



Executive Summary

Tracking New Jersey's Dynamic Landscape:
Urban Growth and Open Space Loss 1986-1995-2002



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Tracking New Jersey's Dynamic Landscape: Urban Growth and Open Space Loss 1986-1995-2002

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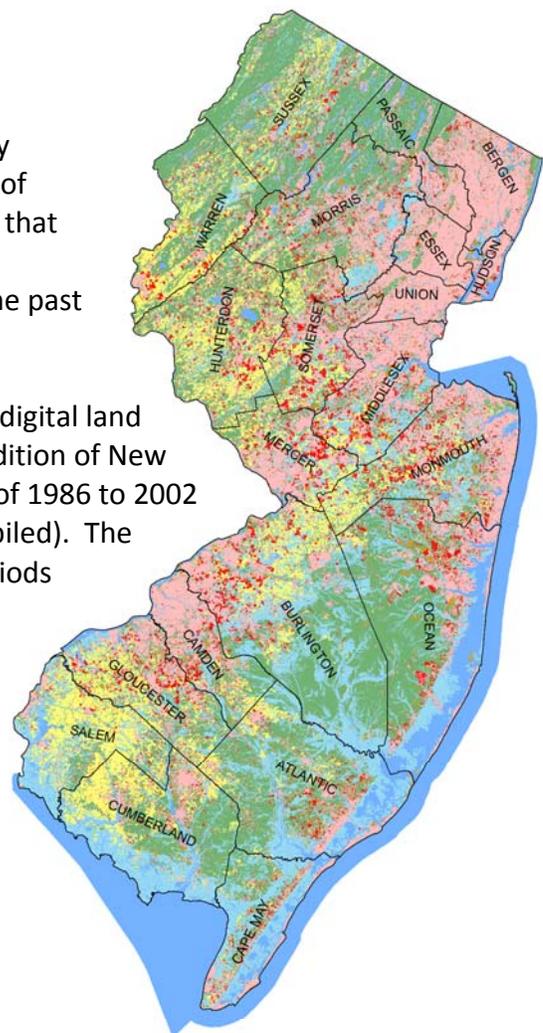
Executive Summary

As America's most densely populated state, New Jersey struggles with managing land development in the face of ongoing development pressure. Regardless of the fact that population growth has slowed, land development has continued at a robust and constant pace throughout the past several decades.

This report utilizes one of the most detailed statewide digital land use/land cover maps in the nation to evaluate the condition of New Jersey's land and how it has changed during the years of 1986 to 2002 (the time period for which the mapping data was compiled). The analysis grouped the study period into two smaller periods 1986-1995 (referred to in the report as T1) and 1995-2002 (referred to as T2). The study examined the data from a number of different angles in order to provide a comprehensive assessment of the condition of land use and land cover and in particular, patterns of urban development in New Jersey in the latter 20th and early 21st century. The following is a summary of our major findings.

Urban Growth Continuing at Rapid Pace

1) New Jersey converted a net 105,988 acres of open space into new development during T2 ('95-'02). During the entire 1986 to 2002 study period, New Jersey developed a total of 239,960 acres. This amount of land converted in sixteen years from open space to development is equivalent to doubling the existing urban land in New Jersey's



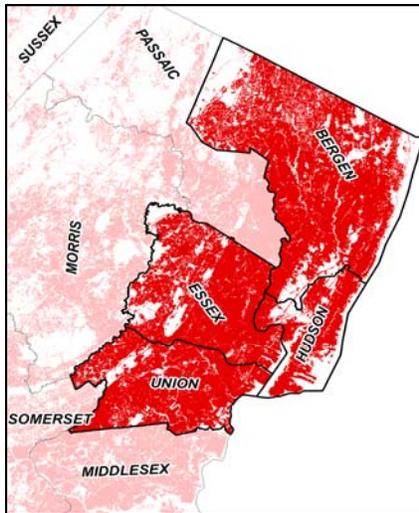
Land Use Categories



New Jersey Land Use and Urban Growth 1986-2002. Red color indicates development that occurred during the 16 years of the study.

four most urbanized counties: Bergen, Union, Essex and Hudson every one and a half decades.

