

New Jersey Pinelands

COMPREHENSIVE MANAGEMENT PLAN



The Second Progress Report On Plan Implementation

December 1991

New Jersey Pinelands Commission



The Pinelands Commission

P.O. Box 7, New Lisbon, N.J. 08064 (609) 894-9342

December 30, 1991

Richard J. Sullivan
Chairman
New Jersey Pinelands Commission
P.O. Box 7
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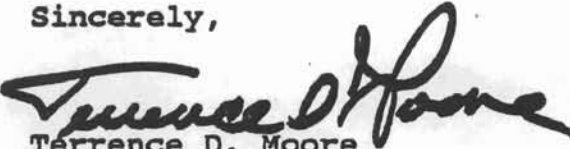
Dear Chairman Sullivan:

I am pleased to transmit to you and members of the Commission the staff report summarizing key programs, initiatives and information related to the implementation of the Pinelands Comprehensive Management Plan.

This is the second such report I have had the opportunity to issue since the Comprehensive Management Plan took effect in 1981. Although budgetary and staffing constraints have prevented us from detailing the full breadth of Pinelands related activities that were reported in 1983, I am confident that the information presented here will be of help to the Commission and others as the second full review of the Plan begins.

Almost eleven months ago the Commission celebrated the tenth anniversary of the Pinelands Comprehensive Management Plan and recognized the efforts of many people who helped to make the Pinelands protection effort a reality. Not only did the anniversary afford us an opportunity to reflect upon past successes, it also allowed the Commission to renew its commitment for the continuing protection of one of New Jersey's most cherished resources. As the first decade of implementation draws to a close, it is fitting that the Commission embarks upon a new challenge - that of analyzing key issues that face the Pinelands in the coming decade and beyond.

Sincerely,


Terrence D. Moore
Executive Director

JCS/km/CP4B

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CHAPTER I

LAND USE PLANNING

The Pinelands Protection Act requires that each municipality and county located within the Pinelands Area revise its master plan and land use regulations to implement the objectives and standards of the Comprehensive Management Plan (CMP). The CMP also sets forth a program to permit federal installations within the Pinelands to revise their master plans and enter into agreements with the Commission to ensure that their land use and development activities are compatible with Pinelands protection policies.

This chapter summarizes these land use planning activities and highlights noteworthy results of the municipal conformance process. Also highlighted are CMP amendments which the Commission has adopted to refine Pinelands-wide land use policies and a proposal considered by the Commission in the late 1980's to introduce a non-regulatory land use program in the Pinelands.

MUNICIPAL CONFORMANCE

Status

The status of municipal conformance as of July, 1991 is given in Table 1.1.

As of July, 1991, 48 municipalities, nearly 91 percent of the 53 municipalities in the Pinelands area, have had their master plans and land use ordinances fully certified by the Commission as being in conformance with the CMP. Since then, one additional municipality (Lacey Township) has been certified. Of the four municipalities which have not yet been certified, two (Egg Harbor Township and Port Republic City) are participating in the conformance process. Berkeley Township was fully certified by the Commission in 1985, but had its certification status modified by a successful court challenge to the Commission's certification action. The Township then became conditionally certified and lost its certification status when it did not amend its land use ordinances in response to the Commission's conditional certification order. The remaining uncertified municipality, South Toms River Borough, has not initiated any significant conformance activity in the past several years.

Table 1.1
Status of Municipal Conformance
July, 1991

Certified

Barnegat Township	Maurice River Township
Bass River Township	Medford Lakes Borough
Beachwood Borough	Medford Township
Berlin Borough	Monroe Township
Berlin Township	Mullica Township
Buena Borough	New Hanover Township
Buena Vista Township	North Hanover Township
Chesilhurst Borough	Ocean Township
Corbin City	Pemberton Township
Dennis Township	Plumsted Township
Dover Township	Shamong Township
Eagleswood Township	Southampton Township
Egg Harbor City	Springfield Township
Estell Manor City	Stafford Township
Evesham Township	Tabernacle Township
Folsom Borough	Upper Township
Franklin Township	Vineland City
Galloway Township	Washington Township
Hamilton Township	Waterford Township
Hammonton Town	Weymouth Township
Jackson Township	Winslow Township
Lakehurst Borough	Woodbine Borough
Little Egg Harbor Township	Woodland Township
Manchester Township	Wrightstown Borough

Not Certified

Berkeley Township	Port Republic City
Egg Harbor Township	South Toms River Borough
Lacey Township (a)	

(a) Lacey Township's Master Plan and Land Use Ordinances were fully certified by the Pinelands Commission on November 1, 1991.

Municipal Flexibility

With so many of the Pinelands municipalities now in full conformance with the Pinelands Plan, it is possible to summarize how the CMP was tailored to fit the individual needs and circumstances of many communities. These include both taking advantage of the flexibility afforded to municipalities as well as the many optional land uses permitted by the CMP.

"Grandfathered" Lots

The CMP's exemption for substandard lots, which is the Commission's "grandfather clause" for owner-used one acre lots, has been included in the ordinances of 34 of 42 municipalities eligible for its use. (There are 4 Military and Federal Installation Area municipalities and 2 Preservation Area municipalities not eligible for this type of exemption.) Eight other municipalities - Dennis, Estell Manor, Galloway, Hamilton, Maurice River, Medford, Monroe and Tabernacle - chose to use other forms of grandfathered lot exemptions, some of which broadened the grandfathering provisions while offsetting these additional development opportunities by making standard zoning provisions somewhat more limiting.

Multiple Zoning Districts Within Management Areas

Through the certification process, Protection Area municipalities also had the opportunity to exercise considerable discretion in the designation of individual zoning districts within Pinelands management areas. Each management area provided a set of permitted and optional uses, as well as an overall residential density limit and minimum lot sizes. Within this framework, municipalities established different zoning districts to segregate uses and densities, thereby maintaining considerable control over local land use patterns. For example, Medford, Pemberton and Stafford have each established 12 separate zoning districts in their Regional Growth Areas.

There are approximately 457 certified residential and non-residential zoning districts in the Pinelands Area. Excluding Special Agricultural Production Areas, Agricultural Production Areas, and Preservation Area Districts where residential uses are not encouraged, Forest Areas have the lowest average number of zones (2.3) per municipality. There is an average of 2.3 municipal zones per Village, 2.8 per Rural Development Area, and 4.8 per Town. The Regional Growth Area has the largest number of municipal zoning districts (135) and averages 6.4 separate zones per municipality.

Municipalities with Regional Growth Areas also undertook the task of creating zoning districts in which bonus densities could be achieved through the use of Pinelands Development Credits (PDCs). Three municipalities with Regional Growth Areas - Medford Lakes Borough, Dover and Berlin Townships, were not required to zone for PDC use because of the character of their Regional Growth Areas; however, each affords the opportunity for PDC use if density or use variances are granted. A fourth municipality, Stafford Township, was only required to accept PDCs within a small geographic area due to the ownership and subdivision pattern in much of its Regional Growth Area.

Establishment of Commercial and Industrial Zones

Within Regional Growth Areas and Rural Development Areas, non-residential uses are permitted by the CMP at the option of the municipality. Twenty of 21 certified Regional Growth Area towns have chosen to create commercial or industrial districts; 17 of 27 Rural Development Area towns have also chosen this option.

Special Districts

One type of special district permitted in Preservation Area municipalities is the designation of Infill Development Areas (IDAs). Recognizing that there are small, compact clusters of homes and businesses where additional development would not impact the overall values of the Preservation Area and where land use alternatives contained in the Pinelands Plan were not very viable due to small lot sizes and surrounding development, the CMP was amended to allow municipalities to designate these areas for limited development. To date, three municipalities have zoned for infill areas - Shamong (2 IDAs), Tabernacle (2 IDAs) and Woodland Township (6 IDAs) - consisting of 2,040 acres. One other, Washington Township, is considering the establishment of an infill area.

In other management areas where clusters of residential, commercial, and industrial development were identified, new Villages or Towns were established. Three new Pinelands Villages were identified (Vincentown in Southampton Township; Jenkins in Washington Township; and Collings Lake in Buena Vista Township) and one existing Village (Whiting in Manchester Township) was redesignated as a Pinelands Town as a result of a CMP amendment. During certification, some municipalities elected not to establish separate zoning classifications for villages. For example, Lake Pine and Taunton Lake are within Regional Growth Area zones, Laureldale is in a Rural Development Area zone, and Landisville is in a Town Area zoning classification.

Six municipalities (Medford, Pemberton, Shamong, Tabernacle, Washington, and Woodland) designated Special Agricultural Production Areas.

Planned Development

Eleven of the 21 municipalities certified with Regional Growth Areas in the Pinelands Area permit some type of planned development. In some cases, this development involves only residential uses while in others, a mixture of residential, commercial and industrial uses is permitted or required.

Non-Conforming Uses

Twenty-eight municipalities have included CMP provisions which allow for a 50% expansion of non-conforming uses. Three of these have also included CMP provisions which permit a change from one non-conforming use to another, as long as the new use is comparable in terms of area, capacity and intensity to the existing use. Twenty municipalities have not included either provision, four of which are zoned exclusively for military and associated uses.

Conservation Districts in Growth Areas

Four of 21 municipalities have established districts in their Regional Growth Areas that are conservation-oriented: Medford Lakes, Stafford, Waterford, and Beachwood. These range from zones where only recreation and conservation uses are allowed to zones in which limited residential and institutional uses are also permitted.

Optional Uses

Most municipalities elected to zone for land uses in their Forest and Preservation Areas which the CMP does not require be included. These uses include agricultural employee housing, campgrounds and home occupations in the Preservation Area and institutional uses, agricultural commercial establishments, resource extraction, and roadside retail sales and service establishments in Forest Areas.

Internal Development Transfer Programs

Four municipalities created development transfer programs within their individual boundaries: Weymouth (Forest Area and Pinelands Village), Evesham (Forest Area, Agricultural Production Area and Rural Development Area), Buena Vista (Forest Area), and Jackson (Forest Area).

Municipal Reserves

Municipal reserves are discrete areas within Rural Development Areas, which will be eligible for development under Regional Growth Area standards when certain growth management criteria are met. Five municipalities with Regional Growth Areas (Monroe, Ocean, Waterford, Winslow, and Hamilton) have designated municipal reserves in adjacent Rural Development Areas. However, only three of these municipalities (Ocean, Waterford, and Hamilton) specifically delineated their reserve areas, accounting for 440, 810, and 2,514 acres, respectively.

Pinelands National Reserve Conformance

As a result of voluntary conformance in the Pinelands National Reserve (PNR) outside the State Pinelands Area, 24,000 acres of the 222,000 acres in the PNR subject to the Coastal Area Facilities Review Act (CAFRA) are also covered by three municipal master plans (Estell Manor City, Bass River and Ocean Townships) and ordinances approved by the Commission.

Almost nine thousand acres of the PNR in the townships of Evesham, Medford, Jackson and Plumsted are not covered by either Pinelands or CAFRA standards. Of the 189,000 acres in the PNR governed exclusively under CAFRA, 69 percent, principally coastal wetlands, is within a Forest Area under the Pinelands Plan land designation program. Twenty-one percent is classified as Regional Growth Area and eight percent as Rural Development Area. The rest of the PNR is designated as Pinelands Town, mostly in the Borough of Tuckerton.

Forest Area & Rural Development Area Clustering

Eighteen of 33 eligible municipalities have chosen to permit on-site clustering in Forest Areas on lots as small as 3.2 acres. Sixteen out of 27 eligible municipalities permit clustering in Rural Development Areas on lots as small as one acre.

Agricultural Commercial Zones

Two of 18 towns with Agricultural Production Areas have created separate commercial zones for agricultural roadside retail sales and service uses within their Agricultural Production Areas: Buena Vista and Pemberton. Many of the other municipalities permit agricultural commercial uses throughout their agricultural zones. Two other municipalities, Hammonton and Southampton, have created industrially-oriented commercial zones in their Agricultural Production Areas. Hammonton's zone is located next to an airport and Southampton's zone was created to provide for Pinelands resource-related industries.

Forest Commercial Zones

Seven of 33 municipalities with Forest Areas have created special forest commercial zones: four for roadside retail and service (Barnegat, Estell Manor, Folsom, and Hamilton); and four for zones oriented to mining and resource-related industries (Barnegat, Maurice River, Ocean, and Upper). Many of the other Forest Area municipalities have elected to permit forest commercial and Pinelands resource-related industrial uses, as well as forestry, conservation and residential development, within one multi-purpose zone.

Historic Districts

Six municipalities - Berlin Borough, Estell Manor, Evesham, Hamilton, Medford and Medford Lakes - have created historic districts.

Density Bonuses (other than PDCs)

Within certified Regional Growth Areas, 2 municipalities (Chesilhurst and Pemberton), allow additional residential density bonuses, over and above those permitted with the use of Pinelands Development Credits, for various public purposes. Chesilhurst allows density to be increased when developers meet affordable housing and/or energy standards; Pemberton provides a density bonus to developers of age-restricted housing.

Effect of Municipal Conformance

Of the approximately 927,000 acres located within the Pinelands Area, 858,000 acres are governed by approved municipal plans and ordinances. This amounts to 93% of the entire Pinelands Area. Coverage by approved plans and ordinances by management area are as follows: Agricultural Production areas and Towns, 100%; Rural

Development Areas, 98%; Forest Areas, 94%; Military and Federal Installation Areas, 92%; Preservation Areas, 88%; and Regional Growth Areas, 82%.

COUNTY CONFORMANCE

The Pinelands Protection Act and the CMP require Pinelands counties to revise their master plans and land development regulations to be consistent with the CMP. Article 3, Part 2 of the CMP sets forth the procedures for certifying county planning documents. Before certifying a county's plan and regulations, the Commission must find that the county's standards and procedures for reviewing development, as well as the county's solid waste management program, capital improvements program, and any other programs affecting development in the Pinelands Area are consistent with the minimum requirements of the CMP.

The Commission has certified the plans and programs of all seven Pinelands counties.

FEDERAL INSTALLATION CONFORMANCE

There are four primary federal facilities located within the Pinelands Area: Fort Dix Army Training Center, Lakehurst Naval Air Engineering Center, McGuire Air Force Base and the Federal Aviation Administration Technical Center.

Although the Commission does exercise some oversight of development activities at each of these facilities, only one - the Lakehurst Naval Air Engineering Center - has formally requested Commission review of its master plan. The center's 1983 master plan was recommended for Commission approval if certain modifications were made. The center submitted the changes along with a proposed memorandum of agreement with the Commission but later withdrew its request. The center has recently submitted an updated master plan for Commission review. Staffs from both organizations are cooperating on modifications which may be needed to more fully reflect Pinelands protection policies.

As reported in 1983, the Commission authorized a memorandum of agreement with the Fort Dix Army Training Center in 1980. However, the Department of Defense never approved it and Fort Dix has yet to seek Commission endorsement of its facility plans.

McGuire Air Force Base and the Federal Aviation Administration Technical Center also have not submitted master plans to the Commission for review. The Technical Center is in the midst of a substantial capital improvements program and the Commission has had the opportunity to review specific development plans for these new facilities.

MANAGEMENT AREA ADJUSTMENTS

During the conformance process, municipalities are permitted to adjust management area boundaries. Net changes in land allocation by management area, in both fully certified and yet to be certified municipalities, as of July, 1991, are shown in Table 1.2.

Preservation Area District

In the Preservation Area, municipalities had the responsibility to delineate Pinelands Villages, to designate Special Agricultural Production Areas or Agricultural Production Areas and to maintain a Preservation Area "District." There are eight Villages located wholly or partly in the Preservation Area which occupy 3,516 acres. Special Agricultural Production Areas occur in six certified municipalities (Medford, Pemberton, Shamong, Tabernacle, Washington and Woodland) and cover a total land area of 36,133 acres. Agricultural Production Areas within the Preservation Area in Shamong and Tabernacle were increased during conformance from the 1,845 acres originally designated by the CMP to 2,075 acres. Military and Federal Installation Areas within the Preservation Area remained the same at 29,657 acres.

Protection Area

Within the Protection Area, municipalities have many more opportunities to make management area adjustments to meet local needs and reflect site characteristics. Since the Commission's management area boundaries were frequently established on the basis of natural factors and represented a regional approach, there were often sound administrative and planning reasons for adjusting management areas. Each of the adjustments was reviewed by the Commission staff and the Commission's Conformance Committee, and it was only after formal approval by the full Commission that they became effective. This process resulted in adjustments to the Commission's land management program for the Protection Area, which are summarized below by management area.

Table 1.2
Summary of Acreage Changes by Management Area
Pinelands Area
July, 1991

Management Area	CMP Acres 1980 ^(a)	Current Acres 1991	Change #	Net Change in Acreage %
Preservation Area District (PAD)	294,918	294,638	(280)	-0.09% ^(b)
Forest Area (FA)	245,118	242,441	(2,677)	-1.09%
Agricultural Production Area (APA)	74,656	66,269	(8,387)	-11.23% ^(c)
Rural Development Area (RDA)	116,550	114,319	(2,231)	-1.91%
Regional Growth Area (RGA)	70,688	80,436 ^(d)	9,748	13.79%
Pinelands Towns	16,638	21,191	4,553	27.37% ^{(c), (e)}
Military & Federal (MAFIA)	46,381	46,098	(283)	-0.61% ^(f)
Villages	26,041	25,598	(443)	-1.70%
Special Agricultural Production Area (SAPA)	36,133	36,133	0	0
TOTAL	927,123	927,123	0	0.00%

(a) Original acreage estimates have been adjusted to account for the original certification of Villages and SAPA.

(b) On a net basis, changes in APA boundaries resulted in an increase of 280 acres in APAs located within the PAD.

(c) About 3,313 acres of this APA decrease was due to the increase of the Pinelands Town in Hammonton. An additional 3,989 acres was re-classified from APA to RDA in Franklin.

(d) A "municipal reserve" in Hamilton Township will be automatically converted to a RGA in 1993. For purposes of this table, it is tabulated as RGA acreage.

(e) Originally designated a Pinelands Village, Whiting became a Pinelands Town through a 1987 CMP amendment. Original acreage estimates have been adjusted to reflect Whiting as a Town using the certified Village boundary as the original Town boundary.

(f) Lands excessed from Ft. Dix in Pemberton and classified as a RDA accounted for one 238 acre adjustment. The remaining 45 acre adjustment is because more accurate acreage estimates were obtained during certification.

Pinelands Villages

One of the first tasks initiated by municipalities during the conformance process involved the delineation of Pinelands Villages within their jurisdiction. Currently, there are a total of 44 Pinelands "certified" Villages in 24 municipalities. Four of these Villages (Brookville, Warren Grove, Waterford Works and Milmay) are located in more than one township. The 44 approved Villages occupy almost 25,600 acres (3,516 acres of which are in the Preservation Area), for an average Village size of approximately 580 acres. There are 14 Villages (32% percent of the total) greater than one square mile in size. In five of the Villages, municipal zoning provides for a minimum lot size of at least 3.2 acres (rather than the normal 1 acre minimum) since local officials in these municipalities wished to maintain the existing character of large lot development. Four other municipalities have multiple zones with both above and below 3.2 acre zoning. Because of the larger lot area requirements in these municipalities, the Village sizes were often increased in order to provide an opportunity for continuing development.

As Table 1.2 indicates, Villages accounted for 26,041 acres in 1980 even though the CMP did not designate their boundaries and could not initially separate acreage estimates from those of other management areas. However, to reflect the fact that the CMP did contemplate Village designations, acreages estimates have been computed from original Village certification actions and reflected in the 1980 figures. Other management area acreages have also been adjusted accordingly. The 1991 acreage estimates reflect two Village changes made since original certification. Mullica reduced the size of its Villages by 457 acres and Southampton allocated 14 acres of its Agricultural Production Area for the Village of Vincentown.

Within the Forest and Rural Development Areas, approximately 13,567 and 5,041 acres, respectively, were allocated to Villages when municipalities first received Commission approval of their master plans and ordinances. Portions of 28 Villages are located in Forest Areas and portions of 18 are located in Rural Development Areas. The smallest Villages, Vincentown in Southampton at 14 acres and Belcoville in Weymouth at 27 acres, are extensions of developed areas outside the Pinelands Area. The smallest Village located wholly within the Pinelands is New Lisbon in Pemberton which measures 100 acres. The largest is Dorothy at 1,888 acres. Both Winslow and Maurice River Townships delineated five Villages, and eight other municipalities had multiple Villages within their Pinelands Area.

Forest Areas

The largest management area, and the most environmentally sensitive in the Protection Area, is the Forest Area. The Forest Area includes 242,441 acres in the Protection Area and an additional 154,684 acres outside the Protection Area but within the PNR. Three municipalities (Bass River, Estell Manor, and Ocean) have received certification for 18,431 acres of Forest Area in the PNR. In total 33 municipalities with Forest Areas covering 227,968 acres have been certified. It is interesting to note that the Forest Area had one of the lowest net management area changes, with a reduction of only 1.09%. Seven municipalities (Bass River, Corbin City, Eagleswood, Egg Harbor City, Evesham, Little Egg Harbor, and Weymouth) did not adjust their CMP Forest Area boundaries, except for the designation of Villages.

The change in the Forest Area acreage totals is discussed below.

