

LITTLE RIVER TRANSIT VILLAGE PHASE 1: FEASIBILITY STUDY

November 30, 2005

Prepared for

City of Newburyport, Massachusetts
and
Town of Newbury, Massachusetts

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1. Introduction

The Little River Transit Village (LRTV) project is an effort to promote “smart growth” in the City of Newburyport and the Town of Newbury. The Transit Village concept envisions that future growth will be concentrated in a compact area near Route 1 and the MBTA Commuter Rail station, and that this development will help preserve a permanent greenbelt in large areas of the two communities that are currently undeveloped. The planning project is a joint project of the City of Newburyport and the Town of Newbury, and is funded through a Priority Development Fund grant from MassHousing and the Massachusetts Department of Housing and Community Development.

The LRTV project is an outgrowth of separate planning efforts in Newburyport and Newbury. Newburyport’s Strategic Land Use Plan established a goal of protecting as much undeveloped land as possible in the “Common Pasture” and the upper watershed of the Little River; identified the area around the MBTA station and Route 1 Traffic Circle as a location to receive the growth that would be displaced from the proposed “Common Pasture Greenway;” and recommended that the City consider implementing the strategy by creating overlay zoning districts for compact, mixed-use development and a Transfer of Development Rights (TDR) program. Meanwhile, Newbury’s Master Plan identified goals of open space protection and creation of a new mixed-use town center around the intersection of Route 1 with Hanover Street and Middle Road.

Coming out of these previous efforts, the Little River Transit Village planning project extends the Newburyport Strategic Land Use Plan’s overlay zoning and TDR concepts to a much larger area in Newbury. The expanded planning project is designed to promote:

1. ***conservation of open space*** in a greenbelt extending from the upper watershed of the Little River in Newburyport, to the lower Parker River including Newbury Neck;
2. ***concentrated, mixed-use development*** (retail/office/residential) around the MBTA Commuter Rail station and the Route 1 Traffic Circle in Newburyport and Newbury, and along Route 1 south to approximately Sled Road in Newbury; and
3. ***construction of multifamily, mixed-income housing*** in the concentrated development area, with a target of 500 to 600 dwelling units (200-300 in Newburyport, and 300 in Newbury), of which at least 20% would be affordable units.

The name chosen for the project is meant to express these interrelated and complementary goals: open space preservation and watershed protection, combined with creation of a new kind of town center focused on the Commuter Rail station.

The first phase of the Little River Transit Village planning project is a series of studies to evaluate the feasibility of concentrating development in the “transit village” area, and of implementing the strategy through the establishment of Transfer of Development Rights (TDR) programs in both communities. The study was guided by a Technical Committee

representing planning officials and planning staff from both communities. Additional input was provided by an Advisory Committee including representatives of the Newburyport City Council, Newbury Board of Selectmen, and business and environmental representatives from both communities, as well as the Technical Committee members. Consulting assistance for the project was provided by Taintor & Associates, Inc. (lead consultant), RKG Associates, Inc. (real estate market analysis), and Weston & Sampson Engineering, Inc. (stormwater impacts, traffic impacts, and water and sewer infrastructure). The Merrimack Valley Planning Commission provided geographic information system (GIS) services, assisting in the development of the initial geographic database.

The feasibility study consisted of the following steps:

1. Study Area Delineation (described in Section 3 of this report) – identification of parcels to be included in the potential development and preservation areas for purposes of the analysis;
2. Build-Out Analysis (Section 4) – creation of a comprehensive parcel database and analysis of data to estimate maximum potential growth under existing City and Town zoning regulations;
3. Alternative Development Scenario (Section 5) – delineation of hypothetical overlay zoning districts with associated use and dimensional standards, and analysis of parcel data to estimate maximum potential growth under these alternative zoning regulations;¹
4. Real Estate Market Assessment (Section 6) – analysis of the real estate market in order to evaluate the potential for a TDR program and the mix of uses described in the build-out analysis for the Transit Village scenario; and
5. Impact Analyses (Sections 7, 8 and 9) – analyses of impacts of concentrated growth under the Transit Village scenario on stormwater quantity and quality, traffic, and water and sewer infrastructure.

Based on the results of the feasibility analysis and discussions among the project Technical Committee and Advisory Committee, it is clear that the general concepts of the Little River Transit Village project are both desirable and feasible to implement. This does not mean that the levels of development estimated in the build-out analyses are appropriate: participants

¹ The initial build-out estimates for the Transit Village scenario were provided to the subconsultants for the real estate market assessment and impact analyses in September 2005. Subsequent to this, the Technical Committee continued its review of the assumptions and methodology, and the build-out analysis was further modified and refined, leading to revised estimates in November 2005. Changes from the earlier build-out analysis included (1) removing some Newburyport parcels from the proposed receiving area, (2) adjusting the boundaries of the three hypothetical overlay zoning districts, and (3) changing several zoning parameters that were used as inputs in the build-out computations (building height, total lot coverage, and mix of uses). As a result, the build-out estimates presented in Section 3 differ from those that were used for the technical studies. However, the feasibility study findings relate to order of magnitude estimates, and would not be significantly changed by using updated build-out figures.

have agreed that the total build-out must be scaled back in geographic extent and adjusted in terms of

In the next phase of the project, the communities will work together to refine the strategy and focus efforts on three nodes.

1. The MBTA station area makes the most sense for both communities to promote for high-density, mixed-use development, for several reasons:
 - It is a large site with a single owner that is interested in moving ahead;
 - The site is adjacent to transit and thus appropriate for a Transit Oriented Development (TOD) strategy;
 - The site is already substantially covered by impervious surface (i.e., parking lots) and thus further development here would have less impact on the environment than on an undeveloped site;
 - State grant funding is available to help finance parking facilities, housing, and bicycle/pedestrian facilities in Transit Oriented Developments; and
 - The developable area of the site is almost evenly split between Newburyport and Newbury, so that both communities would share in the fiscal benefits of development.
2. The area around the intersection of Route 1 with Hanover Street and Middle Road is also a priority for action, because of current developer interest in building a shopping center on the large tract at the northwest corner of the intersection, as well as discussions about a potential affordable housing development on Hanover Street at the eastern edge of the proposed receiving area. As a consequence of the shopping center proposal, Newbury residents are actively considering what kind of development would be most desirable for this area. It appears that an appropriate strategy would be to promote *transit-supportive* development that includes a mix of commercial and residential uses but is lower in density than the TOD around the Commuter Rail station (and also lower than the density used in the hypothetical overlay districts for the build-out analysis). Such a strategy could create a new village center similar to Newbury's existing centers at the Upper Green and Byfield.
3. The third priority node is the Route 1 Traffic Circle. This area is largely developed with small-scale commercial uses, several of them quite new. Because of the fragmented ownership and existing development, it is unlikely that significant redevelopment will occur in the short term; but successful TOD development at the MBTA station will generate the momentum and critical mass for further growth at the Traffic Circle, and therefore the communities should create the zoning tools to support higher-density, mixed-use development there.

2. Summary of Findings and Recommendations

The key findings of the first phase of the Little River Transit Village project are as follows:

1. Receiving Area Build-Out Under Current Zoning

Currently, the areas defined for concentrated development – the MBTA Commuter Rail station, the Route 1 Traffic Circle, and the stretch of Route 1 from the Traffic Circle south to Sled Road in Newbury – are below their development potential as defined by the existing zoning.

- In Newburyport, the proposed “receiving area” contains approximately 343,000 square feet of floor area, or about three-quarters of the estimated 461,000 sq. ft. build-out under existing zoning. In other words, without any change in zoning, the total amount of commercial floor space in the area around the Traffic Circle could theoretically increase by about 34 percent. (This does not include any potential development of the MBTA Commuter Rail station area, because it is assumed that the MBTA parcels would not be developed without a change in zoning.)
- In Newbury, the receiving area is currently developed to only 11% of its potential, with 167,000 square feet built compared to the estimated potential under current zoning of 1.46 million square feet. That is, the total nonresidential floor area along Route 1 from the Traffic Circle to Sled Road could increase by a factor of nine. However, four-fifths of the estimated potential net growth is represented by parcels that are currently zoned for industrial development, primarily those located northwest of the intersection of Route 1 and Middle Road. Commercial (office/retail) growth potential is estimated to be approximately 250,000 square feet, or comparable to the estimated growth potential in Newburyport around the Traffic Circle.

2. Receiving Area Build-Out Under Transit Village Alternative

Within the areas defined for concentrated development the alternative zoning scenario would increase the maximum amount of allowable development to 5.68 million square feet, compared to 1.92 million square feet under the existing zoning in both communities.

- In Newburyport, the overlay zoning scenario would increase the total growth potential from 189,000 sq. ft. to 1.38 million sq. ft., including 862,000 sq. ft. of commercial (retail/office) floor area and approximately 720 residential units.
- In Newbury, the overlay zoning scenario would increase the total growth potential from 1.35 million sq. ft. to 3.79 million sq. ft., including 1.87 million sq. ft. of commercial floor area and approximately 1,650 dwelling units.
- Equally significant in Newbury is the fact that the overlay zoning would permit a different *type* of growth than the current zoning. For the three parcels at the northwest intersection of Route 1 and Middle Road, the alternative zoning

scenario would permit a substantial increase in the total amount of development (2.74 million sq. ft. compared to 1.05 million sq. ft. under existing zoning). However, the current zoning would allow up to 1.05 million sq. ft. of industrial floor area on these parcels with no retail, office or residential development; while the “transit village” overlay zoning would permit up to 1.37 million sq. ft. of retail and office space plus 1,140 dwelling units in mixed-use developments.

- For the MBTA Commuter Rail station area, which comprises 8 parcels totaling 24.1 acres in Newburyport and Newbury, the build-out analysis estimates the potential for approximately 630,000 square feet of development (11 percent of the total build-out), including 315,000 sq. ft. of retail and office space and 260 dwelling units.

3. Sending Area Build-Out Under Current Zoning

The sending areas in both communities have significant potential for growth under existing zoning regulations.

- The Newburyport sending areas are estimated to have the potential for 280 additional dwelling units and 2.36 million square feet of nonresidential floor area.
- The Newbury sending areas are extensive, containing 2,807 acres of parcel area of which 1,736 acres are estimated to be developable (i.e., not in wetlands, river protection areas, wellhead protection areas, or the Parker River Area of Critical Environmental Concern). These sending area parcels have the potential for development of 1,560 additional single-family homes (but only 10,000 square feet of commercial floor area).

