historically. Most every subdivision in Rochester has allocated each square foot of the tract to individual buildable lots, roadways, and other necessary infrastructure (utility easements, drainage structures, etc.) thereby, to a large degree, obscuring or removing the site's special natural features in favor of houses, driveways, and manicured lawns.

Open Space Development

With the "conservation subdivision" or "open space development" an effort is made to preserve part of the land as permanent open space. The remaining, optimally developable land is then subdivided into lots. This design approach, which might be construed as the second, much improved generation of cluster development - *if properly executed* - is an outstanding and critical tool for achieving natural resource conservation¹¹. It has been implemented very effectively in many communities. Plus, there appears to be very strong public support in Rochester for this type of initiative¹². The values of preserving tracts of open space are myriad including providing opportunities for recreation including snowmobiling and hunting which are popular pastimes in Rochester.

The open space development is similar to a golf course community (popular in other parts of the country) except that the land is left in its natural state rather than converted to fairways and greens. Having a golf course in one's back yard enhances property value even if one does not play golf. Certainly, having a natural landscape near one's home will likewise enhance value, but without the expense of creating and maintaining a golf course and the environmental impacts that result.

In the conservation subdivision constitutional property rights of landowners are protected. Whatever overall density would otherwise be permitted under a conventional development is still permitted. That development is simply directed to a portion of the tract. Also, developers often save money in conservation projects due to reduced site preparation and length of roads and utilities. In response to developer concerns about how the public would respond to this innovative type of development it appears that there would be a very strong market¹³. (See section on *Open Space Development* for information on implementation.)

Quality of Development

The City should insist upon quality development. What is built now will be with us for decades, perhaps centuries. Rochester is a beautiful city and a proud community. Fortunately, most developers want to produce quality projects. But the City should not accommodate those developers who would seek to build in the quickest, simplest, cheapest way possible without due regard for the community's standards and the public interest.

Survey respondents were asked to rate the quality of development. The percentage responses are shown below. Overall it was rated acceptable, though 25% consider it disappointing (or poor).

Overall, how would you rate the physical quality of commercial development - site, buildings, green space - in Rochester over the last ten years?

Excellent/very good	3	Good	27	Acceptable	36
Disappointing	22	Poor/very poor	3	No Opinion	9

Interestingly, when respondents were asked about specific elements of development there was a higher level of dissatisfaction with the current standards (except perhaps for lighting, though the question might have been confusing). The results are shown in *Table 5 - Survey Ratings of Development* with responses arranged in descending order.

	Impose Stronger Standards	Standards Appropriate as they are	Loosen Standards
Screening businesses from adjacent residences	45	33	4
Amount of green space	45	37	3
Quality of landscaping	43	42	4
Exterior building design	34	45	2
Screening of parking lots	32	43	5
Signs	32	47	5
Lighting (stronger standard would reduce lighting)	21	53	9

Citizens were also asked in the survey to name developments in Rochester that they like and developments that they did not. The complete lists are shown in *Appendix 6 - Survey Results: Developments eliciting a positive response* and *Appendix 7 - Survey Results: Developments eliciting a negative response*.

The clear feeling of the Land Use Committee was that the City should impose higher standards on development. However, the Committee was explicit that specific standards should be included in the regulations in order to minimize subjectivity to the extent practicable and to minimize the chances for arbitrariness and abuse.

Preferred Uses

People were asked in the Community Survey about the desirability of having more of particular land uses.

Residential Uses

The desirability of the uses is shown below in order of preference based on survey responses (numbers shown represent percentages; the remainder had no opinion). The types of housing in the top portion are considered relatively preferred and those in the bottom portion are relatively not preferred.

Should the City encourage more of the following types of housing in Rochester?

Table 6 - Desirability of various residential uses		
	Yes	No
Single family houses	76	6
Retirement communities	71	12
Low/moderate income elderly housing	71	15
Low/moderate income family housing	45	33
Townhouses (attached)	41	28
Garden apartments (low rise)	36	30
Two and three family houses	34	41
Mobile homes on individual, private lots	29	47
Boarding houses	11	58
Mobile home parks	11	66

As is generally the case, citizens support developing single family over other residential forms. Mobile home parks, boarding houses, and mobile homes on individual lots are relatively unpopular among the citizens.

Nonresidential Uses

Survey respondents were asked to rate the desirability of certain businesses. (Note: The first part represents relatively desired uses and are shown in descending order by percent saying "yes". The second part represents relatively undesired uses and are shown in descending order by percent saying "no"):

Is it desirable to have more of the following types of businesses locate in Rochester to serve the *current* level of population (assuming the businesses locate in fairly optimal locations)?

Table 7 - Desirability of various commercial uses		
	Yes	No
High technology businesses	81	5
Light industry	77	6
Restaurants (sit down)	76	12
Grocery stores	66	21
Retail stores, in general	61	22
Inns/bed and breakfasts	59	18
Child day care	54	19
Hotels and motels	54	25
Agriculture: horticulture, crops	51	15
Health care facilities	49	30
Heavy industry	45	29
Office space/office buildings	41	22
Personal service businesses	41	22
Agriculture: livestock	38	22
Boutique/antique/specialty shops	36	30
Warehousing	26	36
Sand and gravel extraction	7	59
Miniwarehouses/self storage	10	61
Bars/taverns	13	63
Restaurants (fast food)	10	69
Gasoline stations	9	71
Automobile dealerships	5	79

Citizens most seek high technology and light industry, as well as sit down restaurants and grocery stores. Commercial uses that are the least popular include automobile dealerships, gas stations, fast food restaurants, bars, miniwarehouses and sand and gravel extraction.

Citizens were also asked to name businesses that they desired to have more of in Rochester and businesses that they thought we had enough of already. The results are shown in *Appendix 8 - Survey Results: Which Businesses would you like more of?* and *Appendix 9 - Survey Results: Which types of businesses do we perhaps have enough of?*

While these sorts of survey results should not determine whether to permit specific land uses they provide valuable information on the desires of citizens. In refashioning the zoning ordinance reasonable and tempered attention should be paid to this information recognizing that there are numerous other relevant factors (state law, fairness, needs which may not be accurately reflected in the tables, etc.).

According to the Land Use Committee the most desirable industry:

- is environmentally benign;
- does not strain water and wastewater facilities;
- can be supported by the current infrastructure;
- incorporates high technology; and
- offers good wages

ACTION PLAN

As discussed above, this Master Plan recognizes that there are really three general forms of development, each of which should be encouraged in its place. They are:

- Traditional Neighborhood Development (or TND). This form of development seeks to continue the most successful attributes of the town, village, neighborhood.
- Open Space Development (or OSD). This form of development seeks to preserve the best features of the natural landscape while accommodating reasonable growth.
- Conventional Suburban Development (or CSD).

Traditional Neighborhood Development

Traditional neighborhood development should be promoted throughout the city, *as appropriate and practicable*, but particularly in the Urban, Village, and Core Commercial Districts (see *Proposed Land Uses* section, below) and in Traditional Neighborhood Development PUD's (see *Zoning Ordinance* section, below).

The figure to the right is a part of the plan for Disney's Celebration, an outstanding new urbanist community being developed in Orlando, Florida close to Disney world. The plan incorporates a variety of greenspaces, alleys (the narrow corridors in the figure at the rear of lots), a new downtown, and a mix of housing types including large and small single family homes, townhouses, and apartment buildings.

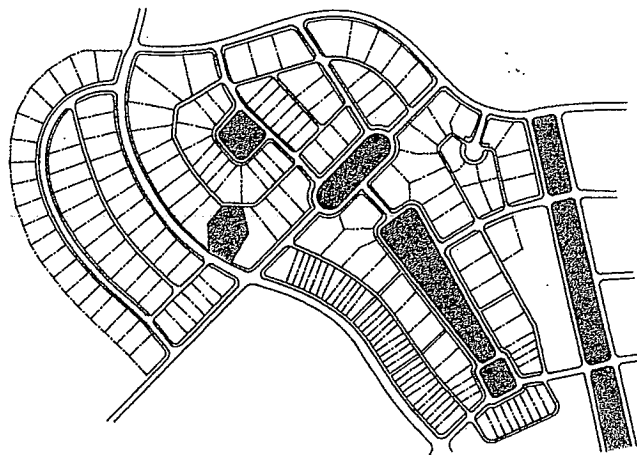


Figure 2 - Celebration

Traditional planning can be implemented by providing for the following:

Streets

- narrow streets within in neighborhoods (recognizing public works constraints such as plowing needs);
- a network or "web" of streets (see *Appendix 10 - Street Plan Types* from Huntersville, NC zoning ordinance);
- logical orientation of streets with respect to each other, compass direction, and topography;
- 2 way traffic patterns rather than 1 way (except where dictated by special design or unusual traffic considerations);
- short blocks with a maximum distance between intersecting streets (i.e. incorporating cross streets at a minimum distance from one another);
- encouraging street connectivity to promote links between neighborhoods rather than cul de sacs except where topography or other factors dictate;

- use of alleys for garages, utilities, garbage pickup (recognizing that this may not be practical in Rochester in most cases)

Neighborhood form

- neighborhood form with a meaningful center and distinct edge
- attention to civic design (such as placing prominent buildings or natural features at the end of streets - called “terminating a vista”)
- parking preferably at the rear of buildings or, if screened, on the side (this would not apply to single family dwellings)
- pedestrian and bicycle linkages among uses

Land uses

- accessory apartments
- mixed housing types as long as they are compatible in design
- accommodation of small scale neighborhood oriented businesses and other institutions (such as day care, schools, churches, meeting facilities)
- corner stores or commercial uses located on adjacent arterial roads

Infrastructure

- meaningful open space, both informal natural areas and formal public parks/greens/squares (though only a relatively small percentage of land area is needed in urban areas);
- a network of sidewalks
- planting strip between sidewalk and street (with street trees where practicable);
- street furniture such as benches and planters;
- vertical curbing, rather than sloped curbing

Building design

- build-to lines rather than setback lines (utilizing maximum rather than minimum setbacks to foster a streetscape);
- regulation of “snout houses”, where the most prominent feature of the house (including single family homes) is the garage. Garages should be set back beyond the front building face or turned 90 degrees so that the door does not face the street. (See *Appendix 11 - Residential Garages* for recommended approaches to handling garages in an unobtrusive manner.)
- architectural design that is respectful of the building traditions of Rochester and New Hampshire
- preservation of historic buildings

Also see *Appendix 12 - The “Ahwahnee Principles”* for additional guidelines to smart growth. The Principles were promulgated by the Center for Livable Communities and were named for the hotel in Yosemite Park where they were drafted.

Open Space Development

Quality Open Space

Many cluster subdivisions were not effective because there was a failure to preserve meaningful parts of the property. The land set aside for open space should be high quality land rather than just left over areas that are otherwise unusable (e.g. drainage basins, utility lines, isolated small patches throughout the tract). Ideally, the conservation land will also be linked with open space areas on adjoining tracts to create sizeable contiguous acreage, especially for wildlife habitat. The goal is to preserve at least 50% of the land that would otherwise be subdivided plus a certain percentage of the "constrained land" - areas that are not generally buildable (wetlands, flood plains, and steep slopes). However, it is important that the landowner be able to create a similar number of lots that he or she would be able to create under a conventional subdivision. The only difference is the arrangement of those lots.

What types of features are protected depends upon the individual parcel, the wishes of the landowner and developer, the market, and the values of the community. In some situations open fields are considered more important than forests; in other situations it is the reverse. Once the Natural and Cultural Resources chapter of the Master Plan is completed it will aid in making these determinations. It may be beneficial for the Planning Board and landowner to walk the land together to determine which unique features may be worth preserving. For example, is the stone wall depicted on the plans in good condition or not? Is the great oak tree in the middle of the field healthy? It is recommended that a landscape architect, forester, or naturalist work with the engineer/planner in drawing up plans. See *Appendix 13 - Process for Developing a Conservation Subdivision*.

Ownership of open space

The open space is owned and maintained by one of the following parties, generally to be determined by the developer: the developer himself, a homeowners association, the Conservation Commission, a nonprofit conservation group or land trust, or the City of Rochester. It is also possible, though less desirable, for the open space to be attached to one single family lot.

Protected areas might include the following and adjacent buffers:

- wetlands
- ponds
- streams
- flood plains
- steep slopes
- farms
- wildflower meadows
- open fields
- woods
- specimen trees
- wildlife habitats
- rocky outcrops
- high knolls
- stonewalls
- archaeological features
- historic houses
- buffers along scenic roads
- formal greens
- active recreation areas

While public access is desirable it is not essential. Whether or not it will be a component depends on who owns the land and what sort of arrangements are made. Many homeowners don't want public access behind their homes and that is fine, as public access is only one of several possible objectives in a conservation development.

Design Considerations

The following should be considered in designing conservation subdivisions:

- Limitations should be set by overall density/number of units rather than minimum lot size. There should be significant flexibility on lot sizes, frontages, and setbacks. Flag lots may work fine on a case by case basis.
- Zero side lot lines on 1 side of lots allow for homes to have one usable side yard instead of 2 unusable ones.
- Development of trails within the conservation areas, for the benefit of homeowners if not the general public, is encouraged.
- Creativity may be necessary in unsewered areas. For example, easements could be established to allow for individual leach fields in common areas.
- Make drainage areas part of the design. Instead of unattractive deep basins make them wide and shallow use them for ballfields.
- Incorporate single loaded streets (houses on only one side) where appropriate to enhance design.
- Add a small green in the middle of the loop road.
- When dealing with an established open field visible to a collector road lots and houses should be placed at the edge of open fields or preferably into the woods rather than in the middle of the field.
- The principles of Open Space Development may be combined with those of Traditional Neighborhood Development to create genuine villages¹⁴

See *Figure 3 - Conventional Subdivision* and *Figure 4 - Conservation Subdivision*, below. Each has the same number of lots but the conservation approach preserves important resources and allows access for all homeowners not just a few whose lots back up to them. (Note in this example two separate parcels - theoretically owned by two parties - were developed jointly in a creative manner.)

Figure 3 - Conventional Subdivision

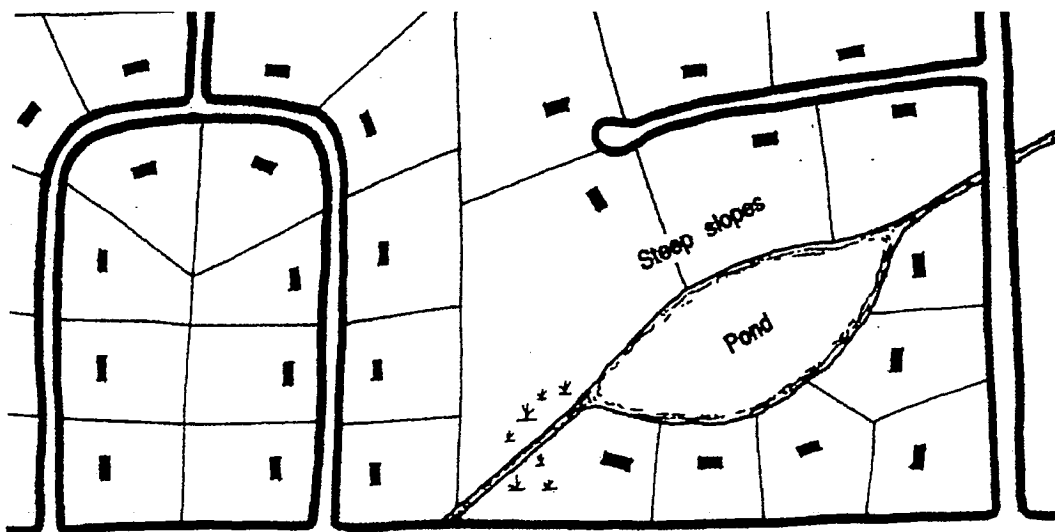
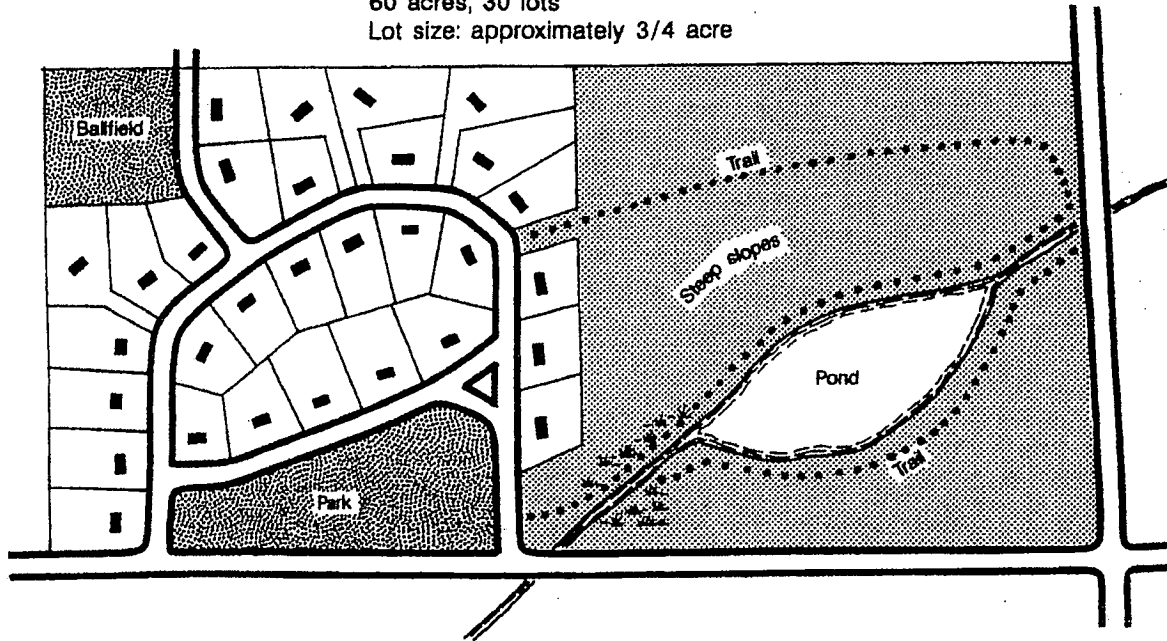


Figure 4 - Conservation Subdivision

Parcels A and B
60 acres, 30 lots
Lot size: approximately 3/4 acre



Proposed Land Uses

The central tool for implementing the Land Use section of a Master Plan is the Zoning Ordinance which includes: a) the written ordinance or *Text* that describes uses, dimensions, and other standards for each zoning district as well as other requirements such as signage; and b) the *Map* which graphically delineates each zone. See *Map 8 - Future Land Use*. This map shows *proposed uses* and is the critical tool to be used to develop future zoning districts.

Frequently, a city or town will simply make adjustments to its current ordinance after completing its master plan. In this instance, *it is recommended that an entirely new ordinance be developed pursuant to this Master Plan*. The Land Use Committee concluded that the current zoning ordinance is sufficiently antiquated that tinkering with it would not yield satisfactory results. Over the past 30 or more years there have been a number of amendments to the ordinance. It has become cluttered with references that make it difficult for citizens to understand and for city officials to enforce. Most significantly, the ordinance does not embody the vision that this community has for its future.

Nonetheless, the current ordinance will serve as a critical baseline and frame of reference from which to evaluate many proposed changes, particularly since it has driven the form of development in the City.

It is recommended that the following be established as new zoning districts. Any of the proposed districts below could be further divided to allow for finer differentiation in standards

(such as having Urban-1 and Urban-2 or Highway Commercial-1 and Highway Commercial-2 districts). In many cases, within a given district it will also be useful to have different standards for developed areas and undeveloped areas. This might be accomplished again through different subdesignations such as Urban-1 and Urban-2 or through other devices (e.g. stipulating that front setbacks on infill lots reflect those of neighboring developed lots).

Overview of Districts

The proposed districts are shown below, followed in detail in subsequent sections.

Residential Districts

Urban
Suburban
Rural
Village

Commercial Districts

Core Commercial
Neighborhood Commercial
Village Commercial
Office Commercial
Highway Commercial
General Commercial

Industrial Districts

Light Industrial
General Industrial
Park Industrial
Recycling Industrial

Special District

Medical

The sections below gives a description of each proposed district.

Residential

Each of the following districts would be primarily residential but some mix in use might be accommodated particularly in the Urban District.

Urban

This district would generally follow the model of Traditional Neighborhood Development and include medium to high density, street connectivity, emphasis on infrastructure (sidewalks, granite curbing, street furniture, and street trees) and quality design, narrow streets, strong pedestrian elements, and some mixed use. This would encompass the core areas of the City in the central section, Gonic, and East Rochester. This district corresponds *very loosely* to the present Residence 2 district. The City should attempt to direct development to the Urban area

but it is recognized that there is a need to accommodate development in suburban and rural areas, as well.

All buildings in the Urban District should be oriented to the street. Some design guidelines, particularly for commercial and multifamily uses should be implemented to ensure development is consistent with traditional architecture. Much of the parking needs for individual sites should be met with on street parking. Parking areas should not be established forward of the main building facade except for single family homes. Overall, a small percent of open space need be stipulated, such as 5% of total acreage for formal greens and preservation of natural landscapes such as streams.

The base use will generally be single family detached housing. But appropriately designed mixed uses should be allowed, even encouraged by various techniques - conditional uses (a new initiative, see *Zoning Ordinance* section), special exceptions, performance standards, and Planned Unit Development, but primarily through the conditional use approach. Mixed uses could include duplexes and triplexes, townhouses, institutional uses (church, school, day care), and small scale retail and office uses.