- o One municipality had an increase of less than 100 acres (Woodbine), 7 had increases between 100 and 1,000 acres (Dennis, Folsom, Medford, Monroe, Ocean, Tabernacle, and Upper), and 3 had increases greater than 1,000 acres (Buena Vista, Jackson and Manchester).
- o Twelve municipalities had decreases between 100 and 1,000 acres (Barnegat, Estell Manor, Galloway, Hammonton, Maurice River, Pemberton, Plumsted, Shamong, Stafford, Vineland, Waterford, and Winslow), and 3 had decreases greater than 1,000 acres (Hamilton, Mullica, and Southampton).

The major increase occurred in Buena Vista and was from Agricultural Production to Forest Area and reflected areas which, although containing agricultural soils, were predominantly forested and not in farm use. Other major increases were from the Rural Development Area in Manchester around Whiting and from the Rural Development Area in Jackson. Minor increases (between 100 and 1,000 acres) in the seven municipalities had an average net increase of about 330 acres.

Major decreases (greater than 1,000 acres) were to the Agricultural Production Area in Hamilton, and to Rural Development/Agricultural Production Areas in Mullica and Southampton. Forest Areas in municipalities like Shamong (949 acre decrease) and Waterford (875 acres decrease), as well as Estell Manor, Galloway, Maurice River, each of whose Forest Areas decreased by more than 700 acres, were also largely due to redesignations to Agricultural Production Areas and Rural Development Areas. Forest Area adjustments to Agricultural Production and Rural Development Areas were done, for the most part, to reflect areas in active farm use and to reflect existing development patterns.

Agricultural Production Areas

Approximately 75,000 acres were included in the Agricultural Production Area classification under the CMP. Eighteen of the certified municipalities have Agricultural Production Areas which cover approximately 66,269 acres. Aside from Village allocations, ordinance revisions resulted in a 8,387 acre reduction from the total acreage designated in the Plan.

The change in the Agricultural Production Area acreage totals is discussed below.

- o One municipality, Vineland, retained its CMP Agricultural Production Area boundaries, and one other, Buena Borough, increased less than 100 acres.
- o Two municipalities increased between 100 and 1,000 acres (Estell Manor and Waterford), and 4 increased more than 1,000 acres (Hamilton, Mullica, Pemberton, and Southampton).
- o One municipality, Medford, decreased less than 100 acres, 3 decreased between 100 and 1,000 acres (Folsom, Galloway, and Monroe), and 6 towns decreased more than 1,000 acres (Buena Vista, Franklin, Hammonton, Shamong, Tabernacle, and Winslow).

The original CMP designated Agricultural Production Areas on the basis of actively farmed areas and surrounding lands with soils suitable for agricultural use; however, many municipalities sought to adjust boundaries to reflect actively farmed lands and designate non-farmed areas as Forest or Rural Development Areas, depending upon environmental factors and existing development patterns. The largest decreases were from Agricultural Production to Rural Development Area (Franklin and Winslow), Towns (Hammonton), Rural Development/ Regional Growth Areas (Shamong and Tabernacle), and Forest/Rural Development Areas (Buena Vista). The major increases were from Forest Area (Hamilton and Mullica) and Rural Development Areas (Pemberton and Southampton).

Rural Development Areas

Rural Development Areas account for 114,319 acres in the Pinelands Area, with an additional 17,361 acres falling within the PNR outside of the Pinelands Area. Two municipalities with Rural Development Areas in the PNR, Bass River and Ocean Townships, revised their land use documents for certification, accounting for approximately 1,100 PNR acres. In total, 30 towns with Rural Development Areas covering 113,117 acres have been certified, resulting in a decrease of 2,231 acres from that designated in the Plan. This is less than a 2% decrease.

As an intermediate management area in terms of land uses and development intensities, the Rural Development Area was often viewed by municipalities and the Commission as the area in which adjustments could be made to reflect local land use and environmental conditions. For example, many minor adjustments occurred in Rural Development Areas due to locally significant concentrations of wetlands and/or uplands located adjacent to other, more conservation or development oriented management areas.

The change in the Rural Development Area acreage totals is discussed below.

- o Three municipalities had no CMP acreage changes after Village boundaries were delineated (Bass River, Berlin Township, and Evesham).
- o Two municipalities had increases less than 100 acres (Folsom and Medford Lakes), 6 had increases between 100 and 1,000 acres (Maurice River, Mullica, Plumsted, Stafford, Tabernacle, and Vineland), and 4 had increases greater than 1,000 acres (Buena Vista, Franklin, Shamong, and Winslow).
- o One municipality had a decrease of less than 100 acres (Woodbine), 7 municipalities had decreases between 100 and 1,000 acres (Buena, Dennis, Galloway, Hamilton, Ocean, Upper, and Waterford), and 6 municipalities had decreases greater than 1,000 acres (Jackson, Manchester, Medford, Monroe, Pemberton, and Southampton).

The largest decreases (greater than 1,000 acres) were to Regional Growth Areas (Medford and Jackson), Towns (Manchester), Agricultural Production Areas (Pemberton), Forest/ Agricultural Production Areas (Southampton), and Forest/Regional Growth Areas (Monroe). The largest increases were from Agricultural Production Areas (Buena Vista, Franklin, Shamong and Winslow). In addition, Maurice River and Tabernacle's Rural Development Area acreages also increased by 763 and 988 acres, respectively. There were also minor increases from Forest Areas (Maurice River, Plumsted, Stafford, and Vineland).

Regional Growth Areas

Regional Growth Areas totaling approximately 119,000 acres in 30 municipalities were designated in the CMP. Of these 30 municipalities, seven had Regional Growth Areas exclusively in the PNR, amounting to approximately 48,000 acres, and one of these (Ocean Township) conformed its land use plan and ordinances in the PNR for an area that covered 4,150 acres. Twenty-one additional municipalities with Regional Growth Areas have been cer-

tified, resulting in a total "certified" area of approximately 66,337 acres in the Pinelands Area.¹ Regional Growth Areas were increased by 9,748 acres (13.8%) during conformance.

The change in the Regional Growth Area acreage totals is discussed below.

- o Six municipalities had no changes from their CMP Regional Growth Area boundaries (Beachwood, Berlin Borough, Berlin Township, Chesilhurst, Dover, and Evesham).
- o Nine municipalities had increases between 100 and 1,000 acres (Barnegat, Galloway, Manchester, Pemberton, Shamong, Southampton, Stafford, Tabernacle, and Waterford), and 4 had increases greater than 1,000 acres (Jackson, Medford, Monroe, and Winslow).
- o One municipality, Medford Lakes, had an acreage decrease of less than 100.

Major increases were from Rural Development Areas (Jackson, Medford, Monroe, and Winslow). Minor increases were also from Rural Development Areas (Galloway, Manchester, Pemberton, Shamong, Southampton, Tabernacle, and Waterford) and Forest Areas (Stafford).

Summary

While adjustments were made in most management areas, net changes were not significant except in Agricultural Production Areas (11% decrease), Regional Growth Areas (14% increase), and Pinelands Towns (27% increase). The Agricultural Production Area and Pinelands Town changes were mostly due to the delineation of Hammonton's Pinelands Town boundaries and a change from Agricultural Production Area to Rural Development Area in Franklin Township. The Regional Growth Area changes were due to additions from Rural Development Areas.

¹ This figure includes a 2,514 acre zone in Hamilton Township which was originally designated as a Regional Growth area in the CMP but redesignated through conformance as a Rural Development Area/Municipal Reserve. Since this zone automatically converts to Regional Growth Area densities in 1993, it is treated as such in this report.

ZONE CAPACITY ESTIMATES

Residential Development Potential

Throughout this discussion of the conformance process, reference has been made to the acreage associated with management area adjustments. Since CMP density guidelines vary widely by management area, each boundary adjustment produces a change in the residential dwelling unit development capacities. Other factors, such as Waivers of Strict Compliance and "grandfathered" lots, also contribute to the development potential in the Pinelands. In 1983, an estimate based on the existing management area delineations and the possible effects of other Plan provisions was published. The purpose of this section is to review the current situation based on the conformance process and other recent experience.

Since not all Pinelands municipalities have been certified by the Commission, the development capacity estimate is derived using two methods. In certified municipalities, the zone capacities from the adopted zoning ordinances were estimated; for uncertified municipalities, the CMP's average density standards were used for the estimates. Table 1.3 estimates the maximum development capacity for management areas (including certified and uncertified municipalities) and special categories.

Forest and Rural Development Areas

The current zoning capacity estimate of 9,200 dwelling units for the Forest Area was derived by combining the total dwelling units permitted by certified ordinances in 33 municipalities with estimates for three uncertified municipalities. The certified municipalities account for 91% of the estimated dwelling unit capacity within Forest Areas.

The Rural Development Area has a currently estimated capacity for 24,200 residential dwelling units, with approximately 23,700 units covered by certified zoning ordinances.

Forest Area projections changed very little between 1983 and 1991, although a slight increase has occurred. In large part, this is because municipalities often exceeded a strict application of CMP density standards when designing uniform zoning district boundaries and lot area requirements for purposes of their land development ordinances. This same phenomenon holds true for Rural Development Areas but the larger increase in estimated zone capacities also reflects that, while the overall acreage total assigned a Rural Development Area classification remained effectively unchanged, more developable land was added while larger areas of wetlands were reclassified into other management areas.

Table 1.3
Estimated Zone Capacities for Residential Units
in Certified and Uncertified Municipalities^{(a),(b)}

<u>Category</u>	<u>Previous ('83) CMP Review Estimate</u>	<u>Current ('91) CMP Review Estimate</u>
Infill Development Areas - Preservation Area District (PAD)	0 ^(c)	200
Forest Area (FA)	9,000 ^(d)	9,200
Rural Development Area (RDA)	22,900 ^(d)	24,200 ^(e)
Regional Growth Area (RGA)		
Base Units	91,200 ^(d)	80,800 ^(e)
PDC Units ^(f)	26,000	22,500
Villages & Towns	17,700	16,400
Waivers of Strict Compliance	14,300	11,900
Substandard Lots (grandfathering)	10,000	10,000
TOTAL	191,100^(d)	175,200

- (a) This table does not include estimates of zone capacities in the PNR, outside the Pinelands Area. Nor does the table include estimates for conditional types of residential uses (e.g. cultural housing) which are permitted in various management areas, the most noteworthy of which are the APA, SAPA, and PAD.
- (b) So that the 1983 and 1991 estimates can be compared to each other, the amount of development which has occurred over time, and the land associated therewith, have not been used as a basis to adjust zone capacities.
- (c) Zone capacities for Infill Areas were not estimated in 1983.
- (d) The 1983 zone capacities for the FA, RDA and RGAs included certified areas located within the PNR but outside the Pinelands Area in Ocean, Bass River and Estell Manor. These estimates have been reduced by a total of 6,000 units to make them comparable with the 1991 estimates.
- (e) Hamilton Township has a RDA Municipal Reserve zone which had been originally designated a RGA in the CMP. Because the zoning for this area triggers RGA densities in 1993, it is treated as a growth area for purposes of these estimates.
- (f) These estimates reflect the maximum number of rights that may be transferred from sending areas into RGAs. The actual zone capacities in the RGAs actually exceed these estimates; for example, the 1991 estimate of zone capacities for PDC units is 46,200.

Regional Growth Areas

The Regional Growth Areas in the Pinelands Area have an estimated zoning capacity of 103,300 dwelling units. Approximately 74% of this total is contained within municipalities with certified plans and ordinances. Egg Harbor Township and South Toms River remain uncertified.

Actual zone capacities in Regional Growth Areas approximate 127,000 units. This difference of 23,700 units is attributable to the fact that, while the Regional Growth Area zoning ordinances permit as many as 46,200 units to be built if PDCs are used, there are at most only 22,500 rights available for transfer.

The total unit capacity change from the previous CMP review is due to the following:

- o Adjustments during certification including substantial decreases in estimated unit capacities in Galloway, Hamilton, and Shamong due to more precise developable land calculations; substantial decreases in Pemberton and Tabernacle due to a Commission mandated reduction for over-zoning and more accurate analyses of subdivision opportunities, respectively; a substantial decrease in the estimate of base units in Monroe Township due to the inclusion of a Planned Residential Development option which transferred base units into PDC units; and an ongoing re-evaluation of land characteristics in Egg Harbor Township's Regional Growth Area.
- o The adoption of a CMP amendment which required three municipalities (Chesilhurst, Waterford and Winslow) within the Upper Mullica River basin to reduce Regional Growth Area densities by 25%.

Villages and Towns

Within certified municipalities there are 44 Pinelands Villages, four of which cross municipal boundary lines, and six Pinelands Towns (Lakehurst, Woodbine, Buena, Hammonton, Egg Harbor City and Whiting), three of which occur in more than one municipality. Of the estimated development potential of 16,400 dwelling units in Villages and Towns, approximately 5,266 units are contained within certified Villages, and 136 are estimated for the remaining two Villages (Bamber Lake and Port Republic) uncertified as of July, 1991. The estimate for Villages and Towns without sewers was derived from certification documents or by applying a density factor of one unit per acre of developable land across

the residentially zoned area unless, as occurred in some Villages, a larger minimum lot size was provided to maintain the character of existing development.

In the latter case, the certified ordinance's minimum lot size was used for the estimate. In the case of the two sewerred Villages (New Lisbon and Pomona) and two sewerred Towns (Lakehurst and Whiting), the zoning ordinance's minimum lot size with sewers was utilized for the estimate.

It is noteworthy that Villages, once certified, had lower average zone capacities than early estimates projected might be the case; thus, the capacity estimates are less now than they were in 1983.

Waivers of Strict Compliance

Waivers of Strict Compliance are methods of providing relief where strict compliance with the CMP would create an extraordinary hardship or where the waiver is necessary to serve a compelling public need.

As discussed in Chapter II, more than 13,500 residential units have received Waivers of Strict Compliance; however, only 8,400 remain valid. If one projects that approximately 70 additional waivers will be granted each year, a total of 11,900 waivers may be approved by the middle of the next century.

Substandard Lots

The substandard, or "grandfathered," lot provision of the CMP provides that lots of an acre or more in the Protection Area may be developed for an owner-occupied dwelling unit. The Commission originally estimated that approximately 10,000 dwelling units could be developed under this provision based on an analysis of ownership patterns. This estimate has been used in Table 1.3. However, a review of three municipalities (Dennis, Estell Manor and Maurice River) that have actually identified their substandard lots indicates that, if these three municipalities are the norm, the actual number of substandard lots will be about half the projection. In large part, this is attributable to the fact that municipalities have tended to recognize existing ownership patterns when identifying specific zoning districts and densities in the various management areas; thus, there are fewer undersized lots than originally thought. Experience gained during the administration of the development review process also appears to indicate that considerably less than 10,000 substandard lots will be approved for development. However, a precise number is difficult to estimate.

Other Categories

There are certain categories of development for which no estimate of dwelling unit capacity is given. The PNR outside of the Pinelands Area is not subject to the CMP's municipal conformance and Pinelands development review standards; therefore, estimates are speculative and are not projected here.

Since all residential development in Agricultural Production Areas, Special Agricultural Production Areas and the Preservation Area District is conditional in nature, it is not possible to derive accurate estimates based upon land characteristics alone. However, as Chapter II suggests, the level of development in these three management areas, over and above that permitted through Waivers of Strict Compliance and grandfathered lot approvals, is not anticipated to be substantial.

Zone Capacity Summary

In 1981, the CMP estimated that approximately 237,000 new residences could be built in the PNR under the terms of the CMP. Although the estimates presented here are less, the difference is attributable to several facts: lands within the PNR but outside the Pinelands Area (which might account for as many as 40,000 units) were not surveyed in the 1983 and 1991 estimates. Regional Growth Area zone capacities have been effectively reduced due to a number of factors; and some waivers have expired.

Average Gross Density

The CMP assigned net residential development densities for three specific management areas - Forest Areas, Rural Development Areas, and Regional Growth Areas - based upon the amount of private, vacant uplands in those management areas. Municipalities then designed zoning districts with gross densities (units per vacant uplands and wetlands), as long as the total estimated capacity of units in each zone was consistent with the CMP standards.

Table 1.4 presents the average gross densities permitted by certified municipal ordinances in each of these management areas.

Table 1.4
Current Average Gross Density by Management Area
Pinelands Area

	Average Gross Density in Certified Zoning Ordinances	
	Expressed in acres per unit	Expressed in units per acre
Forest Areas	1 unit per 22 acres	—
Rural Development Areas	1 unit per 5 acres	—
Regional Growth Areas	—	2.9 units per acre

COMPREHENSIVE MANAGEMENT PLAN AMENDMENTS

Three sets of CMP amendments were adopted in the late 1980s, based in part on the last comprehensive review of the CMP.

The following highlights some of the more noteworthy amendments relative to land use which were adopted in 1987, 1988 and 1990. Other noteworthy amendments concerning development review and cultural resources are more particularly described in Chapters II and IX.

- o To provide more municipal flexibility, the CMP was amended to:

Allow clustering on 1 acre lots in Rural Development Areas with permanent open space deed restrictions;

Permit vegetative waste landfills and solid waste transfer stations in certain areas;

Provide that non-conforming uses may be changed to other non-conforming uses in limited cases;

Permit exemptions from CMP sewer limitations when a public health problem is documented;

Allow municipalities to determine whether or not to permit a number of land uses which the CMP previously required; and

Establish guidelines for municipal designation of Infill Development Areas.

- o To restrict certain uses which are inconsistent with the goals of the CMP, amendments were adopted to:

Place limitations on the location of "public service infrastructure" in conservation-oriented management areas;

Mandate a 25% density reduction in the Regional Growth Areas of Chesilhurst, Waterford and Winslow.

- o To enhance farmland preservation, the CMP was amended to:

Strengthen farm housing standards in Agricultural Production Areas;

Permit non-farm related housing in Agricultural Production Areas areas (1 du/40 acres, clustered on 1 acre lots);

Permit farm-related housing (1 du/40 acres) in Special Agricultural Production Areas; and

Prohibit new institutional uses, campgrounds, and sand and gravel mines in Agricultural Production Areas.

- o To afford environmentally sensitive areas and farmlands with more permanent protection through the use of PDCs, amendments were adopted which:

Increase the allocation of PDCs to approved but as yet undisturbed mining sites;

Require PDC purchase when municipalities grant variances to permit residential development in non-residential zones and when municipalities grant variances to increase density in residential zones; and

Establish requirements for PDC purchase when municipalities grant variances to permit non-residential uses in residential zones.

- o To better guide on-site development of environmentally sensitive lands, amendments were adopted which:

Modify standards for the development of public improvements in wetlands;

Strengthen and clarify resource extraction standards;

Incorporate additional standards for forestry; and

Prohibit sewer extensions in conservation-oriented management areas unless, as mentioned previously, a public health problem exists.

PINELANDS CONSERVANCY

In 1987 and 1988, the Commission considered a proposal to institute a "non-regulatory" Pinelands protection strategy to complement the CMP's regulatory approach.

A new quasi-public organization, named the Pinelands Conservancy, would develop public-private partnerships to address issues which might not be able to be resolved by the Commission. As proposed in a discussion report and draft enabling legislation prepared by the Executive Director, the Pinelands Conservancy would complement the Commission's planning and regulatory functions by:

- o Offering technical assistance to public and private organizations in how to use and develop their properties such that economic returns and environmental goals are fostered;
- o Undertaking selective development projects in cooperation with property owners;
- o Assuming various responsibilities for administering the PDC program;
- o Providing public education programs;
- o Undertaking conservation and recreation projects; and
- o Affording a vehicle for private contributions for the preservation and protection of the Pinelands.

In many respects, the Pinelands Conservancy was fashioned after other models, including the California State Coastal Conservancy, a quasi-public companion to the California Coastal Commission. The Conservancy was proposed to be governed by a board of directors and have a staff which would be funded from a combination of public appropriations and private contributions.

An ad hoc committee of the Commission was formed to review the proposal. As a result of the review, a decision was reserved until more experience with the PDC program was gained and other alternatives to achieve the objectives were considered.

CHAPTER II

DEVELOPMENT REVIEW

To ensure that development within the Pinelands Area does not adversely affect the region's unique natural and cultural resources, the Commission exercises oversight responsibility of municipal and county permitting decisions and has direct decisionmaking authorities in certain types of applications. The review process seeks to determine the impact any project will have upon water quality, flora and fauna, and historic and cultural properties in the vicinity. It also considers the compatibility of a project's proposed use and intensity of development to its location, and other CMP requirements such as visual and scenic standards, native plantings, fire management, infrastructure improvements, performance guarantees, and covenants for long term management of resources. Finally, staff reviewers coordinate with municipal agencies, which in most cases are conducting the initial review of the proposal.

While the review process is necessary for the protection of the Pinelands environment, it is often viewed as being complex. Over the past six years the Commission has examined its development review procedures and adopted a series of amendments designed to improve the process and increase public and municipal participation.

CMP Amendments

In 1985, the Commission approved three major revisions to the CMP. Essentially, these amendments revised certain of the Commission's internal procedures for reviewing applications, provided for additional public notice of proposed projects, and clarified the roles of the Commission and local jurisdictions with regard to development review in uncertified municipalities.