4. Estimated Value of Development Rights

The estimated total value of future development rights in the sending areas under existing zoning significantly exceed the value of future development rights in the receiving areas under the concentrated development scenarios, supporting the feasibility of using a transfer of development rights (TDR) program to promote development in the receiving areas and preserve land in the sending areas.

- In Newburyport, the available sending rights are estimated to be \$39.7 million compared to an estimated increase of \$35.8 million in the receiving areas. Because the sending and receiving area values are so close, the City of Newburyport should prioritize land within the receiving areas for development in order to ensure that transferred development rights are available to support the most critical redevelopment opportunities.
- In Newbury, the differential is much greater, with available sending rights valued at \$156.1 million compared to \$55.9 million in increased receiving area development rights. The total value of available development rights in the Newbury sending areas are thus much greater than the total value of increased development potential in the receiving area. This suggests that the Town of

Newbury may want to consider prioritizing land for inclusion within the sending areas in order to protect the most important corridors, rather than letting the TDR program be used for scattered open space projects.

- It should be noted that current efforts to preserve major parcels in the “Common Pasture” area north of Scotland Road, if successful, will impact the value of sending area development rights that are available to be transferred into the receiving area.

5. Real Estate Market Issues

The real estate market analysis identified issues that need to be considered in moving forward with the Transit Village project:

- Many lenders in this region are reluctant to finance mixed-use projects unless they offer significant scale increases over single-use alternatives. Therefore, zoning in the Transit Village area should be flexible to allow for residential projects on some parcels with non-residential projects on other parcels.
- The MBTA site in Newburyport and Newbury represents a good first project, particularly in light of the Commonwealth’s TOD Incentive Program (which provides funding for parking facilities, affordable housing, and bike/ped facilities). Development of this significant site can begin to create the critical mass that will support further mixed-use development in the area.
- Under current market conditions, it may be difficult to market a development with the specific mix of uses envisioned in the O1 and O2 zoning districts; in particular, more residential development than is currently contemplated would be needed to increase the feasibility of mixed-use developments. The report analyzed an alternative mix of uses for the MBTA site in which the number of residential units was increased from 223 to 500, and the amount of retail/office space was reduced from 512,000 sq. ft. to 150,000 sq. ft., and found that this mix would be more feasible (again, under current market conditions). This represents a mix closer to 80% residential, rather than 34% residential as envisioned in the overlay zoning and build-out analysis.

6. Traffic Impacts

As would be expected by a significant expansion of retail, office, and residential development, build-out under the Transit Village model will result in significant increase in traffic throughout the study area, with impacts particularly notable at four locations: the Route 1 Traffic Circle; the MBTA’s parking lot on the southbound side of Route 1; the intersection of Parker Street, Mulliken Way, and Graf Road; and the intersection of Route 1, Hanover Street, and Middle Road. Significant improvements would be required to address these impacts, including:

- Realignment of Route 1 entering and departing the traffic circle on the northwest side of the circle;

- Realignment of the entrance to and exit from the MBTA parking area at Route 1;
- Implementation of new turn lanes, traffic signals, and sidewalks at the Route 1 intersection with Hanover Street and Middle Road; and
- Improving pedestrian crossing facilities to allow safe pedestrian flow between the MBTA station and (a) areas north of the Traffic Circle and (b) areas south of the railroad tracks and the Little River.

7. Stormwater Impacts

The stormwater analysis concluded that the increase in impervious area and change in land use envisioned by the Transit Village scenario will increase the stormwater pollutant load as well as the peak flows potentially generated from the receiving area, assuming that no controls are put in place. However, the report states that stormwater management practices and site design techniques can be used to mitigate the pollutant load and peak flow impacts to meet or possibly improve the existing conditions. The report notes that existing development in the study area has occurred with little or no stormwater management design and engineering, and recommends that the communities implement a stormwater bylaw/ordinance for the Little River Transit Village.

8. Water Infrastructure

The water analysis differentiated between Newburyport and Newbury because the Newburyport portion of the Transit Village receiving area is served by public water while the Newbury portion is not.

- With build-out under existing zoning, the average day water demand from the Newburyport portion of the receiving area would increase from the current estimated 28,400 gallons per day (gpd) to 167,400 gpd. The City's existing water supply system could likely supply growth under this scenario to the year 2020, assuming current growth rates. However, the City would likely not have sufficient capacity to serve the demand at build-out under the alternative overlay zoning and would need to develop additional sources of water.
- In Newbury, the implementation of the Transit Village overlay districts would increase estimated average day demand at build-out in the receiving area from 51,100 gpd under current zoning to 244,600 gpd. The report notes that without a public water supply system, the Town of Newbury cannot provide adequate water supply or fire protection to new development of this scale, and states that the most viable alternatives appear to be (a) connection to the existing Newburyport distribution system in conjunction with the development of a new water source, or (b) development of a public water supply source and distributions system in Newbury.

9. **Wastewater Infrastructure**

The wastewater analysis also differentiated between Newburyport and Newbury because the Newburyport portion of the receiving area is served by public sewer while the Newbury portion is not.

- Within Newburyport portion of the receiving area, existing average daily wastewater flow is estimated to be 74,000 gallons per day (gpd). Based on build-out in the Newburyport portion alone, average daily wastewater flow with the proposed zoning overlays is estimated to increase to 154,000 gpd. The existing system has capacity available for some increased development in this area, but this remaining capacity is not sufficient to meet the projected flows from the proposed overlay districts even in Newburyport alone. Moderate improvements to the existing sewer collection system, as well as confirmation of available capacity at the Newburyport Wastewater Treatment Facility, will be necessary for implementation of the proposed zoning overlays in Newburyport.
- In the Newbury portion of the receiving area, average daily wastewater flow at build-out with the proposed zoning overlays is estimated to increase by 218,000 gpd over existing conditions. (For comparison purposes, total average daily wastewater flow in this area based on build-out under the existing zoning is projected to be 72,000 gpd.) Alternatives available for wastewater management in the Newbury portion of the receiving area include: extension of sewer service from Newburyport, construction of many individual Title 5 septic systems, or construction of a new wastewater treatment plant in Newbury. The most viable of these alternatives appears to be extension of sewer service from Newburyport. Early discussions with the Newburyport Sewer Commission, major improvements to the existing sewer collection system and confirmation of available capacity at the Newburyport Wastewater Treatment Facility will be necessary to support build-out under the proposed zoning overlays in Newbury.

10. **Appropriateness of the Build-Out Estimates**

The build-out analysis shows that the amount of growth that would be permitted by the hypothetical overlay zoning districts in Newburyport is consistent with the development levels that were contemplated in the Newburyport Strategic Land Use Plan. Thus, the general development standards incorporated in the overlay districts (including building height, lot coverage, parking ratios, and mix of uses) are appropriate and should serve as a starting point for developing the zoning regulations in the next phase of the project.

In contrast, the Newbury portion of the receiving area is much more extensive (85% of the total receiving area, and 80% of the developable parcel area), and as a result the estimated build-out is much greater for Newbury than for Newburyport. The estimated potential for approximately 1.48 million square feet of nonresidential floor area and 1,650 dwelling units in this part of the Route 1 corridor seems excessive (even though it would be linked to the reduction of 1,560 dwelling units in sending areas in other parts of Newbury). Therefore, the next phase of the Little River planning project should look carefully at the parcels and potential overlay district regulations in order to focus

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development more closely around the MBTA Commuter Rail station. It is recommended that the Town consider (a) reducing the maximum permitted density below the levels that have been used in this analysis, and (b) reducing the size of the receiving area to promote more compact development.

3. Study Area Delineation

A study area for the planning project was defined based on analysis of existing development patterns and recommendations from representatives of the City of Newburyport and Town of Newbury. The approach involved the following process:

- First, areas were identified that are currently protected from development through ownership by public agencies (including wildlife management areas) or nonprofit land stewardship organizations (e.g., The Trustees of Reservations, Massachusetts Audubon Society, Essex County Greenbelt Association); or through easements, agricultural protection restrictions, or other non-fee interests. These protected lands form the basis of a greenbelt from Turkey Hill and Scotland Road to Old Town Hill and the Parker River National Wildlife Refuge.
- Second, privately-owned parcels that are undeveloped or significantly under-developed and that could fill in and expand this greenbelt were identified as potential sending areas, to be prioritized for preservation through a transfer of development rights program.
- Third, an area in Newburyport and Newbury, extending from the MBTA Commuter Rail station and the Route 1 Traffic Circle south to Sled Road in Newbury, was identified as a potential receiving area, to be targeted for higher-density, mixed-use development.

The original study area definition is illustrated in **Map 1**. This study area was refined through several iterations as additional information on environmental constraints to development was assembled and analyzed. Ultimately a study area was defined encompassing 432 parcels totaling 3,925 acres, as follows:

Table 1: Study Area Existing Conditions

	Parcels	Total Area (acres)	Developable Area (acres)	Total Existing Floor Area (sq. ft.)	Total Existing Dwelling Units	Total Existing Nonresidential Floor Area (sq. ft.)
Newburyport						
Sending	48	821	479	251,591	5	222,272
Receiving	55	56	43	466,657	23	318,583
Total	103	877	522	718,248	28	540,855
Newbury						
Sending	284	2,807	1,736	1,217,080	183	133,340
Receiving	45	241	113	166,592	22	107,407
Total	329	3,048	1,849	1,383,672	205	240,747
Study Area Total	432	3,925	2,371	2,101,920	233	781,602