Suburban

This district would house much of the projected growth over the next 20 years. It corresponds *very loosely* to the present Residence 1 district and occupy a middle tier around the urban district. Much of the land area is served by either city water or sewer and by both utilities in some locations.

The Suburban District would accommodate medium density Conventional Suburban Development (primarily single family subdivisions on medium or large size lots) but there would be incentives for traditional neighborhood developments and open space developments. The district could be set up to permit a wide range of housing types, each at the same density of units - single family, townhouses, apartments, mobile home parks - with appropriate buffers between different types if designs are not compatible.

Alternatively, there could be several levels of Suburban. For example, Suburban-1 might be considered "sacrosanct" and permit only single family detached housing. Suburban-2 might also permit home occupations and accessory apartments. Suburban-3 might permit multifamily. Certain other nonresidential uses would be permitted by conditional use or special exception

Some amount of open space should be required though less than in the Rural District. This should include both formal greens and informal natural areas. Cul de sacs would be accommodated but interconnectivity would be encouraged. At a minimum, there should be multi-use paths connecting developments.

Rural

This district would generally follow the model of the Open Space Development. It would encompass an outer ring around the suburban district, accommodate low and medium density, and include many of ecologically sensitive areas. It corresponds *very loosely* to the present Agricultural district.

The City should discourage private developers from extending water or sewer into the Rural District and should not participate in cost sharing arrangements to facilitate such extensions. The only exceptions should be where environmental hazards compel it such as from failing leach fields in sensitive areas or where outstanding economic development opportunities dictate extension. Opportunities might be provided for nonresidential activities that are consistent with the rural character of the City. Certainly agriculture would be encouraged and celebrated. Regulations should be very carefully crafted (and other existing regulations carefully reviewed) to ensure that farming is not unduly restricted in any manner. Contractor's storage yards and sand and gravel excavations should be permitted by conditional use (or special exception).

Village

This district would be akin to a very small scale urban district designated at key nodes (such as hamlets and significant road crossings) adjacent to Suburban and Rural Districts where it is appropriate to establish some diverse pedestrian neighborhoods. The Village district might work in tandem with a Village Commercial District (below).

These are areas that tend to be outside the city's core sections, typically in the vicinity of a strategic crossroads such as Meaderboro Road and Walnut Street. The district should be carefully drawn for it is the intent that these generally not expand, or expand very incrementally and surgically in order that the district not encroach into the rural landscape.

The Village District might permit single and two family dwellings, small scale institutional uses, artisan live/work spaces, and small scale elderly/assisted living.

Commercial

The Core Commercial, Village Commercial, and Neighborhood Commercial would all be pedestrian oriented. It is emphasized that carefully crafted regulations - pertaining to driveway access, parking, signage, lighting, and building design - would be necessary to ensure that these districts are attractive for pedestrians and not unduly oriented toward motorists.

Core Commercial (CC)

This district would encompass the traditional downtowns in Rochester, Gonic, and East Rochester. Careful design regulations would be in order to ensure that the attractive pedestrian environment is not impaired. Limited architectural design regulations would be appropriate. Core Commercial corresponds *very loosely* to the present Business 1 district.

This district would permit a wide range of commercial uses as well as compatible mixed use (such as second story residential). Restrictions should apply more to design than to use. However, certain automobile uses - such as a gasoline station, motel or fast food establishment with a drive through window - should not be permitted. Off street surface parking for commercial uses should not be permitted right on the main streets; it should be set back behind or on the side of buildings and screened. Buildings should be at least two stories in height, and preferably three.

A Core Commercial-1, for example, could be established for the heart of the downtown where buildings are built right on the sidewalk such as the block of North Main Street between Wakefield and Union Streets. In this setting especially establishing a build to line is important.

A Core Commercial -2 could be established in downtown areas where buildings are not predominantly located right on the sidewalk such as on South Main Street between Columbus Avenue and Parson Main.

Village Commercial (VC)

This district would be a smaller scale version of Core Commercial appropriate for locations at significant crossroads such as at Meaderboro Road and Walnut Street and perhaps at Tebbets and Rochester Hill Roads. Careful design regulations would be in order to ensure that the surrounding rural or natural character is not impaired. The VC could be as small as four lots (located at each corner of an intersection) or even fewer, provided it was sensitively sited. The Village district would often function in tandem with the residential Village District (above). Alternatively, the City might simply establish a Village district (and not a Village Commercial district) which would permit limited commercial uses through conditional uses and special exceptions.

The scale of the district would be controlled by setting size limits. There could be a maximum building footprint, total square footage, and/or length of building frontage. Alternatively, design review could ensure that the scale was compatible with the district. Village Commercial would allow a similar but more circumscribed set of uses as Core Commercial, some by conditional use or special exception.

Neighborhood Commercial (NC)

This district would be a yet smaller scale version of the Village Commercial District. The intent would be to accommodate very small scale commercial or institutional uses within or adjacent to residential neighborhoods, such as a corner variety store, laundromat, office, personal services establishment, or day care center. Again, the Neighborhood Commercial District could be as small as four lots or even fewer if it is carefully located.

It is recognized that in most undeveloped areas zoning may be less sensitive and can be handled on a large scale. In certain developed areas, particularly older or traditional type neighborhoods where a mix of uses exists in a finely textured manner, surgical zoning techniques such as the Neighborhood Commercial are useful. Where that is the case, designating just a handful of lots should not be considered spot zoning.

Again, careful size and design regulations would be necessary to ensure that the district is strongly pedestrian oriented and that the integrity of the adjoining residential neighborhood is not impaired. Neighborhood Commercial could be located close to public institutions like schools, churches, day care centers, senior citizen centers, and recreation centers, as well as transit stops (such as for COAST). Theoretically, this district could be set up on the edge of neighborhoods alongside collector and arterial roads to appeal to both pedestrians from within the neighborhood and passing cars along the main road. But, this would require tight controls on

parking, lighting, signage, etc. on the highway side again so as not to impact the neighborhood.

Alternatively, there may simply not be practicable locations for this district. The Village Commercial might be sufficient for such small scale settings or such commercial uses might be permitted in residential districts by conditional use or special exception.

Office Commercial (OC)

This district would allow primarily office and institutional uses (including schools and churches, and civic buildings) and uses similar in nature (such as bed and breakfasts, possibly hotels). Generally, impacts from these uses are not as strong as those from retail sales (in terms of traffic generation, parking, signage, and lighting), although retail oriented office activities, such as real estate and insurance offices, can present similar challenges.

Office Commercial could be located at nodes or along corridors such as Rochester Hill Road which a) has sensitive residential areas and scenic qualities but b) also has some commercial character. The tract of land located on the southwest quadrant of the Spaulding Turnpike and Route 202 exchange would also be an appropriate location.

Office Commercial can also serve as a transitional district. An example is the Westwood Medical Center at the southwestern corner of Charles Street. The business is located between the Route 125/Charles Street intersection, an intensive retail node, and the high quality residential Charles Street. An office designation here would recognize the existing use and serves as a gentle transition between these activities. If it was determined after diligent examination that only this one lot was appropriately zoned Office Commercial, such a designation should not be considered spot zoning.

Highway Commercial (HC)

This district would accommodate intensive, automobile oriented uses. It would be located along major corridors which already possess an intensive commercial nature, mainly in the vicinity of the Suburban District, including sections of Routes 125 (north and south of downtown), 11, and 202. Highway Commercial corresponds *very loosely* to the present Business 2 district.

The district would be oriented to a large degree to allowing ease of circulation and access for the automobile. While parking in front of buildings is discouraged in neighborhoods and downtown areas, it is often appropriate in these types of districts. Nonetheless, as these are the most visible corridors in the city (other than the Spaulding Turnpike) design standards as discussed in *Development Standards* section as important.

This district would allow a fairly full range of commercial uses and accommodate buildings with larger footprints ("small boxes and big boxes"). Potential subdistricts could include HC-1 on tighter corridors which would only allow smaller boxes. HC-2 could allow unlimited size boxes such as along Route 11. This would likely be the only district to permit automobile sales and gasoline stations (in one or all subdistricts). In order to promote high value retail activity industrial and warehouse uses might be excluded from some or all HC districts. Certain objectionable uses such as miniwarehouses should probably not be permitted in any HC districts

(but rather General Commercial or General Industrial).

Other possible subdistricts include a special gateway type subdistrict with high standards and a district specially crafted to address corridors with businesses on one side and residences on the other side of the street (sections of Washington Street, Old Dover Road, Hancock Street).

General Commercial (GC)

This district would accommodate intensive commercial uses and likely many Highway Commercial type uses, as well. It would be similar to the General Industrial district and alternatively, one or the other would not be needed. This district and/or the General Industrial should be the only districts where miniwarehouses are permitted.

Industrial

A minimal or moderate level of aesthetic review (architectural design, landscaping, etc.) is appropriate in industrial districts. In a General Industrial District that is not located on a main collector and not visible to neighboring areas there is very little need for these standards other than buffers. In a district located on a collector or arterial road they are necessary. In a high value park like setting on a cul de sac such as Granite State Business Park, Industrial Way, and Nadeau Drive only a moderate level of standards is in order to maintain the quality of the park.

Light Industrial

This district would accommodate light industry, assembly, and office uses for which there should be negligible environmental impacts.

General Industrial

This district could accommodate certain "heavier" industries with limited potential environmental impacts. It should be carefully crafted to distinguish which are acceptable. For example, the impacts from a large smelting operation would likely be unacceptable anywhere in Rochester (though it is doubtful such an industry would seek to locate here). The GC would be Rochester's most "generous" district in that it would allow those uses which might be objectionable in more visible and sensitive areas. This district corresponds *very loosely* to the present Industry 1 and 2 districts.

Park Industrial

This district would be similar to Light Industrial but might incorporate a higher level of standards in order to promote a high quality park like environment. Areas would likely include Granite State Business Park, Industrial Way, and possibly Nadeau Drive. All or most activity, including storage, should be carried on inside, or at the rear of, buildings. Warehouses should probably not be permitted as a primary use.

Recycling Industrial

This special district would accommodate land consumptive, intensive landfill, junkyard, and recycling type businesses such as Turnkey Landfill. It corresponds *very loosely* to the present Industry 4 and 4a districts.

Special District

Medical (M)

This district would replace the present Hospital District. It would need to mesh with an adjoining Office Commercial District. Alternatively, this special district might not be needed. It might be sufficient to zone the Frisbie complex as a subdistrict of Office Commercial (potential subdistricts of OC could accommodate different size buildings).

Zoning Ordinance

In addition to proposals for new zoning districts (under Proposed Uses in prior section) and mapping the following are recommended for incorporation into the Zoning Ordinance.

Significant New Initiatives

1) Establish *conditional uses*. This is an excellent tool similar to a special exception except that the Planning Board has jurisdiction rather than the Zoning Board of Adjustment. The conditional use approach has advantages over the special exception because the Planning Board can review a request in the context of a proposed plan for a property. It is especially effective where discretion is needed in considering design issues which the ZBA generally avoids doing. Certain uses would still be reviewed as special exceptions. Uses in each district would thus be permitted by right (P), permitted by conditional use (CU), permitted by special exception (SE), or not permitted (N).

2) Establish a *Planned Unit Development (PUD) ordinance*. This is an excellent tool to provide for creativity in planning medium and large mixed use sites which may not be conducive to slotting into a regular zoning district. In a PUD the landowner puts forward a land plan for a specific tract showing details on proposed uses, standards, and other provisions. The actual land plan (in a schematic form or a detailed finished form depending upon the ordinance requirements) is adopted as its own new zoning designation by either the Planning Board as a conditional use or the City Council (depending on the structure of the ordinance). For example, development of the Homemaker's land located off Route 108 and the Chris Oliver property located off Dry Hill Road would be facilitated by PUD designation.

A PUD ordinance should stipulate that any proposal meet the various objectives of the Master Plan and that it benefit the public interest. An ordinance might encourage higher quality architectural design, landscaping, signage, and lighting, as well as a harmonious mix of uses, pedestrian orientation, and preservation of significant open space.

3) Establish a *Traditional Neighborhood Development ordinance as a particular type of PUD*. Alternatively, permit a TND subject to a set of design standards as a conditional use anywhere in the City. Because: a) there may be additional costs for infrastructure, and b) there are substantial public benefits in the creation of TND's it is appropriate for authentic TND's to receive significant density bonuses

- 4) Explore establishing a *Transfer of Development Rights* program to protect valuable rural lands - natural and cultural resources, farms, and important viewscapes - and to encourage favorable development in the Urban, Village, Core Commercial, and Village Commercial Districts.
- 5) Investigate the applicability of *Impact Fees* to fund capital improvements for sewer, water, schools, and police and fire protection. A suitable "impact fee" ordinance should definitely be established to address off site traffic impacts in the aftermath of the recent Derry v. Simonsen NH Supreme Court Case. This allowance is vital to accommodate development which causes direct off site traffic impacts.
- 6) Initiate a process for designation of *Prime Wetlands* as provided for in RSA 483--A:7, that is based upon the *Guide to the Designation of Prime Wetlands in New Hampshire*, 1983. Such a designation will provide added protection for high value wetlands over and above the existing but limited Wetland Overlay District.
- 7) Explore creating a *Shoreland Protection Ordinance*.
- 8) Amend the *Aquifer Protection Overlay District* - both in location and in standards - in recognition of deficiencies in the current ordinance, updated groundwater aquifer information, and prospective development of municipal wells in the future.
- 9) Adopt *local historic districts* in downtown Rochester, Gonic and East Rochester. (Alternatively, establish a Heritage Commission, though this approach would not afford protection to historic resources.)
- 10) Develop a strategy to address *uncoordinated piecemeal development*, such as the periodic subdivision of 1 or 2 lots fronting on a collector road out of a large tract of land rather than master planning for orderly development of the entire the tract of land.

Adjustments to Ordinance

- 1) Rewrite the *Nonconforming Uses Section* of the ordinance. The provision should specifically address different types of nonconformities - in use, lot dimensions, building characteristics, or site conditions. There should be reasonable flexibility for nonconforming uses to expand as special exceptions. This is especially important since it is likely that some presently conforming uses will be rendered nonconforming after the comprehensive rezoning.
- 2) Explore changing the *Mobile Home Park Ordinance* incorporating the open space development standards and philosophy in the development of mobile home parks.
- 3) Establish *height limits* in all zoning districts.
- 4) Remove *parking requirements* from the Zoning Ordinance and retain them in the Site Plan Regulations. Other site plan type provisions in the Zoning Ordinance should

likewise be retained only in the Site Plan Regulations in order that the Planning Board can exercise discretion and grant waivers when appropriate.

- 5) Consider establishing a fixed maximum density for each residential district and allowing *flexibility in type of housing* - single family, multifamily, mobile home park - provided the density requirement is met.
- 6) Certain approaches should be explored to manage the proliferation of those types of uses which there may already be in overabundance or which the City seeks to control (see survey results under *Preferred Uses* section), for example:
 - The City might stipulate that any automobile dealerships must sell new cars
 - The City might restrict where drive through windows are permitted as a tool to manage fast food restaurants.
 - Mobile homes on individual lots outside of approved mobile home developments should be allowed only in either the Suburban or Rural districts. In order that they blend in harmoniously with neighboring stick built homes they should be required to meet certain standards such as the following: be double width and have the wheels removed, permanent foundations, permanent entry steps, a minimum roof pitch, and possibly large minimum lot sizes and setbacks. *Alternatively*, stipulate that mobile homes are permitted only in approved mobile home parks.
- 7) Clarify areas where *Telecommunications Towers* (or “wireless communications facilities”) are appropriate and where they are not. They should not be permitted in locations that will significantly impair views along scenic roads.
- 8) Explore allowing *flag lots* (or lots with less than required frontage) under certain circumstances, such as on extremely deep “bowling alley” lots.
- 9) Take measures as reasonable, fair, and legal to encourage desired land uses and discourage those deemed to already be in abundance or undesirable as discussed in this plan.

Mapping Considerations

- 1) *Zoning boundaries* should generally be located at the rear of lots (or at the side) and not in the center of streets. The reason is that the streetscape should be consistent from one side to the other. Where there are incompatible uses abutting each other the higher impact use can be screened along the rear property line. It cannot readily be screened along the front property line. As discussed elsewhere in this chapter the mixed use/zoning designations along Washington Street, Hancock Street, and Old Dover Road have impaired the single family homes in those corridors. In drawing the Urban, Suburban, and Rural districts centerlines of streets were used for simplicity. It might not be worthwhile to adjust those lines on the actual Zoning Map as all of these districts are primarily residential.

- 2) Change mapping so that *zoning district boundaries* are set along rear property lines rather than an even distance back from the centerline of the road as is now done (this is a different issue from that immediately above). The advantage of setting boundaries an even distance from the road is that mapping is simpler - all zoning for the City can probably be illustrated on one map. The advantages of using rear property lines are that fewer lots are split zoned making them more readily usable; there is less chance for encroachment of higher impact uses from extending permitted uses 100 feet beyond the boundary as is now done; and generally boundaries are more consistent with actual use of land if drawn along lot lines rather than set by an arbitrary distance.
- 3) Much of the zoning and rezoning that will occur should be performed on a small scale, lot by lot surgical fashion, particularly in developed and sensitive areas. Affected property owners deserve this consideration. Where there is an intensive amount of activity in a small area such as in existing neighborhoods and downtown areas, or where different, potentially incompatible uses abut one another, this approach is particularly important. If thoughtfully and objectively performed, such lot by lot zoning will not constitute spot zoning. (See discussion under *Office Commercial* subsection regarding Westwood Medical Center as an example.)

Structure of New Zoning Ordinance

Recognizing that the current ordinance will likely be overhauled it is instructive to point to the following approaches that should be undertaken.

- 1) The current ordinance does not include a *Statement of Purpose* for each zoning district. This is useful in order to relate the zoning ordinance to the Master Plan for the benefit of property owners, citizens, and City officials in the application of the ordinance.
- 2) *Definitions* should be expanded and clarified; some are antiquated and some are not consistent with state law.
- 3) The *Table of Uses* is outdated and does not reflect typical contemporary land uses.
- 4) Special zoning amendments crafted to respond to a federal or state initiative will be addressed independently of the comprehensive rezoning such as the regulatory floodway zone and the airport zone, when appropriate. These can generally be readily inserted into any existing zoning ordinance.
- 5) Sections dealing with *administration and enforcement* should be consolidated into one new article entitled: administration of the zoning ordinance.
- 6) Responsibility for interpreting and *administering the Zoning Ordinance* should be assigned to the Planning Department. Enforcement of the ordinance should still be the responsibility of the Code Enforcement Department.

Development Standards

The Site Plan and Subdivision Regulations (and Zoning Ordinance, where appropriate) should incorporate the following standards. These types of regulations would generally not apply to single family homes.

Civic Design

- Where cul de sacs built must allow for pedestrian and/or bike connections at end of cul de sac.
- Encourage awareness of civic design, such as incorporating attractive street furniture (benches, planters, etc.), showcasing important features of the landscape, and
- “terminating vistas” (see *Figure 5 - Terminating Vistas* at right).

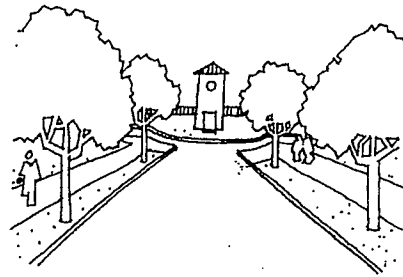


Figure 5 - Terminating Vistas

Architecture

Adopt design guidelines which:

- Limit the size of “big boxes” in certain areas.
- Require architectural treatments to break up large wall and roof areas.
- Encourage use of small building masses rather than one blocky mass.
- Arrange windows and doors in a balanced manner.
- Use decorative details, as appropriate, such as cornices, pilasters, columns, dormers, cupolas, spires, gazebos, porches, trellises.
- Encourage use of traditional building materials on the exterior.
- Require buildings to relate appropriately to the surroundings.
- Address general design issues such as treatment of entryways, roof shape, massing, scale, siting, orientation to street, and proportions.
- Screen dumpsters, utilities, garage doors, loading docks, and mechanical equipment.
- Set design standards for gas station canopies to reduce the sense of hovering mass of these structures.

Landscaping and Open Space

Develop new landscaping regulations to:

- Specify in moderate detail level of ground cover, shrubs, and trees required under various circumstances
- Provide for front, side, and rear buffers where appropriate
- Screen parking lots
- Encourage use of native species
- Provide for survival of materials for a minimum period of time
- Provide for a certain minimum percentage of natural or landscaped open space on each site

- Provide for the protection of endangered species through coordination with the New Hampshire Natural Heritage Inventory (NHI). (See subsection on *Flora and Fauna*.)

Tree Conservation

Adopt regulations to:

- Preserve existing specimen trees on site (such as those of certain species above a certain size)
- Stipulate planting specifications (minimum caliper, height, base around tree, etc.)
- Maintain a certain base level of tree cover

Parking

Establish regulations to provide that parking:

- Must in all cases be appropriate screened and/or buffered.
- In neighborhoods, downtowns, and village centers may not be located forward of the building
- Is managed very carefully in neighborhoods, downtowns, and village centers
- Is broken up with landscaping medians and islands.

Signage

Adopt a new sign ordinance that controls the size, height, appearance, illumination, number, and location of signs and recognizes the differences among different areas of the city. A draft ordinance prepared by staff and a blue ribbon committee of business people has already been endorsed by the Planning Board. Modify that draft as appropriate and incorporate it into the new zoning ordinance.