The first major revision established the requirement that the Commission, itself, formally approve or deny requests for waivers of strict compliance and public development applications. Previously, Commission staff issued waiver and public development approvals without a formal review by the Commission unless an applicant or other interested party raised objections or specific issues.

The second major revision required public notice of certain pending applications for major development by public agencies and by private entities in uncertified municipalities, all waiver ap-

plications, and certain applications for letters of interpretation. For all these cases, the amendment required that written notice of the proposed development be provided by the applicant to all property owners within 200 feet of the development, and that notice of the project be published in a local newspaper. Prior to this time, no such notice was required.

The third major revision was the elimination of Pinelands Development Approvals in uncertified municipalities, which formerly were issued by the Executive Director. Unless a request for a hearing was made, no action on that application by the Commission was necessary. Any local approval that was granted had to adhere to the requirements of the Pinelands Development Approval. This type of approval had been required before an individual could carry out any development in a municipality where the master plan or land use ordinance did not conform to the CMP. The Executive Director now issues a certificate of compliance (the equivalent of a certificate of filing in a certified municipality) which authorizes local agencies to take action on an application.

The elimination of Pinelands Development Approvals has significant impacts on the comparative tables in this Chapter. At the time of the 1983 Plan Review Report, Pinelands Development Approvals were classified as Pinelands approved actions. Except for those applications which had already received a local approval, the 1985 amendments converted Pinelands Development Approvals into Certificates of Compliance. As a result, many approvals reported in 1983 are now pending municipal action or have received municipal approval and are no longer considered to be direct Commission actions.

Further amendments to the development review section of the CMP were adopted in 1987. These were designed to increase municipal discretion, to allow greater flexibility in the purchase of Pinelands Development Credits (PDCs), and to cap the effective period of all approvals issued prior to adoption of the CMP and of certain Waivers granted pursuant to the CMP. The first, not yet implemented by any municipality, seeks to expedite the review process by authorizing a properly trained municipal administrative officer to determine the completeness of applications for single family dwellings. The administrative officer would also determine the compliance of the application with CMP standards and would notify the Commission of his findings. The Commission would not intervene unless the local approval raised substantive issues with the CMP.

The second 1987 amendment gave municipalities the option of granting preliminary approvals to applicants who do not yet have their requisite PDCs in hand if the approvals are conditioned upon the applicant purchasing the PDCs by the time of final approval. This allows a developer to determine the number of residential units that are likely to be approved and, consequently, the number of credits that will be required, before actually buying them. It also allows the developer to defer the costs of PDC purchases until such time as the project, or stages thereof, receive final approvals.

Finally, the 1987 amendments nullified all approvals issued by the Pinelands Development Review Board and by the Commission pursuant to the Interim Rules and Regulations as of January 14, 1991, unless certain specified municipal approvals for the development had been received by that date. This provision was intended to finally "clear the books" of old applications which had received state or Commission approval prior to adoption of the CMP in November of 1980. The 1987 amendments also set a January 14, 1991 expiration date for waivers of strict compliance issued in recognition of valid municipal development approvals predating the CMP and expenditures made by applicants based upon those approvals. The amendments allowed applicants for both types of approvals time to secure municipal approvals and proceed with project development.

ACTIONS ON DEVELOPMENT APPLICATIONS

Number of Applications

In the past ten and one-half years (from September, 1980 to June 30, 1991) more than 17,800 development related applications were received by the Commission. These include private sponsored development applications, public development proposals and requests for waivers of strict compliance and may be classified as (1) those which have received approvals and disapprovals; (2) those still in process; and (3) those that have apparently been withdrawn. It should be noted that Letters of Interpretation which allocate PDCs, activities which are exempt from the Commission's application requirements, certificates of appropriateness that deal with cultural resources discovered in the course of development applications, and development activities which do not require submission of a formal application due to agreements between the Commission and other state agencies have not been included in this total.

Approximately 32% of the applications received by the Commission have not been completed because necessary information has not been submitted. Although the Commission closes these application files, it is possible that a number of applicants are in the early stages of project planning and will re-open them at a later date. It is also likely that during discussions with the Commission staff, many applicants realize that their projects are not generally consistent with the Pinelands Plan and stand little chance of receiving the desired approvals. Rather than proceeding through the entire review process, these applicants may decide not to complete their applications.

An additional 23% of the applications received by the Commission may be classified as "in process." This category includes those projects which have completed applications and received, for example, Letters of Interpretation, Certificates of Filing, Notices of Filing or Certificates of Compliance but have yet to receive municipal approval. Undoubtedly, some of these projects have since been abandoned by the applicants or disapproved locally, but many may yet be active. Applicants may not have submitted the projects to local authorities for review yet because of financial or design reasons, or they may still be under local review.

The remaining 45% (almost 8,000) have received some sort of formal decision. These include privately sponsored projects, public development projects and waivers of strict compliance.

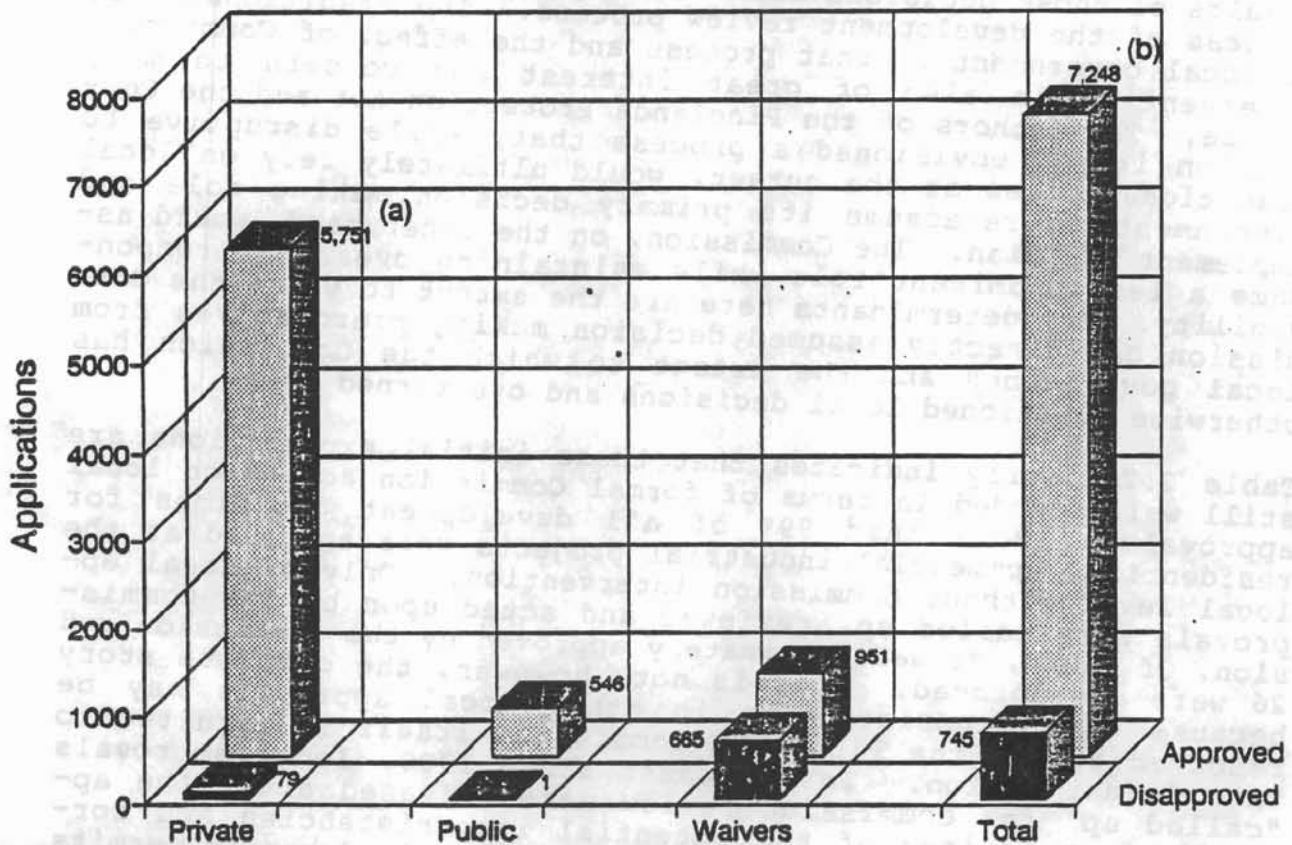
Approvals and Disapprovals

In total, decisions were made on 7,993 applications since September, 1980 when the CMP took effect in the Preservation Area. As Figure 2.1 illustrates, private development accounted for the largest percentage of the three categories of applications. Total approvals out-numbered disapprovals by a margin of nine to one.

These statistics do not tell the entire story, however. Virtually all regulatory agencies report relatively high project approval rates, yet the statistics do not reveal the number of proposals which were abandoned or modified as a result of CMP land use and development requirements or those which were approved with conditions. Neither do the tabulations reflect the number of proposals submitted but subsequently withdrawn because the applicant concluded that approval was unlikely. Finally, applications denied by municipalities with certified ordinances are not reflected because they are not subject to Commission review. In

Figure 2.1

**Actions Taken on Applications
(09/23/80 - 06/30/91)**



(a) Totals do not include any applications that also received waiver approvals.

(b) Totals do not include Letters of Interpretation, which are classified as "in process" in terms of development status.

rather simple terms, it is to be expected that the vast majority of applicants submit proposals which they believe stand a reasonable chance of being approved.

In an effort to judge whether applicants, over time, designed proposals more in keeping with CMP requirements, Table 2.1 charts the percentages of approvals and disapprovals according to the year in which the applications were filed. Not surprisingly, the percentages of approvals have steadily increased to the point where most applications are able to be approved.

Level of Decision Making on Development Actions

The standards upon which development proposals are judged and the results of those decisions are not the only means to evaluate the success of the development review process. The traditional role of local government in that process and the effect of Commission intervention is also of great interest and concern to many people. The authors of the Pinelands Protection Act and the Commission itself envisioned a process that, while disruptive to traditional roles at the outset, would ultimately rely on local government to re-assume its primary decision making role and implement the Plan. The Commission, on the other hand, would assume a less prominent role while maintaining oversight responsibility. Key determinants here are the extent to which the Commission has directly assumed decision making prerogatives from local governments and the extent to which the Commission has otherwise questioned local decisions and overturned them.

Table 2.2 clearly indicates that these initial expectations are still well-founded in terms of formal Commission action on local approvals. More than 99% of all development decisions for residential, commercial/industrial projects were approved at the local level without Commission intervention. Only 47 local approvals were called up, reviewed and acted upon by the Commission. Of these, 21 were ultimately approved by the Commission and 26 were disapproved. This is not, however, the complete story because CMP inconsistencies in other local approvals may be resolved before the Pinelands Commission itself is required to take formal action. In 469 cases since 1980, local approvals "called up" for Commission review were released after the applicant was advised of the potential inconsistencies and corrected them. About one-quarter of these involved septic permits necessitating the use of non-standard septic systems.

Table 2.3 compares the level of decision making on development approvals for select time periods. As shown, the percentage of

Table 2.1
Trends in Approvals and Disapprovals
By Filing Year^(a)

Filing Year	Approved	Disapproved
	Percent of Total Actions Approved	Percent of Total Actions Disapproved
1980	79.3%	20.7%
1981	85.5%	14.5%
1982	85.5%	14.5%
1983	83.4%	16.6%
1984	89.4%	10.6%
1985	93.9%	6.1%
1986	94.2%	5.8%
1987	95.8%	4.2%
1988	96.3%	3.7%
1989	95.5%	4.5%
1990	99.0%	1.0%
1991 ^(b)	97.5%	2.5%
TOTALS	90.7%	9.3%

(a) The percentages in this table reflect all actions reported in Figure 2.1.

(b) Represents the first six months of the year.

Table 2.2
Level of Decision Making on Private Development Applications (a)
(09/23/80 - 06/30/91)

	Residential (b)		Commercial/Industrial (b)
	Number of Applications	Number of Units	Number of Applications
Development Approved (c)			
Municipal Approval - No Commission Intervention	4051	15381	1618
Municipal Approval - Commission Review and Approval	12	256	9
Municipal Disapproval - Commission Review and Approval (d)	0	0	0
TOTAL APPROVED	4063	15637	1627
Development Disapproved			
Direct Commission Action	42	49	10
Municipal Approval - Commission Review and Disapproval	18	107	8
TOTAL DISAPPROVED	60	156	18

- (a) This table does not reflect: applications denied by certified municipalities because the Commission does not exercise any oversight authority in those matters; forestry, resource extraction, leisure recreation and public development projects which are addressed in subsequent tables; and Commission waiver decisions, except for those denials where the proposals were later revised to meet CMP standards and received development approvals.
- (b) The 161 residential applications which also include commercial development are identified both as a residential application and a commercial/industrial application.
- (c) Direct Pinelands Development Approvals (PDAs) ceased to be issued on July 15, 1985. PDAs which received municipal approvals prior to that date are included in this category. Those PDAs which did not receive municipal approvals by that date became completeness documents, with any subsequent municipal actions included where appropriate.
- (d) In uncertified towns, the Commission has the authority to review and approve municipal disapprovals if the disapproval is contrary to a CMP standard.

Table 2.3
Trends in Commission Involvement
in Municipal Decision Making (a)

	Percentage of Applications		
	First Period (9/23/80-6/30/83)	Second Period (7/1/83-6/30/91)	Both Periods (9/23/80-6/30/91)
Municipal Approval-No Commission Intervention	97.4%	99.4%	99.2%
Municipal Approval-Commission Review and Approval	0.6%	0.3%	0.4%
Municipal Disapproval-Commission Review and Approval	0.0%	0.0%	0.0%
Municipal Approval-Commission Review and Disapproval	2.0%	0.3%	0.4%
TOTAL	100.0%	100.0%	100.0%

(a) The percentages in this table are based upon the data in Table 2.2, exclusive of the 52 applications which were directly disapproved by the Commission.

actions involving Commission review of local approvals has decreased since the early 1980s. Not only may this be indicative of applicants' growing familiarity with the CMP, it also suggests that local officials are generally doing an excellent job in applying their ordinance requirements.

PRIVATELY SPONSORED DEVELOPMENT

Management areas were identified in the Plan on the basis of a host of natural, cultural, and physical characteristics and were designed in large part to redirect the patterns of development which had emerged in the recent past. This development, most notably residential and commercial/industrial, was generally thought to represent the largest, long-term threat to the environmental integrity of the Pinelands if not properly managed and directed. The Preservation and Forest Areas, being largely undeveloped, were intended to remain relatively undisturbed and available for non-intensive, traditional land uses. The Agricultural Production Areas and Special Agricultural Production Areas representing those relatively large pockets of land devoted to active farming, were also intended to be protected from incompatible land uses. Four management areas, Rural Development Areas, Villages, Towns, and Regional Growth Areas were identified for gradually increasing levels of residential, commercial, and industrial development. Lastly, the Military and Federal Installation Areas represented those federally owned lands where the continuation of relatively longstanding institutional and military activities would occur.

The following sections report on private development activity within these management areas. Information is dis-aggregated into five development types: residential, commercial/industrial, forestry, resource extraction and recreation activities. Public development activities and those private and public applications which involved a waiver of strict compliance are discussed latter in this chapter.

Residential and Commercial/Industrial Development

Tables 2.4 and 2.5, as well as Figures 2.2 and 2.3, present approval and disapproval data on residential and commercial/ industrial development by management area. For purposes of the analyses conducted here, privately sponsored institutional facilities are considered in the commercial / industrial category.

Table 2.4
Types of Private Development Approved by Management Area ^(a)

(09/23/80 - 06/30/91)

Management Areas	Residential				Commercial/Industrial	
	Applications #(b)	%	#	Units %	Applications #(c)	%
Preservation	100	2.41%	32	0.20%	43	2.56%
Forest	386	9.30%	375	2.40%	115	6.84%
Agricultural Production	330	7.95%	215	1.37%	132	7.85%
Special Agricultural Production	6	0.14%	0	0.00%	2	0.12%
Rural Development	778	18.75%	1475	9.43%	228	13.56%
Regional Growth	1583	38.14%	11085	70.89%	763	45.39%
Pinelands Town	416	10.02%	1107	7.08%	262	15.59%
Pinelands Village	551	13.28%	1348	8.62%	129	7.67%
Military/Federal	0	0.00%	0	0.00%	7	0.42%
TOTAL	4150	100.00%	15637	100.00%	1681	100.00%

(a) Some approval actions were for subdivision only, hence the number of applications may exceed the number of units.

(b) Although residential units are allocated to each specific management area, application totals reflect 87 cases where residential projects are located in more than one management area.

(c) Application totals reflect 54 cases where commercial/industrial projects are located in more than one management area.

Table 2.5
Type of Private Development Disapproved by Management Area

(09/23/80 - 06/30/91)

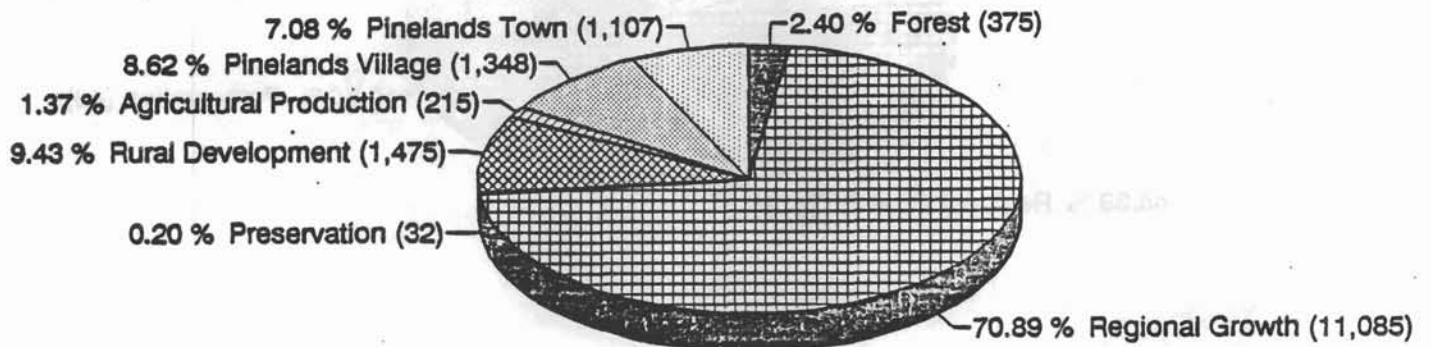
Management Areas	Residential				Commercial/Industrial	
	Applications		Units		Applications	
	#	%	#	%	#	%
Preservation	5	7.94%	7	4.49%	2	9.52%
Forest	12	19.05%	11	7.05%	2	9.52%
Agricultural Production	12	19.05%	18	11.54%	3	14.29%
Special Agricultural Production	0	0.00%	0	0.00%	2	9.52%
Rural Development	10	15.87%	19	12.18%	3	14.29%
Regional Growth	12	19.05%	21	13.46%	6	28.57%
Pinelands Town	6	9.52%	69	44.23%	1	4.76%
Pinelands Village	6	9.52%	11	7.05%	2	9.52%
Military/Federal	0	0.00%	0	0.00%	0	0.00%
TOTAL	63	100.00%	156	100.00%	21	100.00%

- (a) Some disapproval actions were for subdivision only, hence the number of applications may exceed the number of units.
- (b) Although residential units are allocated to each specific management area, application totals reflect 3 cases where residential projects were proposed in more than one management area.
- (c) Application totals reflect 3 cases where commercial/industrial projects were proposed in more than one management area.

Figure 2.2

**Private Residential Development
Units Approved By Management Area**

09/23/80 - 06/30/91

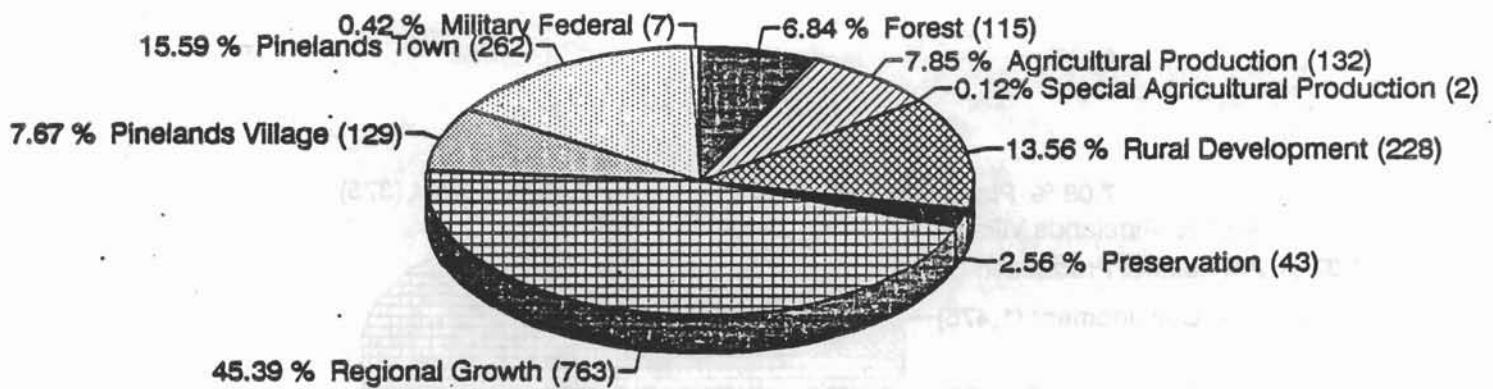


Note: Does not include applications that received waiver approvals.