Little River Transit Village

City of Newburyport & Town of Newbury

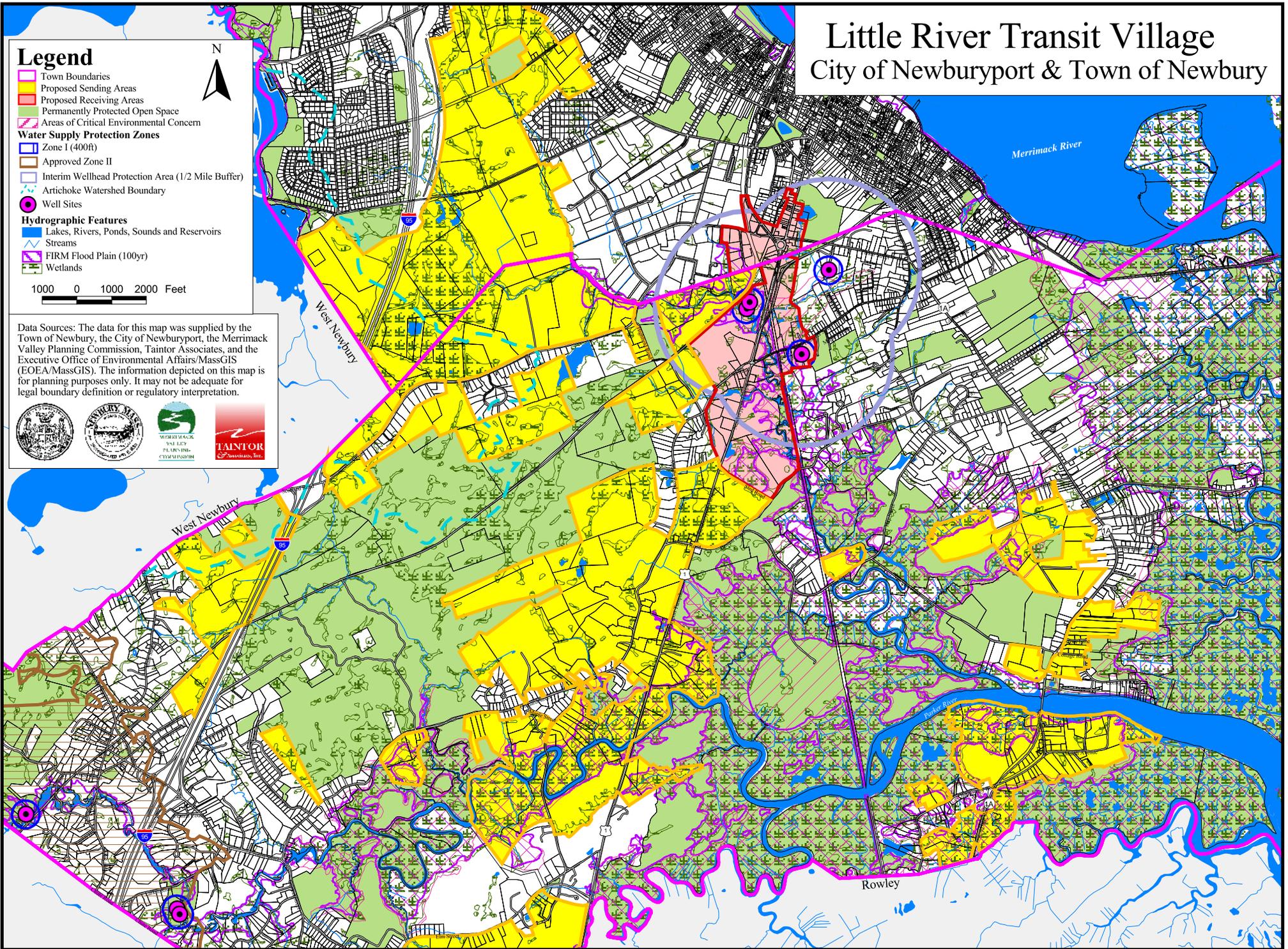
Legend

-  Town Boundaries
-  Proposed Sending Areas
-  Proposed Receiving Areas
-  Permanently Protected Open Space
-  Areas of Critical Environmental Concern
- Water Supply Protection Zones**
-  Zone I (400ft)
-  Approved Zone II
-  Interim Wellhead Protection Area (1/2 Mile Buffer)
-  Artichoke Watershed Boundary
-  Well Sites
- Hydrographic Features**
-  Lakes, Rivers, Ponds, Sounds and Reservoirs
-  Streams
-  FIRM Flood Plain (100yr)
-  Wetlands



1000 0 1000 2000 Feet

Data Sources: The data for this map was supplied by the Town of Newbury, the City of Newburyport, the Merrimack Valley Planning Commission, Taintor Associates, and the Executive Office of Environmental Affairs/MassGIS (EOEA/MassGIS). The information depicted on this map is for planning purposes only. It may not be adequate for legal boundary definition or regulatory interpretation.



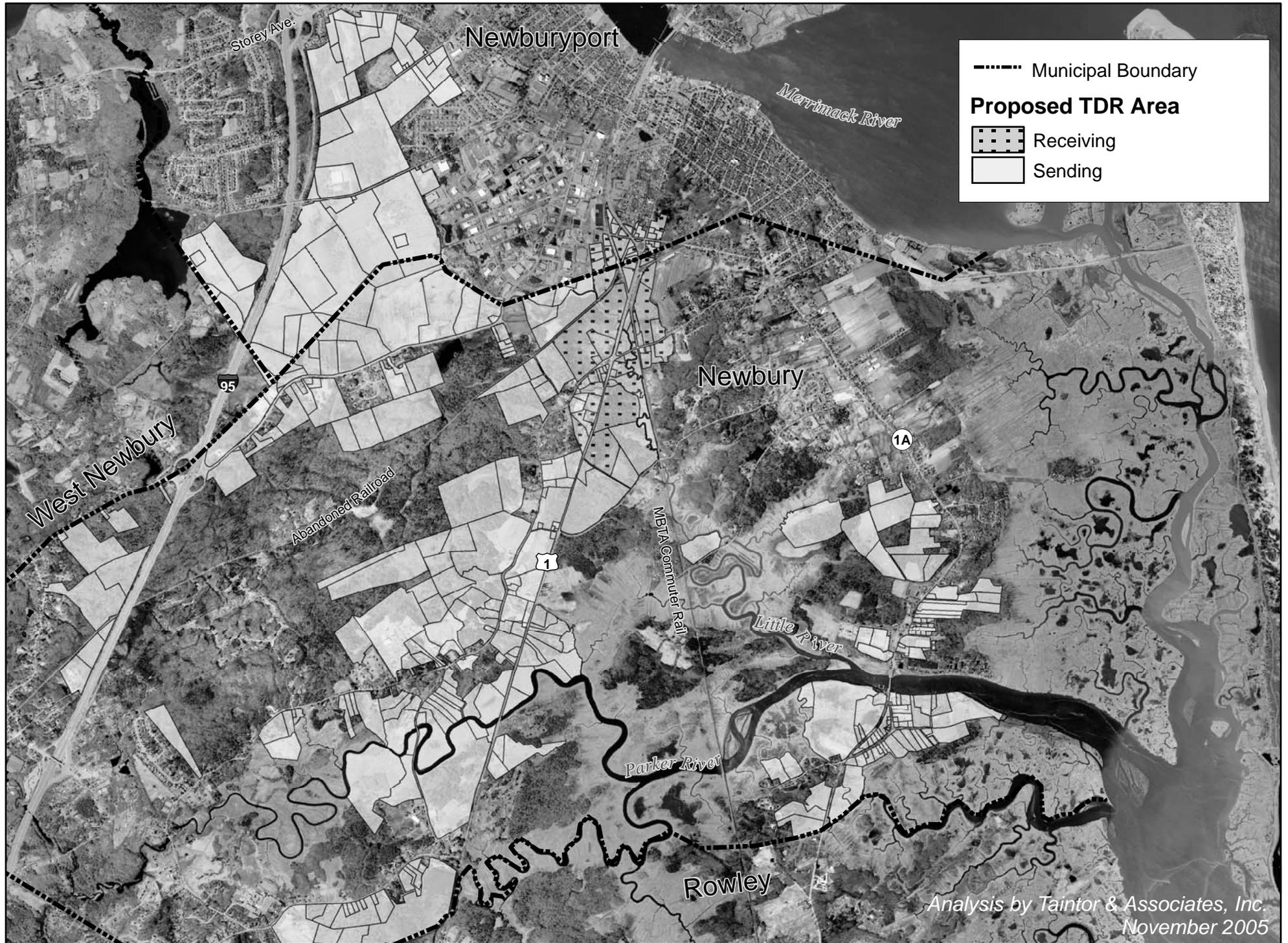
The final delineation of sending and receiving areas is presented in **Map 2**. In addition, **Map 3** presents the sending and receiving areas overlaid with the environmentally constrained areas (wetlands, river corridors, etc.).

After the study area and subareas were defined, a build-out analysis was carried out to determine the amount of additional development that could take place under existing zoning regulations. Then, an alternative scenario (the “transit village” scenario) was created to evaluate the impact of establishing new overlay zoning districts to promote higher-density, mixed-use development in the receiving areas. A second build-out analysis was conducted for the receiving areas using the hypothetical overlay zoning regulations. The results of this analysis were conveyed to the subconsultant team to analyze the implications of the alternative zoning scenario in terms of real estate market values (in order to assess the feasibility of a transfer of development rights program), stormwater impacts, traffic impacts, and water and sewer infrastructure.

Before finalizing this report, the Technical Committee and consultant reviewed the boundaries of the receiving area and the hypothetical overlay zoning districts, and made several changes. These included (a) removing several parcels from the receiving area where the marginal impact of rezoning was considered to be inadequate to encourage participation in a complex permitting process, (b) expanding the boundaries of the higher-density overlay districts and reducing the extent of the lower-density district accordingly, and (c) changing several parameters, representing the intensity and use regulations of the overlay districts, that were used in the build-out analysis for the alternative Transit Village scenario.