2) New Jersey has maintained a steady rate of urbanization throughout the study period increasing slightly from 14,886 Acres per year T1('86-'95) to 15,140 acres per year T2('95-'02).



Land development between 1986-2002 added the equivalent number of acres of development as all of the urban land in the states four most urbanized counties.

This rate equates to a conversion of over thirty one football fields of open space into development every day.

3) If current trends continue, urban land will become the predominant land category in the state by the summer of 2008 when it will surpass upland forest in total acres.

4) Urban growth is not as strongly linked to population growth as might be expected. During the 1986-2002 study period urban land increased 20% while population increased only 11%. Between the 1990 and 2000 census, 145 of New Jersey's 566 municipalities actually lost population while their amount of urban land maintained or even grew in size. This indicates that a substantial amount of urban growth is attributable to a migration from the inner suburbs to housing upgrades in more rural municipalities.

Level 1 Summary of Net Land Use/Land Cover Changes (Note: this table is using standard NJDEP Level 1 classification categories)

Level 1 Land Use Type	1995 Total Acres	2002 Total Acres	Net Change T2('95-'02)	Annualized Net Change T2('95-'02)	Annualized Net Change T1('86-'95)	% Change in Annualized Net Rates
Urban	1,334,476	1,440,464	105,988	15,141	14,886	+2%
Agriculture	652,334	596,804	-55,530	-7,932	-9,485	-16%
Forest	1,616,683	1,575,220	-41,463	-5,923	-4,300	+38%
Water	800,610	800,572	-38	-5	NA	NA
Wetlands	1,022,291	1,009,544	-12,747	-1,821	-1,755	+4%
Bare Land	57,562	61,352	3,789	541	NA	NA

Development Patterns Became More Sprawling

5) During the study period, development patterns became more sprawling. Large lot housing (greater than 1/2 acre) consumed 67% of the open space that was converted to residential development. The low-density nature of this development resulted in providing housing for only 24% of people that occupied new dwellings during this time period.

6) If the number of people who moved into large lot housing during the T2('95-'02) time period had instead chosen medium lot housing (1/8 - 1/2 acre lots), 55% less land would have been converted from open space to residential development during the same time period.

7) The pattern of new development became more dispersed and fragmented. The average size of development tracts decreased while the annual number of developed tracts increased from T1 to T2. At the same time, the location of most of the low-density development was not in the state's smart growth-designated areas.

8) More than two thirds of the land developed during the T2('95-'02) period demonstrate various characteristics associated with sprawl. These characteristics can lead to problems such as traffic, increased energy use and social segregation, as well as, impacts to vital land resources outlined in the following section.

Land Impacts of Urbanization

9) Farmland Loss

Farmland is the land category losing the greatest number of acres to urbanization. During the T2('95-'02) time period, New Jersey lost 55,530 acres of agricultural land. This amount of farmland loss is equivalent to losing one Gloucester County's worth of farmland every seven years. Furthermore, farmland is becoming more fragmented as rural development has increased. However, the rate of loss has slowed somewhat from 9,485 acres per year during T1('86-'95) to 7,933 acres per year during T2('95-'02). This slowdown in loss could be an indication that efforts for farmland preservation are beginning to help stem the conversion.

10) Forest Loss

In contrast to farmland loss, the rate of forest loss has increased substantially, rising by 38% from 4,300 acres per year T1('86-'95) to 5,923 acres per year T2('95-'02). The actual amount of forest lost to development is greater than these net results suggest because the net accounts for an increase in forest from the conversion of farmland to forest. The amount of forest land lost specifically to urbanization was 8,356 acres per year T2('95-'02). This rate is the equivalent of losing 10 Central Parks worth of forest per year or over seventeen football fields worth of forest every day. Forest land is not only shrinking but also becoming more fragmented. This is reducing the amount of



The annual rate of forest loss, T1('86-'95) to T2('95-'02), increased by 38% during the study period. Forest lost to urban growth rose to 8,356 acres per year, or roughly the equivalent of ten Central Parks per year. Photo J. Hasse