Figure 2.3

**Private Commercial/Industrial Development
Applications Approved By Management Area**

09/23/80 - 06/30/91



Note: Does not include applications that received waiver approvals.

The approval data indicate that the Plan's objectives for the various management areas are being met. For example, 71% of all approved residential units are located in Regional Growth areas. In view of the fact that Regional Growth Areas comprise less than nine percent of the Pinelands Area, these statistics become more revealing. When Regional Growth Area development is combined with other development-oriented areas such as Towns, Villages, and Rural Development Areas, the share of new residential development activity increases to 96%. A similar concentration of activity in development-oriented areas is seen in commercial and industrial activity. Forty five percent of all applications are located in Regional Growth Areas and 82% in development-oriented areas.

The lower concentration of non-residential development in the more development-oriented management areas as compared to that of residential development may be explained by three factors. The non-residential development category includes expansion of existing businesses, changes in the use of existing structures and recreation development such as campgrounds. Within this context, it is not surprising that some non-residential development, although a relatively small proportion, has occurred within the Preservation, Agricultural Production, and Forest Areas.

No apparent trends are evident from the disapproval data, except that a relatively high percentage of the disapproved residential units are located in Town management areas. This is due, in large part, to one project which was disapproved while a local sewer ban was in place.

Municipalities with the Highest Development Activity

Overviews of the ten most active communities in terms of residential and commercial/industrial development activity are highlighted in Tables 2.6 and 2.7.

As Table 2.6 indicates, ten municipalities accounted for 82% of all approved residential units. It is noteworthy that most of these municipalities had a greater share of approved residential units than of applications (i.e. larger projects were responsible for the units). The opposite case is most notable in Hamonton, Pemberton and Galloway, where it appears that a relatively higher share of residential applications are for single family housing units.

If one factors in units approved as a result of a waiver, a slightly altered picture is obtained. Two new municipalities are

Table 2.6
Municipalities with Highest Residential Development Activity
(09/23/80 - 06/30/91)

Municipality	Percentage of Residential Approvals	
	Units	Applications
Hamilton Township	26.8%	8.6%
Barnegat Township	9.4%	0.8%
Egg Harbor Township	8.4%	5.6%
Manchester Township	6.1%	3.6%
Monroe Township	5.8%	4.0%
Hammonton Town	5.6%	8.3%
Pemberton Township	5.1%	13.9%
Winslow Township	4.7%	5.9%
Medford Township	4.4%	3.1%
Galloway Township	3.9%	6.3%
TOTAL SHARE OF PINELANDS	80.2%	60.1%

Table 2.7
Municipalities with Highest Commercial/Industrial Development Activity
(09/23/80 - 06/30/91)

Percentage of Commercial/Industrial Approvals	
Municipality	Applications
Hammonton Town	11.5%
Egg Harbor Township	10.4%
Medford Township	9.1%
Hamilton Township	7.7%
Winslow Township	7.1%
Pemberton Township	5.7%
Monroe Township	5.2%
Galloway Township	4.4%
Manchester Township	3.6%
Waterford Township	3.5%
TOTAL SHARE OF PINELANDS	68.3%

among the top ten. Evesham becomes the second most active municipality due to the King's Grant waiver (3,643 units) and Berkeley becomes the fourth highest (behind Barnegat) due to the Hovson's waiver (1,411 units).

Comparison with the development activity highlighted in the 1983 Plan Review report is also revealing, although the way in which development approvals are calculated has changed due to the elimination of Pinelands Development Approvals in 1985. With the exception of two municipalities (Waterford and Franklin Townships), those municipalities with the highest levels of residential development during the first two and one-half years are among the highest during the entire eleven year period.

A large percentage (68.3%) of the regional approvals for commercial and industrial development also occurs in relatively few municipalities. A similar concentration was found in 1983 as well, with 73% of the total application activity situated in 9 municipalities. Tabernacle is no longer among the most active municipalities.

There is also a correlation between residential development and commercial/industrial proposals. Of the ten most active municipalities in terms of commercial and industrial development approvals, eight are also among the most active in residential development.

Forestry

Forestry is a longstanding enterprise in the Pinelands and is generally concentrated in the more rural areas. Table 2.8 shows that 35 of the applications approved for forestry are in the Forest Area, and 19 in the Preservation Area. Forestry is expected to have a special significance for landowners in these areas since it presents an alternative land use to residential and other types of development.

Beyond these two management areas, it is difficult to draw any firm conclusions. For example, Regional Growth Areas had a relatively higher incidence than might have been predicted; however, this may be indicative of a temporary land use pending future residential and commercial development.

Resource Extraction

Resource extraction in the Pinelands consists primarily of the mining of sand and gravel for private commercial enterprise. It

Table 2.8
Approvals and Disapprovals for Forestry
by Management Area ^(a)
(09/23/80 - 06/30/91)

Management Area	Approval Actions ^(b)	Disapproval Actions
Preservation	19	1
Forest	35	0
Agricultural Production	4	0
Special Agricultural Production	1	0
Rural Development	12	0
Regional Growth	12	0
Towns & Villages	2	0
Military/Federal	0	0
TOTAL	85	1

(a) Excludes actions covered by the Commission's Memorandum of Agreement with DEPE.

(b) Approval actions reflect 8 cases where forestry activities are located in more than one management area.

is recognized that mining depletes a non-renewable resource. For this reason, restoration of these sites throughout the Pinelands is required, and mining has been limited in the Preservation Area. No new operations are permitted there, but existing, legal operations prior to 1979 have been allowed to continue mining. Outside the Preservation Area, municipalities are given the option of permitting new operations. To date, 69 resource extraction applications have been approved in the Pinelands.

As Table 2.9 indicates, 46% of all approved resource extraction applications are located within the Preservation Area District and the Forest Areas, the two most conservation-oriented land use areas in the Pinelands. The number of Preservation Area District operations has not materially changed since 1983, but there has been more than a threefold increase within Forest Areas. This trend, if it continues, may not be in keeping with the conservation goals established for the Forest Area.

Recreation Activities

Recreation activities represent organized trail events (e.g. enduros) and are distinguished from commercial/industrial projects because they do not involve facility development.

Although 76 such applications have been approved, Table 2.10 illustrates their linear nature. This is because they have traversed multiple management areas in 138 cases. As would be expected, these activities are concentrated in the more conservation-oriented management areas and frequently pass through Villages.

PUBLIC DEVELOPMENT

As Table 2.11 indicates, over one-half of the approved public development has been associated with municipal use, and much of that has been located in Regional Growth Areas, Rural Development Areas, Towns, and Villages. It is no coincidence that much of the service-related development (schools, municipal office buildings, etc.) is being located in the primary areas of population.

Conversely, a fairly large proportion of county and state level development has been located in the Preservation Area District, Forest Areas, and Rural Development Areas. A good deal of the state development is associated with state owned parks and forests in the Preservation Area District and the Forest Areas, and represents state forestry activities and park facility renovation or development. The remaining state, and much of the

Table 2.9
Approvals and Disapprovals for Resource Extraction
by Management Area
(09/23/80 - 06/30/91)

Management Area	Approval Actions (a)	Disapproval Actions
Preservation	16	0
Forest	29	0
Agricultural Production	3	0
Special Agricultural Production	1	0
Rural Development	16	0
Regional Growth	10	0
Towns & Villages	1	0
Military/Federal	0	0
TOTAL	76	0

(a) Approval actions reflect 7 cases where operations are located in more than management area.

Table 2.10
Approvals and Disapprovals for Recreation Activities
by Management Area
(09/23/80 - 06/30/91)

Management Area	Approval Actions (a)	Disapproval Actions
Preservation	62	0
Forest	28	0
Agricultural Production	3	0
Special Agricultural Production	15	0
Rural Development	2	0
Regional Growth	1	0
Towns & Villages	27	0
Military/Federal	0	0
TOTAL	138	0

(a) Approval actions reflect 62 cases where the activity is located in more than one management area.

Table 2.11
Public Development
Approved by Management Area
(09/23/80 - 06/30/91)

Management Area	Federal	State	County	Municipal	Total ^(a)
Preservation	4	35	18	10	67
Forest	3	21	22	15	61
Agricultural Production	0	7	3	15	26
Special Agricultural Production	0	0	4	0	4
Rural Development	1	32	22	37	92
Regional Growth	2	16	35	154	207
Town	0	5	8	35	49
Village	2	3	5	41	51
Military/Federal	37	4	1	2	44
TOTALS	49	123	118	309	601

(a) Total approvals reflect 55 cases where development is located in more than one management area.

county sponsored development, consists of bridge maintenance and highway projects that may span several management areas.

Only one project, a firing range in the Preservation Area District, has been disapproved. Other applications were withdrawn after the sponsors became aware of conflicts with the CMP.

WAIVERS OF STRICT COMPLIANCE

Approvals and Disapprovals

Waivers of strict compliance are exemptions from the CMP and are approved in very limited circumstances. Although Table 2.1 shows that approvals (951) have outnumbered disapprovals (665), many waiver applications are withdrawn (before the Commission takes final action) when applicants learn of the difficult tests which must be met.

Tables 2.12, 2.13, 2.14 and 2.15 dis-aggregate waiver approvals and disapprovals for residential and non-residential development by management area. Since applications located in more than one management area are attributed to each affected management area, the application totals in these tables exceed that shown in Table 2.1.

The vast majority of waiver approvals have been granted for residential projects, and those projects account for some 13,665 dwelling units. Non-residential waivers accounted for 35 approvals of various types, in many cases a small commercial building of under 3,000 square feet.

Since the CMP took effect, residential waiver applications accounting for 7,536 residential units have been disapproved. Additionally, 5,932 more units were effectively disapproved when the Commission granted waivers for fewer units than were requested. Forty-two non-residential applications were disapproved.

Location by Management Area

In terms of Pinelands land management areas, the greatest number of residential waiver approvals, both in terms of applications and units, were issued for projects within Rural Development Areas (71% of total units). Four projects, Barton's Run and Kings Grant in Evesham, Leisuretowne in Southampton, and Hovson in Berkeley Township, accounted for 9,046 of the 9,657 units approved in Rural Development Areas.

Table 2.12
Waivers of Strict Compliance
Approved by Management Area
For Residential Development
(09/23/80-06/30/91)

Management Area	Total Waivers Approved				Waiver Units with Development Approvals	
	Applications (a)		Units		Units	
	#	%	#	%	#	%
Preservation	34	3.58%	50	0.37%	29	0.38%
Forest	186	19.58%	1,618	11.84%	1,019	13.51%
Agricultural Production	106	11.16%	847	6.20%	62	0.82%
Special Agricultural Production	1	0.11%	1	0.01%	0	0.00%
Rural Development	257	27.05%	9,657	70.67%	5,409	71.69%
Regional Growth	251	26.42%	1,368	10.01%	988	13.09%
Pinelands Town	31	3.26%	30	0.22%	8	0.11%
Pinelands Village	84	8.84%	94	0.69%	30	0.40%
Military/Federal	0	0.00%	0	0.00%	0	0.00%
TOTAL	950	100%	13,665	100%	7,545	100%

(a) Although the number of residential units are allocated to each specific management area, application totals reflect 34 cases where the site is located in more than one management area.

Table 2.13
Waivers of Strict Compliance
Approved by Management Area
For Non-Residential Development
(09/23/80 - 6/30/91)

Management Area	Waiver Applications (a)				Waiver Applications with Development Approvals			
	Private #	Public #	Total #	%	Private #	Public #	Total #	%
Preservation	6	3	9	25%	1	1	2	15%
Forest	1	1	2	6%	0	0	0	0%
Agricultural Production	2	1	3	8%	0	0	0	0%
Special Agricultural Production	0	0	0	0%	0	0	0	0%
Rural Development	5	0	5	14%	3	0	3	24%
Regional Growth	12	1	13	36%	5	1	6	46%
Towns and Villages	4	0	4	11%	2	0	2	15%
Military/Federal	0	0	0	0%	0	0	0	0%
TOTAL	30	6	36	100%	11	2	13	100%

(a) Application totals reflect 1 case where the site is located in more than one management area.

Table 2.14
Waivers of Strict Compliance
Disapproved by Management Area
For Residential Development
(09/23/81 - 06/30/91)

Management Area	Waiver Disapprovals (a)				Waiver Approvals With Denied Units (b)				TOTALS			
	Disapproved Applications (c)		Disapproved Units		Approved Applications		Denied Units		Total Applications With Units Disapproved or Denied		Total Units Disapproved	
	#	%	#	%	#	%	#	%	#	%	#	%
Preservation	30	4.7%	80	1.1%	5	7.7%	38	0.6%	35	4.99%	118	0.88%
Forest	136	21.4%	5688	75.5%	16	24.6%	606	10.2%	152	21.68%	6294	46.73%
Agricultural Production	67	10.5%	137	1.8%	8	12.3%	27	0.5%	75	10.70%	164	1.22%
Spec. Agricultural Production	1	0.2%	1	0.0%	0	0.0%	0	0.0%	1	0.14%	1	0.01%
Rural Development	188	29.6%	853	11.3%	20	30.8%	5214	87.9%	208	29.67%	6067	45.05%
Regional Growth	154	24.2%	702	9.3%	11	16.9%	40	0.7%	165	23.54%	742	5.51%
Towns & Villages	60	9.4%	75	1.0%	5	7.7%	7	0.1%	65	9.27%	82	0.61%
Military/Federal	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.00%	0	0.00%
TOTAL	636	100.0%	7536	100.0%	65	100.0%	5932	100.0%	701	100.00%	13468	100.00%

(a) Reflects 1 denial for a residential/commercial project.

(b) These represent approved waiver applications where the number of requested units exceeded the number approved. These differences are considered to be denied units.

(c) Although residential units are allocated to each management area, application totals reflect 12 cases where development was proposed in more than one management area.

Table 2.15
Waivers of Strict Compliance
Disapproved by Management Area
For Non-Residential Development
(09/23/81 - 06/30/91)

Management Area	Private Development Applications Denied ^(a)		Public Development Applications Denied		TOTAL APPLICATIONS DENIED	
	# (b)	%	#	%	# (b)	%
Preservation	8	19.51%	0	0.00%	8	17.39%
Forest	3	7.32%	2	40.00%	5	10.87%
Agricultural Production	8	19.51%	1	20.00%	9	19.57%
Spec. Agricultural Production	0	0.00%	0	0.00%	0	0.00%
Rural Development	11	26.83%	1	20.00%	12	26.09%
Regional Growth	6	14.63%	1	20.00%	7	15.22%
Towns & Villages	5	12.20%	0	0.00%	5	10.87%
Military/Federal	0	0.00%	0	0.00%	0	0.00%
TOTAL	41	100.0%	5	100.00%	46	100.00%

(a) Reflects 1 denial for a residential/commercial project.

(b) Application totals reflect 4 cases where development was proposed in more than one management area.

The second largest number of units was approved in the Forest Area (12% of total units) where four projects (Hardt in Weymouth, Oxley in Stafford, Henart Homes in Pemberton, and the O'Brien development in Southampton) comprise 82% of the 1,618 waiver units.

The third largest number of residential units approved through waivers occurs in Regional Growth Areas (10% of total units). Here again, a large proportion (62 percent) is represented in five projects. The largest approved development is Barnegat Village in Barnegat with 379 units; the four other major Regional Growth Area waiver projects are each just over 100 units.

Not surprisingly, almost 92% of the residential units disapproved are located in the Forest and Rural Development Areas. Aside from the Preservation Area District and the two agricultural areas where development expectations are not that high, these two management areas were the most affected by CMP land use standards.

Non-residential approvals, small in number, were focused primarily in more development-oriented areas. Non-residential denials, also few in number, are fairly evenly spread by management area.

Status of Waiver Approvals

A waiver of a CMP standard is not a development approval. An applicant must still obtain a local development approval before proceeding to build.

One type of waiver (so-called A-2 waivers) expired on January 14, 1991 if certain local development approvals had not yet been obtained. A second type (so-called A-3 waivers) expire after extended periods of inaction. Table 2.16 shows the impact of these waiver expirations upon previously-approved waiver units. Out of a total of 13,665 waiver units approved since January 1, 1980, nearly 40% or 5,275 waiver units have expired. This means that a maximum of only 8,390 units can potentially be built based on the total waivers approved to date.

As Table 2.12 illustrates, 7,545 of the approved waiver units have already received valid development approvals. Of the remaining 6,120, the waivers for 5,275 units have since expired.

TABLE 2.16

STATUS OF APPROVED RESIDENTIAL WAIVERS UNITS
(9/23/80 through 6/30/91)

TYPE	APPROVED	EXPIRED	STILL VALID
A-1 REASONABLE USE(a)	844	NA	844
A-2 EXPENDITURES(b)	11,993	4,770	7,223
A-3 VALID APPROVAL(c)	728	505	223
B COMPELLING PUBLIC NEED	100	NA	100
	13,665	5,275	8,390

(a) A-1 type waivers are granted upon a showing of no beneficial use of the property.

(b) A-2 type waivers were granted upon a showing of a valid municipal development approval as of 2/7/79.

(c) A-3 type waivers were granted upon a showing of a valid final subdivision approval as of 2/7/79.

Expired Waivers

Four types of waivers have been granted since the CMP took effect, but two types have expiration dates attached to them.

As Table 2.16 indicates, the largest category of approved but now expired waivers relates to large residential projects which received waivers under the "extraordinary hardship" test in recognition of valid municipal development approvals issued prior to the Pinelands Plan and expenditures made by the applicants in reliance upon those approvals (so-called "A-2" waivers). The 4,770 expired waiver units in this category represent applications which failed to obtain all necessary local approvals or building permits by the January 14, 1991 deadline.

The remaining category of expired waivers relates to large residential projects which received waivers under the "extraordinary hardship" test in recognition of valid final subdivision approvals issued by February 7, 1979 (so-called "A-3" waivers). The 565 expired waiver units in this category represent applications which failed to show that 10% of the waiver lots were sold or constructed in the first two years after the waiver was granted and in each year thereafter.

It is interesting to note that most of the expired waiver units are within seven large projects located within Forest and Rural Development Areas. These developments were Pine Lake Estates in Buena Vista, King's Grant and Barton's Run in Evesham, Leisure Tech and O'Brien in Southampton, Oxley in Stafford, and Bennett in Winslow Township. These projects alone account for 33% of all waiver units approved in Forest Areas and 38% of those in Rural Development Areas.

The other two categories of waivers granted, "extraordinary hardship" in recognition of properties not capable of yielding a reasonable rate of return if used or developed in accordance with the Plan (representing 6% of approved waiver units), and waivers approved upon a showing of compelling public need (representing 1% of approved waiver units), do not have expiration dates, unless the conditions associated with the waiver necessitated an expiration date.

Location of Valid Waivers

Figure 2.4 illustrates how the 8,390 still valid residential waivers are distributed in each of the seven Pinelands counties by "development-oriented" (Regional Growth Area, Town, and Vil-

RESIDENTIAL WAIVERS

Total Units by County and Location of Large Projects

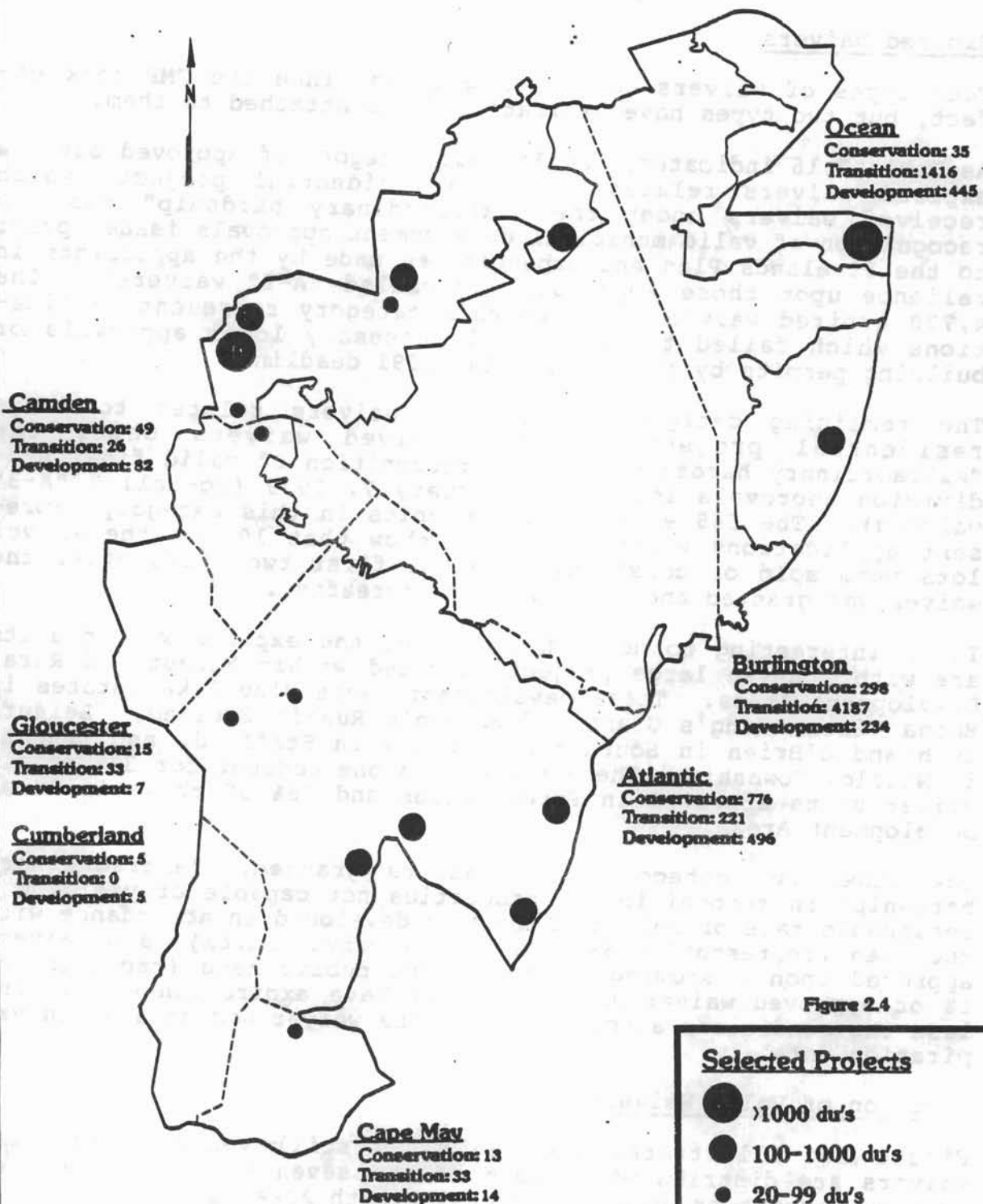


Figure 2.4

NEW JERSEY
PINELANDS



6-30-91

REGIONAL LOCATION



Selected Projects

- >1000 du's
- 100-1000 du's
- 20-99 du's
- Pinelands Area Boundary
- Preservation Area Boundary

Development:
du's still valid in V.T. or RGA

Transition:
du's still valid in RDA

Conservation:
du's still valid in PA, APA, or FA

lage), "transition" (Rural Development Area) and "conservation-oriented" (Agricultural Production, Special Agricultural Production and Forest Areas, and the Preservation Area District) classifications. Projects larger than 20 dwelling units are also located.