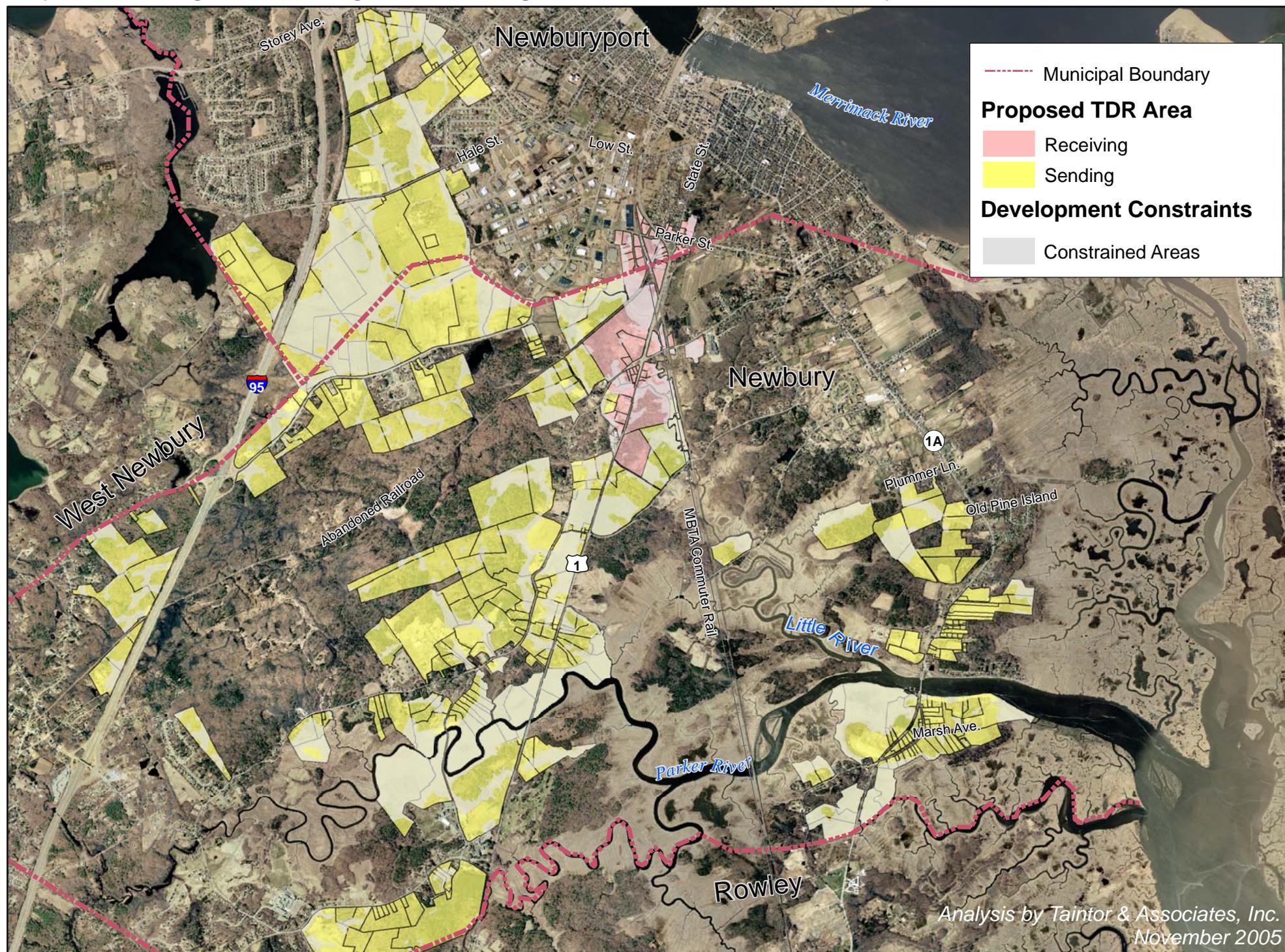
Little River Transit Village Study

Proposed Sending and Receiving Areas



Little River Transit Village Study

Proposed Sending and Receiving Areas Showing Estimated Constraints to Development



4. Build-Out Analysis – Existing Zoning

The first step in the feasibility study was the preparation of a build-out analysis to determine the amount of additional development possible under existing zoning. In this context, the term “build-out” refers to the maximum amount of development that is allowed under existing zoning, and possible considering environmental constraints such as wetlands. Build-out estimates are expressed in terms of the number of single-family dwelling units or the amount of commercial or industrial floor space that can be built.

The purpose of the initial Little River Transit Village build-out analysis is to estimate the ultimate amount of development, both residential and nonresidential, that is permitted under current zoning in the Little River Transit Village study area. This question is important because it helps to identify the underlying development plan for the area. The existing zoning regulations set forth standards and requirements for the type and density of development which may occur in the future. Although these regulations help shape development, the actual development that occurs will be influenced by land availability, market conditions, as well as the local zoning regulations. Therefore, the projected build-out level may far exceed the current level of development and may actually be greater than short-term estimates of growth potential. However, by determining the potential for development, performing a build-out analysis is a way to measure the effectiveness of existing zoning regulations in directing future growth.

The initial build-out analysis is also important for assessing the feasibility of a Transfer of Development Rights program to preserve open space in the sending areas and promote concentrated development in the receiving areas. To implement a TDR program, zoning in the receiving areas would have to be changed to permit more density of development than under current zoning. A comparison of build-out estimates using the current zoning with build-out estimates using revised zoning illustrates the potential development impact of a TDR program. The existing zoning build-out thus provides the baseline against which to compare alternative zoning strategies.

The database assembled for the Little River Transit Village (LRTV) study area contained 432 parcels (103 in Newburyport and 329 in Newbury), broken down by general land use as follows:²

² The actual number of parcels recorded in the Assessor databases for Newbury and Newburyport in the boundaries of the study area will be lower. For the purposes of this analysis certain parcels were split where they were located in multiple zoning districts.

Table 2: Study Area Existing Conditions by Current Land Use Categories

Current Land Use (based on local assessors use classifications)	Number of Parcels	Total Parcel Area (Acres)	Average Parcel Area (Acres)	Developable Area (Acres)	Existing Floor Area (Sq. Ft.)
Residential	252	1,592	23.9	870	832,779
Commercial	47	164	19.1	86	335,583
Industrial	20	303	96.4	178	359,677
Agricultural	51	995	56.3	629	-
Multiple Use Properties	25	456	22.4	334	123,025
Municipal	7	42	36.2	26	7,317
Other Public	27	315	23.4	208	440,659
Recreation	2	50	24.9	34	-
Open Wetlands in Residential Area	1	8	8.0	6	-
All Parcels	432	3,925	310.6	2371	571,001

The land use classification is based on the land use code assigned in the assessment record for each parcel. Developable area was determined by identifying land use constraints that would prevent or restrict development and subtracting that from the total parcel area.

Constraints to development were identified as follows:

Wetlands (for Newbury and Newburyport)

Wetlands were excluded from the developable area. The wetlands boundaries were based on maps created by the Massachusetts Department of Environmental Protection (MA DEP) (which were delineated from a 5,000 ft aerial fly-over) as well as hydric soils data provided by the Natural Resources Conservation Service.³ Two areas in Newburyport were updated with more detailed wetlands information that had been delineated as part of engineering studies for those properties.⁴

Fresh Water and Coastal Resource Buffer Area (for Newbury and Newburyport)

The Massachusetts Wetlands Protection Act and Rivers Protection Act⁵ seeks to limit adverse impacts of development on wetland resources.⁶ This includes 100 to 200 foot buffer areas around these resources. For this study, land falling within a 100-foot buffer around all wetland, fresh water and coastal resources was considered undevelopable. However, those portions within the buffer area where development has already occurred were considered developable.

Area of Critical Environmental Concern (for Newbury only)

The ACEC is a state designation for an area identified at the community level to contain significant natural and cultural resources. Newbury’s zoning bylaw restricts development within the Parker River-Essex Bay ACEC. For this analysis the ACEC

³ All wetlands information used in this analysis was provided by MassGIS.

⁴ These properties included those located north of Hale Street and south of Crow Lane (currently or previously owned by Marineau, Cabot, NAID, and the City of Newburyport) as well as the Woodman property on Low Street currently proposed for an affordable housing development under Chapter 40B.

⁵ M.G.L. c. 131, § 40: Massachusetts Wetlands Protection Act; 310 CMR 10.00: Wetlands Regulations

⁶ According to the Act, wetland resources include: *Any bank, freshwater wetland, coastal wetland, beach, dune, tidal flat, marsh or swamp bordering on the ocean; any estuary, creek, river, stream, pond, lake, or certified vernal pool; land subject to tidal action, coastal storm flowage, or flooding; and riverfront areas.*

boundary was adapted from a Massachusetts Geographic Information System (MassGIS) datalayer and reconfigured to match (approximately) the 3 meter contour line.

Public Water Supply Area (Zone 1) (for Newbury only)

A portion of the Little River Transit Village study area in Newbury falls within a Water Supply protection area (Zone 1) that is defined as a 400-foot radius around each existing or potential well site. Based on information available from MassGIS, there are two overlapping circles near the Little River (west of Rte 1 and the MBTA tracks, and east of the Mass Electric easement), and a third circle south of Hanover St (between the railroad tracks and the elementary school). All of these areas were excluded from the build-out computations.

Methodology

The build-out analysis takes four steps:

- ✦ First, the required amount of open space is estimated based on the development constraints outlined above and the remaining area is considered to be developable for buildings and parking areas;
- ✦ Second, parcels are categorized as having residential (R) or non-residential (NR) build-out potential;
- ✦ Third, the maximum build-out is computed based on zoning regulations for maximum building height, maximum building coverage, minimum open space, and required off-street parking;
- ✦ Fourth, the build-out under zoning is compared to existing floor area, and the larger of the two numbers is accepted as the final build-out estimate.

The required open space was calculated by determining what percentage of each parcel was restricted by the constraints listed above (wetlands, 100-foot buffer, ACEC, and water supply areas). That percentage was then deducted from the total parcel area, and the remaining area was defined as the *developable area* for the build-out.

The estimated future use under build-out does not necessarily correspond to the existing land use category. Rather, future use classifications were determined based on current zoning regulations. For example, land that is currently in residential use but is located in a commercial or industrial zoning district would indicate a nonresidential build-out potential. In such cases the assumption is that the property would be built out to its maximum nonresidential capacity, replacing the existing residential use with commercial or industrial floor area. As a result the analysis would indicate a negative build-out number for residential units.

Parcels were excluded from the build-out analysis if they were owned by a governmental or charitable entity. Thus, for example, no build-out estimates were performed for the courthouse property at the Traffic Circle or for the MBTA Commuter Rail station. In both cases it was assumed that the existing public use would continue in place under existing zoning regulations. In addition, parcels were excluded from the build-out analysis if they were designated by the local assessors as “undevelopable land.”⁷

Residential

For land located in a residential zoning district, the build-out analysis estimated the maximum number of single-family dwelling units that could be developed through subdivision. First, the number of existing dwelling units was estimated based on the land use code assigned for each parcel.⁸ Next, the build-out potential was determined based on the minimum area per unit required under existing zoning. The total developable area was further reduced by a factor of 15% to reflect land needed for subdivision roads, utilities, and parcel shape inefficiencies.⁹ Finally, the build-out under zoning was compared to the existing dwelling units, and the larger of the two numbers was accepted as the final build-out estimate.