Lighting

Adopt lighting standards that:

- prohibit glare onto roads and adjacent properties
- establish maximum levels of footcandles
- establish maximum heights of light poles
- require shielding of fixtures to prevent light spillover
- address floodlights
- address different types of bulbs and spectrums of light (metal halide vs. high pressure sodium)
- address lighting in gas station canopies
- require an illumination study where appropriate

Other Performance Standards

Revise performance standards in Zoning Ordinance - addressing noise, odors, vibrations, etc. - to make more specific, measurable, and enforceable and make reference to best management practices.

Miscellaneous

Soils

Require that all subdivision and site plans provide soil maps and information in accordance with the *Site Specific Soil Maps for New Hampshire and Vermont*, special publication no. 3, June, 1997. This provision would supercede the current allowance for HISS mapping that is inconsistent with current NRCS standards. Require that maps be prepared by field examination and stamped by a certified soil scientist.

Stormwater Management

Require that any addition stormwater runoff created by a development be detained on site unless there are public facilities that can accommodate it. Require that no degradation to water quality result through devices such as detention basins, level spreaders, grass swales, hay bales, filtration strategies. Stipulate use of catch basins or other devices to trap oil, grease and sediments for projects above a certain threshold.

Ensure that stormwater management and erosion and sediment control plans are consistent with RSA 485-17 and NHDES rules Env-Ws 415 for Site Specific permits. Make reference to a guidance document for developers such as *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas* in New Hampshire, 1992 and *Best Management Practices for Urban Stormwater Runoff*, 1996. Consider incorporating the *Office of State Planning's Model Stormwater and Erosion Control Regulation*, 1997 in the City's regulations.

Solid Waste

Ensure that all solid waste, both construction and operational, is hauled to a licensed disposal site.

Hazardous materials

Adopt the current state standards in Env-Ws 421, rules for Best Management Practices, prepared by NHDES in 1996. These requirements are aimed at facilities that may generate hazardous or petroleum/chemical products in order to mitigate threats to groundwater.

Administrative Strategies

The following miscellaneous approaches should be pursued.

- 1) Overhaul the Site Plan and Subdivision Regulations and combine into one document "*Land Development Regulations*" or comparable title.
- 2) Enhance Rochester's current *Geographic Information System* in Rochester to ensure that it is geographically referenced and based upon accurate aerial photography.
- 3) Acquire accurate *aerial photography* in digital format for the whole City that is referenced to the State Plane Coordinate System.

- 4) Prepare an *accurate base map* of the City that includes existing features and a parcel based overlay.
- 5) Coordinate the *geographic data* with the City's property records into a unified database that is consistent with the needs of the City's various departments.
- 6) Require that all subdivision plans include an accurate, geographically referenced *digital copy of the plan* that can be used to revise the Town's parcel database and map.
- 7) Engage the services of a consultant who can implement and maintain the City's digital database.
- 8) Prepare a map inventory of City resources that would be consistent with the City's revised base map.
- 9) Work with the Public Works Department to determine the approximate annual rate of *water and sewer service absorption* of capacity to better plan for future development.
- 10) Update the *fee schedule* for development applications.
- 11) Establish a *Master Plan Implementation Committee* to ensure this chapter is executed.

ENDNOTES

1. Surveys were distributed as follows:

Citizens - 500 surveys were mailed to citizens selected at random.

Chamber of Commerce - Approximately 425 surveys were mailed, one to each member.

Stakeholders - Approximately 200 surveys were mailed to elected and appointed officials and others identified as active citizens.

Mixed - Surveys were available at City Hall for anybody to fill one out.

2. "Agriculture, Forest and Related Land Use in New Hampshire", 1952 to 1975, Research Report Number 64.
3. The acreage figures do not add up to 28,910 acres, the total for the City, because of possible minor glitches in the GIS and Assessing record keeping system; it is partly due to the exclusion of roads from the figures.
4. "1990 Census of Housing and the Estimates of Housing Supply" provided by the New Hampshire Office of State Planning.
5. This figure varies somewhat from the 7,300 acres defined as "built up" under the GRANIT classification, due to different methods of estimation.
6. According to a report produced by Strafford Regional Planning Commission as communities grow in population their taxes tend to rise steadily. This may be due in part to urbanizing communities demanding a higher level of services but it is also likely due to the less efficient, sprawling nature of much contemporary development.

Generally (at least in the short term), commercial and industrial development tends to be fiscally advantageous while residential development tends to be fiscally disadvantageous. This is, of course, due to the high costs for public school students. This consideration, along with other economic benefits such as shopping and employment opportunities, is likely the reason more support growth of commercial and industrial uses than residential uses. However, it appears that in the long run a community will attain its own balance of residential and nonresidential uses such that more people will move to the City after new employers locate there, thus balancing the fiscal equation.

7. Randall Arendt. lecture at New Hampshire Planning Conference.
8. Excerpt from article "Eschew Obfuscation - Breaking through the confusion of smart growth terminology" by Jeff Speck. New Urban News. December 2000.

9. In the Community Survey respondents were asked the following (responses are shown at the left):

Which setting would you prefer to live in?

- 51% A small suburban style subdivision, such as one on a cul de sac, with about a dozen homes situated on large lots, where you would need to drive to most places except for some wooded areas nearby; houses would all be single family and residents would have similar incomes; or
- 38% A larger traditional style neighborhood with a network of streets, sidewalks, and street trees, with homes on smaller lots, in walking distance of a commercial or community center; houses would be mostly single family but there would be some mix of housing types and incomes
- 11% No answer
10. Numerous articles in the publication "New Urban News" have demonstrated the strong demand in many situations for well-designed projects.
11. The method was developed and has been successfully promoted by Randall Arendt, author of several books on the subject. Open space/conservation subdivisions had an earlier incarnation as "cluster subdivisions". Cluster subdivisions were rarely successful for various reasons but a new generation appears to be far more successful.
12. In the Community Survey respondents were asked if they supported the following:
- Imagine a 20 acre tract of land in a rural area. Under which development plan would you prefer to live?
- 36% Land fully subdivided with 15 spacious one acre housing lots (with 5 acres used for the road)
- 51% 15 one half acre housing lots; with 9 acres of trails weaving around a small pond and meadow and maintained as common or public land (with 3-1/2 acres used for the road)
- 13% No answer

13. The following is quoted from Randall Arendt, author of Growing Greener.

"Another concern of many people is that homes in conservation subdivisions will differ in value from those in the rest of the community. Some believe that because so much land is set aside as open space, the homes in a conservation subdivision will be prohibitively priced and the municipality will become a series of elitist enclaves. Other people take the opposite view, fearing that these homes will be smaller and less expensive than their own because of the more compact lot sizes offered in conservation subdivisions.

Both concerns are understandable, but they miss the mark. Developers will build what the market is seeking at any given time, and they often base their decision about selling price on

the character of surrounding neighborhoods and the amount they must pay for the land.

In conservation subdivisions with substantial open space, there is little or no correlation between lot size and price. These developments have sometimes been described as "golf course communities without the golf course," underscoring the idea that a house on a small lot with a great view is frequently worth as much or more than the same house on a larger lot that is boxed in on all sides by other houses.

It is a well-established fact of real estate that people pay more for park like settings, which offsets their tendency to pay less for smaller lots. Successful developers know how to market homes in conservation subdivisions by emphasizing the open space. Rather than describing a house on a half acre lot as such, the product is described as a house with twenty and one half acres, the larger figure reflecting the area of conservation land that has been protected in the development. When that conservation area abuts other similar land, as in the township-wide open space network, a further marketing advantage exists."

14. Indeed, this approach is strongly encouraged. See Crossroads, Hamlet, Village, Town by Randall Arendt for guidance.

SUGGESTED READING/WEBSITES

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About Planning - <http://planneronline.homestead.com/NewPlanningMeridian.html>
American Planning Association - <http://www.planning.org/>
Center on Urban and Metropolitan Policy - <http://www.brook.edu/es/urban/>
Cyberbia - <http://www.cyberbia.org/>
Great Buildings.com - <http://www.greatbuildings.com/>
INTBAU - <http://www.intbau.org/>
Lincoln Institute - <http://www.lincolnst.edu/main.html>
National Trust for Historic Preservation - <http://www.nhtp.org/>
New Hampshire Office of State Planning - <http://www.webster.state.nh.us/osp/>
Congress for the New Urbanism - <http://www.cnu.org/>
North Carolina Smart Growth Alliance - <http://www.ncsmartgrowth.org/>
Placematters.org - <http://www.placematters.org/>
Planetizen - <http://www.planetizen.com/>
Planning Commissioner's Journal - <http://www.plannersweb.com/>
Project for Public Spaces - <http://www.ppsj.org/index.html>
Revised Statutes Annotated - <http://www.gencourt.state.nh.us/ras/html/indexes/default.html>
City of Rochester, NH - <http://www.rochesternh.net/>
Smart Growth Network - <http://www.smartgrowth.org/>
Strafford Regional Planning Commission - <http://www.mv.com/ipusers/plan/index.htm>
Sustainable Development Center - <http://www.sustainable.doe.gov/>
Traditional Building.com - <http://www.traditional-building.com/>
Urban Land Institute - <http://www.uli.org/>

City of Rochester, NH Master Plan Update Land Use

Map 1

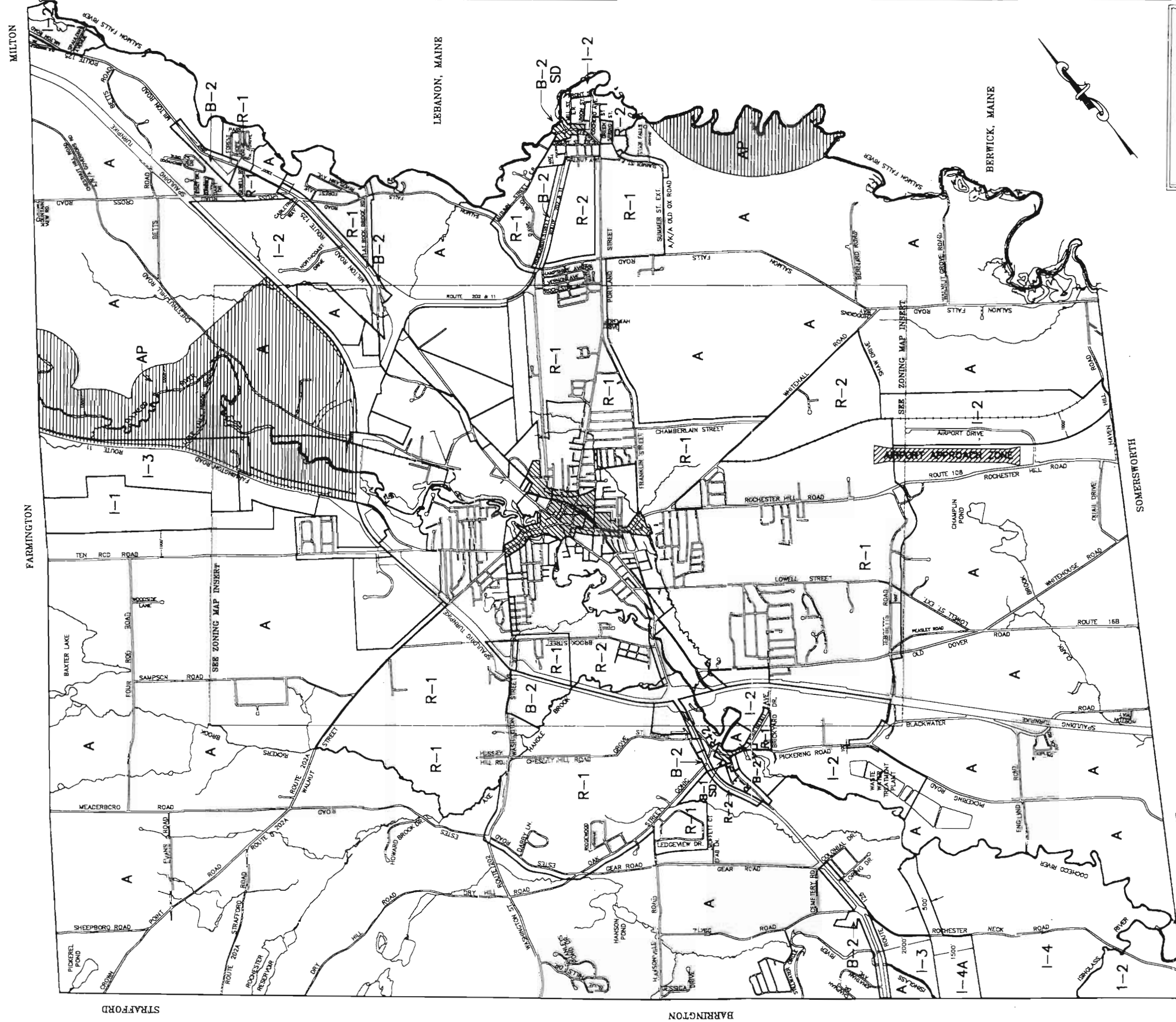
- | | |
|---------------------------------|-----------------------------|
| Residential | Solid Waste |
| Commercial | Industrial |
| Government | Commercial Complexes |
| Institutional | Mixed Use |
| Educational | Outdoor/Other Built-up Land |
| Indoor-Cultural/Amusement/Sport | Cemetery |
| Industry | Agriculture |
| Mining-Sand/Gravel | Brush/Transitional |
| Transportation-Road/Rail | Forested |
| Water/Wastewater Facility | Water |
| Municipal Boundary | Railroad |
| State-Maintained Road | Pipeline/Transmission Line |
| Other Road or Street | Stream |



Data Sources:
 Land use data from Strafford Regional Planning Commission, April, 2000, based on interpretation of 1992/1993 ASCS aerial photography.
 Road centerlines from NH Department of Transportation, September, 1999.
 All other base features from USGS 1:24,000 scale Digital Line Graphs, as archived in the GRANIT database at Complex Systems Research Center, University of New Hampshire.



Appledore Engineering Inc.
 April, 2000



ZONING DISTRICTS	
A	AGRICULTURAL
R-1	RESIDENCE 1
R-2	RESIDENCE 2
B-1	BUSINESS 1
B-2	BUSINESS 2
I-1	INDUSTRY 1
I-2	INDUSTRY 2
I-3	INDUSTRY 3
I-4	INDUSTRY 4
I-4A	INDUSTRY 4A
H	HOSPITAL

OVERLAY DISTRICTS	
	AQUIFER PROTECTION
	SPECIAL DOWNTOWN
	AIRPORT APPROACH

CITY OF ROCHESTER, N.H. ZONING MAP

Map 2

INTERPRETATION OF ZONING DISTRICT BOUNDARIES
 (CITY OF ROCHESTER ZONING ORDINANCE - SECTION 42.3)
 UNLESS OTHERWISE INDICATED, THE ZONING DISTRICT BOUNDARY LINES ARE THE CENTER LINES
 OF THE MAIN TRACKS OF RAILROAD LINES AND THE CENTER LINES OF WATERWAYS.
 ON THE CENTER OF THE MAIN TRACKS OF RAILROAD LINES AND THE CENTER LINES OF WATERWAYS,
 ARE SO INDICATED THAT THEY PARALLEL THE CENTER LINES OF STREETS AND OTHER PUBLIC
 RIGHTS-OF-WAY. SUCH BOUNDARIES SHALL BE INTERPRETED AS PARALLEL, THERETO AND AT
 THE DISTANCE THEREFROM AS INDICATED. IF NO DISTANCE IS GIVEN, SUCH DIMENSION SHALL
 BE 200' FROM THE CENTER LINE OF THE STREET OR WATERWAY. ON SUCH LINES EXTENDED ON THE
 CENTER LINE OF A BLOCK, WHICHEVER IS LESS.

- SOURCE DATA FOR THIS MAP INCLUDE:
- 1) BASE MAP FROM EXISTING DIGITAL FILES PROVIDED BY THE CITY OF ROCHESTER
 - 2) CITY OF ROCHESTER ZONING ORDINANCE DATED MARCH 4, 1986 AND SUBSEQUENT AMENDMENTS
 - 3) ZONING MAP OF THE CITY OF ROCHESTER, NEW HAMPSHIRE DATED APRIL 1985, LAST AMENDED FEBRUARY 22, 1991
 - 4) CITY OF ROCHESTER PROPERTY MAPS DATED JUNE 30, 1992, LAST REVISED APRIL 1996

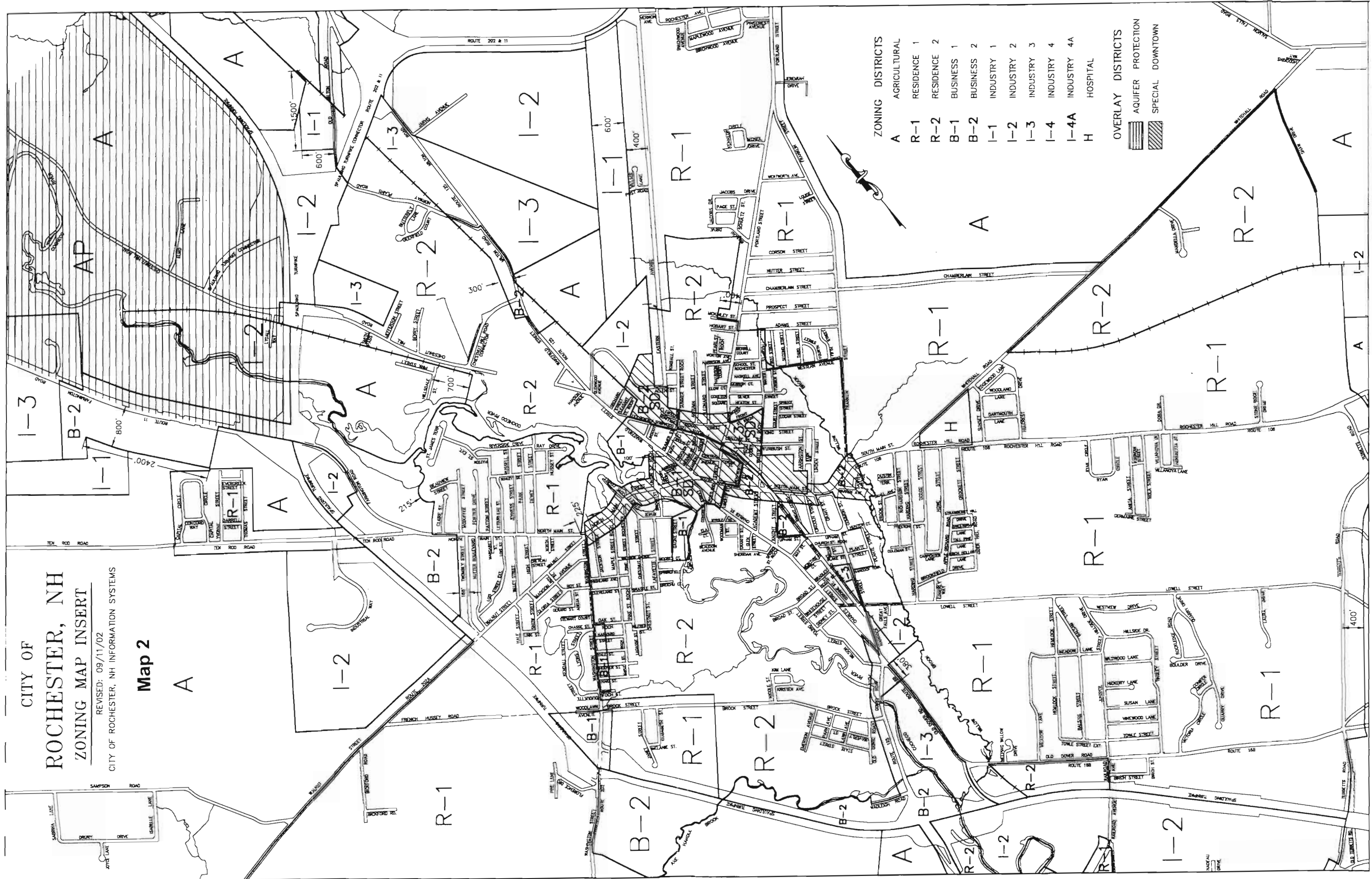
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 AMENDED:

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REVISED: 09/11/02
CITY OF ROCHESTER, NH INFORMATION SYSTEMS

Map 2



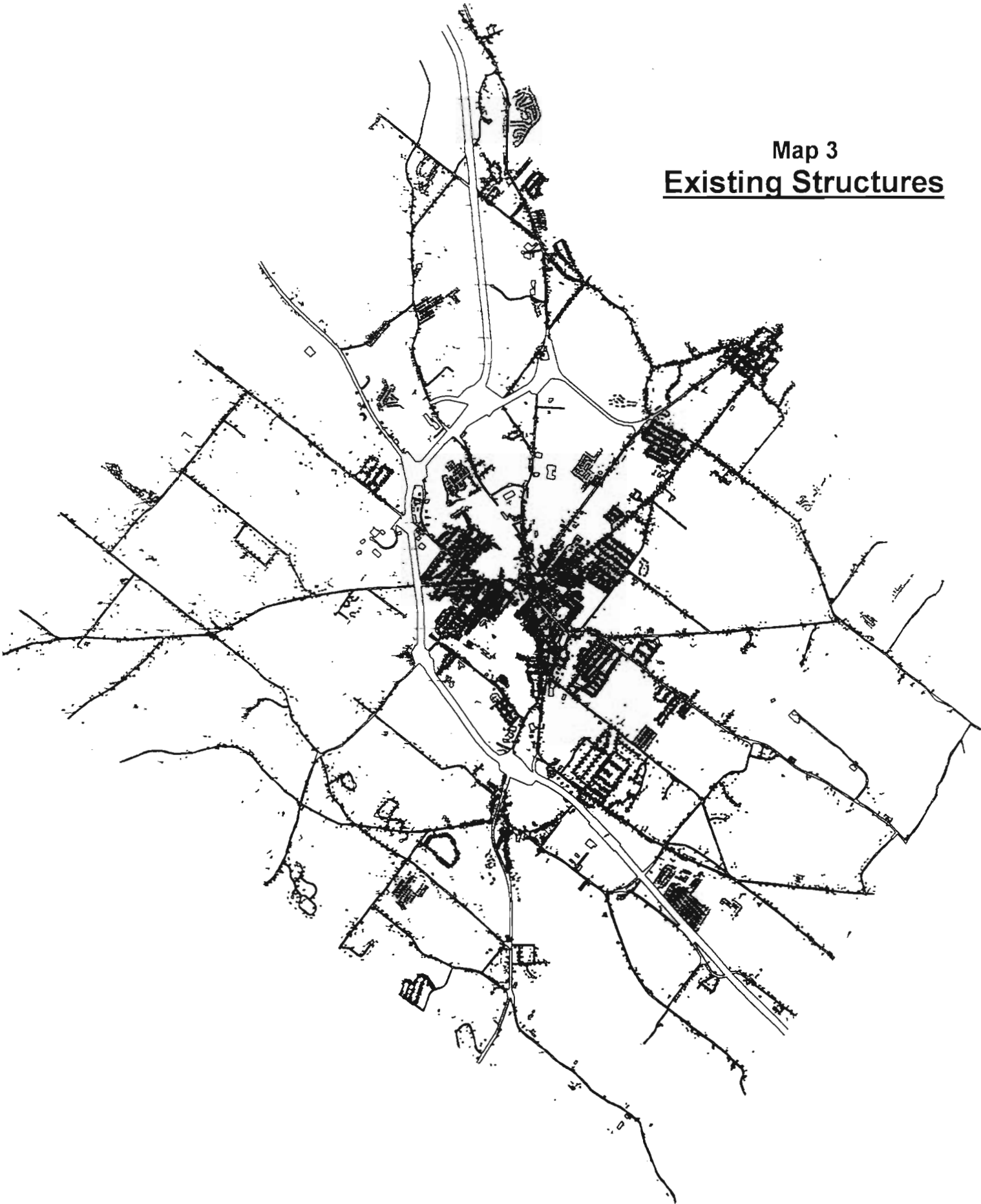
ZONING DISTRICTS

- A AGRICULTURAL
- R-1 RESIDENCE 1
- R-2 RESIDENCE 2
- B-1 BUSINESS 1
- B-2 BUSINESS 2
- I-1 INDUSTRY 1
- I-2 INDUSTRY 2
- I-3 INDUSTRY 3
- I-4 INDUSTRY 4
- I-4A INDUSTRY 4A
- H HOSPITAL

OVERLAY DISTRICTS

- AQUIFER PROTECTION
- SPECIAL DOWNTOWN

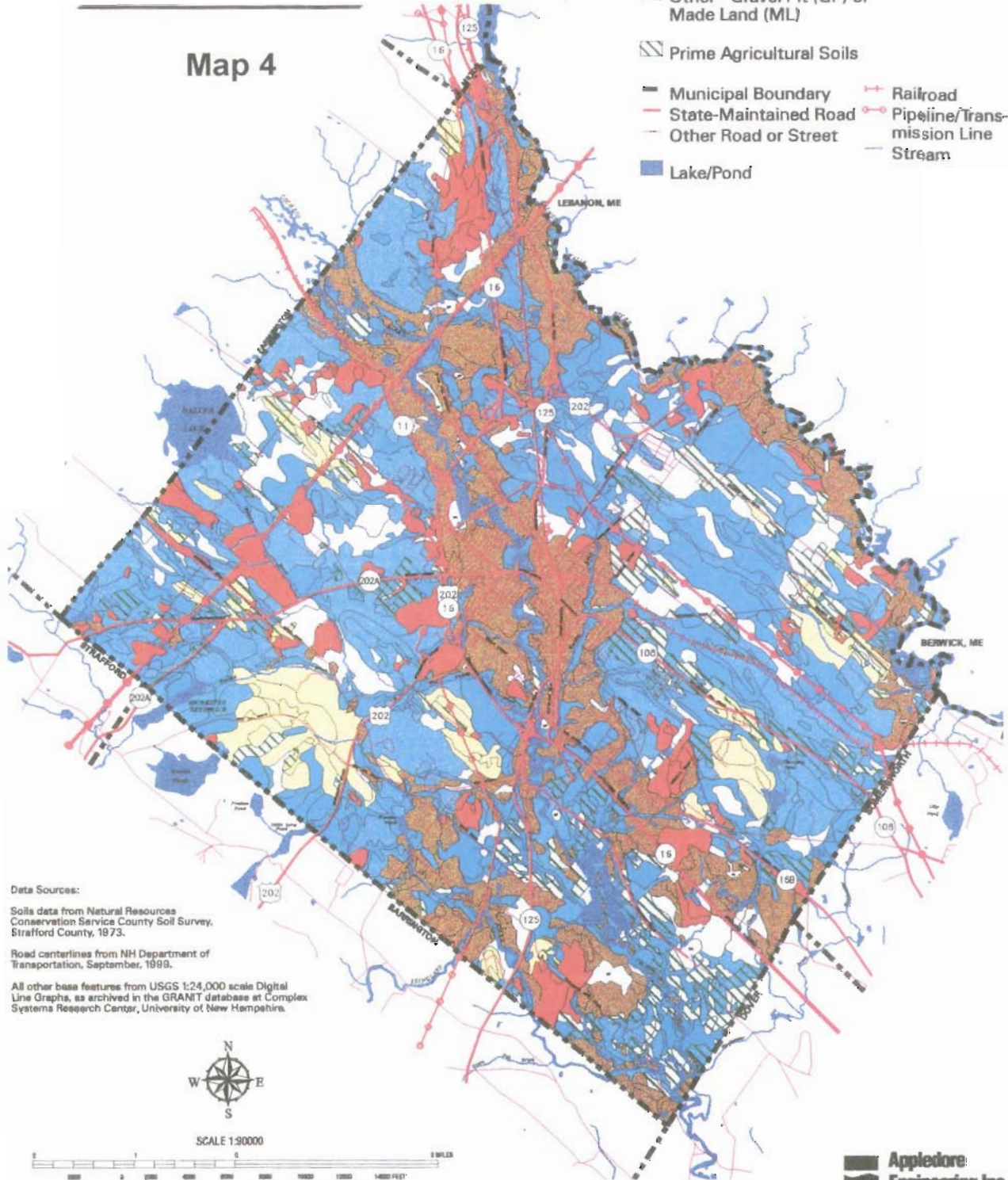
Map 3
Existing Structures



City of Rochester, NH Master Plan Update Soil Conditions

Map 4

- Hydric
- Seasonally Wet
- Well-Drained Stony
- Shallow to Bedrock
- Sandy & Gravelly
- Well-Drained Stony with Hardpan
- Other - Gravel Pit (GP) or Made Land (ML)
- Prime Agricultural Soils
- Municipal Boundary
- State-Maintained Road
- Other Road or Street
- Lake/Pond
- Railroad
- Pipeline/Transmission Line
- Stream



Data Sources:

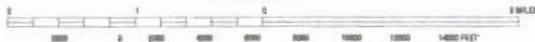
Soils data from Natural Resources Conservation Service County Soil Survey, Strafford County, 1973.

Road centerlines from NH Department of Transportation, September, 1999.

All other base features from USGS 1:24,000 scale Digital Line Graphs, as archived in the GRANIT database at Complex Systems Research Center, University of New Hampshire.



SCALE 1:50000

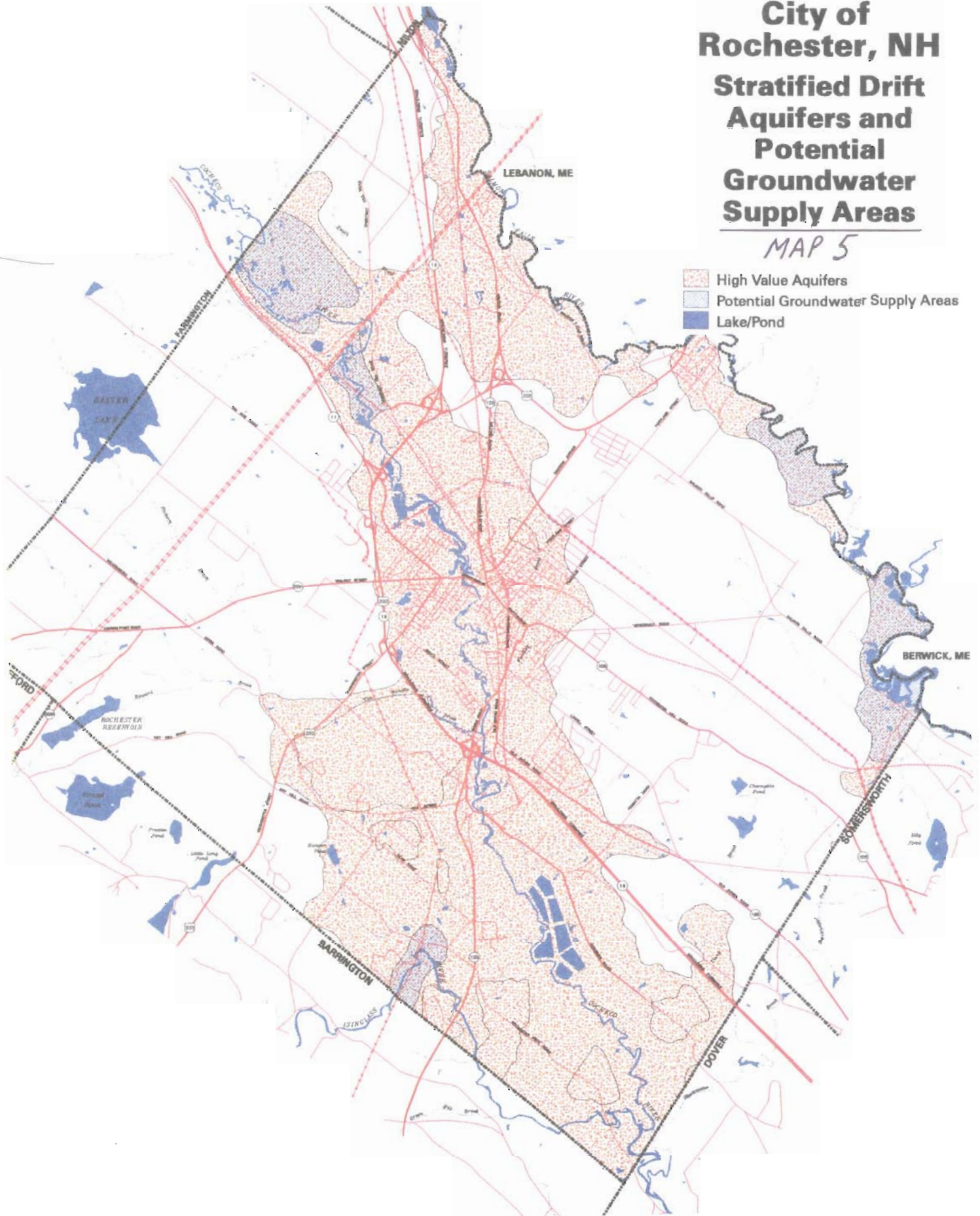


Data Registered to New Hampshire State Plane Coordinates, 1983 datum.

City of Rochester, NH Stratified Drift Aquifers and Potential Groundwater Supply Areas



MAP 5

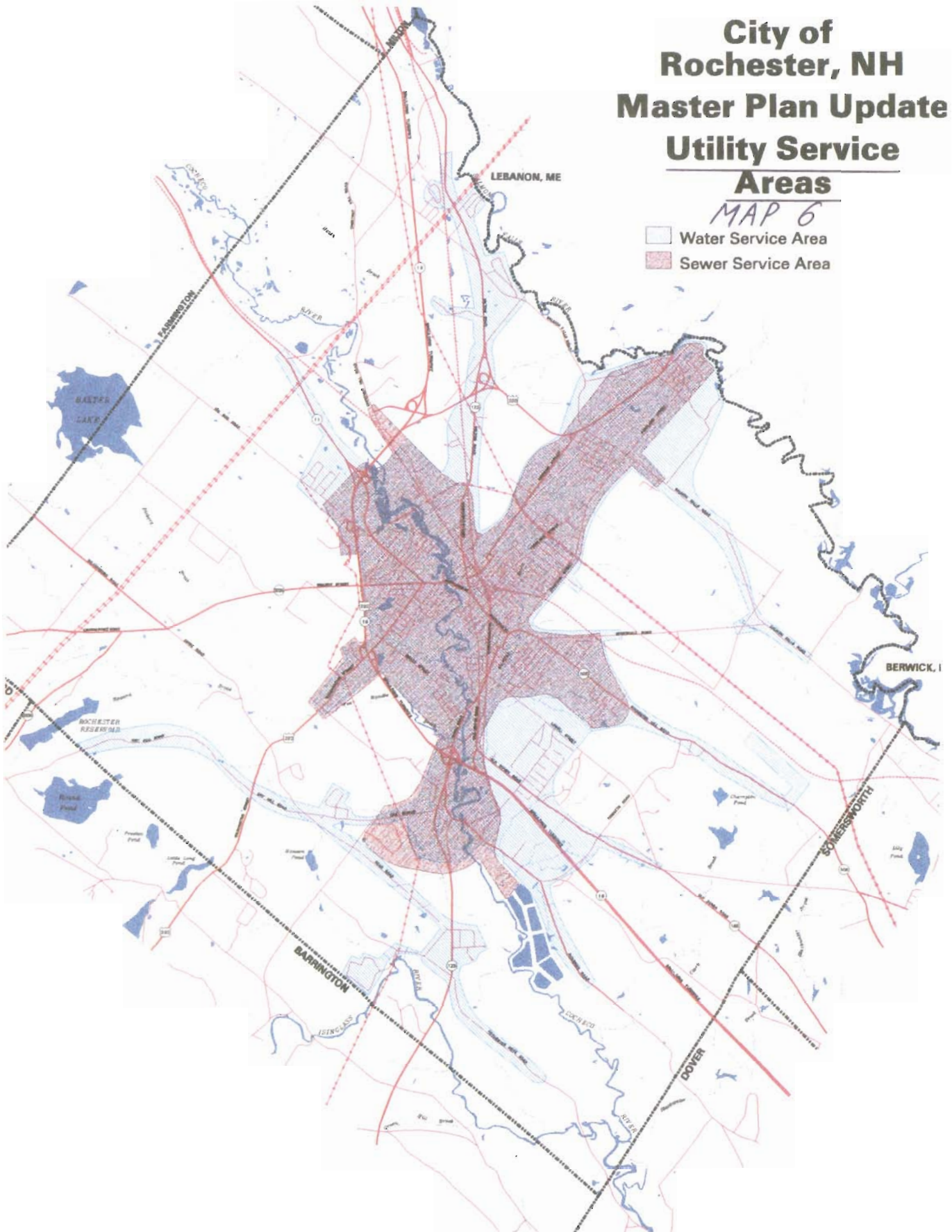
- High Value Aquifers
- Potential Groundwater Supply Areas
- Lake/Pond



City of Rochester, NH Master Plan Update Utility Service Areas

MAP 6

-  Water Service Area
-  Sewer Service Area



City of Rochester, NH Master Plan Update Development Constraints

Map 7

- Developed Land
 - Public/Quasi-Public Land
 - Hydric Soils
 - Steep Slopes
 - High Value Aquifers
 - Road/Transmission Line Rights-of-Way
 - Lake/Pond
 - Developable Land
-
- Municipal Boundary
 - State-Maintained Road
 - Other Road or Street
 - Railroad
 - Pipeline/Transmission Line
 - Stream



Data Sources:

Land use data from Stratford Regional Planning Commission, April, 2000, based on interpretation of 1992/1993 ASCO aerial photography.

Conservation lands from GRANIT Conservation and Public Lands layer, 1/24,000, updated February, 2000.

Soils data from Natural Resources Conservation Service County Soil Survey, Stratford County, 1:24,000, 1973. Steep slopes based on soils with slope greater than 25%.

Aquifers from "Geology and Water Quality of Stratford-Graft Aquifers in the Bellamy, Cochran, and Shelton Falls River Basins, Southwestern New Hampshire", Maul and Lavelle, US Geological Survey Water-Resource Investigations Report 00-4191.

Rights-of-way (road and transmission line) generated as 100 ft buffers around relevant base features.

Road centerlines from NH Department of Transportation, September, 1996.

All other base features from USGS 1:24,000 scale Digital Line Graphs, as archived in the GRANIT database at Complex Systems Research Center, University of New Hampshire.



SCALE 1:90000



Data Registered to New Hampshire State Plane Coordinates, 1983 datum

Appendix 1

Land Use Forum Results

A number of issues were raised by citizens during the initial community forums. In a special forum dedicated to Land Use participants were placed in various groups and selected their top goals as follows (stated verbatim and *in order of priority*)¹:

Zoning Group

Better and consistent enforcement of the zoning ordinance
Buffering and protection of wetlands and aquifers
Limitations on 24-hour businesses; limit to specific area with better policing
Ability to use property in a more profitable way, e.g. flexibility in residential uses permitted
Flexibility in regulations in older sections of city
Rural and open space conservation
Equitable dispersion of small businesses throughout the city
A document that is continually updated and reviewed - working document

Open Space Group

Identify particular aquifers for protection from pollution
Program to work with large property owners to preserve and maintain open space
Zoning that promotes open space
Protect visual corridors as open pastures or fields, such as Ten Rod Road, Salmon Falls Road, Meaderboro Road, Chesley Hill Road, Pickering Road, Chestnut Hill Road, Haven Hill road, Whitehall Road
Limit development in rural areas

Neighborhoods Group

Neighborhood elementary schools with active involved parents and children
Better utilized fairground for the whole community
A sense of neighborhood pride resulting in beautification, e.g. flower beds, landscaping, holiday decorations
A uniform downtown neighborhood which retains the historic character of the city
The development of a Conservation Ethic to protect Rochester water and other natural resources
The same or lower building densities
Troubled neighborhoods (Lafayette Street, River Street, Pine Street) better connected to the rest of the city through increased recreational and social services

¹ Each group developed a list and then voted. Those shown herein received at least 2 votes. These are stated verbatim except for minor corrections and clarifications.

Community Character Group

More activities on Commons, at schools and fairgrounds; more community events

Stabilization of tax rate

Local daily newspaper

Less poverty

Acquisition of medium-sized neighborhoods

Historic buildings preserved

Natural resources preserved

Commercial Design Group

Large buffer areas between parking areas and streets

Character and theme of the city

More use of natural materials for building

Parking at the rear of the building

Sidewalks and curbs in the inner core and arterials

Diversity of building design

Appendix 2

Master Plan Survey - Land Use Questions (Results)

All numbers below are percentages among total responses received from the 453 individuals who returned surveys. Color coded surveys were sent to four population groups including: a) 500 citizens selected at random from the voters registration list; b) the 425 (approx.) members of the Rochester Chamber of Commerce; c) 200 (approx.) elected officials, and members of boards, commissions, and other organizations; and d) numerous citizens who picked up the survey at City Hall.

LAND USE

Should the City encourage more of the following types of housing in Rochester?

	Yes	No	Neutral/ No Opinion
Single family houses	76	6	17
Two and three family houses	34	41	26
Townhouses (attached)	41	28	31
Garden apartments (low rise)	36	30	34
Boarding houses	11	58	32
Mobile home parks	11	66	22
Mobile homes on individual, private lots	29	47	23
Low/moderate income family housing	45	33	22
Low/moderate income elderly housing	71	15	15
Retirement communities	71	12	17

What type of growth do you favor compared to the growth we've experienced in the last ten years?

	More Rapid Growth	Rate About Right	Slower Growth	No Growth	Neutral/ No Opinion
Residential development	16	47	23	3	10
Commercial development	49	27	11	3	10
Industrial development	52	27	7	4	10

Overall, how would you rate the physical quality of commercial development - site, buildings, green space - in Rochester over the last ten years?

Excellent/very good	3	Good	27	Acceptable	36
Disappointing	22	Poor/very poor	3	No Opinion	9

Based on the quality of existing commercial development that you see in Rochester should the City's requirements/standards be changed in the following areas?

	Impose Stronger Standards	Standards Appropriate as they are	Loosen Standards	No Opinion
Exterior building design	34	45	2	19
Amount of green space	45	37	3	14
Quality of landscaping	43	42	4	12
Screening of parking lots	32	43	5	19
Screening businesses from adjacent residences	45	33	4	18
Signs	32	47	5	16
Lighting (stronger standard would reduce lighting)	21	53	9	17

What is your position on the following?