Burlington County is characterized as having both the highest number of total waiver units (4,719 units) and waiver units in transition areas (4,187). Overall 71% of the still valid waiver units are located in transition areas, 15% in development areas, and 14% in conservation areas.

Burlington County, along with Atlantic and Ocean, account for 97% of all waiver units. Figure 2.4 illustrates that this is primarily due to several large projects.

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CHAPTER III **PINELANDS ACQUISITION PROGRAM**

PINELANDS ACQUISITION PROJECTS

The Pinelands acquisition program represents a cooperative effort between the Commission and the Department of Environmental Protection and Energy (DEPE). Without the support of DEPE's two land management divisions (Fish, Game and Wildlife, and Parks and Forestry) and the project management expertise of the Office of Green Acres, little progress in permanently protecting critical areas in the Pinelands would have been possible.

Status of Active Projects

The acquisition program presented in the Comprehensive Management Plan (CMP) recommended that 100,000 acres be added to the 240,000 acres of existing, state owned recreational lands. Eight specific project areas, encompassing 67,000 acres, were identified as priority acquisitions. By August, 1983, more than 26,000 acres had been acquired (see Table 3.1).

Some eight years later, a total of 61,348 acres have been acquired (see Figure 3.1). As Table 3.1 illustrates, not only was progress made in the projects underway in 1983,¹ acquisition efforts proceeded in two new projects (Makepeace Lake and East Plains/Stafford Forge) after federal funding was received.

The 8,000 acre Makepeace Lake project in Atlantic County is strategically located within the forest corridor linking the northern and southern Pinelands. The 8,400 acre East Plains/Stafford Forge project, located in Burlington and Ocean counties, is an important addition to the Stafford Forge Wildlife Management Area. Located within the headwaters of the Oswego River and Westecunk Creek basins, this area provides valuable watershed protection to existing state lands. The project area also includes extensive areas of the East Plains (pygmy forest).

During this period, the state was successful in initiating the Southern Forest Region project by acquiring 3,765 acres within the Manumuskin/Tuckahoe River basin. Further acquisition in this project area must, however, await federal funding.

¹ Refer to the December 1983 CMP Progress Report on the First Three Years of Implementation for project descriptions.

Table 3.1
Pinelands Acquisition Projects

Project	Project Acreage	Acres Acquired As Of Aug. 1983	Acres Acquired Between August 1983 & June 1991	TOTAL ACRES ACQUIRED AS OF JUNE 1991
Funded Pinelands Projects				
Cedar Creek Watershed	15,400	7,904	6,384	14,288
West Plains/Greenwood Forest	9,000	8,808	199	9,007
Oswego River	10,250	5,709	2,996	8,704
Bass River	8,500	536	4,748	5,284
Upper Wading River Watershed	3,400	0	3,142	3,142
Goose Ponds at Tabernacle	909	909	-	909
Friendship Bogs	2,171	2,171	-	2,171
Makepeace Lake	8,000	N/A	7,689	7,689
East Plains/Stafford Forge	8,400	N/A	5,305	5,305
Minor Additions to State Lands	960	579	504	1,083
TOTAL	66,990	26,616	30,967	57,583
Federal Funding Application Submitted				
Wading River Ecosystem	16,693	N/A	0	0
Southern Forest Region				
Manumuskin/Tuchahoe River Basin	12,800	N/A	3,765	3,765
Belleplain Extensions	5,363	N/A	0	0
TOTAL	34,856	N/A	3,765	3,765
PINELANDS GRAND TOTAL	101,846	26,616	34,732	61,348

MAJOR PUBLIC LAND HOLDINGS

Current Through June 1991

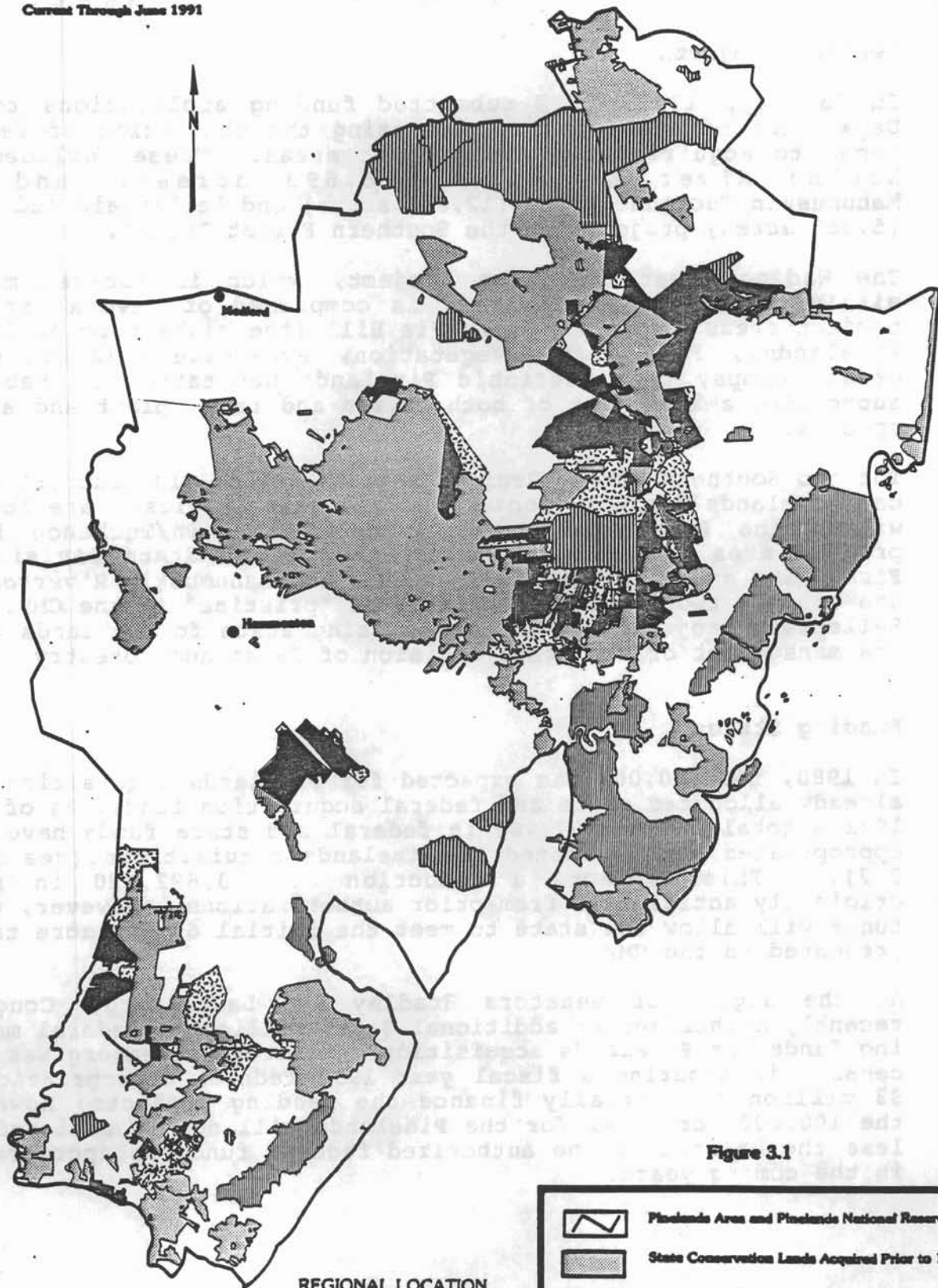


Figure 3.1

NEW JERSEY
PINELANDS



REGIONAL LOCATION



- Pinelands Area and Pinelands National Reserve
- State Conservation Lands Acquired Prior to 1979
- Major Federal and County Conservation Lands
- Major Federal, State and County Facilities
- State Conservation Lands Acquired Under Pinelands Program Since 1979
- Lands Proposed for State Acquisition Under Pinelands Program

Pending Projects

In January, 1991, DEPE submitted funding applications to the Department of the Interior requesting the obligation of federal funds to acquire three new project areas. These included the Wading River Ecosystem (16,693 acres), and the Manumuskin/Tuckahoe River (12,800 acres) and Belleplain Additions (5,363 acres) projects in the Southern Forest Region.

The Wading River Ecosystem project, which is located mainly within the Preservation Area, is comprised of several smaller project areas including Apple Pie Hill (the highest point in the Pinelands), Pine Plains vegetation, extensive Atlantic white cedar swamps, characteristic Pinelands habitats, and habitats supporting a long list of both common and rare plant and animal species.

The two Southern Forest Region projects, which also support typical Pinelands habitats and common and rare species, are located within the Protection Area. The Manumuskin/Tuckahoe River project area, which will be managed by the State Division of Fish, Game and Wildlife, falls within the Manumuskin River basin, one of only two streams identified as "pristine" in the CMP. The Belleplain project will add to existing state forest lands under the management of the State Division of Parks and Forestry.

Funding Status

In 1980, \$60,500,000 was expected for Pinelands acquisition from already allocated state and federal acquisition funds. As of June 1991 a total of \$49,807,780 in federal and state funds have been appropriated and committed to Pinelands acquisitions (see Table 3.2). This reflects a reduction of \$10,692,220 in funds originally anticipated from prior authorizations. However, these funds will allow the state to meet the initial 67,000 acre target presented in the CMP.

At the urging of Senators Bradley and Lautenberg, Congress recently authorized an additional \$13.5 million in federal matching funds for Pinelands acquisition. Senator Lautenberg was successful in securing a fiscal year 1992 federal appropriation of \$3 million to partially finance the pending projects; however, the 100,000 acre goal for the Pinelands will not be achieved unless the balance of the authorized federal funds is appropriated in the coming years.

Table 3.2
Pinelands Acquisition Program Funding Status

Funded Projects	Acreage	Funds			TOTAL COST ^(e)
		Federal "502" Funds ^(a)	LWCF ^(b)	Green Acres Bond Issue Funds	
Cedar Creek Watershed	15,400	\$8,185,641	\$1,800,250	\$5,100,000	\$15,085,891
West Plains/Greenwood Forest	9,000		\$1,880,920	\$2,069,000	\$3,949,920
Oswego River Extension	10,250	\$3,080,000	\$83,350	\$1,626,666	\$4,790,016
Bass River	8,500	\$2,809,500		\$1,371,654	\$4,181,154
Upper Wading River	3,400		\$900,000	\$1,200,000	\$2,100,000
Goose Ponds at Tabernacle	909		\$522,600	\$603,699	\$1,126,299
Friendship Bogs	2,171		\$562,500	\$612,000	\$1,174,500
Makepeace Lake	8,000	\$4,874,000		\$2,026,000	\$6,900,000
East Plains/Stafford Forge	8,400	\$5,800,000		\$2,500,000	\$8,300,000
Minor Additions to State Lands	960			\$1,200,000	\$1,200,000
Limited Practical Use Program		\$1,000,000		^(c)	\$1,000,000
TOTAL	66,990	\$25,749,141	\$5,749,620	\$18,309,019	\$49,807,780
Pending Projects^(d)					
Wading River Ecosystem	16,693	\$7,000,000	-	\$7,000,000	\$14,000,000
Southern Forest Region					
Manumuskin/Tuckahoe River	12,800	\$4,300,000	-	\$6,300,000	\$10,600,000
Belleplain	5,363	\$2,200,000	-	\$2,200,000	\$4,400,000
TOTAL	34,856	\$13,500,000	-	\$15,500,000	\$29,000,000
ANTICIPATED GRAND TOTAL	101,846	\$39,249,141	\$5,749,620	\$33,809,019	\$78,807,780

(a) Funds authorized through Section 502 of the National Parks and Recreation Act of 1978.

(b) Federal Land and Water Conservation Fund.

(c) The \$1 million state match has not yet been appropriated.

(d) Federal funding applications requesting \$13.5 million in 502 funds were submitted in January 1991. The Manumuskin/Tuckahoe River project has been initiated using Green Acres funds.

(e) Total costs do not reflect administrative costs for surveys, appraisals, etc.

LIMITED PRACTICAL USE PROGRAM

A recent amendment to the federal Pinelands legislation (Section 502 of the National Parks and Recreation Act) authorizes matching federal grants to the State of New Jersey to acquire properties in the Pinelands National Reserve (PNR) found to have "limited practical use." Up to \$2 million may be available to support this program if New Jersey matches the appropriated federal funds. Anticipating the necessary state funding, the Commission and DEPE cooperatively developed a program to identify properties which may be eligible for acquisition because of "limited practical use."

OTHER MAJOR PUBLIC LAND ACQUISITION PROGRAMS

Several other important public land acquisition programs have contributed to the protection of critical lands within the PNR. The two most significant projects are the creation of the Great Cedar Swamp Division of the Cape May National Wildlife Refuge and major additions to the Edwin B. Forsythe National Wildlife Refuge. A total of 4,456 acres have been acquired within the PNR as part of the Great Swamp project, and approximately 10,000 acres have been added to the Edwin B. Forsythe National Wildlife Refuge, bringing its total to 37,952 acres.

The Division of Fish, Game, and Wildlife independently acquired 1,940 acres within the PNR through the Waterfowl Stamp Program. County governments also acquired several large tracts of land within the Pinelands. Among the recently created county parks are Lake Lenape (1,825 acres) and River Bend (550 acres) in Atlantic County, and Wells Mill (810 acres) in Ocean County.

CHAPTER IV

PINELANDS DEVELOPMENT CREDIT PROGRAM

The Comprehensive Management Plan (CMP) established the Pinelands Development Credit (PDC) Program to: 1) encourage a shift of development away from active farmland and environmentally sensitive regions, and; 2) provide a way for landowners in these areas to benefit from increased land values in Regional Growth Areas. The program allocates transferable development rights (PDCs) to property owners in the Preservation Area District, Special Agricultural Production Areas, and Agricultural Production Areas as a supplemental use of property. The credits, each of which equals four transferable residential development rights, can be purchased for use in Regional Growth Areas to increase the densities of housing developments there.

ALLOCATION AND USE POTENTIAL

PDCs Available for Allocation

PDCs are allocated to properties on the basis of land characteristics. For example, uplands in the Preservation Area District are allocated one credit for every 39 acres. In Agricultural Production and Special Agricultural Production Areas, all uplands and areas of active agriculture, including berry agricultural bogs and fields, are allocated two credits per 39 acres. Properties approved for resource extraction, but as yet not mined, also receive two credits per 39 acres. Wetlands not in agricultural use are generally allocated 0.2 credits per 39 acres, a ratio based on the comparative sales prices of uplands and wetlands. Finally, owners of lots at least 0.1 acre in size as of February 7, 1979, are allocated at least 0.25 PDCs if the property is vacant and not in common ownership with contiguous land.

Both the CMP and the 1983 CMP Progress Report contained an estimate of the number of PDCs that might be allocated. Since then, the estimate has been revised to account for several factors: land acquisition in the Preservation Area has progressed, thereby reducing the amount of land eligible for credits; municipalities have adjusted management area boundaries during the conformance process, thereby affecting areas which may be eligible for a PDC allocation; and Special Agricultural Production Areas have been designated. The net result of these adjustments is that approximately 5,625 PDCs are available for allocation. Since each PDC carries with it the opportunity to con-

struct four residential units, it is estimated that this yields the potential for the development of 22,500 homes in Regional Growth Areas.¹

PDCs are formally allocated when a landowner receives a Letter of Interpretation from the Commission establishing the exact number of PDCs attributed to a particular property. Upon formal allocation, a landowner may "sever" PDCs from the land by recording a conservation or an agricultural easement to permanently protect the property. As of June 30, 1991, approximately 3,203 rights (800.75 PDCs) had been formally allocated and, of these, 659 rights (164.25 PDCs) had been severed.

Once the PDCs are severed from the "sending property," they may be sold to a private buyer or to the New Jersey Pinelands Development Credit Bank (NJPD CB).² The NJPD CB periodically auctions credits it owns to private parties. As of June 30, 1991, the NJPD CB owned 227 rights (56.75 PDCs), of which 51 were under option for sale to developers. Another 323 rights (80.75 PDCs) had been purchased privately.

Redemption Opportunities

Just as the areas allocated credits have been affected by changing conditions, so too have the areas capable of receiving the transferred credits. During the conformance process many municipalities adjusted growth areas boundaries, thereby affecting the land area available to accept credits. Also during conformance, some municipalities demonstrated that certain already subdivided or developed areas were incapable of receiving credits. Zoning ordinances often included commercial and industrial districts in growth areas resulting in a reduction of residentially zoned areas. Nevertheless, the net effect of these changes has not dramatically altered the PDC receiving potential of Pinelands Regional Growth Areas.

¹ Amendments to the CMP's waiver program are scheduled to take effect in February, 1992 and will slightly increase the number of PDCs to be allocated.

² The Burlington County Conservation Easement and Pinelands Development Credit Exchange is authorized to purchase PDCs, but has not purchased any since 1987. All of the PDCs it purchased have since been sold.

It is estimated that 46,200 rights (11,550 PDCs) could be used in Regional Growth Areas. This estimate accounts for zoning opportunities in eighteen municipalities whose land use ordinances have been certified by the Pinelands Commission and two municipalities (Egg Harbor Township and South Toms River Borough) whose ordinances have yet to receive Commission approval and where PDC use is governed by the CMP. Not reflected are additional opportunities for PDC use when municipalities grant density and use variances in Regional Growth Areas, including three (Medford Lakes Borough, Berlin Township and Dover Township) which weren't required to zone for normal PDC use.³

Based upon the allocation and redemption estimates, more than twice as many opportunities to use PDCs exist than there are PDCs available for use. This is not to suggest, however, that there will be a shortage of PDCs. Zoning ordinances do not require that properties be developed at maximum permitted densities, and some land in growth areas has already been developed at lower densities.

PROGRAM ACTIVITY

Although the PDC program was first established in 1981, the 1983 Progress Report noted that there had been only a modest amount of program activity in its first two and one-half years. At that time, many property owners were still unfamiliar with the program; the agricultural and development communities were opposed to it; and municipal zoning ordinances clarifying precisely where and how PDCs could be used were just coming on line. Most importantly, the CMP's recommendation that legislation to create a state "bank" to help implement the PDC program had yet to be enacted.

In the last eight years, conditions have gradually changed. Knowledge about the program has improved, opposition has diminished, and most municipalities now have Commission-approved zoning ordinances in place. Perhaps most noteworthy, the Pinelands Development Credit Bank Act was enacted. The Bank began operations in 1988.

³ The CMP amendments scheduled to take effect in February, 1992 also create additional opportunities for PDC use when waivers of strict compliance are approved, and when municipalities grant density variances for certain residential uses on properties outside of Regional Growth Areas.

As might be expected, these changing conditions have resulted in increased levels of program activity. The following sections highlight PDC activities in a variety of key performance areas through June 30, 1991. For ease in comparing the PDC program to other transfer-of-development-rights programs, much of the PDC statistical data is expressed in terms of development "rights." In the Pinelands, each development credit entitles its owner to develop four residential units; thus, one development "right" is equivalent to one-quarter of a Pinelands Development Credit.