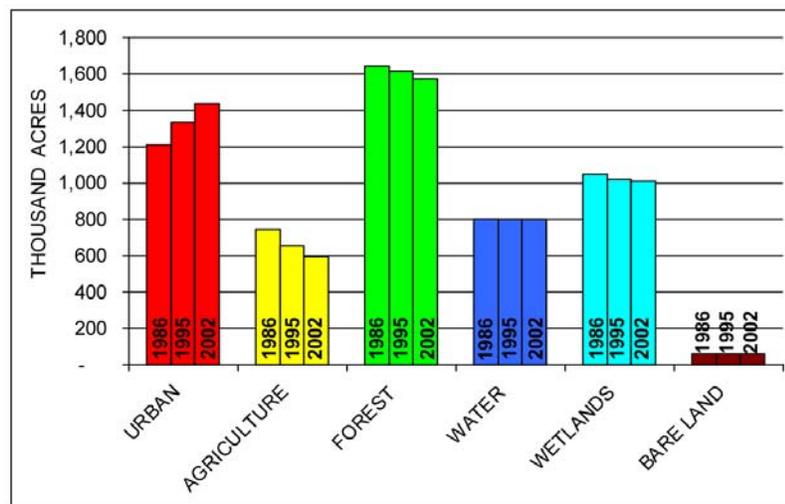
forest land that is considered interior or “core,” which has with important implications for wildlife habitat.

11) Wetlands Loss

Wetlands have also continued to lose land to urbanization. New Jersey is losing total wetlands at the rate of 3.3 football fields of wetlands every day or at the equivalent rate of all the wetlands remaining in the Hackensack Meadowlands every 5.3 years. While the annual net rate of all wetlands lost to development increased slightly from 1,442 acres per year T1(’86-’95) to 1,573 acres per year T2(’95-’02), there are some positive trends in that the rate of loss for “natural” wetlands (i.e., coastal, freshwater emergent and forested wetlands) to development declined from 1,035 acres per year T1(’86-’95) to 843 acres per year T2(’95-’02).

12) Loss of Wildlife Habitat

The three previous impacts mentioned (loss of agricultural, forest and wetlands) also carry with them the implied loss or alteration of wildlife habitat. Of particular vulnerability, are the habitats for Threatened and Endangered species. Evaluating the NJ urban growth data against the wildlife mapping data (known as the *Landscape Project*) allowed for an inventory of habitat



Land use change throughout the 1986-1995-2002 study period. At the current rate of change, urban land use will surpass forest in number of acres by August 2008.

loss. Grasslands experienced the greatest loss, dropping by 4.9% during the seven year T2(’95-’02) study period, followed by forest habitat loss of 2.4% and emergent wetlands habitat loss of 1.1%.

13) Impervious Surface Increase

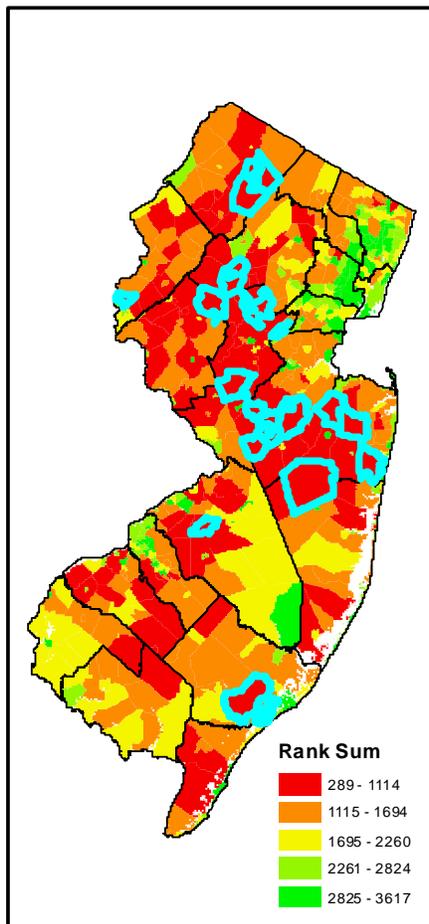
One of the direct environmental consequences of development is the creation of impervious surface, which is associated with multiple impacts. Chief among the effects of impervious surface is the degradation of water

quality. As of 2002, New Jersey contained 489,668 acres of impervious surface, the equivalent of a slab of concrete the size of Ocean County. During T2(’95-’02) impervious surface was being created at the rate of 5,116 acres per year or the equivalent of 1,742 parking spaces being paved every day. During T2(’95-’02) forty-one of New Jersey’s watersheds substantially increased impervious surface areas.