	Support	Oppose	Neutral/ No Opinion
Encouraging development in core areas of the City (such as area roughly defined by the Turnpike and Connector, Tebbetts, Chamberlain and Franklin)	48	22	30
Encouraging significant new development in outlying/rural areas	53	25	23
Having shopping and civic buildings distributed along commercial road corridors with large convenient parking areas in front	60	17	23
Commercial and civic areas being less automobile oriented with parking at the side or rear of buildings and accommodations for walking and bicycling	47	21	31
Requiring significant open space areas be preserved in large subdivisions	69	9	22
Allowing the following (with some limitations) in mainly single family areas:			
- home occupations	67	14	19
- home based child day care	55	23	22
- accessory apartments	37	35	28
- small corner stores such as variety store or laundromat	56	27	17

Imagine a 20 acre tract of land in a rural area. Under which development plan would you prefer to live?

- 36 Land fully subdivided with 15 spacious one acre housing lots (with 5 acres used for the road)
- 51 15 one half acre housing lots; with 9 acres of trails weaving around a small pond and meadow and maintained as common or public land (with 3-1/2 acres used for the road)
- 13 No answer

Which setting would you prefer to live in?

- 51 A small suburban style subdivision, such as one on a cul de sac, with about a dozen homes situated on large lots, where you would need to drive to most places except for some wooded areas nearby; houses would all be single family and residents would have similar incomes; or
- 38 A larger traditional style neighborhood with a network of streets, sidewalks, and street trees, with homes on smaller lots, in walking distance of a commercial or community center; houses would be mostly single family but there would be some mix of housing types and incomes
- 11 No answer

NATURAL AND CULTURAL RESOURCES

How important is it to preserve each of the following in Rochester?

	Very Important	Important	Somewhat Important	Not Important	Neutral/ No Opinion
Quality of rivers, streams, and ponds	82	12	3	0	2
Health of swamps, bogs, and wetlands	53	25	15	3	4
Groundwater as potential water supply	78	14	5	0	4
Forested areas	58	26	13	1	3
Open fields	45	28	20	4	4
Agriculture	42	29	21	4	5
Stone walls, archaeological sites	45	22	23	6	4
Wildlife habitats	52	25	18	1	4
Historic buildings and sites	47	23	21	5	4

Do you think the City should establish a local historic district downtown with design review regulations? Yes 38 No 22 Neutral/No opinion 40

Is it desirable to have more of the following types of businesses locate in Rochester to serve the current level of population (assuming the businesses locate in fairly optimal locations)?

	Yes	No	Neutral/ No Opinion		Yes	No	Neutral/ No Opinion
Retail stores, in general	61	22	17	Inns/bed and breakfasts	59	18	23
Boutique/antique/speciality shops	36	30	34	Health care facilities	49	30	22
Personal service businesses	41	22	37	Child day care	54	19	28
Grocery stores	66	21	13	Light industry	77	6	17
Restaurants (sit down)	76	12	12	Heavy industry	45	29	26
Restaurants (fast food)	10	69	21	High technology businesses	81	5	15
Office space/office buildings	41	22	37	Warehousing	26	36	38
Bars/taverns	13	63	24	Miniwarehouses/self storage	10	61	29
Automobile dealerships	5	79	16	Sand and gravel extraction	7	59	34
Gasoline stations	9	71	20	Agriculture: horticulture/crops	51	15	34
Hotels and motels	54	25	22	Agriculture: livestock	38	22	40

Appendix 3

Rochester's Soil Groups

The following description of Rochester soils are based upon the soil conditions grouped into seven categories for planning purposes.

Wetland (Hydric) Soils

These soils are formed in association with the marine silts and clays, some areas of till, and the more recent alluvial sediments deposited by streams and rivers. These include poorly and very poorly (Hydric A and B) drained material having a water table at or near the ground surface for five to nine months of the year. Wetland soils, commonly found along water courses and in low lying areas, are located in Rochester along the Cocheco River, Salmon Falls River, and their tributaries. These soils comprise of approximately 6709 acres or 23.1 percent of the land base in Rochester.

Seasonably Wet Soils

These soils are similar to wetland soils, but generally are better drained. This group includes all moderately well drained soils or those having a water table within 1 to 2 feet of ground surface during parts of the year, a perched water table or slowly permeable sub-layer during the wet season. They tend to be located on the lower slopes of hills and on low knolls. Development of these soils should either be minimized and only allowed at low densities. These soils comprise of approximately 4184 acres or 14.4 percent of the land base in Rochester

Shallow to Bedrock Soils

This soil group tends to be located on low, knobby hills and ridges that typically are located on thin deposits of glacial till and have bedrock within 1 to 3 feet of the surface. The county soil survey combined these soils with some that have deeper soils. Therefore, while this group tends to have a shallow to bedrock characteristic, there will be some areas that do have deeper soils. Development on these soils tends to be costly due to construction costs of foundation and septic systems or sewer lines. These soils comprise of approximately 2706 acres or 4.3 percent of the land base in Rochester.

Sandy and Gravelly Soils

Sandy and gravelly soils are excessively well-drained soils that have formed in thick sand and gravel deposits or stratified drift. They are typically found along the plains and terraces of the Cocheco and Salmon Falls Rivers. These soils have very good development potential since there are few limitations to development. However, these soils are often the sites of significant ground water resources including aquifers, municipal water supply wells, having well-head protection areas. Therefore, development should be managed to avoid groundwater contamination from impervious surfaces, hazardous materials and high septic

system density. These soils comprise of approximately 6433 acres or 22.2 percent of the land base in Rochester.

Deep, Well-Drained Stony (Non- Hardpan) Glacial Till Soils

This group consists of well-drained loamy soils that are formed in deep, sandy and stony glacial till. Most types of development can be considered for these soils. The only limitations would be stones and clay lenses that might hinder foundation and septic tank construction and drainage. These soils comprise of approximately 6497 acres or 22.4 percent of the land base in Rochester.

Deep, Well-Drained (Hardpan) Glacial Till Soils

These soils occur under the same conditions as those above, but typically have a hardpan at about 2 feet in depth that restricts the downward and lateral movement of water. While these soils maybe well drained, septic systems may be problematic on small lots. The moderately slow permeation and the possibility of a perched water table above the hardpan are limitations that could lead to groundwater pollution. Development including water and sewer service is recommended especially where densities are relatively high. These soils comprise of approximately 1861 acres or 6.4 percent of the land base in Rochester.

Prime Agricultural Soils

The US Natural Resource Conservation Service has identified and mapped prime farmland soils in Strafford County and Rochester. These areas are scattered throughout the community, although a majority of these soils can be found in the west and southwest sections of the city, along Salmon Rivers Falls River and the Cocheco drainage area in southern Rochester.

Appendix 4

Rochester's Aquifers

Rochester is served by two stratified drift aquifers that correspond to the two major rivers, the Cocheco Aquifer and the Salmon Falls Aquifer. These areas comprise approximately 20 square miles, or 45% of the city's total land area (SRPC *Strafford Region Natural Resource Inventory, 1998*). The yields of the two aquifers are more fully described in the *Geohydrology and Water Quality of Stratified-Drift Aquifers* report and shown on Map X *Natural Resources Constraints*.

Groundwater yield is rated by the transmissivity or yield of the stratified drift aquifer. Yield is measured in feet squared per day and the USES has classified yield into four categories: Less than 500, 500 to 1000, 1000 to 2000 and 2000 to 3000. Although the groundwater is potentially recoverable by wells, the pumping of water from an aquifer requires careful analysis.

The Cocheco River aquifer has several sites that yield greater than 8,000 ft²/day (see Map X *Water Resources*). The Salmon Falls aquifer is generally categorized as a low-flow aquifer. One high yield area (greater than 8,000 ft²/day) was identified near East Rochester.

A recent study by the consulting firm of Emery & Garrett has identified five specific sites within the City that have a high potential for groundwater yield. These sites tend to be in the general locations as the high yield aquifer areas identified in the above study. Three of these are located within the Cocheco River aquifer and the other two are within the Salmon Falls aquifer. Two of the Cocheco sites are adjacent to one another and are located in the northern portion of the aquifer near the Farmington border. The third one in the Cocheco aquifer is near the Barrington border where the Isinglass River joins the Cocheco. The other two are adjacent to the Salmon Falls, one just south of East Rochester and the other just north of the Somersworth border. Further study of these areas is necessary to determine the potential for long-term sustained yields.

Appendix 5

The Second Coming of the American Small Town

The Second Coming of the American Small Town

By Andres Duany and Elizabeth Plater-Zyberk

Wilson Quarterly, Winter 1992

(This essay is the foundation for the famous, circa 1992, presentation made by Andres Duany in Boston, entitled "The Merits of Neo-Traditionalism," which is widely considered to be the speech that started the internationally prominent New Urbanism movement.)

Three years ago, Dade County, Florida sentenced itself to the absurd fate of perpetual Urban adolescence. Responding to a state mandate, the county government adopted a package of "balanced growth" measures, conceding that traffic congestion and growing demands on the public purse for roads and other infrastructure had made it impossible for the city of Miami to grow any further in the old way. Most citizens were pleased. The reaction against growth has become a national phenomenon, although elsewhere it is often much less organized and much more emotional. In California, that harbinger of everything to come in this country, it has reached near-suicidal proportions. In Santa Cruz County, restrictions on growth have crimped the tax base: Three bridges have been closed for lack of funds to pay for repairs. But the people of Santa Cruz apparently would rather endure such difficulties than grow.

This is unprecedented. Never before in American history has growth been so unwelcome. After all, growth signifies more people, more commerce, more prosperity, more culture. It is in the nature of cities and towns to grow, and when they grow no further, like all organisms, they begin to die. What is responsible for this bizarre antipathy is not growth itself but the particular kind of growth we have in the United States. Suburban sprawl is cancerous growth rather than healthy growth, and it is destroying our civic life.

Americans are only beginning to understand that this is so. Many Californians are no longer interested in building more highways to make traffic flow more smoothly; not unreasonably, they now simply want less traffic. The credit for this change belongs partly to the environmental movement, which has persuaded most Americans of the need to stop ravaging the landscape and polluting the atmosphere with ever more roads and cars. But Americans are also beginning to recognize an important fact. It is not only the atmosphere or the animal habitat that is endangered on this continent. The human habitat is threatened as well.

Growth gone awry can be seen anywhere in suburbia but nowhere more clearly than in the "planned communities," based on derivative versions of the planning ideals embodied in Reston, Virginia, or Irvine, California, that have proliferated on the suburban fringes since the 1960s. Examined piece by piece, these planned communities do seem to of many of the things that Americans say they want: convenient workplaces, well-managed shopping centers, and spacious, air-conditioned houses full of the latest appliances. But why, when they get all of this, do Americans hate it so much that they want to stop more of it from being created?

"No more of this!" they say. "It is ugly and it increases traffic." They are happy with the private realm they have won for themselves, but desperately anxious about the public realm around them. Because of the radical

malfunctioning of the growth mechanism, the late 20th-century suburbanite's chief ideology is not conservatism or liberalism but NIMBYism: Not In My Back Yard.

Suburbanites sense what is wrong with the places they inhabit. Traffic, commuting time, and the great distances from shopping, work, and entertainment all rank high among their complaints. But all such inconveniences might be more bearable were suburbs not so largely devoid of most signs of "community." The classic suburb is less a community than an agglomeration of houses, shops, and offices connected to one another by cars, not by the fabric of human life. The only public space is the shopping mall, which in reality is only quasi-public, given over almost entirely to commercial ends. The structure of the suburb tends to confine people to their houses and cars; it discourages strolling, walking, mingling with neighbors. The suburb is the last word in privatization, perhaps even its lethal consummation, and it spells the end of authentic civic life.

Is there an alternative? There is, and it is close at hand: the traditional American town. This is not a radical idea—far from it. When the Gallup Organization asked Americans in 1989 [what kind of place they wanted to live in, the most popular choice was] a small town. Only 24 percent chose a suburb, 22 percent a farm, and 19 percent a city. One hardly needs an opinion to discover the allure of towns. The market reveals it. Americans have shown over and over again that they will pay premium prices to live in the relatively few traditional towns that remain, places such as Marblehead, Massachusetts, Princeton, New Jersey, and Oak Park, Illinois.

All of the elements of towns already exist in the modern American suburb. For various historical reasons, though, they have been improperly assembled, artificially separated into "pods" strung along "collector roads" intended to speed the flow of traffic. The pods are specialized: There are housing "clusters," office "parks," and shopping "centers." These elements are the makings of a great cuisine, but they have never been properly combined. It is as if we were expected to eat, rather than a completed omelet, first the eggs, then the cheese, and then the green peppers. The omelet has not been allowed to become the sum of its parts.

The tragedy is that we could have been building towns during the 1970s and '80s. But all of that wonderful growth has been wasted, and it is doubtful that we will ever see anything like it again in our lifetimes. Misguided planning, not rapacious real-estate developers, is chiefly to blame for this gross miscarriage of growth. Left to their own devices, developers would have every incentive to build towns. Because towns are more compact than sprawl, the cost of land, streets, water and sewer lines, and other infrastructure is lower. And they can be built at lower risk, in small increments.

The town is a model of development well-suited to times of economic adversity, and it dominated American thinking until World War II. But postwar developers were guided by a new model that emerged out of government economic policy and planning legislation. Matters were complicated by the fact that each of the elements of the town emigrated to the suburbs at different times. First there was the great decanting of the urban population after World War II, encouraged by such well-meaning government programs as Federal Housing Administration and Veterans Administration mortgages and the construction of interstate highways. The supermarkets, small shops, and department stores followed, filling up the new shopping centers and malls. More recently, the office and industrial parks have followed. As early as 1980, 38 percent the nation's workers were commuting from suburb to suburb, and only half as many were traveling from suburb to city center. Meanwhile, the poor never joined the suburban migration, becoming ever more isolated in the city core, which has become their specialized habitat.

All of this suburban development occurred under the dominion of Euclidian zoning—zoning that requires the rigid segregation of housing, commerce, and industry. That approach to zoning is a residue of the Industrial Revolution, which made it seem desirable to move people's homes away from the dark satanic mills. Such

distancing is no longer necessary, of course, since most contemporary office parks and electronics plants make extraordinarily benign neighbors. Nevertheless, every generation of planners attempts to relive that last great victory of the planning profession by separating more and more elements, more and more functions:

Even doctors' offices today are kept strictly isolated from the people who use them. We believe, quite simply, that all of these elements should once again be assembled into traditional towns. But what goes into the design of a town?

[Take the case of] Alexandria, Virginia, American towns share so many attributes that it could just as well be Manchester, New Hampshire, or Key West, Florida, or any number of other places. It contains neighborhoods of finite size and definite character which people can easily traverse on foot. Residential areas are seamlessly connected to the rest of the town, and they are not even exclusively residential. They boast corner stores, attorneys' offices, coffee shops, and other small establishments.

In the traditional American town, what is important is not what buildings are used for but the buildings' size and disposition toward the street. Buildings of similar size and characteristics tend to be compatible regardless of their use. Successful towns can be composed of little buildings, like Alexandria, or of relatively big ones, like Washington, D.C., whose buildings are all roughly the same size (thanks to strict height restrictions) though they serve a variety of functions. Some are civic buildings, others house offices, and others contain apartments. In the typical planned community, the formula is completely reversed: The building sizes vary, but the building uses are completely homogeneous. Offices go with offices, for example, never with houses.

Likewise, the streets in the two kinds of communities are conceived in completely different ways. In the planned community there are "collector streets," which are only for cars, and cul-de-sacs, which are hard to describe because while they are supposedly designed for people they are rarely used. In the traditional town, streets are complex things, usually laid out in grids, with lanes for cars to travel and lanes for cars to park; they are lined with sidewalks, trees, and buildings. This seems like a perfectly obvious description of a street, but the fact is that we no longer design such streets. Traffic engineers now refer to trees as FHOs: Fixed Hazardous Objects. Trees, sidewalks, and buildings impede the flow of traffic; if there must be houses nearby, they are walled off by "sound barriers."

Planned communities suffer from being too diagrammatically planned, and at the heart of their plans is the collector street. In the traditional town's network of streets, there are many ways to get from one place to another. In the planned community, there is only one way: A driver must make his way from his pod onto the collector, and from the collector onto the highway. Then he can go places...

All of this becomes clearer when towns are viewed from the air. The town of Virginia Beach, Virginia, for example, apparently takes pride in what it has achieved through its planning code: "Becoming a showcase, Virginia Beach Boulevard Phase One celebrated its opening," says the caption ... from the town's promotional brochure. This is a typical product of postwar American planning as expressed through hundreds of local planning, zoning, and public-works codes. In every community, the code is a kind of constitution that lays out the rules that will order the life of the city, the rules that describe the form of urbanism that will emerge, just as the American Constitution contains within it the lineaments of American society. In Virginia Beach, as in most American communities, it is quite easy to conclude that the single most important constitutional principle is that cars must be happy. There are to be many, many lanes of traffic so that cars can move with ease and speed and negotiate turns with extraordinary grace and quickness, sparing the brakes and steering mechanism excessive wear. There is to be no on-street parking that would impede the progress of the blessed auto.

The right to park is the First Amendment in this scheme of things. Every American believes he has a constitutional right to a parking spot, even on those hectic days between Thanksgiving and Christmas. If he cannot get that parking spot, he concludes that something is dreadfully wrong and converts to NIMBYism. So there must be vast parking lots. Local planning codes describe with loving precision what the parking lots are to be like: the number of cars, the type of drainage, the kind of lights that go on them, the size of the parking space, even the paint. Our codes are extraordinarily precise about the needs of the car. But the needs of the human are another matter. The code reflects no understanding of what being in a parking lot feels like for a human being.

Everything in the Virginia Beach scheme of things is mono-functional: All of the buildings shown in the photograph house commercial enterprises-branch banks, food emporiums, discount stores-with housing and other functions carefully excluded. This is an ecological system. When all commercial activities are grouped together, the multilane roads and vast expanses of asphalt parking lot become a necessity.

Attempts have been made to repair the excesses of suburban development, and Virginia Beach illustrates some of them. There are ordinances that eliminate ugly signs, that require the preservation of trees or the planting of new ones, or that mandate the construction of sidewalks. But these efforts are largely cosmetic. Sidewalks are good for the conscience of planners, but they turn out to be so uninviting when dropped into landscapes like this that to be a pedestrian is to be considered a pariah. Driving by in a car, one might charitably offer a ride to a well-dressed person who had wandered onto this sidewalk; otherwise one would assume that a person on foot was indigent, mad, or both.

The token sidewalk reveals its absurd and perilous character most dramatically in the suburban office park, where the pedestrian is exposed to double jeopardy. On one side is roaring traffic, on the other a sea of cars. The traffic roars because the code forbids on-street parking. A line of parked cars would slow traffic and serve as a buffer of metal between the pedestrian and the moving car, providing an indispensable element of psychological comfort. Without it, the pedestrian feels too exposed. He will not use the sidewalk. Even in Paris, the great city of walkers, stores began to fail when certain avenues were stripped of their parking during the presidency of Georges Pompidou (1969-74). The hapless pedestrian is confronted by another barrier on his other side: the parking lot. It is there because the code requires it. The code requires that the building be set back a great distance from the street, and that means that the parking lot has to be placed in front. The poor pedestrian is thus deprived even of the potential interest of the building which, however miserable a structure it might be, is more interesting than the hood ornaments of cars.

There are people alive today who have never even laid eyes on the alternative to suburbia, people, in other words, who have never seen a real town. Fortunately, the American film and television myth-machine continues to do its part by churning out various simulacra of the American small town. So at least the image survives.

Authentic urban experience has become such a rarity that many places have become tourist attractions simply by virtue of being real towns. Visitors drive hundreds of miles to spend a weekend in places like Sonoma, California, just for the sake of experiencing the pleasures of small-town living.

Pondering the case of world-famous Sonoma, one realizes how pathetically easy it is to make such a place. What, after all, is Sonoma? A few very basic buildings attractively arranged. Yet tourists flock to Sonoma and places like it all over the country. Mount Dora, Florida, another tourist attraction, has two good blocks. Winter Park has four. Yet they are like magic. People come and wander around, entranced by the magic of urbanism that is denied them in the conventional suburb. This also explains the success of Disneyland and Disney World.

Visitors do not spend as much time on rides as they do wandering along Main Street, USA, and the multinational urban constructions of Epcot, getting civic kicks that they cannot get at home.

Most critics of suburbia dwell on its ugliness, yet the chief defect of the suburbs is not so much aesthetic as the fact that as civic environments they simply do not work. Some of the newer and more attractive developments, such as this one in Palm, Beach, Florida, may appear beautiful, but they have insidious social effects. In this typical version of residential planning, all of the housing in each pod is virtually identical. The houses in [a nearby] pod ... sell for about \$350,000. Everybody who lives in those houses belongs to an economic class distinct from the one of people who live in the pod of \$200,000 houses and from the one of the people who live in the pod of \$100,000 apartments. The development's layout makes random personal contact among people from different economic groups highly unlikely. No longer do we openly sanction the good old American segregation by race and ethnic group; now we have segregation by income level. It is minutely executed in the suburb, and it is consciously promoted through snob-appeal advertising. It is so extreme that the people in the \$350,000 houses would rise up in arms if somebody proposed to build a \$200,000 house in their pod.

Such economic segregation has far-reaching effects. A whole generation of Americans has now reached adulthood cut off from direct contact with people from other social classes. It is now entirely possible for a child of affluence to grow up in such a class ghetto, attend an Ivy League university and perhaps a top law school, and enter the working world without acquiring any firsthand knowledge of people unlike himself or herself. As a result more and more Americans regard one another with mutual incomprehension and fear, and that accounts for no small share of the tension in our national political life.