"Sending Area" Activity

Allocation of PDCs

Table 4.1 and Figure 4.1 show yearly and cumulative allocations of Pinelands Development Credits. Through June 30, 1991, there have been 3,203 rights allocated in 390 instances. After some initial growth in 1982 and 1983, the number of sending area landowners requesting allocations grew rather slowly between 1984 and 1988. However, the number of allocations has increased dramatically since then, with 60% of the total being issued within the past two and one-half years. This may be due to marketing efforts by the New Jersey Pinelands Development Credit Bank.

Rights Severed

As shown in Table 4.2, after some initial growth in 1983 and 1984, the number of landowners who actually severed their PDCs grew slowly between 1985 and 1989. However, the number of severances increased dramatically in 1990, with over 45% of the total severances occurring since 1989. As of mid-year 1991, a total of 659 rights had been severed.

Land Protected

The severances have resulted in the permanent protection of approximately 5,876 acres of land as of June 30, 1991. Of this total, 3,575 acres are located in the Preservation Area, 1,698 acres in the Agricultural Production Area and 603 acres in the Special Agricultural Production Area.

In comparison, 10,920 acres of land have been permanently protected through the purchase of development rights in the statewide farmland preservation program, of which 5,679 are located in the seven Pinelands counties.

Table 4.1

**Pinelands Development Credit Program
Allocation of Rights by Year**

Year	Number of Allocations ^(a)	Number of Rights Allocated
1981	7	332
1982	24	677
1983	36	507
1984	33	216
1985	22	123
1986	13	30
1987	7	41
1988	8	37
1989	81	458
1990	152	753
1991 ^(b)	7	29
TOTAL	390	3,203

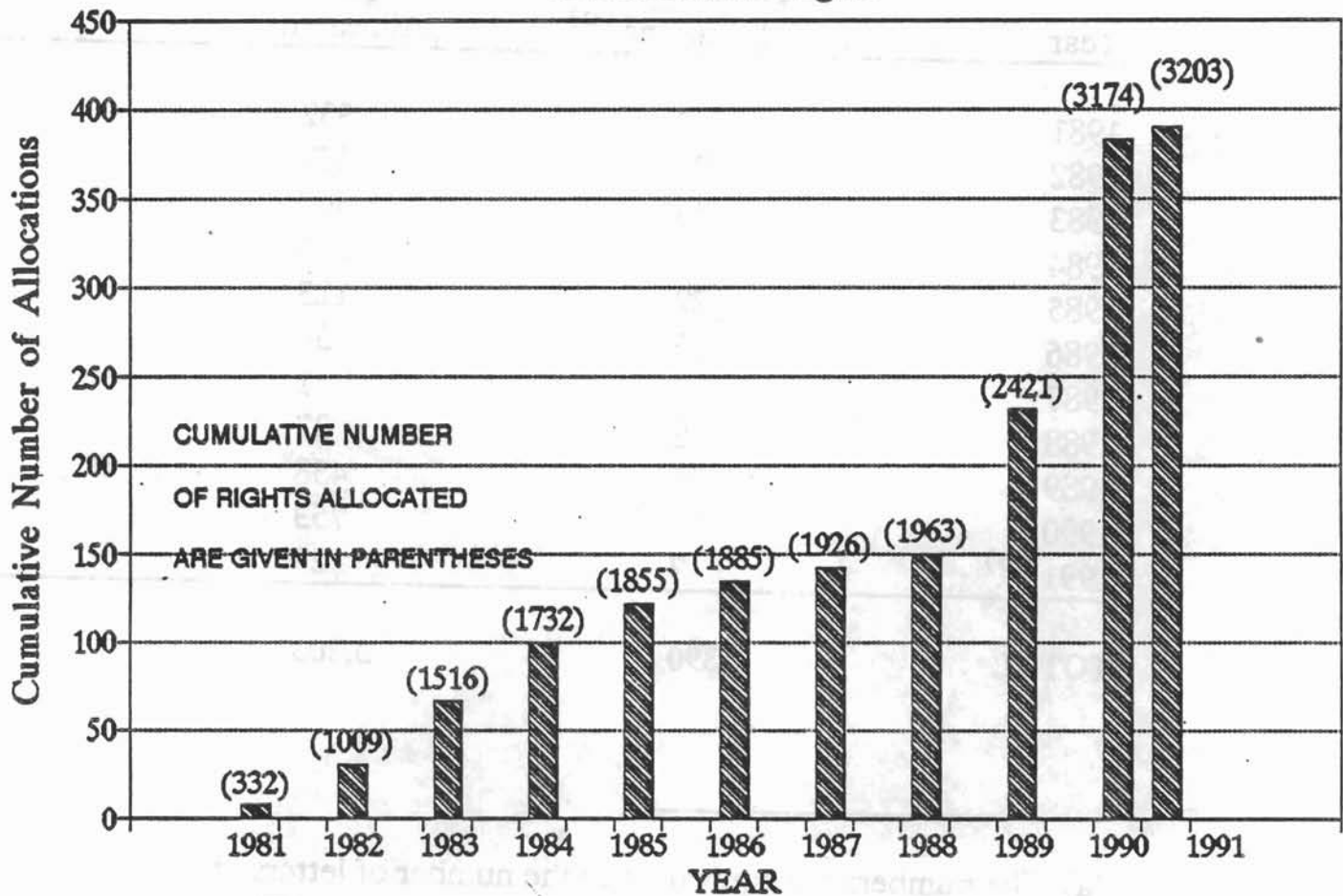
(a) The numbers are equivalent to the number of letters of interpretation issued by the Pinelands relative to PDC allocations.

(b) The 1991 totals represent one half of a year.

Source: Cross-referenced LAN file summary, Exec. Dr.'s LOI summary record & 1990/91 LOIs.

Figure 4.1

Pinelands Development Credit Program Allocation of Rights^(a)



(a) The 1991 totals represent one-half of a year.

Table 4.2

**Pinelands Development Credit Program
Number of Rights Severed from Land**

Year of Severance	Not Purchased to Date	Purchased to Date by:		
		NJ PDC Bank ^(a)	Private	TOTAL
1982	0	0	18	18
1983	0	34	108	142
1984	0	39	68	107
1985	0	0	32	32
1986	0	7	30	37
1987	0	0	9	9
1988	0	0	2	2
1989	0	1	3	4
1990	70 ^(b)	146	41	257
1991 ^(c)	39	0	12	51
TOTAL	109	227	323	659

(a) NJPDC Bank purchases include those initially purchased by the Burlington county exchange but subsequently sold to NJPDC Bank. The dates indicate when the initial severances took place.

(b) Includes 21 rights severed in 1990 with deferred option to purchase in 1991.

(c) The 1991 total represents one-half of a year.

Source: Burlington county exchange listing & PDCB Registry

"Receiving Areas" Activity

Development Projects

PDC activity can also be measured by examining the number of projects using PDCs in the "receiving" areas. Regional Growth Area projects included in Figures 4.2 and 4.3 are those that are actively being pursued by developers, those that have received preliminary or final approvals, and those that have been constructed. Additional projects which are in the early stages of planning are not included in these tabulations because of too many unknowns which might affect ultimate PDC use. As of June 30, 1991, there are a total of 132 active, approved or built PDC projects with a potential use of 1,897 rights.

As with PDC allocations, developer interest in PDC projects evidenced slow growth from 1985 to 1988, but has increased since then. Indeed, the number of PDC projects increased more than fourfold in three years (from 32 projects in April, 1988 to 132 by June, 1991). Similarly, there has been almost a threefold increase in the number of rights to be used during this same three year period.

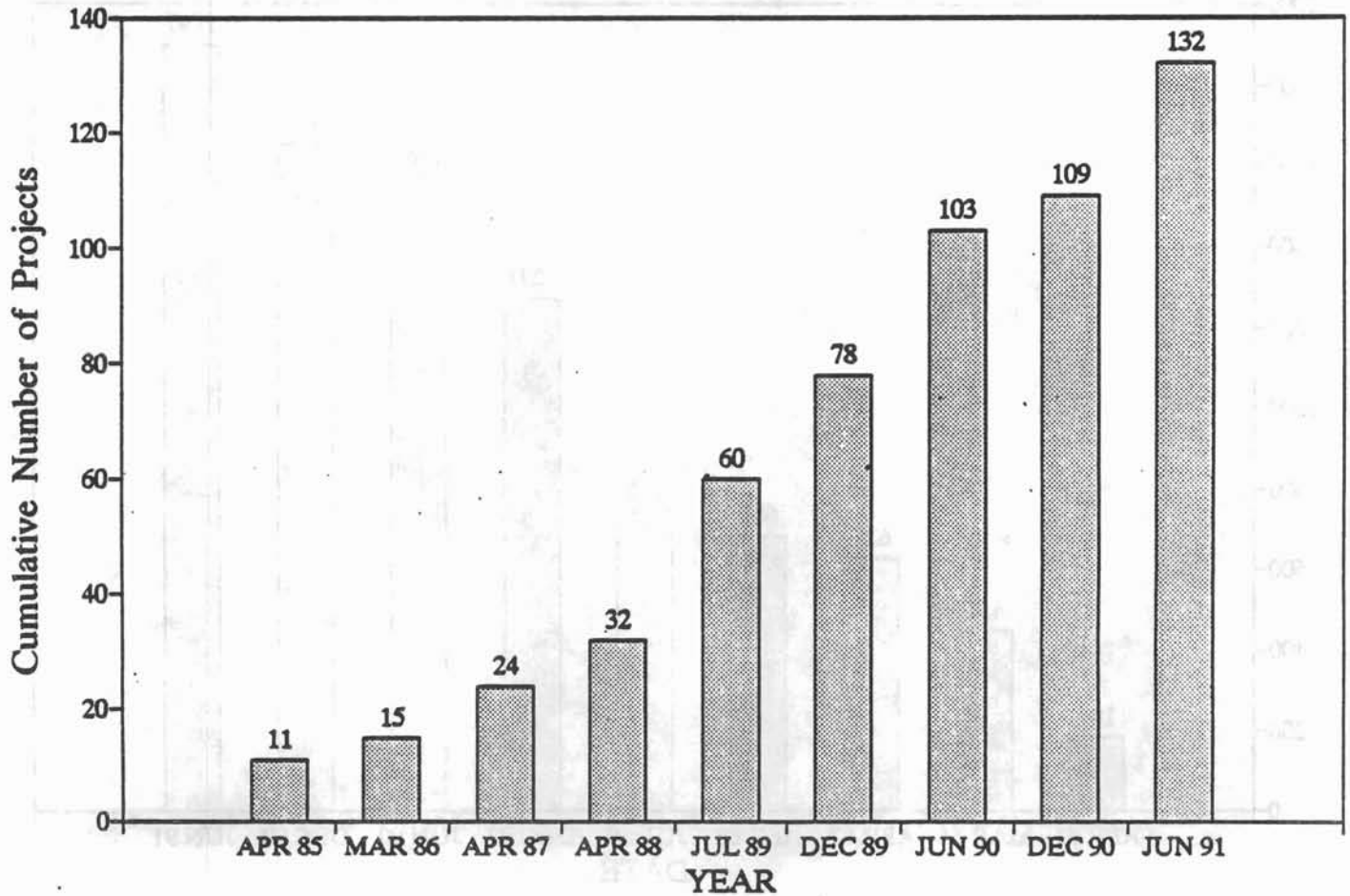
Table 4.3 shows the level of PDC project activity by Regional Growth Area municipality. As shown, Monroe and Medford Townships exhibit the highest overall level of PDC project activity. By comparing this table with Table 2.6 we find that, not surprisingly, municipalities with high levels of approved development applications also evidence high levels of PDC project activity.

PDC Use in Relation to Overall Development Activity

Table 4.4 compares the number of PDC units approved in two reporting periods to the total dwelling units approved in the Regional Growth Areas. In the early stages of the program, less than 1% of approved residential units involved PDC use; however, this rate increased to four and one-half percent during the past six years. Although the cumulative percentage of PDC units to total units approved remains relatively low, the recent trend suggests that the rate of use may continue to grow in the future. As a further indication that the rate of PDC use should continue to grow in relation to total growth area development, the number of rights involved in pending but not yet approved projects has increased considerably since 1985. The total rights involved in these active projects as a percentage of the total residential units approved increased from 5.4% in 1985 to 12.1% in 1991.

Figure 4.2

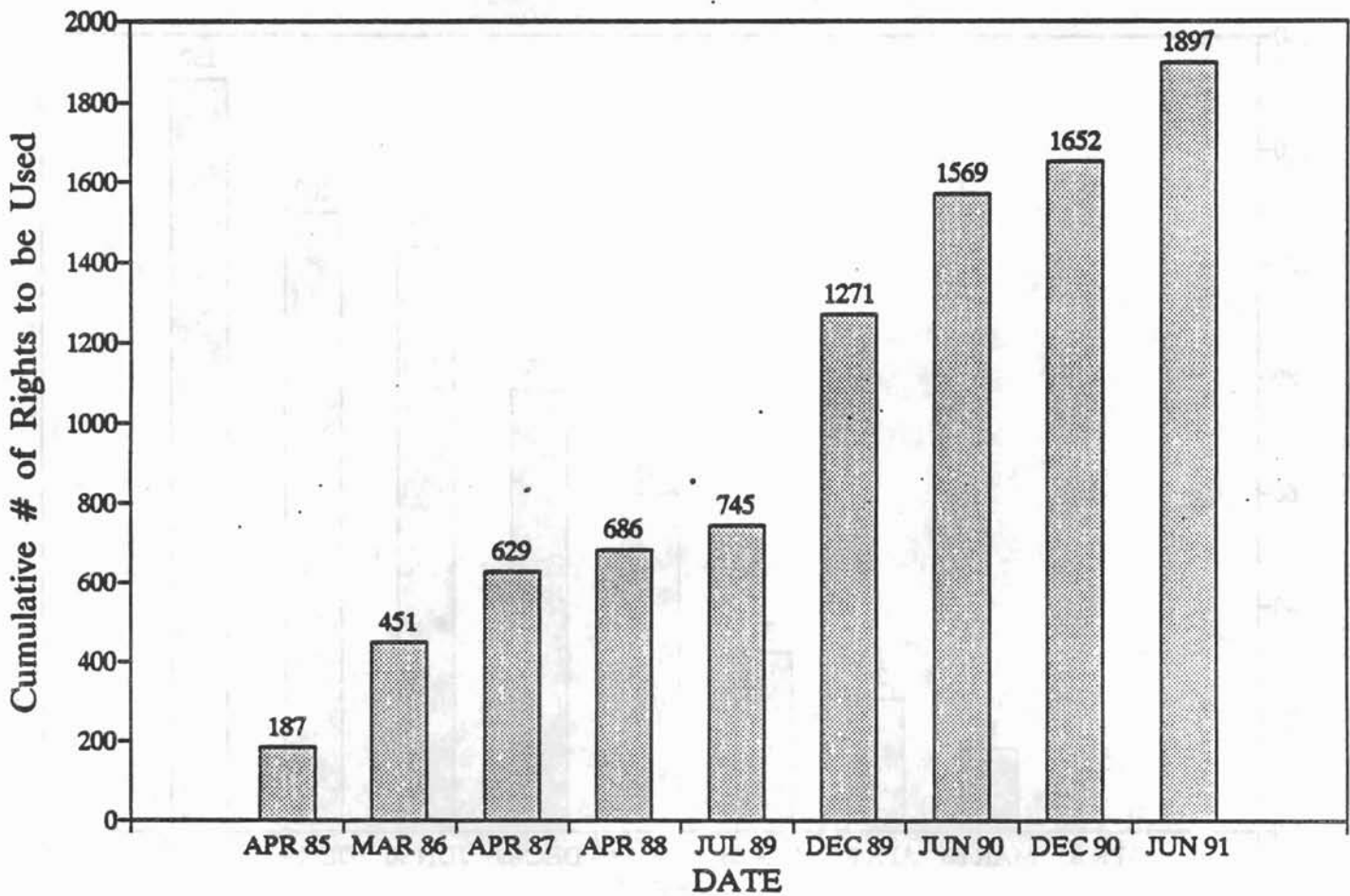
**Pinelands Development Credit Program
Projects Using PDCs ^(a)**



(a) Only built or approved projects and projects pending local approval are included.

Figure 4.3

Pinelands Development Credit Program
Number of Rights to be Used^(a)



(a) Only built or approved projects and projects pending local approval are included.

Table 4.3

**Pinelands Development Credit Program
Projects Using PDCs**

Municipality	Number of Projects (a)	Number of Rights
Barnegat	1	4
Egg Harbor	10	177
Galloway	2	240
Hamilton	9	357
Manchester	1	10
Medford	23	343
Medford Lakes	1	1
Monroe	43	409
Pemberton	18	200
Shamong	2	7
South Toms River	2	2
Stafford	2	2
Tabernacle	11	31
Waterford	6	75
Winslow	1	39
TOTAL	132	1,897

(a) Includes projects pending local approval, in receipt of local approval, or built as of 6/30/91.

Table 4.4

**Pinelands Development Credit Program
PDC Use in Relation
To Development Approvals in Regional Growth Areas**

Period (a)	TOTALS DURING THE PERIOD				CUMULATIVE	
	Residential Units Approved (b)	PDC Rights Approved For Use (c)	Percentage of Residential Units Using PDC Rights	Residential Units Approved (b)	PDC Rights Approved For Use (c)	Percentage of Residential Units Using PDC Rights
09/23/80-04/30/85	2,989	27	0.9%	2,989	27	0.9%
05/01/85-06/30/91	9,084	410	4.5%	12,073	437	3.6%

(a) Date of approval represents the first date on which an application received an approval.

(b) Represents the total number of approved residential units through 6/30/91 for applications which received their first approval during the time period indicated.

(c) Derived from the PDC status reports and equal the total number of rights (1/4 PDC) included in built and approved projects.

PDC Transactions

Number of Rights Sold

As Table 4.2 indicates, 550 of 659 rights severed as of June 30, 1991 have been sold by "sending" area property owners. Three hundred twenty-three of the rights sold have been purchased by developers and 227 have been purchased by the NJPDC Bank for resale to developers at a later date.

Table 4.5 disaggregates those developer purchases so that an assessment can be made as to the role public and private parties are playing in these purchases.

In the earlier stages of the program (1984 - 1988), virtually all of the purchases were from the Burlington county exchange. However, private transactions, those in which sales are negotiated between a private seller and private buyer, have increased dramatically since then, as shown in Figure 4.4. Although the number of purchases each year by developers has decreased since 1988, it is noteworthy that more than 70 rights were under option from private sellers and the NJPDC Bank as of June 30, 1991, and the number of rights which developers are proposing to use continue to increase.

Private Market Purchase Prices

Table 4.5 also shows the average purchase prices for the 79 rights purchased through the private market. Both the mean, (or numerical average), and the median (or midpoint), which is less sensitive to extremely high or low purchase prices, are included for comparative purposes.

As shown, the mean purchase price increased from approximately \$2,000 per right in the mid-1980's to almost \$3,500 per right in early 1991. The median purchase price is somewhat higher than the mean.

SUMMARY OF OTHER MAJOR ACTIVITIES

Beginning in 1986, the Commission began a two-part study of the PDC Program. The purpose of the study was to determine the strengths and weaknesses of the program and to identify ways in which the program could be further strengthened. The first part of the study reported on prevailing attitudes towards the program by the public. The second part of the study evaluated and made recommendations on the operational features of the program.

Table 4.5

**Pinelands Development Credit Program
Number of Rights Purchased by Developers**

Year of Purchase	Total Rights Purchased By Developers	Burlco Exchange Sales (Rights)	NJ PDC Bank Sales (Rights)	Private Sales		
				Private (Rights)	Mean Sales Price (Rights)	Median Sales Price (Rights)
1984	9	9	0	0	N/A	N/A
1985	8	5	0	3	\$2,250	\$2,250
1986	45	26	0	19	\$2,006	\$2,083
1987	38	38	0	0	N/A	N/A
1988	86	86	0	0	N/A	N/A
1989	83	79	0	4	\$3,375	\$2,875
1990	31	0	1 ^(a)	30 ^(b)	\$4,199	\$4,125
1991 ^(c)	23	0	0	23 ^(d)	\$3,441	\$3,500
TOTAL	323	243	1	79	\$3,335	\$3,500

N/A - Not applicable because there were no private transactions during the year.

(a) Excludes 51 rights which were auctioned by the Bank in 1990 but are scheduled for closing after 6/30/91.

(b) Excludes 29 rights under option for purchase at the end of 1990.