Nonresidential

For parcels in non-residential zoning districts, the build-out analysis estimated the maximum permitted floor area using two separate computations. Both computations assumed that buildings will be built to the maximum permitted height and coverage.

The first, and simpler, calculation is the product of the maximum allowable building coverage multiplied by the maximum building height in number of stories (Maximum Lot Coverage x Building Height). For example, if the maximum allowed building height is 3 stories and the maximum allowed building coverage is 50%, then build-out would be estimated by multiplying the parcel area by $3 \times 50\% = 1.5$. While this formula may work in industrial districts (with low building heights and low parking requirements), it produces unrealistically high estimates in commercial areas, where development potential is more constrained by off-street parking requirements.

The second calculation is more complex, and takes into account the off-street parking requirements. The objective is to compute the maximum floor area which can be developed within the maximum building height permitted by zoning, such that both the building footprint (floor area divided by building height) and the required off-street parking¹⁰ (floor

⁷ These include Massachusetts Department of Revenue classification codes 132/1320 (Undevelopable Residential Land), 392/3920 (Undevelopable Commercial Land), and 442/4420 (Undevelopable Industrial Land).

⁸ Single family and condominium uses were assigned 1 dwelling unit; two-family uses were assigned 2 dwelling units; and apartments were assigned 5 dwelling units.

⁹ For Newbury parcels, the calculation also adjusted for the zoning bylaw requirement that upland areas be equal to at least 80% of the minimum lot area.

¹⁰ In order to use this approach for Newburyport, assumptions had to be made regarding the mix of uses which are likely to be developed within each zoning district. This is because there are different requirements for off-street parking based on different uses. For business districts this assumed a parking requirement of 1 space per

area divided by parking ratio, multiplied by the paved area required for each parking space) can be accommodated on the developable area of the site.¹¹ Solving for floor area, the formula used in this computation is as follows:

$$\text{Maximum Floor Area} = \frac{\text{Buildable Area}}{\frac{1}{\text{Maximum Building Height}^{13}} + \frac{450^{12}}{\text{Parking Ratio}^{14}}}$$

It is important to note that the nonresidential build-out estimates for Newburyport are higher than in the Strategic Land Use Plan. This is due to a different interpretation of the Zoning Ordinance’s “maximum coverage” requirements.

Build-Out Estimates

The existing development levels and estimated build-out under current zoning are presented in Table 3, grouped by community (top half of table) and by sending vs. receiving areas (bottom half of table).

Overall, there is a significant potential for both residential and nonresidential growth. The analysis estimates the residential build-out to be 2,035 dwelling units, an increase of 1,820 over the existing level of 215 dwellings. By far the majority of this potential growth (1,546 new dwellings) would be in Newbury, which is not surprising given that the study area includes more than 3,000 acres of open or underdeveloped land in the Town, most of which is zoned for residential development.

The analysis estimates the nonresidential build-out to be 4.65 million square feet of commercial (retail/office) and industrial floor area, more than six times the existing level of 734,881 square feet. The Newburyport portion of the study area represents approximately two-thirds of the potential growth, and a substantial portion of this potential development is attributable to parcels in the upper watershed of the Little River.

250 sq feet and for industrial districts 1 per 500 sq feet. In Newbury, the parking requirement is 75 in the Commercial Highway district and 600 in the Industrial district.

¹¹ In order to use this approach for Newburyport, assumptions had to be made regarding the mix of uses which are likely to be developed within each zoning district. This is because there are different requirements for off-street parking based on different uses. For business districts this assumed a parking requirement of 1 space per 250 sq feet and for industrial districts 1 per 500 sq feet. In Newbury, the parking requirement is 75 in the Commercial Highway district and 600 in the Industrial district.

¹² It is assumed that on average, each parking space will represent 450 square feet of area devoted to parking and circulation, including driveways, circulation aisles, emergency access, sidewalks and pedestrian paths, and landscaping. This assumption is based on a review of site plans for large commercial developments in suburban locations.

¹³ The build-out analysis limits building heights in the industrial districts to 1 story, even though the zoning permits otherwise, in order to reflect the dominant building pattern in industrial areas. Build-out estimates based on multiple-story buildings in combination with the low parking requirements for industrial uses would be unrealistically high.

¹⁴ Parking ratio is the gross building area (in square feet) requiring the provision of one off-street parking space.

Table 3: Estimated Build-Out Under Current Zoning

	No. of Parcels	Total Parcel Area		Developable Area		Total Existing Floor Area	Buildout Estimates (Current Zoning)						
		Acres	Average	Acres	Percent		Existing DU	Residential Buildout	Additional Units	Existing Nonres Floor Area	Nonres Buildout	Additional Sq Ft	
Newburyport													
Sending	48	821	17.1	479	58%	251,591	5	284	279	222,272	2,580,352	2,358,080	
Receiving	33	43	1.3	28	64%	343,085	5	0	(5)	271,862	461,148	189,286	
Total	81	865	10.7	507	59%	594,676	10	284	274	494,134	3,041,500	2,547,366	
Newbury													
Sending	284	2,807	9.9	1,736	62%	1,217,080	183	1,743	1,560	133,340	143,636	10,296	
Receiving	45	241	5	113	47%	166,592	22	8	(14)	107,407	1,460,333	1,352,926	
Total	329	3,048	9.3	1,849	61%	1,383,672	205	1,751	1,546	240,747	1,603,969	1,363,222	
Study Area Total	410	3,913	9.5	2,355	60%	1,978,348	215	2,035	1,820	734,881	4,645,469	3,910,588	

	No. of Parcels	Total Parcel Area		Developable Area		Total Existing Floor Area	Buildout Estimates (Current Zoning)					
		Acres	Average	Acres	Percent		Existing DU	Residential Buildout	Additional Units	Existing Nonres Floor Area	Nonres Buildout	Additional Sq Ft
Sending Areas												
Newburyport	48	821	17.1	479	58%	251,591	5	284	279	222,272	2,580,352	2,358,080
Newbury	284	2,807	9.9	1,736	62%	1,217,080	183	1,743	1,560	133,340	143,636	10,296
Total	332	3,628	10.9	2,215	61%	1,468,671	188	2,027	1,839	355,612	2,723,988	2,368,376
Receiving Areas												
Newburyport	33	43	1.3	28	64%	343,085	5	0	(5)	271,862	461,148	189,286
Newbury	45	241	5.4	113	47%	166,592	22	8	(14)	107,407	1,460,333	1,352,926
Total	78	285	3.6	141	49%	509,677	27	8	(19)	379,269	1,921,481	1,542,212
Study Area Total	410	3,913	9.5	2,355	60%	1,978,348	215	2,035	1,820	734,881	4,645,469	3,910,588

Sending Area Build-Out

The sending areas in both communities have significant potential for growth under existing zoning regulations. The Newburyport sending areas are estimated to have the potential for 280 additional dwelling units and 2.36 million square feet of nonresidential floor area. As noted earlier, the Newbury sending areas are extensive, containing 2,807 acres of parcel area of which 1,736 acres are estimated to be developable (i.e., not in wetlands, river protection areas, wellhead protection areas, or the Parker River Area of Critical Environmental Concern). These sending area parcels have the potential for development of 1,560 additional single-family homes, but only 10,000 square feet of commercial floor area.

Receiving Area Build-Out

Currently, the areas defined for concentrated development – the MBTA Commuter Rail station, the Route 1 Traffic Circle, and the stretch of Route 1 from the Traffic Circle south to Sled Road in Newbury – are below their development potential as defined by the existing zoning.

In Newburyport, the proposed “receiving area” contains approximately 343,000 square feet of floor area, or about three-quarters of the estimated 461,000 sq. ft. build-out under existing zoning. In other words, without any change in zoning, the total amount of commercial floor space in the area around the Traffic Circle could theoretically increase by about 34 percent. (This does not include any potential development of the MBTA Commuter Rail station area, because it is assumed that the MBTA parcels would not be developed without a change in zoning.)

In Newbury, the receiving area is currently developed to only 11% of its potential, with 167,000 square feet built compared to the estimated potential under current zoning of 1.46 million square feet. That is, the total nonresidential floor area along Route 1 from the Traffic Circle to Sled Road could increase by a factor of nine. However, four-fifths of the estimated potential net growth is represented by parcels that are currently zoned for industrial development, primarily those located northwest of the intersection of Route 1 and Middle Road. Commercial (office/retail) growth potential is estimated to be approximately 250,000 square feet, or comparable to the estimated growth potential in Newburyport around the Traffic Circle.

5. Alternative Development Scenario

A second build-out analysis was undertaken using revised zoning for the receiving areas in the proposed Little River Transit Village. The proposed zoning changes would create overlay zoning for the parcels in the receiving areas as delineated by the proposed Transfer of Development Rights program, and would encourage increased density of development in the receiving areas with a mix of uses (primarily retail, office, and residential) oriented around the Commuter Rail station.

For the purpose of analysis, three overlay districts were defined in consultation with the City and Town representatives on the project's Technical Committee.