Economic segregation is not the American way. The more traditional arrangement ... in Georgetown, in Washington, D.C., allows people of different economic levels to live together. (it should be noted, however, that in Georgetown the variety is now reduced, for the simple reason that this sort of neighborhood is such a rarity and in such high demand that the poor, the elderly, and most young families have been priced out of the market.) There are small apartment buildings, relatively more expensive town houses, and single-family houses that are substantially more expensive. Across the street is a great estate. People of diverse income levels, in other words, can live very close together.

The planning techniques that make such diversity possible are simple, but most of them have fallen into disuse. One method is to match the size and mass of buildings. A large slab-like apartment building in the middle of a street of smaller dwellings instantly signals to passers by that the people living there are different from-either richer or poorer than-their neighbors. Make all the buildings roughly similar in size, however, and the size of the residents' paychecks matters much less.

Coral Gables, Florida, built during the 1920s, demonstrates another valuable planning technique. The system of the "street address" makes use of the fact that street-level perceptions are what matter. Single-family homes exist side-by-side with larger units, but because the mass of each apartment building is tucked away behind a facade roughly equal in height and width to the houses, the differences are noticeable only from the air. A visitor driving down one of these streets would not be aware that two building types-as well as different types of people-are sharing the same geography.

The current suburban fashion, however, is to lay out sites in almost random manner. The arrangement looks more like the result of a train wreck than of a conscious design. Because the buildings face every which way, they have no real fronts or backs. Consequently, all of the buildings in the pod must be homogeneous, and that means that the people must be alike (at least in terms of income) as well.

On a traditional street, even fairly glaring differences between dwellings can be softened by close attention to architectural details. In places like Annapolis, Maryland, for example, a great historic house worth \$1 million or more sits comfortably ...next to a pair of tiny 12-foot-wide townhouses. The marriage works because the two structures share architectural expressions. The little townhouses have windows that are like those of the bigger house, doors that are elaborated like those on the neighbor's house, similar roofs, and other common details.

Housing the poor in structures that look different from those of the middle class is a catastrophic mistake. Unfortunately, architects are often tempted to experiment on poor people, dreaming up novel designs for public housing. Architectural experiments should be restricted to the rich. As we discovered with the well-intentioned public-housing projects of the 1960s and later decades, people who are reminded they are different-perhaps only a few of them, but enough to have a large effect-will act differently, and before long the buildings will be in ruins.

Affordable housing must be provided in small increments and must be closely interspersed with market-rate housing. Even when it looks very much like middle-class housing, as it does in Reston, Virginia, housing for the poor quickly reproduces the conditions of the ghetto if it is concentrated in one place. On Cape Cod, there is now a requirement that 10 percent of the housing in large new developments must be affordable, which seems to be about the right ratio for achieving a mix without diminishing the value of surrounding properties.

One obstacle to spreading out affordable housing has always been the high price of land. But actually there are plenty of low-cost locations all over America. One such place is "over the store," which in older towns such as Siasconset, Massachusetts, has long provided apartments for the clerks, cooks, or waiters who work below. It is not the American Dream to live over the store, of course, but it works. Every new shopping center built in the affluent suburbs causes a social problem, because the less well-off are forced to travel great distances to work or shop. Requiring developers to build housing above the shops would by itself put a large dent in the affordable housing problem.

Another source of land is the vast buffer strip so characteristic of suburban development. It is a reflex of modern planners to separate anything "undesirable"-office buildings, high-traffic streets, parking lots-from the rest of the landscape with a broad swath of green buffer. Why not fill in these spaces with small places designed for people who cannot afford the American Dream?

One of the oldest and most powerful tools for integrating affordable housing in communities is the humble outbuilding. In colonial Williamsburg, the house of the master sat on the front of the lot, and behind it might be a smaller house children and a little bit farther back the servants' quarters: all on the same piece of real estate. Residential outbuildings, such as backyard cottages and garage apartments, remained a standard feature of residential neighborhoods well into the 20th century.

An outbuilding is really a bedroom pulled out of the house and equipped with a small kitchen and bath. Because children grow up and leave home, America has millions of empty bedrooms. Had some of them been built as outbuildings, they would now be available for elderly relatives, nannies, students, and many others. But suburban zoning codes completely forbid occupied outbuildings. A homeowner who submits a plan for an outbuilding will find it very thoroughly scrutinized to make sure that he cannot somehow covertly slip in a kitchen and bath. Planning authorities in other countries take precisely the opposite approach. In Canada and Australia, outbuildings are called "granny flats," and government encourages homeowners to build them by offering tax breaks and even grants. But here we ban them.

All of this economic segregation has not even allowed us to create an Eden for those who can afford the American Dream. The modern version of the American Dream is a McMansion, which may have a well-conceived and appointed interior yet almost always lacks the advantages of a neighborhood. The McMansion is both pretentious and isolated, an island in a sea of strangers and cars. Even the much cherished suburban yard offers no more than a cartoon version of country living, utterly lacking the privacy that it promises, in part because planners have been deprived of the tools to create it.

Americans do not deserve to be treated this badly. They work very hard to achieve the American Dream. Yet in other countries with more sophisticated notions of urban design, people with incomes much lower than those of most Americans enjoy a significantly higher quality of life—not the pseudo-quality of life measured in appliances and cars but quality of life understood in terms of privacy and community. There is a renewed appreciation of these values in America, but the very tools that would allow designers to help revive them have been sacrificed to suburban sprawl.

One of the great mysteries of the American suburb is this: How with such low-density development have we produced such extraordinarily high traffic? How have we achieved the traffic of a metropolis and the culture of a cow town? That, too, has been accomplished by the miraculous postwar planning device of the collector street, festooned with its variety of pods: shopping centers, office parks, schools, and residential areas, each with an independent connection to the collector. This arrangement guarantees that nobody can go to lunch, go shopping, or get to work or school without driving.

In Orlando, Florida, it has been estimated that each single-family house generates an average of 13 car trips a day and thus vast amounts of pollution. Enormous concern about air pollution has prompted California authorities to ban charcoal-lighter fluid for home barbecues. But we keep driving. Still, it is not the 13 car trips a day that congest the streets. Asphalt abounds in the suburbs. The problem is that most of it is barely used. Instead, the suburbanite who wants to get anywhere has to make a beeline for the collector. It is on the collectors that the clogging occurs. In fact, in downtown Los Angeles, Washington, D.C., and other cities that still have 19th-century grid systems of streets, the best way to shave time off a trip is to get off the collector and use the side streets. Why? Because traffic is diffused through capillaries, rather than confined to arteries.

Compare a recent collector plan to the development strategies of the 1920s, exemplified ... by Coral Gables, Florida. In Coral Gables, the closely interspersed shadings show different uses: residential, commercial, and so on. The roadways form an extraordinary capillary system that allows residents to get around easily, even on foot if they choose. Today, Coral Gables has no traffic problems to speak of, while late-vintage developments to the west of Miami, such as Kendall, are so choked with traffic that real-estate values were dropping even before the current recession. And the extraordinary thing is that the traffic from Kendall must flow through Coral Gables to get to downtown Miami.

Although some are beginning to alter their views (and their computer software), many traffic engineers refuse to believe that the old street-grid model works better. When they feed data on grid networks into their computers, the results almost always predict overloading at the intersections. In reality, the intersections are not congested at all.

An intelligently designed street system is only the first step in the creation of a workable town. The next is to figure out what it takes to get humans out on the streets, participating in the public realm. Many learned books have been written on civic life, but it is doubtful that many thinkers have greater insight into this aspect of the subject than American shopping center developers. Understanding the factors that can influence a shopper's decision to walk from one end of a shopping mall to the other—the uses of light, the size and the proportions of

spaces, the focusing distance of the human eye-is a matter of life and death to them, because consumers will take their business elsewhere if the mall does not reflect an understanding of human nature.

Some years ago, for example, we proposed putting a post office in a shopping center we were working on, but the developer vetoed it when we told him that it would have to be about 30 feet wide. He explained that people would not walk past a ring 30-foot wall; they would simply turn around without going to the stores on the other side. Design decisions that delicate.

Designers need to gain the same kind of insight into the design of housing in order to encourage pedestrian traffic on the streets. We believe that houses like this [refers to an illustration of a house close to a street side sidewalk, a front porch and a picket fence] generate pedestrian traffic. They do so because they project the human presence within the house to those passing on the street. There is, after all, nothing more interesting to humans than other humans. While suburban developments often have a variety of pleasant features-attractive landscaping, tidiness, compatible colors-they still fail miserably at the vital task of being interesting. The reason, in this case, is that the only information these [types of] houses put forth to passers by is that cars live there. That may give passing cars a nice feeling, but it does not do much for people. It does not encourage them to get out and walk. At bottom, this a problem of urban design: When housing achieves a certain density but parking remains a necessity, the car's house (the garage) overwhelms the human's house. No architect is skillful enough to make human life project itself on the facade of a house when 60 percent of it is given over to garage doors. Without them, even a mediocre architect can create a satisfactory design.

The way to banish the garage from the facade is to create an alley behind the house. This humble invention of the 19th century has completely disappeared from the lexicon of planning codes. (We once designed alleys in a Florida project but had to label them jogging "tracts" to get them accepted.) Alleys also yield an important fringe benefit: They allow residents to take their trash off the street. The decline of the alley was completed when the plastic bag was invented. Once Americans no longer had to worry about the stink of garbage, they could put it in front of their homes, which has greatly contributed to the decay of urbanism.

Alleys address another problem: where to put the "services," the gas, electric, water, sewer, and telephone lines. Merely sinking such things underground in the street in front of the house does not solve the problem, in part because utility companies require easements that are two to 10 feet wide. Add that requirement to others-traffic lanes, sidewalks, planters for trees-and the streets become so wide that they destroy the feeling of neighborhood intimacy.

At stake in the design of streets, alleys, and other facets of the suburb, some writers say, is something they call "sense of place." Planners are in hot pursuit of this elusive commodity, yet they seldom manage to achieve it. They seem to think that sense of place can be created by a combination of decorative landscaping, exciting architecture, varied pavement textures, elegant street lights, and colorful banners. We think that achieving a "sense of place" is a much simpler matter, better thought of in terms of sense of space. The designer's chief task is the making of space that draws people out from their private realms to stroll and loiter with their neighbors: public space.

The ubiquitous "California-style" townhouse development is a classic case of the search for sense of place gone awry. The architect wiggles the units back and forth as much as the budget will allow to individualize each one, but the result is that each unit becomes an object. They do not form a wall, and without a wall no space can be defined or demarcated. Here there is no public space; there is only a parking lot. And it should not be surprising that people flee such spaces for their homes as soon as they park their cars.

Long ago in Old Town Alexandria, Virginia, the same elements-townhouse, asphalt, cars-were put together in a much more sensible fashion. The buildings were lined up to form a wall, which defines the street as space. Each unit is distinguished by slightly varying the heights-a far more economical form of articulation. This is very simple, yet it is very rare in suburbia.

The superiority of the Alexandria model is not purely theoretical; the market shows that people are willing to pay several times as much to live in Old Town Alexandria as they are to live in a modern townhouse in a typical development, several times as much for termite-ridden beams and parking that on a good day is two blocks away. That shows how strong is the human appetite for sense of space. Any architect or planner who does not deliver such good public spaces, easy as they are to create, is not only doing our society a grievous disservice. He is doing the developer he works for a financial disservice.

Aligning buildings will not by itself yield sense of space. It is also important to maintain a certain ratio of height-to-width. From classic texts and our own direct studies of places that seem to possess this ineffable quality, we have derived a good operational rule for creating sense of space: For every foot of vertical space, there ought to be no more than six feet of horizontal space. In other words, the street width as measured from building front to building front should not exceed six times the height of the buildings.

One reason a sense of space is so rarely achieved in this country is that Americans like their houses low and their front yards deep-a formula for exceeding the ratio. But even this can be mitigated, as it is in many older suburbs, by the use of trees to humanize the height-to-width ratio. The woman riding her bicycle [refers to a photo of a woman riding a bicycle on a shaded residential street] is having a more pleasant day because somebody long ago had the good sense to plant rows of trees. That underscores the fact that in the suburbs, landscaping is not just a form of decoration; it is a social necessity. In traditional town planning, landscape architects first correct the spatial problems created by the planners and architects and only then make pretty scenes. Yet today most of them would rather die than line up trees in a row. It is considered uncreative. They would rather design beautiful naturalistic clusters, hoping to foster the illusion that a forest had somehow sprouted in the middle of the city.

Another obstacle to a sense of space is the curvilinear street, perhaps the most common feature of the suburban subdivision.. On a perfectly flat piece of land, the roads twist madly, as if they were hugging the side of a mountain. Streets ought to be laid out largely in straight segments, as they were until the 1940s. After all, the vast majority of our successful towns and cities, from Cambridge to Portland, were laid out this way. Yet we have twice been summarily fired by developers when we submitted plans that included grids. Upon reflection, we realized that the developers had a valid concern, one related to the shopping-center developers' understanding that human beings do not like endless vistas. People do not like to look down a street without being able to focus on its end.

The curvilinear street seems a natural solution, since it constantly closes the vista. But it has unfortunate side-effects. A landscape of curvilinear streets is disorienting (which is why the visitor to the suburbs constantly has the feeling of being lost). Curvilinear streets also prevent the eye from focusing on anything for longer than a fraction of a second. And since the human eye needs at least two or three seconds to perceive architectural gestures-the memorable pediment or facade, the steeple-architects do not bother to provide them. Without such landmarks, the neighborhood becomes a featureless mass of buildings.

Again, it requires no great creative gift to discover alternatives that work with grids. One notable town-planning manual published in 1909, Raymond Unwin's "Town Planning in Practice," contains page after page of illustrations showing the many ways that intersections can be cleverly used to terminate vistas. In the

memorable American cities, such as Charleston, South Carolina, our ancestors even used intersections as sites for churches, civic buildings, and other special structures, and these are the very sites that have become famous and that draw tourists from all over. Today, it would be impossible to build such intersections, because they have been outlawed as threats to public safety at the behest of the traffic engineers.

In fact, it is often the odd intersections that produce the fewest accidents. When we drew up a master plan for Stuart, Florida, the authorities immediately proposed straightening out the town's "confusion corner," an intersection so tangled that a picture of it graces a postcard. But our research showed that "confusion corner" ranked only 20th for traffic accidents in Stuart. The 19 more dangerous intersections were built to contemporary engineering standards. In Washington, D.C., according to one local architect, 11 of the 12 most dangerous intersections conformed to such modern standards. It is not hard to guess the explanation. A driver on the enormous streets that are now mandatory is more likely to be bored and inattentive (and possibly speeding) than is a driver on a "dangerous" older street.

Grids, intersections, and other devices are important, but other details must be attended to in order to bring people out into the civic realm. One of the most important is the curb radius at intersections. At the now standard 25-40 feet, the curb radius allows the driver of a car travelling 35 miles per hour to negotiate the corner without having to slow down much. That poses an intimidating challenge for a pedestrian attempting to cross the street. Moreover, the gentle curve of the sidewalk, so kind to the car, nearly doubles the pedestrian's crossing distance. A 24-foot-wide road widens to 40 feet where pedestrians cross. Priority has been given to the car, not the pedestrian.

Pedestrians count in places like Boca Raton, where a typical curb radius is eight feet. In Boston, radii of eight or six or even three feet are very common. A typical traffic engineer will swear that such a thing is no longer possible, that it will cause accidents. But it does not.

Common sense has evaporated from the traffic-engineering profession, and the huge costs of its absence are measured in economic as well as aesthetic terms. In America, thanks to the traffic engineers, we push highways right through the middle of cities, as [the] cover of Florida's Department of Transportation annual report proudly demonstrates. By giving a little four-lane road in Orlando the characteristics of a highway, the state turned it into a monster. Highways destroy cities. When it enters a town or city, a highway should become a boulevard. A typical French boulevard actually has more lanes than the Orlando highway [refers to a photo of one with 12], but an entirely different effect. The elements and engineering "geometries" of the boulevard are completely different. Buildings and trees line the boulevard and cars park along its length, inviting pedestrians to stroll along its sidewalks.

American taxpayers would be astounded if they realized the true costs of their highways, costs that far exceed the price of construction. Avenues help pay for themselves by enhancing the value of buildings in the vicinity and thus enlarging the tax base. But highways destroy market value and shrink the tax base, forcing local authorities to raise tax rates. Their hidden costs probably run into billions of dollars.

In the United States, we invest too much in "horizontal infrastructures and not enough in "vertical infrastructure," too much in asphalt on the ground for cars and not enough in buildings for people. Our planning codes and regulations demand a gold-plated asphalt infrastructure, leaving little money for the human infrastructure. The unhappy results are all around us. Some of us have become quite accustomed, for example, to sending our children to schools that are nothing more than trailer parks with fences around them. But the highways are built to ever higher standards; they are wider, the curbs are softer, the concrete more elaborate. Everything gets better for the cars; we do not dream of denying our automobiles anything.

Building more highways to reduce traffic congestion is an exercise in futility. Whenever it is done, more people are encouraged to take to their cars, and before long the roads are as clogged as ever. We cannot continue to spend as extravagantly on roads as we did during the postwar decades of affluence. We must revert to planning approaches from the days when America was a poorer but smarter nation. The only permanent solution to the traffic problem is to bring housing, shopping, and workplaces into closer proximity.

Reining in the auto would also help solve the problem of affordable housing. At MIT, architects are going to great lengths to find ways to make housing cheaper, developing prefabricated components, spacing wall studs further apart, and using rubber hoses for plumbing. In the end, all of these efforts do not add up to very much—perhaps a \$10,000 or \$20,000 savings. Nothing can be done that rivals making it possible for a family to get by with one less car. That extra car, so necessary in today's suburb, costs about \$5,000 annually to operate. That is a highly leveraged sum, large enough to supply the payments on a \$50,000 mortgage at 10 percent interest.

The tyranny of the auto reaches into every corner of American life. Why is the U.S. Postal Service perennially bankrupt? One reason surely is that it has to deliver mail all over the continent in broken jeeps. The auto's worst victims, however, are the very young and the very old. Every year, hundreds of thousands of people move to Florida and many thousands move out.

Many of those emigrants are people who moved to Florida to retire but found after a few good years that they had to go elsewhere. The suburb, they discovered, is poorly suited to the elderly. A suburbanite who loses his or her driver's license—perhaps because of failing eyesight—ceases to be a viable citizen. That person cannot go shopping, visit friends, or get to the doctor's office. He cannot take care of himself. In a town, he can. He may be too old to drive, but he is not too old to walk. Unfortunately, only a few senior citizens are wealthy enough to afford to live in the rare towns that exist—some of these have been dubbed Naturally Occurring Retirement Communities, or NORCS, by demographers. For the less-fortunate majority, nursing homes are frequently the only alternative.

Children are the other great victims of the suburbs. Families move to the suburbs precisely because they are supposed to be "good for the kids." And the fresh air and open spaces are good for them. Suburban sprawl is not. Children in the postwar suburbs are kept in an unnaturally extended state of isolation and dependence because they live in places designed for cars rather than people.

The school is the social center of the child's life, but the routine of the typical suburban school is governed by the school bus. The children are bused in at eight o'clock in the morning and most of them are bused home at three o'clock, regardless of what they are doing, warehoused in front of television sets until their parents come home from work. If the parents do not want their children to lead that kind of life, one of them (almost always the mother) has to stay home to take care of them. And that often amounts to little more than exchanging a career for a new job as an unpaid chauffeur. Imagine how the lives of children would change if the suburban house and yard were assembled in the form of a traditional neighborhood so that kids could visit friends, go out for a hamburger, or walk to a library on their own.

All of us suffer. The eight-hour workday was the great victory of the past century, but we have squandered our gains by expanding our commuting time. Instead of spending two more hours a day with our families and friends, or forging bonds of community over the backyard fence or at the town hall, we have chosen to spend them competing with our fellow citizens for that scarce commodity called asphalt. That is yet another example of how the public realm has been transformed into an arena of hostility and competition.

Americans are ready for the return of the town. The signs of a revival of interest in community on a smaller scale are everywhere. In major cities, policemen are deserting their patrol cars and walking the sidewalks, not just responding to crises but actually getting to know the people on their beats. The experts have dressed this up by calling it "community policing." New York City is studying the possibility of decentralizing its courthouse system, creating 75 precinct courthouses so that the legal system is brought closer to all citizens. Corporations are moving to small towns; Los Angeles yuppies by the thousands are leaving the city's sprawl for the more traditional neighborhoods of Portland and Seattle.

Developers are starting to catch on to this reality. During the 1960s, most of their advertising appealed to snobbism; during the '70s it emphasized security; now "community" sells. The marketing experts at Arvida, the largest and probably the most sophisticated developer in Florida, have promoted one of their new developments, Weston, by calling it a "hometown" and advertising various "lifestyle attractions." But developers are cautious because Americans seem to have been so happy buying houses strewn amid suburban sprawl. Arvida, like other developers that have taken this tack, did not actually build a town. Weston is much the same as any other suburban planned community, with the usual shopping and housing pods connected to collector streets.