Urbanization and NJ's Land Management Systems

14) The New Jersey State Development and Redevelopment Plan

The New Jersey State Plan divides the state into six planning areas each with different goals of land management. Planning Areas 1-3 are intended to be the growth areas where most development should be focused. The remaining planning areas intended to discourage large-scale growth include: PA-4 *Rural*, PA-4B *Rural Environmentally Sensitive*, and PA-5 *Environmentally Sensitive*. These sensitive areas, however, received about 40% of the acres of urban growth that occurred during T2('95-'02). Most of the development in these sensitive areas was attributable to large-lot low-density housing. This type of development consumes much more land proportionately than the amount of people that live in the houses. The result was that while only 22% of new home buyers were actually located in PA-4, PA-4B or PA-5 during T2, they accounted for 40% of the land that became developed. This sprawling development is undermining the intent of the NJ State Plan.



This map depicts urbanization at the municipal scale combining seven different metrics of growth. Red indicates a higher degree of sprawl, with the top twenty most sprawling towns outlined in blue.

15) The Pinelands Comprehensive Management Plan

The Pinelands Comprehensive Management Plan (CMP) is similar to the NJ State Plan in that there are a number of designated planning areas that are intended to either receive or discourage growth. The plans are very different, however, in that the Pinelands CMP has a much stronger measure of regulatory control. This has resulted in the Pinelands area experiencing a significantly slower rate of development than the rest of the state. During T2('95-'02) the Pinelands received only 7.5% of the total acres of growth that occurred in the state even though it contained 25.8% of the land available for development. Furthermore, the majority of growth occurred in the planning areas intended to receive development while the areas intend for preservation had relatively modest urban growth. The urban growth patterns within the Pinelands indicate that the Pinelands CMP is effectively guiding development in a manner consistent with the way it was intended.

Regional Analysis

16) County Level Evaluation

At the county level the growth hotspots that experienced significant upticks in development rates include coastal counties (Atlantic, Monmouth, and Ocean with +24%,

+22%, and +37% increases in annual rates of growth respectively) and central New Jersey counties (Middlesex and Somerset with +18% and +19% increase in annual rates of growth respectively). Several counties including Salem, Cumberland and Hunterdon saw their development rates decrease with annualized development rates dropping -24%, -23% and -19% respectively. These rates represent only the change in development rate from T1('86-'95) to T2('95-'02). Other ways of quantifying urban growth at the county-level are also evaluated in the report.

17) Municipal Level Evaluation

The municipal level evaluation looked at urban growth in terms of 1) acres of urban growth, 2) change in urban growth rates T1-T2, 3) urban growth as a percentage of previous urban area, 4) urban growth as percentage of municipal size, 5) urban growth as a percentage of land available for development, 6) urban growth in acres of development per person added to population, and 7) the proportion of low-density to high-density residential growth. These seven growth treatments are combined using rank ordering to provide a meta-growth indicator to identify the top municipalities impacted by growth during the T2('95-'02) time period.

Conclusion

The findings in this report make it clear that New Jersey's land use pattern is rapidly changing. Once development takes place it sets the land use pattern for a time scale of decades to centuries. Land use policy and decisions occurring at this time are locking the future land use patterns in place as the Garden State marches toward its build-out landscape sometime in the middle of this century. The study confirms that some land use policies such as the Pinelands Comprehensive Management Plan have worked effectively. The study also confirms that policies in other parts of the state are less effective as large portions of New Jersey's recent growth embodies many of the problematic characteristics of sprawl. Contrary to other recent reports that suggest an end to sprawl in New Jersey, the land use patterns actually reveal that the Garden State is still sprawling dramatically as of 2002.



Photo: J. Hasse