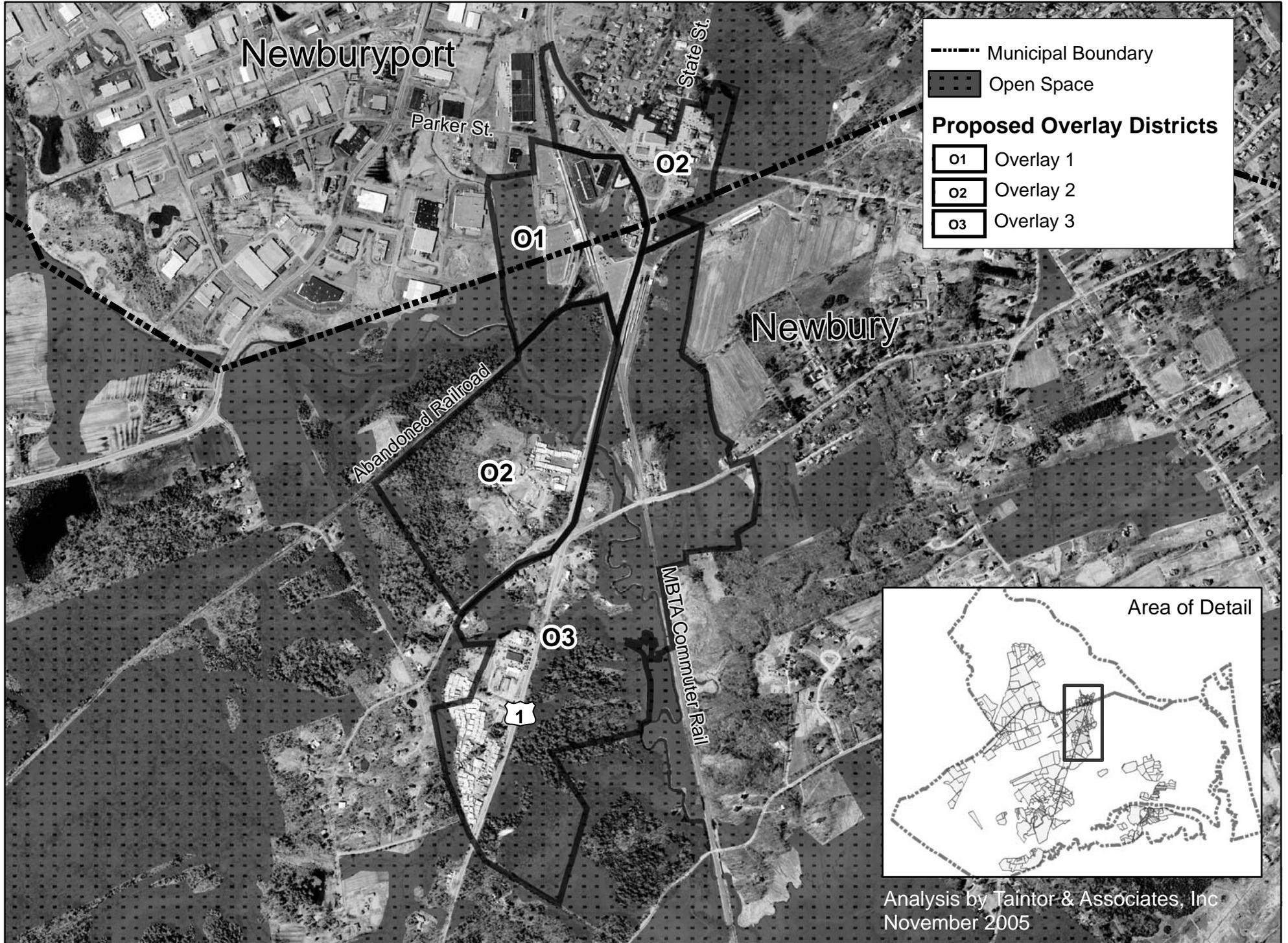
- The O1 district is intended to be the core of the Transit Village, with the highest development intensities. As finally delineated, the O1 district would include the MBTA-owned parcels around the Commuter Rail station in both Newburyport and Newbury, plus properties located between the railroad tracks and the Route 1 Traffic Circle. The build-out estimates assumed an average building height of 3.5 stories (based on a maximum zoning height of 4 stories), structured parking, and 75% coverage of parcels by buildings and parking facilities.¹⁵
- The O2 district is the largest of the three overlay districts, including properties around the Traffic Circle in both communities (except for parcels on the west side of the Circle, which would be in the O1 district), several parcels north of the Circle along Route 1 and State Street in Newburyport, and a large tract of land south of the MBTA area bounded by Route 1 on the east and Middle Road on the south (currently zoned Industrial). The O2 district would have somewhat lower development intensity than the O1 district, based principally on a 3-story height limit (rather than the 4-story maximum in the O1 district). As for the O1 district, the build-out analysis assumes a maximum 75% lot coverage by buildings and parking facilities.
- The O3 district would have the lowest potential development intensity, based on a 2-1/2 story height limit, use of surface parking lots rather than structured parking, and limiting coverage by buildings and parking areas to 50% of parcel area. This zoning district would include all the receiving area parcels in Newbury south of the O1 and O2 districts.

The final delineation of the overlay districts is presented in **Maps 4, 5 and 6** on the following pages. The maps also show the minimum greenbelt area based on environmental constraints, indicating how the receiving area is contained by open space and buffered from surrounding residential and industrial areas.

¹⁵ The 75% coverage limitation assumes that 15% of the total parcel area will be used for access and circulation or lost to lot shape inefficiencies; and 10% of the lot area will be landscaped.