Building real towns will require changing master plans, codes, and road-building standards, and, above all, attitudes. The mindless administration of rules enshrining the unwisdom of the past half century must cease; the reign of the traffic engineers must end. Americans need to be reacquainted with their small-town heritage and to be persuaded of the importance of protecting the human habitat every bit as rigorously as the natural habitat. Architects and planners and developers can be leaders and educators, but ordinary citizens will have to insist that the happiness of people finally takes precedence over the happiness of cars, that the health of communities takes precedence over the unimpeded flow of traffic. As the great architect Louis Sullivan wrote in 1906:

"If you seek to express the best that is in yourself, you must search out the best that is in your people, for they are your problem, and you are indissolubly a part of them. It is for you to affirm that which they really wish to affirm. Namely the best that is in them. If the people seem to have but little faith, it is because they have been tricked so long. They are weary of dishonesty, more weary than they know, much more weary than you know. The American people are now in a stupor. Be on hand at the awakening."

These were hopeful words in 1906. Nearly a century later, they are urgent.

Appendix 6

Survey Results - Developments Eliciting a Positive Response

Citizens were asked in the Community Survey to state developments in Rochester that they like. Their responses with the number of times the response was given are as follows.

Granite State Industrial Way	33
Walmart	24
Opera House	23
Commons	18
Blue Hills	13
Evergreen	11
Lowell Street	11
Library	11
Spaulding High School	11
Cabletron	10
Commercial growth on Route 11 corridor	10
Governors Inn	10
New Fire Station in Gonic	8
Hanson Pines	8
Lilac Mall	8
Tara Estates	6
Juniper Street	5
Dustin Homestead	4
Ledgeview	4
Meadowbrook	4
School swimming pool	4
Capitol Circle	3
Charles Street	3
Downtown	3
Frisbie Memorial Hospital grounds	3
Frisbie Conference Center	3
Lilac City Mobile Home Park	3
Market Basket	3
Proposed mall on Route 11/North Main Street	3
Roger Allen Baseball Park	3
Tingley Street	3
Walgreens	3
Willis Carroon Building	3
Brock Street	2
Fair grounds	2

Franklin Heights	2
Holy Rosary Credit Union	2
Paradise Park	2
Rochester Hill	2
Ryan Circle	2
Sampson Road	2
Stonewall Drive	2
Stair Falls	2
Anderson Building	1
Arthurs Market	1
Babe Ruth baseball field	1
Betts Road	1
Buck Meadows	1
Cochecho River Estates	1
Cold Spring Manor	1
Community Center	1
Horsehill Feeds	1
Jarvis Tool	1
Meaderboro Road	1
Police Department	1
Portland Street (close to Salmon Falls Road)	1
Post Office	1
Roberge Manor	1
Stillwater Circle	1
St. Marys Church	1
Country Club	1
Rivers Edge	1

Appendix 7

Survey Results - Developments Eliciting a Negative Response

Citizens were asked in the Community Survey to state developments in Rochester that they don't like. Their responses with the number of times the response was given are as follows.

Mobile home parks	31
Low income developments/apartment buildings	27
Big box retail establishments	25
Unsafe/unsightly downtown buildings	16
Malls	12
Streets leading to fair grounds	9
Wasted money on more school pools	4
Downtown traffic	3
Poor zoning	3
Community center	3
Downtown parking situation	2
Too many gas stations	2
Too many car dealers	2
Too many tattoo/manicure shops	2
Too many people/kids loitering	2
Industrial parks	1
Houses that look alike	1

Appendix 8

Survey results - which businesses would you like more of?

Citizens were asked in the Community Survey to state businesses that they would like to see more of in Rochester. Their responses with the number of times the response was given are as follows.

Family Restaurant/Outback/Applebees type	75
Supermarket (especially on North Main Street)	59
Mens and womens clothing store	35
Home Depot/building supply/hardware	17
Fabric shop/arts and crafts	13
Specialty boutiques	13
Christmas tree shop/department store	11
Macys/Filenes	9
Light industry	8
Small retail bookstore/coffee shop	8
Adult entertainment (dancing & shows)	6
Recreational facilities for children/teens	6
Computer/electronic/high tech store	5
Hotel/motel	5
Movie theater	5
Small general store	3
Supermarket (in Gonic)	3
Big & tall shop for men and women	2
Jewelers	2
Museum	2
Music store	2
Professional building	2
Shoe store	2
Toy store	2
Bakery	1
Child care facilities	1
Conference center/banquet facilities	1
Health food store	1
Pet shops	1

Appendix 9

Survey results - which types of businesses do we perhaps have enough of?

Citizens were asked in the Community Survey to state businesses that they think we have too many of in Rochester. Their responses with the number of times the response was given are as follows.

Auto dealers/auto supply shops	49
Fast food restaurants	44
Pawn shops/second hand shops/antiques/flea markets	43
Pizza/sub shops	40
Drug stores	31
Banks	26
Gas stations	26
Hair salons/tattoo shops/nail shops	26
Chinese restaurants	20
Convenience stores	8
Bars	5
Self storage	4
Insurance agencies	2
Loan offices	2
Real estate agencies	2
Law offices	1
Video shops	1

Huntersville Land Development Code

Street Plan Types

The layout of streets should provide structure to the neighborhoods. The formality of the street plan will vary depending upon site conditions and topography. Unique site conditions should be used to create special neighborhood qualities. The following are examples of street plan types, noting advantages and disadvantages.

Organic Network

Nantucket



Advantages

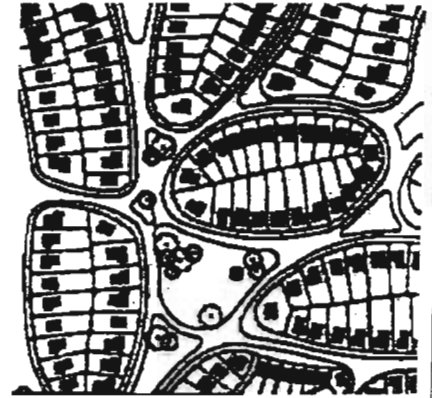
- Street hierarchy with main routes for through traffic
- Even dispersal of local traffic throughout network
- Responsive to terrain
- Responsive to environmental conditions
- Small scale suited to pedestrians

Disadvantages

- Variety of blocks and lots that do not conform to any overall plan

Curvilinear Network

Riverside, IL



Advantages

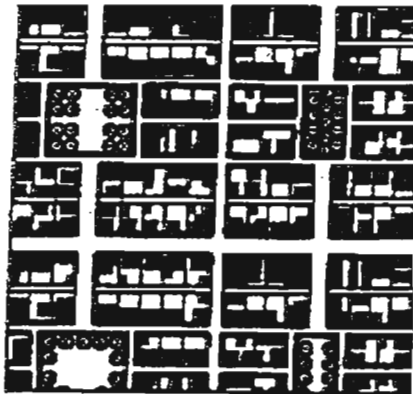
- Avoids monotony by deflecting views
- Highly responsive to terrain
- Even dispersal of traffic through the network

Disadvantages

- Little directional orientation
- Uncontrollable variety of lots
- No natural hierarchy of street
- Lack of spatial definition

Orthogonal Grid

Savannah, GA.



Advantages

- Excellent directional orientation.
- Clear spatial definition
- Lot variety controllability
- Street hierarchy with end blocks for through traffic
- Even dispersal of traffic through grid
- Alleys for efficient double loading of service and for utilities location

Disadvantages

- Monotonous unless periodically interrupted
- Does not accommodate environmental interruptions
- Unresponsive to steep or special terrain

Diagonal Network

Mariemont, OH.



Advantages

- Street hierarchy with diagonals for through traffic.
- Diagonals can respond to terrain
- Creates focal points at intersections
- Clear spatial definition

Disadvantages

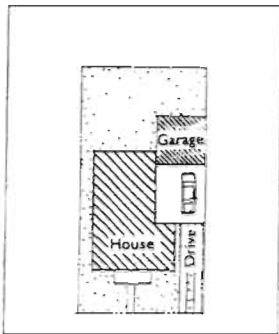
- Some awkward block shapes at intersections of diagonals and regular grid

Appendix 11

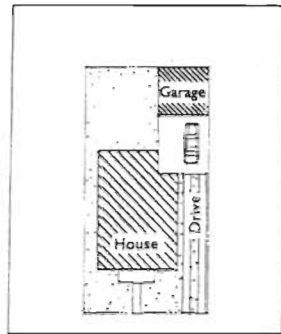
Residential Garages

Residential Garages

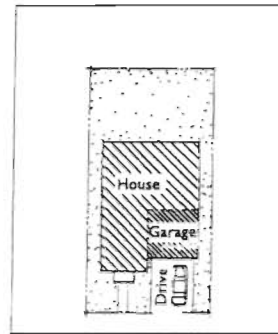
Residential garages should be positioned to reduce their visual impact on the street. This will allow the active, visually interesting features of the house to dominate the streetscape. At a minimum, the garage should be set behind the front facade of the residential building. In single-family areas, garages may be sited in several ways: in the rear accessed from an alley, in the rear accessed by a side drive, or to the side recessed behind the front facade by at least 5 feet.



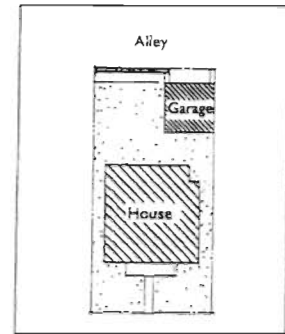
SIDE DRIVE (ATTACHED)



SIDE DRIVE (DETACHED)



RECESSED FRONT GARAGE



ALLEY
(ATTACHED OR DETACHED)

An active, pleasant, and safe pedestrian environment is created along streets when residences face the street directly. By recessing garages, more active living areas can overlook the street, allowing residents to keep a watchful eye on playing children and participate in neighborhood activity. This configuration also creates a more human-scaled and less monotonous environment by minimizing the visual impact of large, blank garage

doors and by enclosing the street with a variety of architectural elements, such as windows, bays, and porches.

Garages must be sited away from the street, behind or below residential buildings. Where the garage is below residences, it should be depressed so that the first floor of living units is not more than about four feet above finished grade. Tandem parking is permitted and encouraged in garages.

Appendix 12

The Ahwahnee Principles

(by the Center for Livable Communities)

Preamble:

Existing patterns of urban and suburban development seriously impair our quality of life. The symptoms are: more congestion and air pollution resulting from our increased dependence on automobiles, the loss of precious open space, the need for costly improvements to roads and public services, the inequitable distribution of economic resources, and the loss of a sense of community. By drawing upon the best from the past and the present, we can plan communities that will more successfully serve the needs of those who live and work within them. Such planning should adhere to certain fundamental principles.

Community Principles:

1. All planning should be in the form of complete and integrated communities containing housing, shops, work places, schools, parks and civic facilities essential to the daily life of the residents.
2. Community size should be designed so that housing, jobs, daily needs and other activities are within easy walking distance of each other.
3. As many activities as possible should be located within easy walking distance of transit stops.
4. A community should contain a diversity of housing types to enable citizens from a wide range of economic levels and age groups to live within its boundaries.
5. Businesses within the community should provide a range of job types for the community's residents.
6. The location and character of the community should be consistent with a larger transit network.
7. The community should have a center focus that combines commercial, civic, cultural and recreational uses.
8. The community should contain an ample supply of specialized open space in the form of squares, greens and parks whose frequent use is encouraged through placement and design.
9. Public spaces should be designed to encourage the attention and presence of people at all hours of the day and night.
10. Each community or cluster of communities should have a well-defined edge, such as agricultural greenbelts or wildlife corridors, permanently protected from development.
11. Streets, pedestrian paths and bike paths should contribute to a system of fully-connected and interesting routes to all destinations. Their design should encourage pedestrian and bicycle use by being small and spatially defined by buildings, trees and lighting; and by discouraging high speed traffic.

12. Wherever possible, the natural terrain, drainage and vegetation of the community should be preserved with superior examples contained within parks or greenbelts.
13. The community design should help conserve resources and minimize waste.
14. Communities should provide for the efficient use of water through the use of natural drainage, drought tolerant landscaping and recycling.
15. The street orientation, the placement of buildings and the use of shading should contribute to the energy efficiency of the community.

Regional Principles:

1. The regional land-use planning structure should be integrated within a larger transportation network built around transit rather than freeways.
2. Regions should be bounded by and provide a continuous system of greenbelt/wildlife corridors to be determined by natural conditions.
3. Regional institutions and services (government, stadiums, museums, etc.) should be located in the urban core.
4. Materials and methods of construction should be specific to the region, exhibiting a continuity of history and culture and compatibility with the climate to encourage the development of local character and community identity.

Implementation Principles:

1. The general plan should be updated to incorporate the above principles.
2. Rather than allowing developer-initiated, piecemeal development, local governments should take charge of the planning process. General plans should designate where new growth, infill or redevelopment will be allowed to occur.
3. Prior to any development, a specific plan should be prepared based on these planning principles.
4. Plans should be developed through an open process and participants in the process should be provided visual models of all planning proposals.

Appendix 13

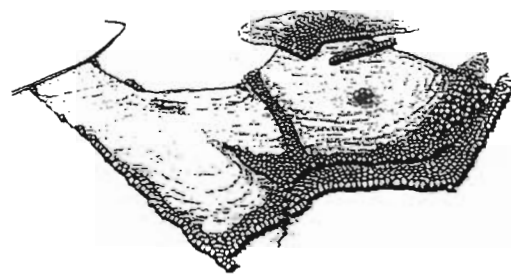
Process for Developing a Conservation Subdivision

The steps in developing an conservation subdivision are as follows:

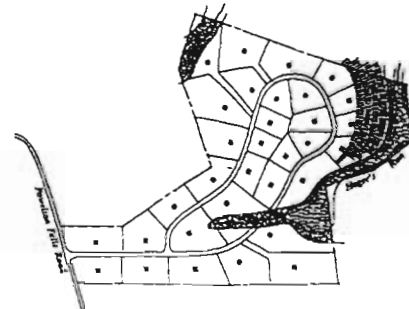
- 1) Create a yield plan for the site that assesses the number of viable building lots that would be available under a conventional subdivision design under the present or proposed zoning. This establishes the density that would otherwise be allowed.
- 2) Prepare a conservation site analysis plan that identifies prominent open spaces and important natural features broken out into primary and secondary conservation areas. Primary includes wetlands, steep slopes, and floodplains; secondary includes historic sites, scenic views, cultural resources.
- 3) Locate the portions of the site that are most suitable for development.
- 4) Locate prospective sites for dwelling units with consideration to views of open space.
- 5) Connect the house sites with streets and trails. Locate the road and pedestrian paths, including trails through the open space. Maximize the protection of views. Locate septic fields.
- 6) Delineate lot lines.

(Note that the steps laid out in the two following excerpts vary somewhat but the approach is the same.)

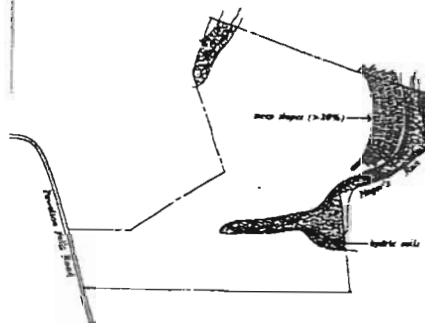
Figure 9.1. CONSERVATION DEVELOPMENT SUBDIVISION DESIGN APPROACH*



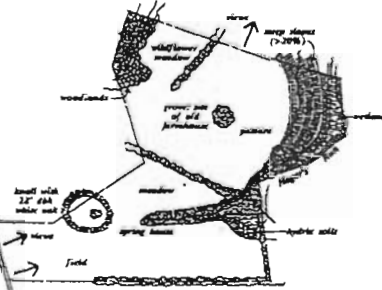
Undeveloped Land



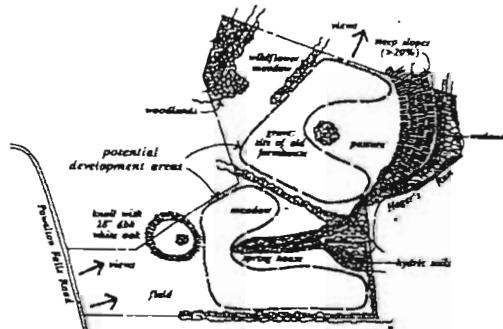
Step 1: Yield Plan



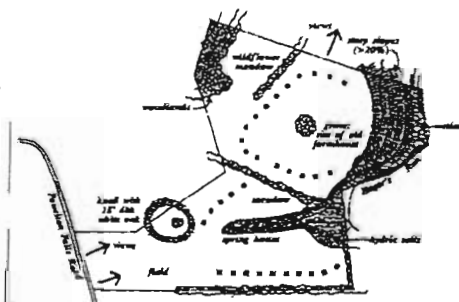
Step 2a: Primary Conservation Areas



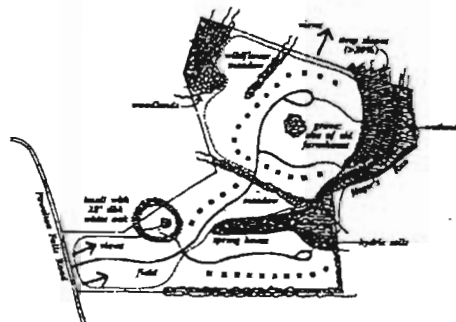
Step 2b: Secondary Conservation Areas



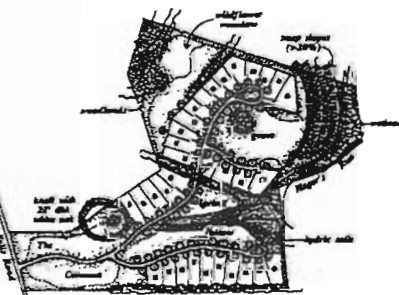
Step 3: Areas Suitable for Development



Step 4: Locate Dwelling Units



Step 5: Locate Roads and Travel Ways



Step 6: Delineate Lot Lines

* Graphics from Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks by Randall Arendt

The Four-Step Approach to Designing Conservation Subdivisions

The design process for conservation subdivisions is firmly based on the detailed site information provided through the Existing Resources/Site Analysis Map, together with off-site data shown on the Context Map regarding potential linkages to resource areas on adjoining properties and the surrounding neighborhood in general. The primary purpose of this design approach is to provide landowners and developers with their full legal density in a way that conserves not only the most special features of the proposed development site, but that also helps to protect an interconnected network of conservation lands extending across the community. *The heart of this design process can be summarized as four sequential steps beginning with the all-important identification of the conservation land that should potentially be protected.* Those steps, which are illustrated in Figures 5-5 through 5-10, are: (1) identifying conservation areas, (2) locating house sites, (3) aligning streets and trails, and (4) drawing in the lot lines.

“Yield Plan” to Determine Density

As an alternative to deducting certain percentages of various kinds of constrained land—in order to determine the net developable acreage on any given tract—ordinances can establish procedures for preparing a simple “Yield Plan,” as illustrated in Figure 5-3.

Under this approach, applicants submit a lightly engineered sketch showing the maximum number of lots they could reasonably expect to achieve through a conventional layout, given the presence of fundamental building constraints such as wetlands, floodplains, and steep slopes (over 25 percent). In unsewered areas, the planning commission would then require that a 10 percent

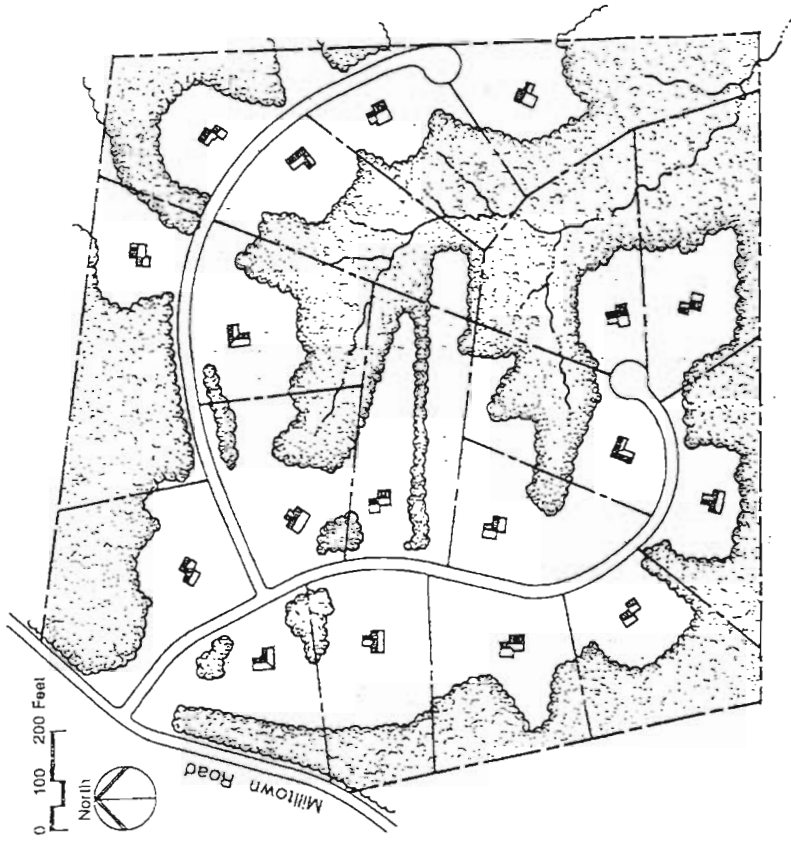


Figure 5-3. YIELD PLAN.

sample of lots, of its choosing, be tested for on-site septic suitability. If all these lots pass, the number of lots shown on the Yield Plan is approved; but if any lots fail they are deleted and another 10 percent sample is required. Again, local officials would select those lots to be evaluated, focusing on those that appear to be the most marginal or dubious.