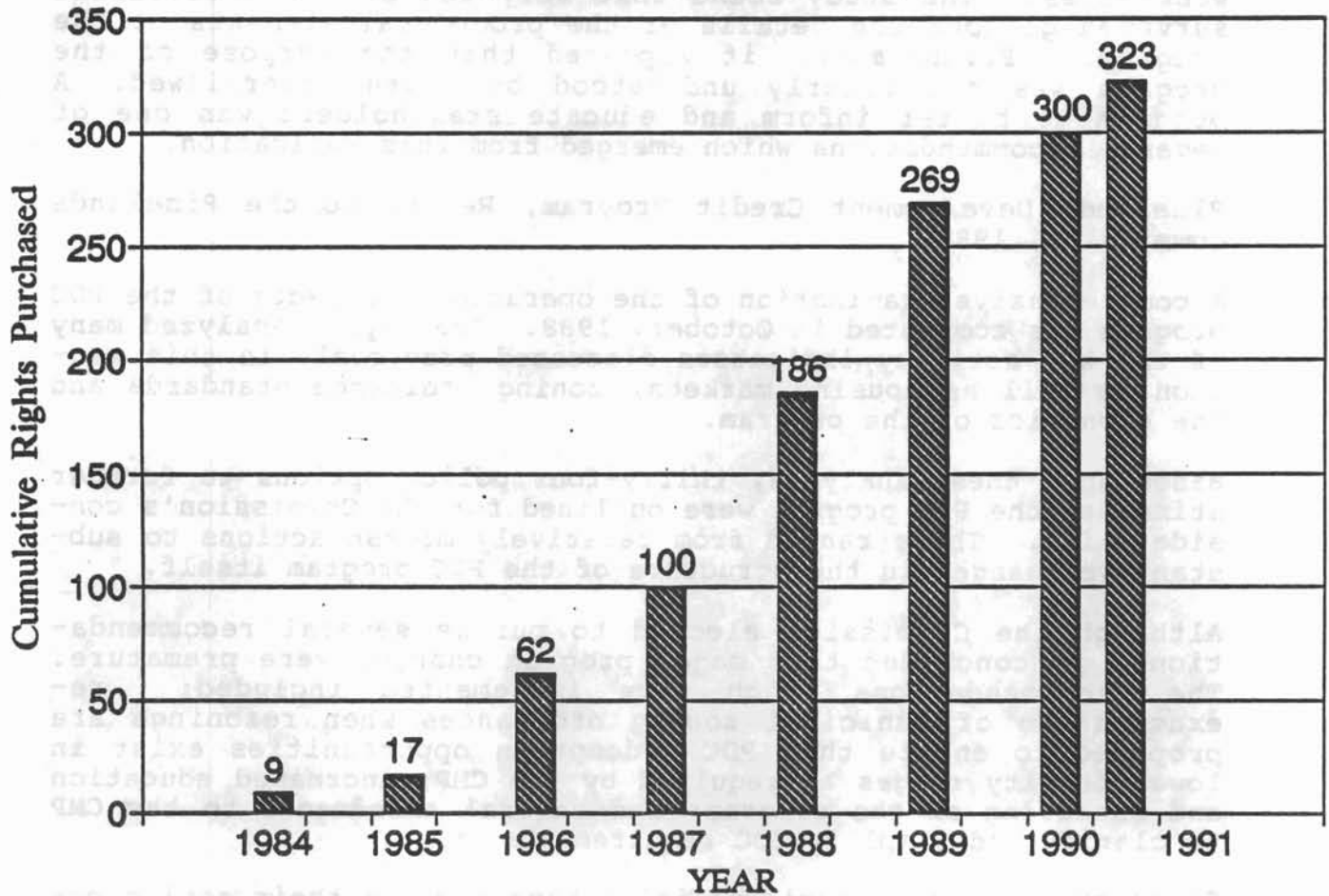
(c) The 1991 totals represent one-half of a year.

(d) Includes 7 of the 80 optioned rights which were purchased during the first six months of 1991.

Source: Burlington county exchange listing & PDCB Registry

Figure 4.4

**Pinelands Development Credit Program
Rights Purchased by Developers ^(a)**



(a) The 1991 totals represent one-half of a year.

Pinelands Development Credit Evaluation Report, 1987

In early 1986, the Commission contracted the services of real estate consultant Karl Kehde to canvass stakeholders and evaluate their attitudes toward the program. Between the periods of June 1986 and June 1987, 44 in-depth interviews were conducted with landowners, developers and municipal officials.

The interviewees were probed on their knowledge of the program and were asked to assess the program's overall strengths and weaknesses. The study found that very few of the individuals surveyed grasped the details or the procedural elements of the program. Furthermore, it appeared that the purpose of the program was not clearly understood by those interviewed. A program to better inform and educate stakeholders was one of several recommendations which emerged from this evaluation.

Pinelands Development Credit Program, Report to the Pinelands Commission, 1988

A comprehensive examination of the operational aspects of the PDC program was completed in October, 1988. The report analyzed many of the key activity indicators discussed previously in this section as well as housing markets, zoning ordinance standards and the economics of the program.

Based upon these analyses, thirty-four policy options to further stimulate the PDC program were outlined for the Commission's consideration. These ranged from relatively modest actions to substantive changes in the structure of the PDC program itself.

Although the Commission elected to pursue several recommendations, it concluded that major program changes were premature. The recommendations which were implemented included: re-examination of municipal zoning ordinances when rezonings are proposed to ensure that PDC redemption opportunities exist in lower density ranges as required by the CMP; increased education and marketing of the program; and several amendments to the CMP to clarify and simplify PDC requirements.

Since then, several municipalities have revised their zoning ordinances to better distribute the zoning opportunities for PDC use and the NJPDC Bank has undertaken a more aggressive educational program targeted primarily to property owners in PDC sending areas. Moreover, CMP amendments relative to the PDC program which are described in the following subsection have been adopted.

March 19, 1990 Comprehensive Management Plan Amendments

On March 19, 1990, amendments to the CMP, which were adopted by the Commission in response to the recommendations of the PDC report, took effect. These amendments served several purposes involving both PDCs and the implementation of the recommendations contained in the report entitled An Assessment of Sewer and Water Supply Alternatives For Pinelands Growth Areas in the Mullica River Basin, Camden County, May 1988.

First, the amendments simplified the method for calculating PDC allocations when homes are already located on a property, or when a residential development right is to be retained. The amendments adjusted the PDC allocation in these cases by one-quarter PDC for each such home or right retained.

Second, the amendments added a standard to require the redemption of "lost" PDCs when local use variances are granted to allow non-residential development in a PDC receiving zone. Prior to these amendments, the CMP required PDC use when residential development was approved by variance in a non-residential zone, but did not address the opposite case.

Third, the amendments deleted a reference in the CMP which had been misinterpreted to mean that PDCs were not necessarily needed when normally permitted residential densities were exceeded as a result of a municipal variance approval.

Finally, maximum densities in three Mullica River basin municipalities (Chesilhurst, Winslow, and Waterford) were reduced by 25% to reduce water supply demands and maintain water quality in the basin.

CHAPTER V **ENFORCEMENT**

The enforcement unit within the intergovernmental coordination and enforcement office was created in November, 1985 to serve as a focal point for enforcement activities. Prior to this time, permitting staff in the development review office were responsible for investigating violations that occurred within the municipalities they served. As public awareness of the Comprehensive Management Plan (CMP) increased, however, the Commission realized the need to develop specific procedures and dedicate staff solely to the enforcement of the CMP.

Violations of CMP standards are most frequently brought to the Commission's attention by concerned citizens. Citizen reports are initially directed to the enforcement staff for review and confirmation that a violation has occurred. Once confirmed, the report is entered into the Commission's computerized tracking system and referred to the development review office for assignment to the staff member in charge of the municipality in which the activity occurred. The staff makes every effort to resolve the violation without recourse to legal action. A letter is often sent to the property owner indicating the nature of the violation that has occurred and the measures that may be taken to relieve the problem. When appropriate, the issue is also channeled to municipal officials for resolution at the local level. Only when all such efforts have been exhausted and the violation remains outstanding does it return to the enforcement staff for further action. At this point the Attorney General's office is consulted regarding legal options, and final efforts are made to remedy the matter administratively. If legal action is warranted, a recommendation is forwarded to the Commission to authorize the Attorney General's office to pursue litigation.

Other measures to improve compliance with the CMP development standards have also been implemented. In 1989, the staff began the computerized tracking of all the developments that were approved with conditions and, in 1990, launched a systematic compliance inspection program to follow-up these conditions. Commission staff now conduct inspections at many of these sites to ensure that the conditions of approval are met. In cooperation with the New Jersey State Police, the Commission also began aerial reconnaissance of the Pinelands in 1990 to spot potential violations. This monitoring operation targets illegal forestry and resource extraction activities, in particular, as well as other unauthorized land disturbances. Together, these new enforcement procedures have uncovered a number of violations over the past two years which might not otherwise have been detected.

Over the years, coordination of enforcement activities with the Department of Environmental Protection and Energy (DEPE) has improved. If, for example, a violation report is received which may involve DEPE regulations, the Commission's enforcement office now notifies the appropriate DEPE agency and requests its involvement. Depending upon the nature of the violation, DEPE may assume a "lead" or "support" role in investigating and resolving the matter. Efforts to institutionalize cooperative enforcement activities may now be feasible because DEPE has just established a central Office of Enforcement Policy.

In spite of these efforts, the Commission's enforcement program is neither comprehensive nor fully effective. The Commission does not have the ability to monitor almost one-quarter of the state's land mass. When violations are noted, the Commission's lack of enforcement authority makes it difficult to reach an equitable solution.

Consequently, the Commission has endorsed a bill now pending in the legislature to enhance its enforcement authority.

As presently constituted, Senate Bill 2207 would grant the Commission enforcement powers similar to that which DEPE possesses for solid waste management, water pollution control and freshwater wetlands protection. The Commission would be authorized to issue administrative orders requiring compliance with the standards of the CMP and levy fines. The bill would also allow the Commission to withhold final approval of an applicant's development applications if a persistent violation at one site has not been resolved. The provisions of the bill, if enacted, would considerably enhance the Commission's ability to ensure that all development in the Pinelands be undertaken in a manner consistent with the preservation and protection of the region's natural and cultural heritage.

VIOLATIONS

Number of Violations

As indicated on Table 5.1 and Figure 5.1, the number of confirmed violations has risen dramatically in the past four years. Between 1987 and 1990, the number of confirmed violations reported annually almost doubled. This increase is undoubtedly due to heightened public awareness of the efforts to protect the Pinelands and to the improved monitoring procedures employed by the Commission. Nevertheless, it must be assumed that this only represents a fraction of the illegal activities that may be taking place in the Pinelands.

Table 5.1
Status of Violations

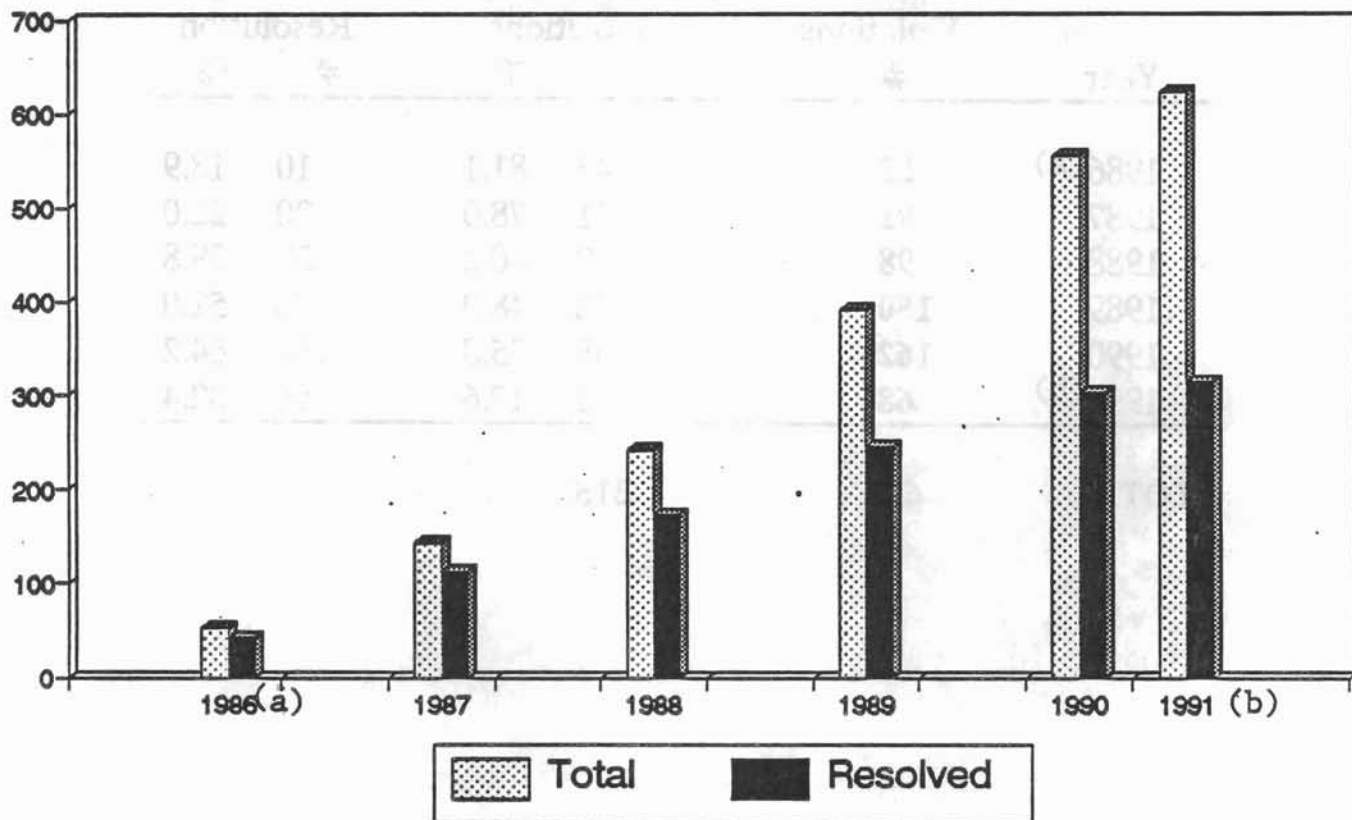
Year	Total Confirmed Violations #	Resolved Violations		Pending Resolution	
		#	%	#	%
1986 ^(a)	53	43	81.1	10	18.9
1987	91	71	78.0	20	22.0
1988	98	59	60.2	39	39.8
1989	150	72	48.0	78	52.0
1990	162	58	35.8	104	64.2
1991 ^(b)	68	12	17.6	56	82.4
TOTAL	622	315		307	

(a) These figures represent those 1986 violations which were entered into the computer tracking system.

(b) Represents the first six months of the year.

Figure 5.1

**Confirmed Violations by Year
Cumulative Summary**



(a) These figures represent those 1986 violations which were entered into the computer tracking system.

(b) Represents the first six months of the year.

Violations by Type

Violations of the CMP standards fall into 11 categories. From Table 5.2 it is clear that the bulk of violations arise from unauthorized construction, the clearing of wetlands and vegetated areas, and illegal uses. These have remained fairly constant while other types of violations have significantly declined as a percentage of the total. These declines may be due to improved monitoring by other public agencies and better understanding of the law by the public.

Location of Violations

The municipalities in which the greatest number of violations occur tend to be in the northern and western portions of the Pinelands where population and development pressures are the greatest (See Table 5.3). It is also possible, however, that more monitoring takes place in these communities than in others.

Table 5.4 shows Pinelands municipalities with no reported violations since 1986. These towns tend to be already fully developed, have little land in the Pinelands or little development pressure. Again, it is also possible that less monitoring takes place in some of these communities.

ENFORCEMENT ACTION

Violations Resolved

As Table 5.1 indicates, the number of violations resolved each year has remained fairly constant, averaging 65 per annum between 1987 and 1990, despite reduced staffing levels. However, because of the sharp increase in violations reported, the number that are still pending resolution grew steadily during the same period. This gap, evident in Figure 5.1, illustrates that violations often take a year or more to resolve and that the Commission has not been able to keep pace with the growing numbers of violations reported each year. The pending enforcement bill, if enacted, would vastly improve the Commission's ability to resolve violations more efficiently and, without doubt, help to remedy this situation.

Local Resolution

Some violations can be successfully resolved at the local level. These include illegal construction, illegal use and clearing of vegetation which local inspection officials are well suited to handle in many cases.

Table 5.2
Violations by Type

Type of Violation	1986 ^(a)		1987		1988		1989		1990		1991 ^(b)		TOTAL	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Forestry	6	11.3	6	6.6	1	1.0	3	2.0	2	1.2	2	2.9	20	3.2
Resource extraction	4	7.5	6	6.6	3	3.1	3	2.0	8	4.9	2	2.9	26	4.2
Wetland clearing	4	7.5	7	7.7	10	10.2	14	9.3	21	13.0	14	20.6	70	11.3
Wetland filling	6	11.3	8	8.8	4	4.1	14	9.3	12	7.4	6	8.8	50	8.0
Vegetative clearing	2	3.8	10	11.0	20	20.4	12	8.0	24	14.8	6	8.8	74	11.9
Landfilling	3	5.7	11	12.1	6	6.1	11	7.3	8	4.9	1	1.5	40	6.4
Construction w/o permit	9	17.0	14	15.4	21	21.4	42	28.0	32	19.8	15	22.1	133	21.4
Change of use w/o permit	6	11.3	8	8.8	6	6.1	13	8.7	5	3.1	0	0.0	38	6.1
Illegal use	9	17.0	12	13.2	17	17.3	18	12.0	22	13.6	16	23.5	94	15.1
Violation of condition	4	7.5	9	9.9	10	10.2	14	9.3	22	13.6	5	7.4	64	10.3
Unauthorized land disturbance (c)	-	-	-	-	-	-	6	4.0	6	3.7	1	1.5	13	2.1
TOTAL	53	100.0	91	100.0	98	100.0	150	100.0	162	100.0	68	100.0	622	100.0

(a) These figures represent those 1986 violations which were entered into the computer tracking system.

(b) Represents the first six months of the year.

(c) This type of violation was not tracked separately by the Commission until 1989.

Table 5.3
Municipalities With Violations
By Type of Violation
For 1986 - 6/91 Period

Forestry	Resource Extraction	Wetland Clearing	Wetland Filling	Vegetation Clearing	Land Filling	Construction w/o Permit	Change of Use w/o Permit	Illegal Use	Violation of Condition	Unauthorized Land Disturbance	Total Violations	
Municipality #	Municipality #	Municipality #	Municipality #	Municipality #	Municipality #	Municipality #	Municipality #	Municipality #	Municipality #	Municipality #		
Pemberton 4	Winslow 5	Hamilton 7	Winslow 10	Pemberton 12	Pemberton 7	Pemberton 18	Tabernacle 8	Monroe 12	Monroe 8	Lacey 2	Pemberton 73	
Franklin 3	Woodland 4	Medford 8	Pemberton 8	Monroe 8	Tabernacle 8	Buena Vista 10	Winslow 8	Hamilton 7	Pemberton 6	Maurice River 2	Monroe 50	
Monroe 2	Folsom 2	Pemberton 8	Hammononton 8	Hamilton 4	Barnegat 3	Waterford 10	Pemberton 5	Winslow 7	Winslow 8	Monroe 2	Winslow 48	
Tabernacle 2	Hamilton 2	Southampton 8	Waterford 4	Washington 4	Egg Harbor 3	Hammononton 9	Evesham 2	Pemberton 8	Buena Vista 4	Berlin 1	Tabernacle 36	
Washington 2	Lacey 2	Winslow 6	Monroe 3	Waterford 4	Woodland 3	Monroe 9	Hammononton 2	Southampton 8	Hamilton 4	Egg Harbor 1	Hamilton 32	
Woodland 2	Monroe 2	Franklin 5	Hamilton 2	Jackson 3	Bas River 2	Tabernacle 9	Maurice River 2	Woodland 8	Hammononton 4	Folsom 1	Waterford 32	
Buena Vista 1	Barnegat 1	Monroe 4	Lakehurst 2	Medford 3	Medford 2	Southampton 7	Mullica 2	Buena Vista 5	Tabernacle 4	Hamilton 1	Southampton 30	
Folsom 1	Galloway 1	Buena Vista 3	Medford 2	Shamong 3	Waterford 2	Medford 8	Waterford 2	Maurice River 4	Waterford 4	Southampton 1	Hammononton 28	
Hamilton 1	L. Egg Harbo 1	Galloway 3	Mullica 2	Southampton 3	Winslow 2	Barnegat 4	Dennis 1	Cheesthurs 3	Egg Harbor 3	Waterford 1	Buena Vista 27	
Plumsted 1	Manchester 1	Mullica 3	Southampton 2	Tabernacle 3	Buena Vista 1	Evesham 4	Estell Manor 1	Evesham 3	Medford 3	Wrightstown 1	Medford 25	
Southampton 1	Maurice River 1	Shamong 3	Upper 2	Barnegat 2	Franklin 1	Winslow 4	Hamilton 1	Franklin 3	Southampton 3		Woodland 23	
	Mullica 1	Evesham 2	Buena Vista 1	Buena Vista 2	Hamilton 1	Berlin 3	Lacey 1	Manchester 3	Bas River 2		Mullica 18	
	Pemberton 1	Hammononton 2	Evesham 1	Evesham 2	Hammononton 1	Egg Harbor 3	Medford 1	Mullica 3	Estell Manor 2		Franklin 18	
	Upper 1	Maurice River 2	Galloway 1	Folsom 2	Lacey 1	Galloway 3	Monroe 1	Shamong 3	Galloway 2		Evesham 15	
	Washington 1	Washington 2	Jackson 1	Franklin 2	Manchester 1	Mullica 3	Port Republic 1	Tabernacle 3	Mullica 2		Washington 15	
		Waterford 2	L. Egg Harbo 1	Hammononton 2	Monroe 1	Washington 3	Shamong 1	Waterford 3	Berkeley 1		Maurice River 14	
		Woodland 2	Washington 1	Manchester 2	Mullica 1	Woodland 3	Woodland 1	Estell Manor 2	Dennis 1		Barnegat 12	
		Barnegat 1	Weymouth 1	Ocean 2	Shamong 1	Berkeley 2		Hammononton 2	Evesham 1		Egg Harbor 12	
		Berkeley 1		Winslow 2	Southampton 1	Buena Boro 2		Medford 2	Franklin 1		Shamong 12	
		Folsom 1		Bas River 1		Cheesthurs 2		Ocean 2	Jackson 1		Galloway 11	
		Jackson 1		Buena Boro 1		Hamilton 2		Washington 2	Lacey 1		Folsom 9	
		Ocean 1		Egg Harbor 1		Jackson 2		Barnegat 1	Maurice River 1		Manchester 8	
		Tabernacle 1		Estell Manor 1		Manchester 2		Dennis 1	Weymouth 1		Jackson 8	
				Galloway 1		Maurice River 2		Egg Harbor 1	Woodland 1		Lacey 8	
				Lacey 1		Plumsted 2		Folsom 1			Estell Manor 7	
				Lakehurst 1		Bas River 1		Stafford 1			Bas River 6	
				Mullica 1		Dennis 1		Vineland 1			Ocean 6	
				Woodland 1		Estell Manor 1		Weymouth 1			Cheesthurs 5	
						Folsom 1					Berkeley 4	
						Franklin 1					Berlin 4	
						Ocean 1					Dennis 4	
						Shamong 1					Upper 4	
						Upper 1					Weymouth 4	
						Weymouth 1					Buena 3	
											Lakehurst 3	
											Plumsted 3	
											L. Egg Harbor 2	
											Port Republic 1	
											Stafford 1	
											Vineland 1	
											Wrightstown 1	
TOTAL	20	28	70	80	74	40	***	38	84	84	13	822