Little River Transit Village Study

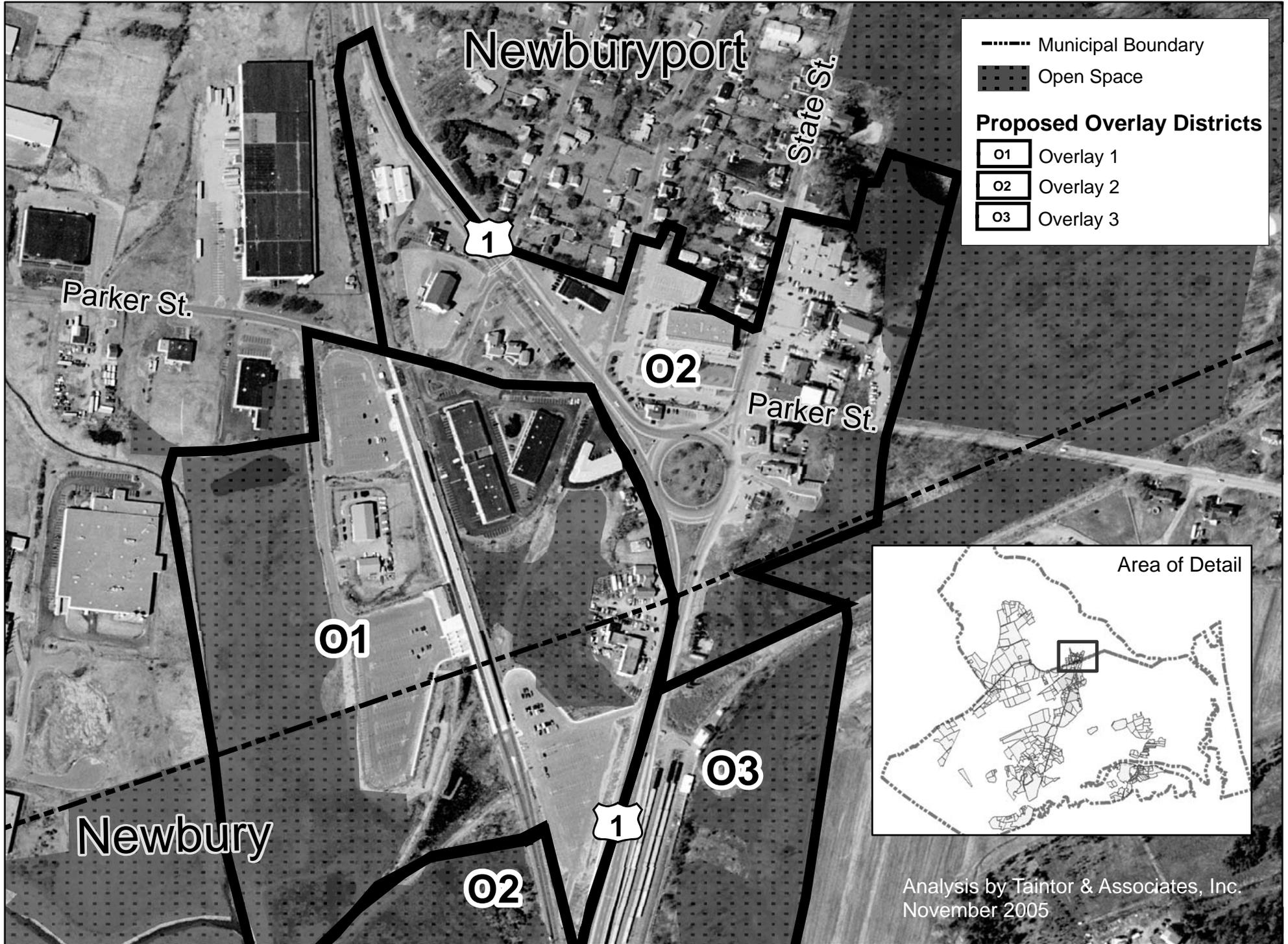
Proposed Overlay Zoning Districts



Analysis by Taintor & Associates, Inc
November 2005

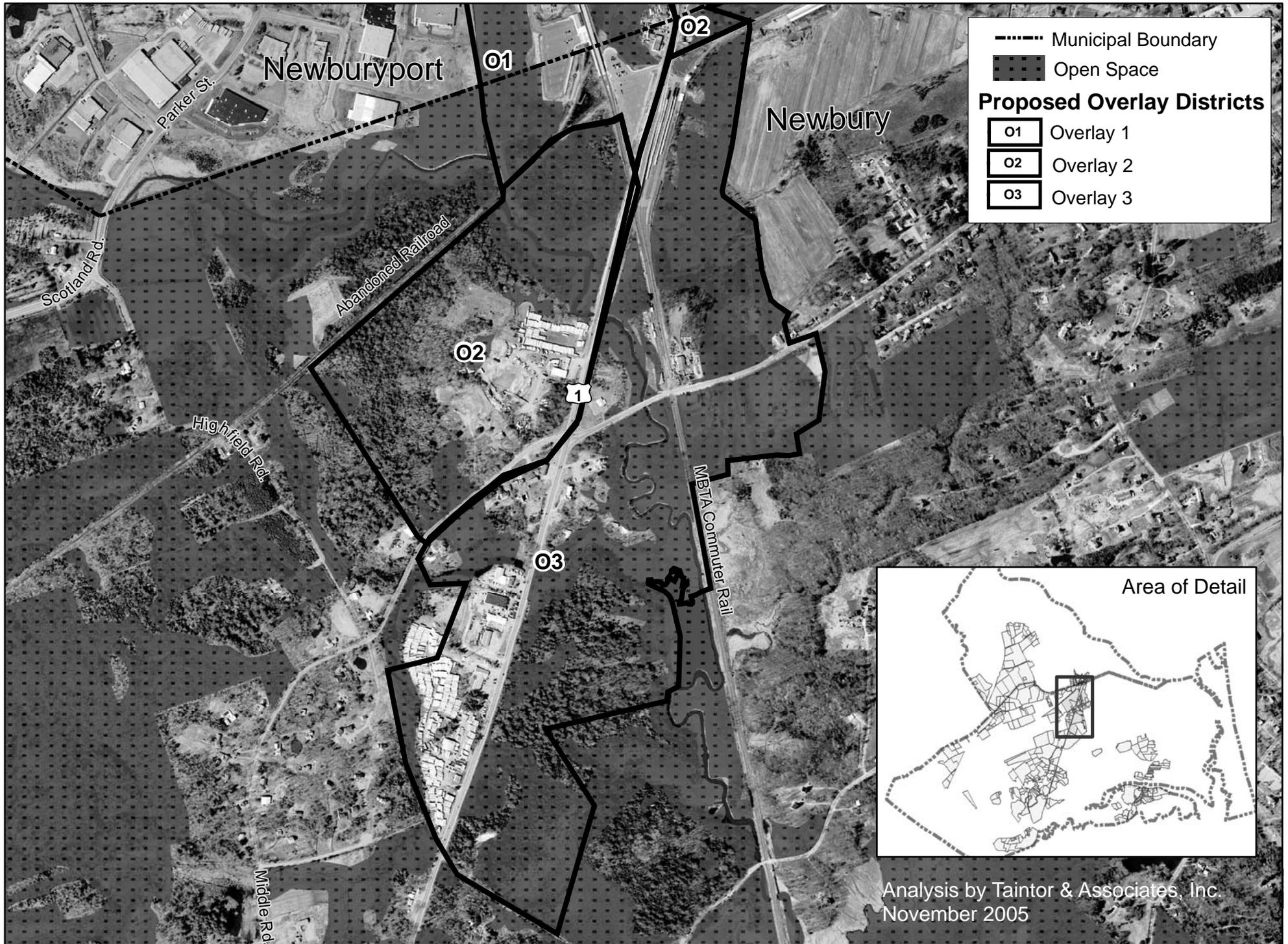
Little River Transit Village Study

Proposed Overlay Zoning Districts -- North



Little River Transit Village Study

Proposed Overlay Zoning Districts -- South



Analysis by Taintor & Associates, Inc.
November 2005

Table 4 summarizes the extent of the three overlay districts and their current development levels.

Table 4: Proposed Overlay Districts – Extent and Current Development Levels

Overlay District	No. of Parcels	Developable Area (Acres)	Existing Floor Area (Sq. Ft.)
Overlay 1	17	17.8	156,126
Overlay 2	26	65.0	210,431
Overlay 3	35	57.9	143,120
TOTAL	78	140.7	509,677

Table 5 presents assumptions regarding development intensity and mix of uses that were used in the build-out analysis:

Table 5: Proposed Overlay Districts – Build-Out Analysis Assumptions

Overlay District	Maximum building height (stories)	Off-street parking	Blended off-street parking ratio ¹⁶
Overlay 1	3.5	Structured (3.5 stories)	1 space per 450 sq. ft.
Overlay 2	3	Structured (3 stories)	1 space per 450 sq. ft.
Overlay 3	2.5	Surface	1 space per 425 sq. ft.

¹⁶ The “blended off-street parking ratio” was computed based on the assumed mix of uses and parking ratios for individual uses. The mix of uses within all overlay districts was assumed to be 25% retail, 25% office, and 50% residential. Off-street parking requirements for the overlay districts were figured at 1 space per 300 sq. ft. of retail floor area (except 1 per 200 sq. ft. in the O3 district), 1 per 300 sq. ft. of office floor area, and 1 per 600 sq. ft. of residential floor area (based on 2 spaces per dwelling unit, and 1200 sq. ft. of floor area per unit). Weighting the parking ratios by the mix of uses results in blended parking ratios of 1 per 450 sq. ft. for the O1 and O2 districts, and 1 per 425 sq. ft. for the O3 district.

Receiving Area Estimated Build-Out Under Transit Village Scenario¹⁷

Table 6 summarizes the build-out estimates under the alternative development scenario and compares them to the estimates for build-out under existing zoning. Within the areas defined for concentrated development the alternative zoning scenario would increase the maximum amount of allowable development to 5.68 million square feet, compared to 1.92 million square feet under the existing zoning in both communities.

Newburyport Receiving Area Build-Out

In Newburyport, the overlay zoning scenario would increase the total growth potential from 189,000 sq. ft. to 1.38 million sq. ft., including 862,000 sq. ft. of commercial (retail/office) floor area and approximately 720 residential units.

Newbury Receiving Area Build-Out

In Newbury, the overlay zoning scenario would increase the total growth potential from 1.35 million sq. ft. to 3.79 million sq. ft., including 1.87 million sq. ft. of commercial floor area and approximately 1,650 dwelling units.

Equally significant in Newbury is the fact that the overlay zoning would permit a different type of growth than the current zoning. For the three parcels at the northwest intersection of Route 1 and Middle Road, the alternative zoning scenario would permit a substantial increase in the total amount of development (2.74 million sq. ft. compared to 1.05 million sq. ft. under existing zoning). However, the current zoning would allow up to 1.05 million sq. ft. of industrial floor area on these parcels with no retail, office or residential development; while the “transit village” overlay zoning would permit up to 1.37 million sq. ft. of retail and office space plus 1,140 dwelling units in mixed-use developments.

MBTA Commuter Rail Station Build-Out

For the MBTA Commuter Rail station area, which comprises 8 parcels totaling 24.1 acres in Newburyport and Newbury, the build-out analysis estimates the potential for approximately 630,000 square feet of development (11 percent of the total build-out), including 315,000 sq. ft. of retail and office space and 260 dwelling units.

¹⁷ Initial build-out estimates were provided to RKG Associates, Inc. and Weston & Sampson Engineers, Inc., for use in preparing the technical reports on estimated real estate values, traffic impacts, stormwater impacts, and water and sewer infrastructure. The build-out estimates were subsequently refined based on review of the initial parcel-specific results. The following changes in the database were made:

- (a) A number of parcels were removed from the proposed O3 overlay district where the preliminary build-out analysis showed little or no impact in terms of additional development potential. The deleted parcels fall into two categories. First, a number of parcels along State Street in Newburyport that are small in area and are already developed, and it was assumed that there would be little incentive to pursue a complex permitting process to achieve a marginal increase in development potential.
- (b) Build-out estimates for the MBTA parcels at and around the Commuter Rail station were adjusted to reflect preservation of the 801 existing parking spaces. This reduced the potential build-out of these parcels by approximately 11 percent.
- (c) Some additional corrections were made to the build-out formulas.

Table 6: Estimated Build-Out for Receiving Areas Under Alternative (Transit Village) Scenario

	No. of Parcels	Total Parcel Area		Developable Area		Total Existing Floor Area
		Acres	Average	Acres	Percent	
Newburyport	33	43	1.3	28	64%	343,085
Newbury	45	241	5.4	113	47%	166,592
Total	78	285	3.6	141	49%	509,677

	Buildout Estimates (Current Zoning)					
	Existing Dwelling Units	Residential Buildout	Additional Units	Existing Nonres Floor Area	Nonres Buildout (Sq Ft)	Additional Floor Area (Sq Ft)
Newburyport	5	0	(5)	271,862	461,148	189,286
Newbury	22	8	(14)	107,407	1,460,333	1,352,926
Total	27	8	(19)	379,269	1,921,481	1,542,212

	Buildout (Revised Zoning)					
	Total Buildout Floor Area	Increased Floor Area	Nonres Buildout Floor Area	Additional Nonres Floor Area	Residential Buildout	Additional Dwelling Units
Newburyport	1,723,240	1,380,155	861,680	589,818	719	714
Newbury	3,958,410	3,791,818	1,979,290	1,871,883	1,651	1,629
Total	5,681,650	5,171,973	2,840,970	2,461,701	2,370	2,343

6. Real Estate Market Analysis

An analysis of the real estate market was conducted by RKG Associates, Inc., in order to evaluate the potential for a transfer of development rights (TDR) program. RKG's study was based on the build-out estimates under existing zoning and the alternative transit village strategy, and on a review of real estate sales data within Newburyport and Newbury as well as in the larger North Shore market area. The analysis was focused on estimating the value of future development rights in both the sending and receiving areas, and did not generally address broader issues such as absorption rates and regional capacity to support estimated residential, retail, and office build-out levels.

The full market analysis report is presented in Attachment 1. Key findings of the analysis are summarized below.

Estimated Value of Development Rights

The estimated total value of future development rights in the sending areas under existing zoning significantly exceed the value of future development rights in the receiving areas under the concentrated development scenarios, supporting the feasibility of using a transfer of development rights (TDR) program to promote development in the receiving areas and preserve land in the sending areas.

- In Newburyport, the available sending rights are estimated to be \$39.7 million compared to an estimated increase of \$35.8 million in the receiving areas. Because the sending and receiving area values are so close, the City of Newburyport should prioritize land within the receiving areas for development in order to ensure that transferred development rights are available to support the most critical redevelopment opportunities.
- In Newbury, the differential is much greater, with available sending rights valued at \$156.1 million compared to \$55.9 million in increased receiving area development rights. The total value of available development rights in the Newbury sending areas are thus much greater than the total value of increased development potential in the receiving area. This suggests that the Town of Newbury may want to consider prioritizing land for inclusion within the sending areas in order to protect the most important corridors, rather than letting the TDR program be used for scattered open space projects.
- It should be noted that current efforts to preserve major parcels in the "Common Pasture" area north of Scotland Road, if successful, will impact the value of sending area development rights that are available to be transferred into the receiving area.

Real Estate Market Issues

The real estate market analysis also identified several issues that need to be considered in moving forward with the Transit Village project:

- Many lenders in this region are reluctant to finance mixed-use projects unless they offer significant scale increases over single-use alternatives. Therefore, zoning in the Transit Village area should be flexible to allow for residential projects on some parcels with non-residential projects on other parcels.
- The MBTA site in Newburyport and Newbury represents a good first project, particularly in light of the Commonwealth's TOD Incentive Program (which provides funding for parking facilities, affordable housing, and bike/ped facilities). Development of this significant site can begin to create the critical mass that will support further mixed-use development in the area.
- Under current market conditions, it may be difficult to market a development with the specific mix of uses envisioned in the O1 and O2 zoning districts; in particular, more residential development than was originally contemplated would be needed to increase the feasibility of mixed-use developments. The report analyzed an alternative mix of uses for the MBTA site in which the number of residential units was increased from 223 to 500, and the amount of retail/office space was reduced from 512,000 sq. ft. to 150,000 sq. ft., and found that this mix would be more feasible (again, under current market conditions). This represents a mix closer to 80% residential, rather than 34% residential as envisioned in the overlay zoning and build-out analysis. [Note: Based on this finding, the build-out analysis was revised with the residential component increased to 50% of total floor area, as described in Section 4 above.]