Figure 5-3 is a Yield Plan and Figure 5-4 illustrates what the property would look like if that Yield Plan were implemented.

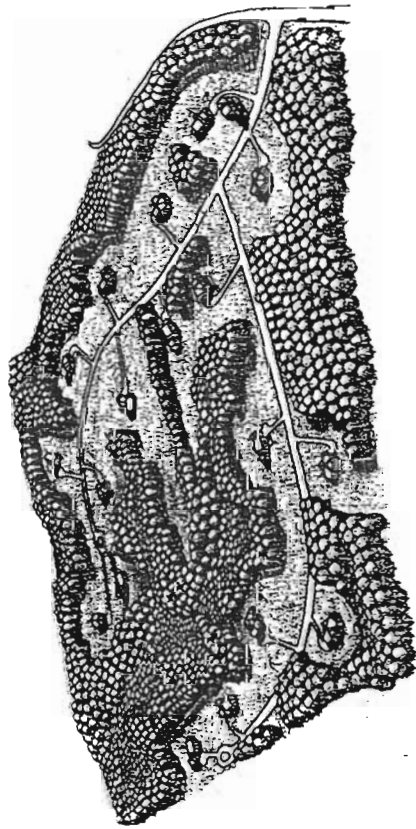


Figure 5-4. CONVENTIONAL SUBDIVISION: This bird's-eye perspective illustrates how the property would appear if the Yield Plan were built.

Step 1: Identifying Conservation Areas

Step 1, involving the delineation of lands to be conserved, is divided into two parts. Part 1 is to locate the inherently unbuildable parts of the property that are wet, floodprone, or steep (Primary Conservation Areas). Part 2 involves selecting a certain proportion (usually at least half) of the remaining relatively unconstrained land and designating that as a Secondary Conservation Area. The choice as to which elements of the site are to be so considered should be guided by clearly ranked criteria for determining conservation areas, which are discussed later in this chapter. In general, the features that are selected for inclusion in Secondary Conservation Areas are those which are the most sensitive environmentally, the most significant historically or culturally, or the most scenic.

This property's Primary Conservation Areas are fairly straightforward, consisting of well-defined wetlands and floodplains, often bordered by steeply sloping ground (see Figure 5-5). Some of these unbuildable areas also include Secondary Conservation Area elements, such as mature woods in the bottomland hardwood forest and on the

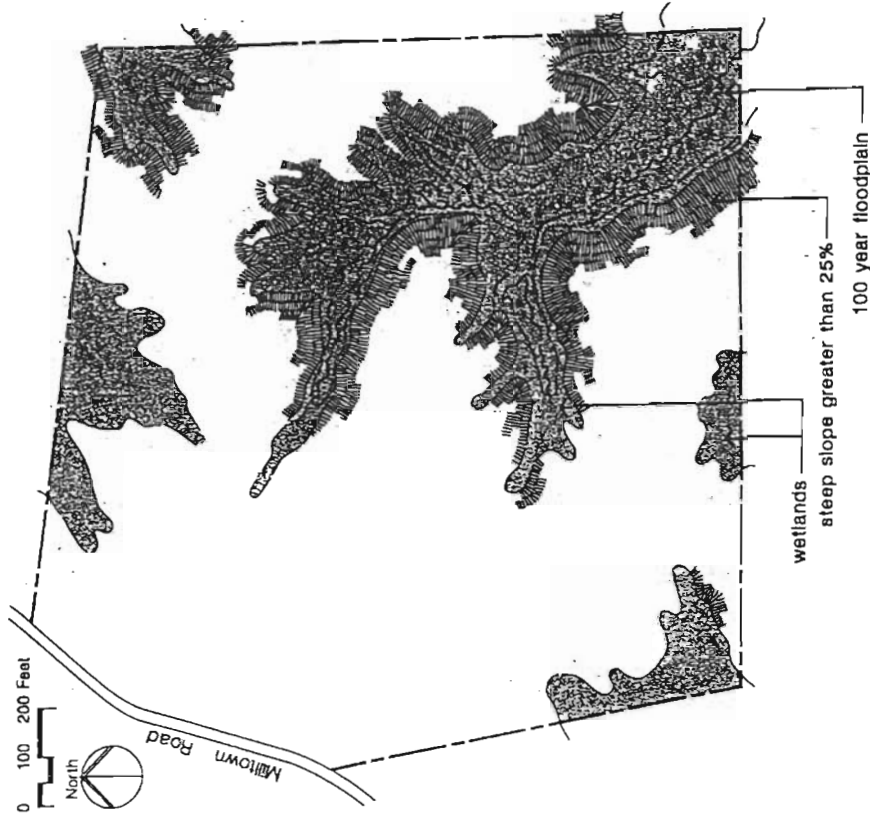


Figure 5-5. PRIMARY CONSERVATION AREAS.

steep slopes that were passed over by timber harvesters because of their limited accessibility.

Secondary Conservation Areas also include the upland woodlands, the "Great Oak," two wildflower meadows, a couple of serpentine rock outcroppings, a family cemetery, the cellar hole of the original farmstead, and a stone wall and hedgerow running across the middle of the property (see Fig. 5-6). The rural character of the site, as seen from the township road, is also defined by the open views into

A34

necting them with the street. These lots are especially useful in odd corners of a neighborhood, such as at the end of a cul-de-sac or along a sharp curve in the street. Although they are essentially variations on wedge-shaped lots common in such situations, they often provide more usable yard space than do wedge-lots since their shape in the area where the house is situated tends to be more rectangular.

Although flag lots are most appropriate in relatively low-density subdivisions where the overall density is one acre or more per dwelling, these "flag lots" can also be useful at higher densities and should generally be permitted in all developments, with certain restrictions. To curb potential abuses, they should be limited to no more than 15 or 20 percent of the total number of lots (for instance), and when the "flag" portion is less than 10,000 square feet the planning commission should be authorized to require adequate visual screening between adjoining lots (particularly those that share a front-back boundary).

Although it is rarely possible to design layouts so that every house has a view over major open space, it is often feasible to give most houses a view of at least a minor open space, such as a small neighborhood common or village green, or several acres of trees and grass around a small pond doubling as a stormwater retention facility, attractively landscaped with native species such as red-twig dogwood shrubs.

Once the Primary and Secondary Conservation Areas have been delineated, the remaining lands that stand out as the most logical places to situate the house lots and streets are called Potential Development Areas (see Fig. 5-7).

Step 2 involves locating house sites within these Potential Development Areas in a way that maximizes the number of homes enjoying direct views of the conservation land (see Fig. 5-8).

It is clear that identifying house sites before lot lines and streets allows building locations to be carefully selected so that natural, his-

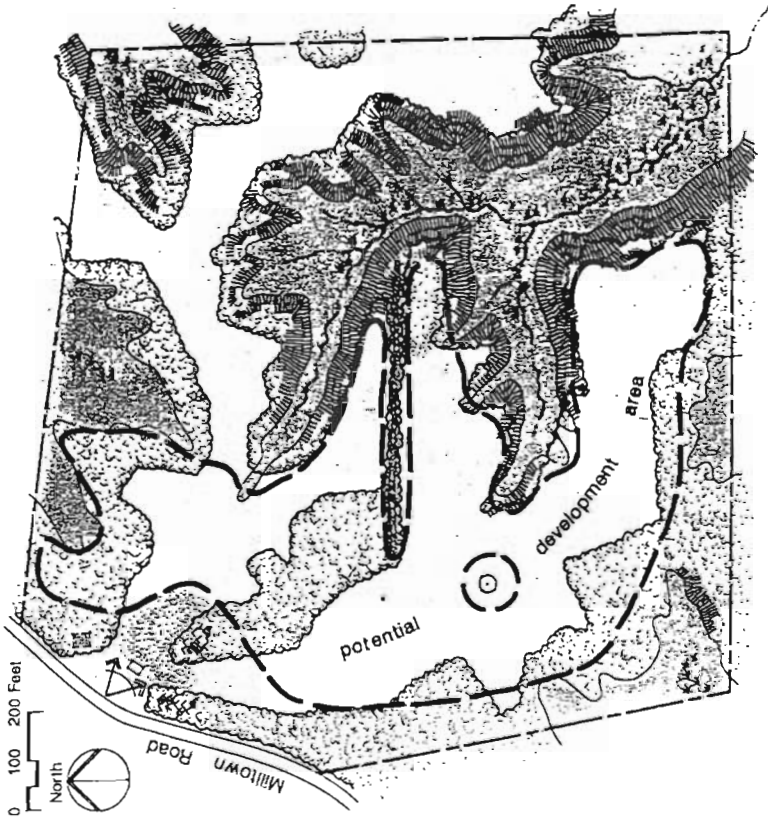


Figure 5-7. POTENTIAL DEVELOPMENT AREAS.

torical, or cultural features worth preserving, including large trees and prominent rock outcrops as well as historic or cultural features such as stone walls, cellar holes, battle trenches, and archaeological remains, can be avoided. Because it is not always possible to draw the Secondary Conservation Areas sufficiently large to include all these features, some of the less significant areas might fall into those parts of the site slated for development. However, the flexibility of this design approach enables the majority of such features—and all of the best ones—to be designed around.

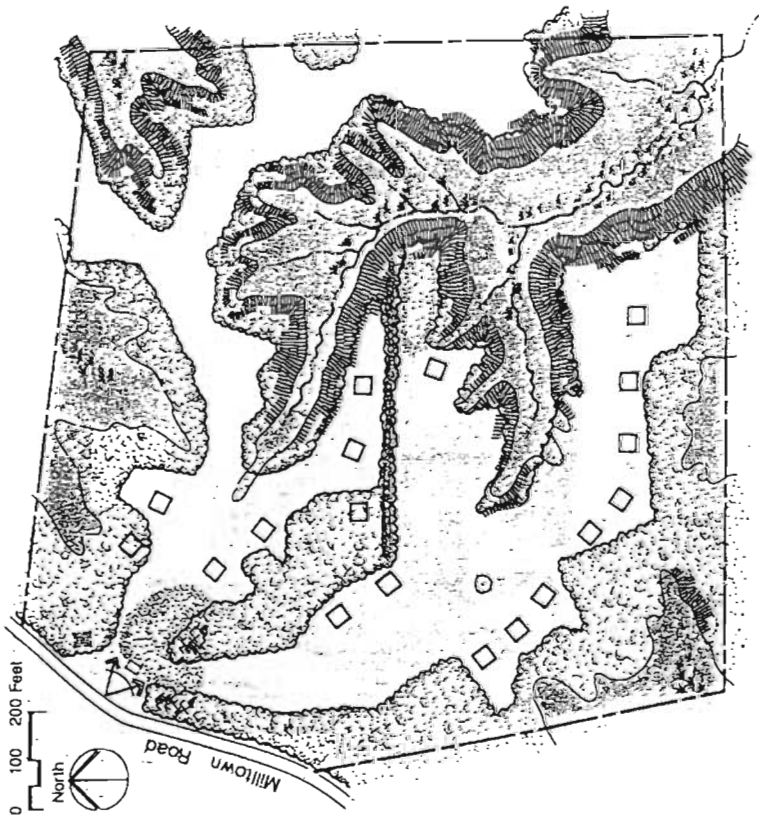


Figure 5-8. LOCATING HOUSE SITES.

Step 3: Aligning Streets and Trails

After the conservation land has been at least tentatively identified and potential house sites have been sketched in, the third logical step is to determine the best way to access every residence with a street system (see Fig. 5-9). This part of the exercise essentially involves "connecting the dots." Readers should note that the *single-loaded* streets (with houses on one side only) in the conservation design are not longer or more expensive than the *double-loaded* streets serving the same

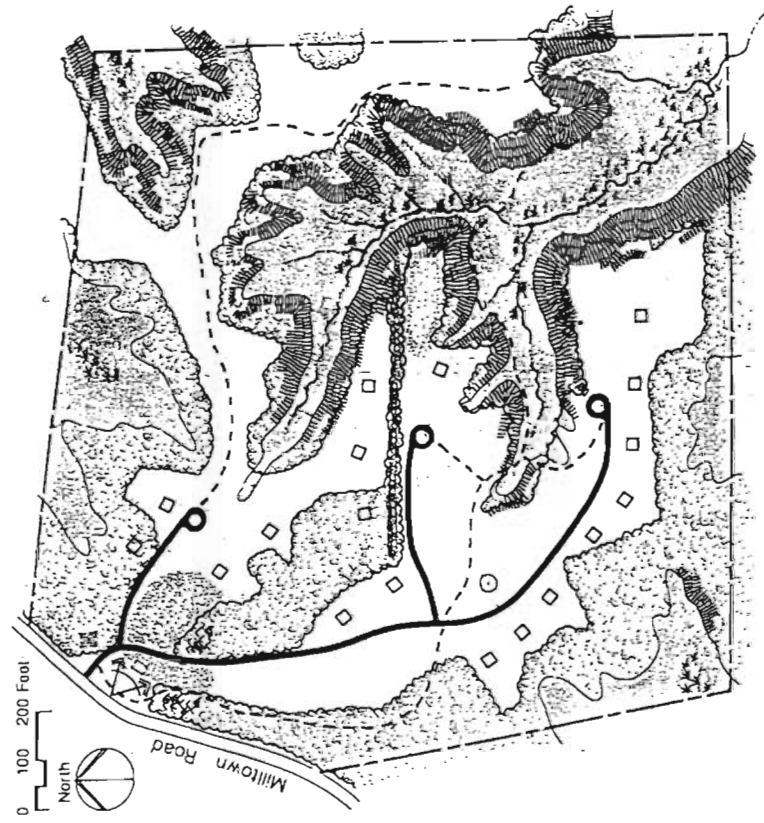


Figure 5-9. ALIGNING STREETS AND TRAILS.

number of lots in the conventional layout on the Yield Plan illustrated in Figure 5-3.

Areas with relatively level or rolling topography pose few street design challenges from an engineering standpoint, with the major considerations being to avoid crossing wetlands and to minimize the length (and cost) of new access streets. There are further considerations from an environmental perspective, such as avoiding large trees, mature tree stands, or wildlife habitats. Sometimes it is possible to split

the travel lanes so that they curve apart forming an elongated, boulevard-style island between them, where a certain large tree or other natural or historic feature may be preserved and given visual prominence. (When the preservation of large trees is involved, it is essential that the entire area under the canopy's outer "drip line" be kept undisturbed from heavy construction equipment, which can easily cause permanent damage to root systems. To achieve this, temporary construction fences should be erected ten feet beyond such drip lines until all construction activity has been finished in the tree's immediate location.) An excellent example of tree and woodland preservation in a new conservation subdivision is "Garnet Oaks" in Bethel Township, Delaware County, Pennsylvania, where the developer's site designer carefully aligned streets to avoid impacting major trees and where all contractors and subcontractors were required to attend a special training seminar on tree conservation practices cosponsored by the Morris Arboretum and Realen Homes.

Step 4: Drawing in the Lot Lines

The fourth and final step is the easiest, once the conservation areas have been delineated, the house sites located, and the road alignments determined (see Fig. 5-10). At this point in the design process, drawing in the lot lines is usually little more than a formality (and one that is unnecessary in condominium developments where all land is jointly owned). Clearly the most significant aspects of a development, from the viewpoint of future residents, are how their houses relate to the open space, to each other, and to the street (see Fig. 5-11). Lot lines are the least important element in the development design process, yet they and the street pattern are typically the first items to be set down on paper.

Maintaining livability on the somewhat smaller lots needed in conservation subdivisions does not pose much of a design problem in zoning districts where the normally required lot is one or two acres. The

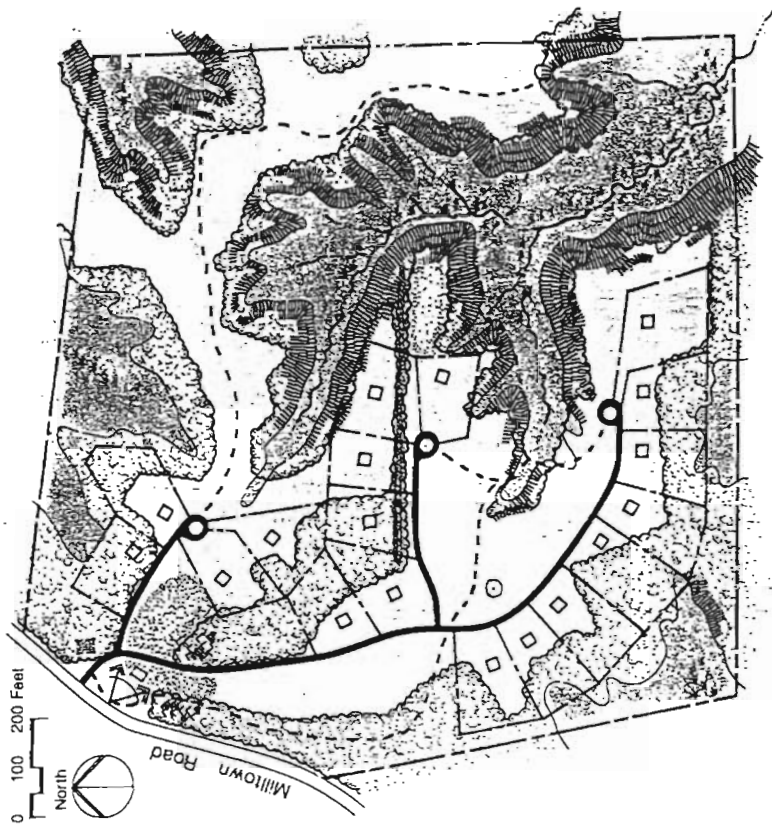


Figure 5-10. DRAWING IN THE LOT LINES.

challenge increases as density rises and lot sizes become more compact. As mentioned above in Step 2, lot lines in high-density, single-family developments can be drawn fairly close to side walls with few or no windows, enabling larger and more usable side yards to be provided on the opposite side of the house. This approach can be taken further by building on one of the side lot lines ("zero-lot line" construction).

The issue of appropriate lot depth is directly related to the presence or absence of open space along rear lot lines. When conserva-

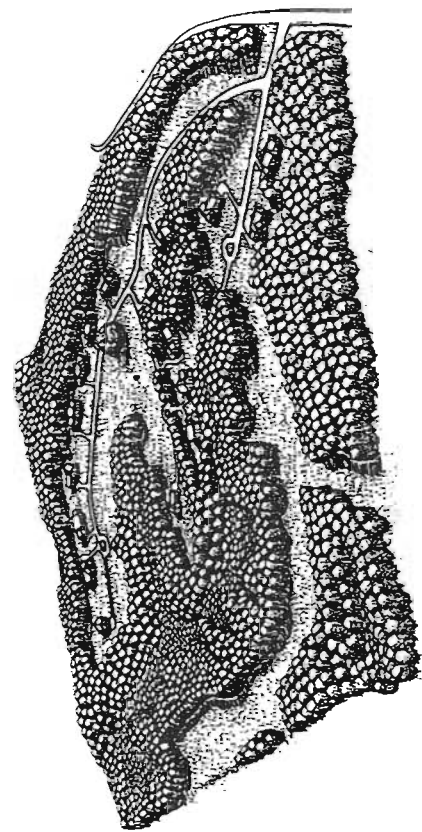


Figure 5-11. Bird's-eye perspective illustrating a conservation subdivision using the four-step design approach.

tion land is located immediately behind them, there is good justification for shortening proposed house lots, as the open space visually extends the perceived depth of back yards.

Therefore, a logical argument can be made to reduce both the width and the depth of lots where houses are located off center (i.e., closer to one side line, thereby maximizing one side yard) and where lots abut conservation areas behind them. In developments with public sewerage or with private central treatment facilities (such as "spray irrigation"), where zoning densities might allow one dwelling per 20,000 square feet of land, 75 percent open space can be achieved by designing house lots of 5,000 square feet. These smaller, village-scale lots are often deemed to be more desirable than conventional half-acre lots by several distinct groups of potential home buyers—such as empty-nesters, young couples, and single parents with a child or two—who want some private outdoor living space but who also wish to minimize their yard maintenance responsibilities. This is especially true when the lots back up to protected open space, which psychologically enlarges the dimensions of the actual lot.

Architects, landscape architects, and site designers have for many years recognized that the most efficient use of a house lot occurs when the house is located "off center and up front." Equal side yards generally produce two functionally useless areas on lots narrower than 80 feet, and front yards are practically useless in any case because they are so much within the public view. Unless homes are located along heavily traveled streets with considerable traffic noise, there is little need for deep front setbacks to provide buffering. Placing homes where front porches or stoops are within conversational distance of sidewalks helps create conditions for friendlier neighborhoods, where passersby can exchange pleasantries with residents sitting on porches on weekend afternoons or summer evenings.

Note on Design Sequence for Village Layouts

The above sequence of steps is generally modified in situations where a more formal, neo-traditional, or village-type layout is desired, as in Option 5 developments. In such cases, Step 2 becomes the location of streets and squares followed by the location of house sites. Whereas the relationship between homes and open space is of the greatest importance in more rural conservation subdivisions, the relationship between buildings, streets, and squares is the dominant design consideration in the neo-traditional approach to site design. Both design approaches place more emphasis on the designation of public open space and on the provision of sidewalks, footpaths, and trails—in an effort to foster a pedestrian-friendly community atmosphere—compared with conventional suburban "cookie-cutter" layouts offering just house lots and streets.