7. Traffic Impacts

An assessment of traffic impacts was carried out by Weston & Sampson Engineers, Inc. The analysis evaluated the potential changes in traffic flows and volumes under build-out conditions, as well as the feasibility of facilitating those changes within the existing roadway and pedestrian infrastructure. Where facilitating these changes was found to be infeasible within existing conditions (i.e. geometry, facilities), the study identified possible improvements needed or recommended in order to accommodate those changes.

The traffic study found that build-out under the Transit Village overlay zoning scenario would result in a significant increase in traffic generated at four key locations: the Route 1 Traffic Circle, the MBTA parking lot on the west side of Route 1, the intersection of Parker St./Mulliken Way/Graf Rd., and the intersection of Route 1/Middle Rd./Hanover St. In addition, build-out under the overlay zoning scenario would require accommodation of pedestrian traffic with safe and convenient pedestrian pathways to and from the MBTA station, to the south along Route 1 and to the north across the Route 1 traffic circle.

The study determined that the proposed development appears to be infeasible without the implementation of specific traffic improvements throughout the corridor in order to facilitate traffic as mixed-use redevelopment occurs. These improvements will not only accommodate the additional vehicle and pedestrian trips expected as a result of the build-out, but they will also control future vehicle and pedestrian circulation and make the Little River Transit Village area a more attractive and safe corridor for future development. These required improvements appear to be practicable within the existing geometric, environmental, utility, and right-of-way constraints of the LRTV area.

The key improvements that would be required include the realignment of Route 1 entering and departing the traffic circle on the northwest side; realignment of the entrance and exit from the MBTA Newbury parking area; incorporating new turn lanes, traffic signals and sidewalks along the Hanover Street/ Middle Road intersection with Route 1; and improving pedestrian crossing facilities to allow safe pedestrian flow between the MBTA station and the areas north of the traffic circle and south of the railroad tracks and the Little River.

The traffic study recommends that traffic impacts should be assessed and specific improvements incorporated over a period of time, in phases, as the redevelopment progresses. All traffic improvements discussed in the traffic report are not required to be implemented at one time but rather throughout the redevelopment in stages. Specific parcels will have significant traffic impacts if and when they are redeveloped in accordance with the mixed-use zoning concepts: these include parcels in Newbury on the west side of the Route 1 traffic circle, and parcels at the northwest quadrant of the Route 1/Middle Road intersection.

The full traffic study is appended to this report as the first section of Attachment 2.

8. Stormwater Impacts

An assessment of stormwater impacts of build-out under the Transit Village alternative zoning scenario was carried out by Weston & Sampson Engineers, Inc. The study analyzed flooding and peak flows, estimated the impacts of development on stormwater quantity and quality, identified stormwater management challenges, and provided recommendations for management practices in the receiving areas.

The Little River Transit Village area is located within and adjacent to a coastal marsh system associated with the Little River. The Little River flow southeast into the Parker River Estuary, which then discharges into Plum Island Sound. The soils in the proposed LRTV are generally classified in Hydrologic Soil Group (HSG) C, which means they have a low capacity for infiltration and proportionately higher runoff rate. The topography in the area is low and relatively flat, with some rock outcrops and small hills.

The development in the area proposed to be re-zoned with the three overlay districts is currently a combination of industrial, transportation, commercial and some residential land uses. This area is approximately 24 percent impervious area. The proposed overlay districts would allow for up to 85 percent impervious cover on unconstrained land in each of the three proposed districts. This would result in an increase in impervious area from approximately 24 to 48 percent of the proposed mixed use Receiving Area.

Based on this initial watershed scale analysis, it appears that this increase in impervious area and change in land use will increase the stormwater pollutant load as well as the peak flows potentially generated from the LRTV receiving area, assuming that no controls are put in place. However, this feasibility analysis indicates that stormwater management practices and site design techniques can be used to mitigate the pollutant load and peak flow impacts to meet or possibly improve the existing conditions. While no flow measurements, comprehensive floodplain analysis, stormwater mapping or sampling was performed for this feasibility study, site observation indicates that much of the development to date within the proposed receiving area has been undertaken with limited stormwater management design and engineering, in large part because no stormwater regulations were triggered and/or the development occurred prior to the implementation of such regulations.

One key recommendation to ensure that the proposed redevelopment would not impose additional stormwater impacts on the Little River or on neighboring properties is to implement a stormwater bylaw or other control mechanism for the LRTV. While no flow measurements, comprehensive floodplain analysis, stormwater mapping or sampling was performed for this feasibility study, it appears from site observation that much of the development to date in this area has been undertaken with limited comprehensive stormwater engineering. As such, it is likely that the stormwater impacts from some currently developed sites could be significantly improved if the sites were to be redeveloped. The overall stormwater impacts from the proposed redevelopment would be addressed on site-by-site case, as each site is reviewed by the permitting authority. Each developer would then be held responsible for managing stormwater from their individual site according to a set of

Little River Transit Village Feasibility Study

standards that addresses the environmental peculiarities and regional concerns of the LRTV area. Cumulatively, this redevelopment could potentially manage stormwater impacts such that they could be equal to or less than under current conditions.

The full stormwater impact analysis is appended to this report as the second section of Attachment 2.

9. Water and Sewer Infrastructure

This analysis looked at the water demand and wastewater flows under existing conditions, build-out under existing zoning and build-out under the proposed overlay zoning scenario for the Little River Transit Village. The analysis differentiated between flows and demand in Newburyport versus Newbury since, under existing conditions, the City of Newburyport provides water and sewer to all of the Newburyport section but not to the Newbury section of the proposed Receiving Area.

Within the City of Newburyport, the average day water demand for the proposed Receiving Area, based on build-out of that area under current 2005 zoning, is estimated to be 28,400 gallons per day (gpd). Under build-out conditions for the same area under the proposed overlay zoning districts, the average day demand is estimated to be 167,400 gpd. The City of Newburyport has an existing water supply system that appears to be able to provide adequate water supply and fire protection to the project area within Newburyport if it were experiencing normal growth, as projected for 2020. Upgrades to the Newburyport Water Treatment Plant and pumping facilities are currently under construction or planned in order for the City to meet its projected demands for the year 2020. However, if the same area were built out under the proposed overlay zoning districts, the City would very likely not have sufficient capacity in its water supply to provide water to the new development. Additional source(s) would be required.

Within the Town of Newbury, the proposed Receiving Area is not serviced by a centralized public water supply system. Average day water demands, based on build-out of the Newbury portion of the Receiving Area under current 2005 zoning, is estimated to be 51,100 gpd. A full build-out of the same area under the proposed overlay zoning districts would result in an estimated average day demand of 244,600 gpd. As the Town of Newbury does not have a water supply, they cannot provide adequate water supply or fire protection to new development in the project area. Potential alternative water supplies include: connection with the City of Newburyport, individual or non-community supply wells, or development of a public drinking water system. The most viable alternatives appear to be connection to the existing Newburyport distribution system in conjunction with the development of a new source or development of public water supply source and distribution system in Newbury.

The City of Newburyport has an existing sewer system with existing service to the Newburyport portion of the Little River Transit Village project area. Existing wastewater flow within the project area is estimated to be 74,000 gpd on an average daily flow basis. Average daily wastewater flow based on build-out in Newburyport alone with the proposed zoning overlays is estimated to be 154,000 gpd. While the existing system has some capacity available for increased development in this area, it appears that the remaining collection system capacity will be insufficient to meet the projected flows from the proposed overlay districts even in Newburyport alone. Moderate improvements to the existing sewer collection system and confirmation of available capacity at the Newburyport Wastewater Treatment Facility will be necessary for implementation of the proposed zoning overlays in Newburyport.

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The Town of Newbury does not have an existing sewer system. Average daily wastewater flow based on build-out in Newbury with the proposed zoning overlays is estimated to be an additional 218,000 gpd. For comparison purposes, average daily wastewater flow based on build-out under 2005 zoning in Newbury is projected to be 72,000 gpd. Alternatives available for wastewater management in the Newbury portion of the Little River Transit Village project area include: extension of sewer service from Newburyport, construction of many individual Title 5 septic systems, or construction of a new wastewater treatment plant in Newbury. The most viable alternative appears to be extension of sewer service from Newburyport. Early discussions with the Newburyport Sewer Commission, major improvements to the existing sewer collection system and confirmation of available capacity at the Newburyport Wastewater Treatment Facility will be necessary for implementation of the proposed zoning overlays in Newbury.

Planning level cost comparisons for the wastewater management alternatives under the proposed zoning are presented in the Assessment of Water and Wastewater Systems document.

The full stormwater impact analysis is appended to this report as the third section of Attachment 2.

10. Conclusion

The various analyses conducted for the Feasibility Study indicate that the Little River Transit Village concept, including the associated Transfer of Development Rights mechanism, is feasible in its general outline, but that significant infrastructure investments would be required to support full build-out to the extent suggested by the proposed overlay zoning districts.

In the next phase of the planning project, the two communities will need to determine more specifically the amount and type of development that will be desirable within the receiving areas. This information can then be used to refine the boundaries and regulations for the overlay zoning districts, and to calibrate TDR transfer ratios so as to provide effective incentives for development within the receiving areas and open space preservation in the sending areas.

Specifically, the next phase of the Little River planning project should focus development more closely around the MBTA Commuter Rail station, to take advantage of the site's unified ownership, existing development as parking lots, and availability of State TOD funding. South of the Little River, it is recommended that the Town of Newbury consider reducing the maximum permitted density below the levels that have been used in this analysis, and reducing the size of the receiving area to promote more compact development around the intersection of Route 1 with Hanover Street and Middle Road. Finally, both communities should consider phasing implementation of the zoning overlay districts and TDR programs, so that initial development projects will have the greatest possible impact in terms of revitalizing the core Transit Village area and preserving high priority open space parcels.