Table 5.4
Municipalities With No Reported Violations
By Type of Violation
For 1986 - 6/91 Period

Forestry	Resource Extraction	Wetland Clearing	Wetland Filling	Vegetation Clearing	Land Filling	Construction w/o Permit	Change of Use w/o Permit	Illegal Use	Violation of Condition	Unauthorized Land Disturbance	No Reported Violations
Barnegat Bass River Berkley Berlin Buena Boro Buena Vista Cheilhurst Dennis Egg Harbor Estel Manor Evesham Franklin Galloway Hammoncton Jackson Lacey Lackhurst L. Egg Harbor Manchester Maurice River Medford Mullica Ocean Port Republic Shamong Southampton Stafford Tabernacle Vinland Waterford Weymouth Winslow Wrightstown	Bass River Berkley Berlin Buena Boro Buena Vista Cheilhurst Dennis Egg Harbor Estel Manor Evesham Franklin Hammoncton Jackson Lackhurst Medford Ocean Port Republic Shamong Southampton Stafford Tabernacle Vinland Waterford Weymouth Wrightstown	Bass River Berlin Buena Boro Cheilhurst Dennis Egg Harbor Estel Manor Lackhurst L. Egg Harbor Manchester Phumsted Port Republic Weymouth Wrightstown	Barnegat Bass River Berkley Berlin Buena Boro Cheilhurst Dennis Egg Harbor Estel Manor Folsom Franklin Galloway Jackson Lacey Lackhurst L. Egg Harbor Manchester Maurice River Ocean Phumsted Port Republic Shamong Stafford Upper Vinland Washington Weymouth Wrightstown	Berkley Berlin Cheilhurst Dennis L. Egg Harbor Maurice River Phumsted Port Republic Stafford Upper Vinland Weymouth Wrightstown	Berkley Berlin Buena Boro Cheilhurst Dennis Estel Manor Evesham Folsom Galloway Jackson Lackhurst L. Egg Harbor Maurice River Ocean Phumsted Port Republic Stafford Upper Vinland Washington Weymouth Wrightstown	Lacey Lackhurst L. Egg Harbor Port Republic Stafford Vinland Wrightstown	Barnegat Bass River Berkley Berlin Buena Boro Cheilhurst Dennis Egg Harbor Estel Manor Folsom Franklin Galloway Jackson L. Egg Harbor Manchester Maurice River Ocean Phumsted Port Republic Shamong Stafford Upper Vinland Washington Weymouth Wrightstown	Bass River Berkley Berlin Buena Boro Cheilhurst Dennis Egg Harbor Estel Manor Lackhurst L. Egg Harbor Manchester Maurice River Ocean Phumsted Port Republic Shamong Stafford Upper Vinland Washington Weymouth Wrightstown	Barnegat Berlin Buena Boro Cheilhurst Folsom Lackhurst L. Egg Harbor Manchester Ocean Phumsted Port Republic Shamong Stafford Upper Vinland Washington Wrightstown	Barnegat Bass River Berkley Buena Boro Buena Vista Cheilhurst Dennis Estel Manor Evesham Franklin Galloway Hammoncton Jackson Lackhurst L. Egg Harbor Manchester Medford Mullica Ocean Pemberton Phumsted Port Republic Shamong Stafford Tabernacle Upper Vinland Washington Weymouth Winslow Woodland	Beachwood Berlin Boro Cortlin City Dover Egglewood Egg Harbor City Cheilhurst Medford Lakes New Hanover North Hanover Springfield S. Tom's River Woodbine

In order to evaluate trends in local enforcement actions, a sample of 105 Pinelands violations which have been resolved since 1986 was analyzed. The percentage of locally resolved violations steadily increased each year, from a low of 15% in 1987 to a high of 38% in 1990. This suggests that local governments are taking a more active role in Pinelands enforcement matters.

in order to evaluate the
role of the Pinebluffs
in the community. The
results of the study
will be presented at the
annual meeting of the
New Jersey State Library
Association in 1971.

CHAPTER VI

SCIENCE

Although limited by its budget, the Commission has successfully undertaken a number of technical and scientific studies since 1983. These studies cover several broad areas of Pinelands research and management including wastewater disposal technology, wetlands ecology, fire ecology, forestry, surface water quality, hydrology, storm water management, and water supply. The results of completed studies and the status of ongoing projects are summarized below. Footnotes refer to the full citations for the completed studies which are presented at the end of the chapter.

WATER RESOURCES

Completed Studies

Ecological Implications of Exporting Cohansey Water¹

In 1984, the Commission convened a meeting of scientists with Pinelands research experience to discuss issues associated with exporting water derived from the Cohansey aquifer in order to meet the water supply needs of the metropolitan Camden area. The technical advisory committee identified several issues concerning regional and local changes in water quality, water table level, and salinity changes and associated ecological effects. A majority of the committee concluded that the cumulative ecological and cultural impacts associated with water exportation can be significant and that pumping the Cohansey to meet metropolitan Camden's water supply needs was not a viable alternative.

Storm Water Management²

An assessment of the storm water runoff contribution made by 24-hour duration storms of varying intensities was completed by the Commission in cooperation with the Atlantic County Department of Regional Planning. Using long-term precipitation data (1945-1986) for Atlantic County and the Soil Conservation Service runoff curve number method for estimating storm runoff (TR-55), the cumulative volume of storm water runoff resulting from past storm events was estimated for no development, low density development, and high density development scenarios. The simulation indicated that storm water basins designed to accommodate a 10-year/24 hour storm would have retained post-development runoff for the 41 year period.

Hydrologic Budgets^{3,4}

The Commission completed two separate studies of the hydrologic effects of ground water pumping and interbasin transport of sewage on Pinelands stream basins. The first study assessed sewer service alternatives for the Mullica River basin in lower Camden County.³ The second one assessed water supply alterna-

tives for the sewered area of Hamilton Township (Atlantic County).⁴ In both studies, current and future water supply and recharge patterns within the basin were estimated, wastewater discharge and water supply scenarios were developed, basin-wide water quality inventories were completed, stream flows were estimated, and the potential environmental impacts associated with altered stream flows were determined. The potential environmental impact of increased nutrient loading associated with wastewater disposal was also estimated in the Mullica River basin study.

Recommendations on preferred water supply and wastewater disposal alternatives, including growth management, were presented. The Mullica River study concluded that a strategy relying solely on interbasin transfer of sewage flows from the Mullica River basin to the Delaware River has the greatest impact on the Pinelands. Although within-basin discharge of treated effluent increases nutrient loads in Pinelands receiving basins, this impact can be directed towards streams which have less relative resource value compared to others in the Mullica River. As a result of this study, the Commission adopted a comprehensive set of policies reducing future development capacities in lower Camden County and governing future wastewater and water supply service in the region. The Hamilton Township study concluded that water supply for sewered areas cannot be supplied with water derived from Kirkwood-Cohansey wells located within the study basins without significantly depleting stream flows. It included a recommendation to investigate alternative water supply sources, such as the use of deeper, confined aquifers, well fields in hydraulic connection with the mainstem of the Great Egg Harbor River, and surface flows from the Great Egg Harbor River.

Nitrogen Removal Efficiency of RUCK Septic Systems⁵

The RUCK system was developed to reduce the amount of nitrogen in household wastewater through the use of sand filters and specially designed underground tanks. Nitrogen-laden wastewater from toilets is initially kept separate from bath and sink water and passed through a sand filter. It then enters a pump tank and a rock filled tank where it is mixed with the washwater under anaerobic (oxygen free) conditions. The carbon in the washwater aids in the removal of nitrogen and the combined wastewater is then pumped into a disposal field.

The Commission monitored the nitrogen removal efficiency and performance of 15 residential and three commercial RUCK septic systems. The five year study confirmed that residential RUCK systems provide a degree of nitrogen removal from household wastewater. The average total nitrogen in the RUCK systems studied was 19.9 mg/l compared to a total of 39.5 mg/l assumed for standard septic tanks. Mechanical and installation problems were identified as major concerns. Performance of commercial systems was variable.

Pinelands Surface Water Quality Monitoring^{6,7}

In 1987, the Pinelands Commission and the Burlington County, Cape May County, and Ocean County health departments initiated a cooperative, regional Pinelands surface water quality monitoring program. Two reports, covering the periods 1983-1989⁶ and 1988-1990,⁷ have been published. The first report includes water quality data and statistics and a summary of conditions for 214 stream stations. The second report presents data and summary statistics for 133 stream stations. In 1990, the Atlantic County Utilities Authority began participating in the program.

Studies in Progress

Mullica River Basin (Lower Camden County) Hydrologic Monitoring

As an outgrowth of the Mullica River basin study and its comprehensive sewer and water supply policies, the Commission approved the Camden County Municipal Utilities Authority's plans in July 1988 to sewer areas in lower Camden County. As part of its approval, the Commission required the establishment of a long-term hydrologic monitoring program for the Upper Mullica River basin. With funding from the Camden County Municipal Utilities Authority, the Commission and the United States Geological Survey have initiated a cooperative surface water quality and stream flow monitoring program. Beginning in the spring of 1991, the United States Geological Survey began making monthly measurements of stream discharge at twelve gaging stations located throughout the Atsion River (Upper Mullica River), Sleeper Branch, and Nescochague Creek drainage systems. Water quality is also monitored quarterly at eight of these stations. This monitoring schedule will continue for a two year period. Up to three more full years of monitoring will be conducted while sewage flows from the basin reach predetermined flow levels.

Great Egg Harbor Basin (Monroe Township) Hydrologic Monitoring

As a condition of the Commission's approval of the Monroe Township Municipal Utilities Authority's plans to expand its water and sewer service area within the township's Regional Growth Area, the Commission required that the Monroe Township Municipal Utilities Authority implement a long-term hydrologic monitoring program to assess the impact that sewerage will have on local stream flows. The Monroe Township Municipal Utilities Authority authorized and funded a Commission-designed monitoring program which the United States Geological Survey is currently implementing. During the first two years of the study, which was initiated in March 1990, monthly stream flow measurements will be made at ten stations to establish a baseline data set. Two additional one-year sampling periods will be initiated when wastewater exports reach 1.6 to 1.8 million gallons per day and 2.4 to 2.7 million gallons per day.

A Comparison of the Nitrogen Removal Efficiency of Standard and Pressure Dosing Septic Systems

In 1989 the Commission began a study comparing the ability of pressure dosing and standard septic systems to remove nitrogen from residential wastewater. Unlike standard septic systems which rely on gravity to distribute septic tank effluent to the disposal field, pressure dosing systems periodically pump the wastewater to the field under pressure. Pressurized dosing is done to evenly distribute septic tank wastewater throughout the disposal bed and to rest the bed between doses. Nitrogen removal through denitrification is a benefit which has been attributed to this process.

The Division of Pinelands Research (Rutgers University) is participating in this study. Fifteen pressure dosing and ten standard systems will each be monitored for a period of three years. Monitoring equipment has been installed in most of the sites chosen for study, and wastewater sampling has begun. Wastewater samples, which will be analyzed for several parameters including nitrogen, phosphorus, alkalinity, and total organic carbon, are being collected from septic tanks (and dosing tanks) and from three levels within the disposal area. Some delays were initially encountered by the Division of Pinelands Research in staffing the project and establishing the laboratory procedures. The study is now scheduled to be completed by 1995.

Pinelands Water Quality Monitoring Program

As part of its ongoing surface water quality monitoring program, the Commission will continue to publish annual data reports. Commission staff is currently sampling 80 stream stations in Atlantic, Burlington and Ocean Counties. Laboratory analyses are being completed by the Burlington and Ocean County health departments and the Atlantic County Utilities Authority. As part of the Pinelands program, the Cape May County Health Department is collecting and analyzing surface water samples for 21 stream stations.

WETLANDS

Completed Studies

Pinelands Wetland Buffer Model⁸

The Division of Pinelands Research, in cooperation with the Commission, developed a model for delineating the minimum site-specific width of upland development buffer areas needed to maintain and preserve the ecological integrity of wetlands. The model, which is based on an evaluation of wetland quality and an assessment of potential development impacts, is presented in a report which also describes Pinelands wetlands, reviews their values and functions, and describes development-related impacts.

In 1985 the Commission adopted the use of the model as a guideline for applying Pinelands wetland buffer regulations to development proposals.

Wetland Boundary Delineation⁹

This field study, which was a cooperative Pinelands Commission and Division of Pinelands Research investigation, characterized the vegetation, soils, and hydrology along upland to wetland pitch pine dominated transition areas. It was concluded that vegetation composition can be a principal factor in delineating wetland boundaries in the Pinelands. The transition from upland to wetland vegetation coincided with a seasonal high water table of approximately 18 inches (45 cm).

Atlantic White Cedar Management¹⁰

This report describes the extent and distribution of white cedar swamps in the Pinelands, presents an inventory of representative cedar harvests on state (1974-1984) and private (1980-1984) lands, and discusses recommended cedar harvesting methods. In 1984, nearly one-half of all Pinelands cedar swamps were found on state lands. Factors to be considered when determining the size of a cedar harvest, the harvesting methods to be used, and subsequent management practices were discussed. These include swamp size, shape, and orientation, stand age, condition and composition, wetland hydrology, adjacent forest type, and the effect of deer browsing. Effective timber management techniques such as clearcutting, slash control, and hardwood control were also presented. It was recommended that cedar harvesting on state lands be conducted only if it is necessary to maintain existing stands and if post-harvest management plans are implemented as needed.

Factors Shaping Pitch Pine Lowland Vegetational Gradients¹¹

This field investigation related water-table level, soil moisture, soil texture, soil nutrients and disturbance to forest composition along pitch pine dominated lowland community gradients. Community composition of upland, transitional and swamp stands was highly correlated with soil moisture, mean water-table level and soil bulk density. Forest stands found on sites with a higher proportion of very fine sand and silt and clay appeared more mesic (moderate moisture) than suggested by water-table level, while the vegetation of recently prescribe-burned stands and stands severely disturbed by past fires appeared more xeric (dry).

Pinelands Wetlands Identification Manual¹²

This manual describes the approach used by the Commission to identify and delineate freshwater wetlands. It serves as a Commission supplement to the 1989 federal manual for identifying and

delineating jurisdictional wetlands and adapts the federal method to the specific characteristics of Pinelands wetlands. The manual describes modified hydrophytic vegetation, hydric soil, and wetland hydrology criteria reflecting conditions found in the region. It also includes detailed information on vegetation, soils and hydrology.

Studies in Progress

Pitch Pine Lowland Water-Table Monitoring Program

The Commission maintains a shallow ground water level monitoring network in Lebanon and Wharton State Forests. Growing season (March-October) water levels are measured monthly at 29 sites ranging from uplands to swamps. The 1991 growing season represents the fifth year of the monitoring program.

OTHER STUDIES

Completed Studies

Fire History of the Pine Plains¹³

A 30-year fire history (1953-1982) of the Pine Plains (Pygmy Forest) and surrounding areas was reconstructed using N.J. Forest Service fire records. Within a 60,000 acre study area, 19 major (greater than 100 acres) fires burned a total of 56,111 acres during the 30-year period. All fires were associated with human activities including arson, debris burning, cigarette smoking, and military operations. The random point fire frequency (total land area/area burned per year) was 28 years for the Pine Plains and 34 years for the surrounding non-Plains area. The reconstructed fire history suggested that the fire frequencies of the Plains and adjacent non-Plains areas have decreased since the earlier part of this century. The results of this study can be applied to Pine Plains fire management programs.

Industrial Parks Resource Assessments¹⁴

In 1986, the Commission received a technical assistance study grant from the U.S. Economic Development Administration to conduct natural and cultural resources analyses of selected industrial parks in the Pinelands. The objective of the study was to identify environmental factors that may affect the development potential of industrial parks in Hamilton Township, Egg Harbor Township, Stafford Township, Woodbine Borough, and Chesilhurst Borough to facilitate Commission review of proposed projects in the parks.

Studies in Progress

Selection of Study Basins for Long-Term Environmental Monitoring

The Commission has initiated plans to conduct a long-term environmental monitoring program to assess if the Comprehensive Management Plan is successfully protecting the natural and cultural resources of the Pinelands. As a first step in designing a monitoring program, Commission staff began an analysis of all stream basins within the Pinelands to determine which best represent pre- and post-CMP conditions. A report presenting the results of the analysis is nearing completion.

COUNCIL ON PINELANDS RESEARCH AND MANAGEMENT

Long Term Research Plan

Recognizing that the Pinelands Commission itself has limited resources to devote to the multitude of important research issues and that a number of other institutions share the Commission's interest in Pinelands research topics, a Council on Pinelands Research and Management was formed in 1984. The council is composed of representatives of the Governor, the Commissioner of the New Jersey Department of Environmental Protection and Energy, the President of Rutgers University, the President of Stockton State College, the U.S. Department of the Interior and the Commission, as well as a non-governmental representative who is knowledgeable of the Pinelands and associated research issues.

As a means to better coordinate research activities and to help focus research and management issues, the council has prepared a long-term research plan for the Pinelands. Twenty-one important, long-term research questions are presented under three general, natural resource strategies. These are more particularly described in Table 6.1

Priority Research Topics

The council also periodically identifies research topics which it believes warrant priority consideration. These current topics are: (1) an assessment of the effectiveness of buffer areas in protecting wetlands; (2) the establishment of a regional surface water quality monitoring program; (3) the effect of ground water withdrawals on Pinelands hydrology and the impact of altered hydrologic regimes on wetlands; and (4) a comprehensive inventory of Atlantic white cedar swamps and implementation of regeneration strategies. A brief discussion of current efforts follows.

Wetland Buffers

The Division of Pinelands Research, in cooperation with the Commission, has established a long-term study to assess the effectiveness of upland buffer zones. Funding was received from a

private foundation for the initial selection and monitoring of buffer sites; however, there is a need to secure additional funding to support longer-term monitoring over an eight to ten year period.

Water Quality Monitoring

As reported earlier, the Commission has established a cooperative surface water quality monitoring program. Final design of a long-term environmental monitoring program for the Pinelands should help to determine what, if any, additional funding might be needed to sustain the water quality monitoring component.

Effects of Altering Pinelands Hydrology

A research consortium which includes the United States Geological Survey, the New Jersey Department of Environmental Protection and Energy, Rutgers University and the Commission has been formed to undertake a comprehensive, five year study of Pinelands hydrology if funding is secured. The study is estimated to cost \$6.1 million, but a reliable funding source has not been found. The proposed Pinelands Water Resources Protection Bond Issue would provide a significant amount of the needed financial support but, as reported in Chapter X, that bond proposal has yet to be enacted.

Atlantic White Cedar Management

In addition to the Commission study described earlier, the Department of Environmental Protection and Energy, Bureau of Forest Management, has mapped and classified Atlantic white cedar stands. However, more detailed inventory information is still needed.

Two other studies are complete or underway, but more support, possibly through the U.S. Department of the Interior and the U.S. Forest Service, has been recommended so that this topic can be more fully researched.

Table 6.1
Long Term Research Recommendations(a)
Council on Pinelands Research and Management

Resource Strategy: Preservation and Enhancement of Water Resources

Research questions:

What are the relationships between various categories of land use and water quality?

How effective are current technologies in attenuating degradation of ground and surface waters?

What factors influence the direction and rate of movement of a contaminated groundwater plume within the Cohansey aquifer and how can quantitative estimates of groundwater flux be made for this aquifer?

What are the biological and geochemical processes that regulate groundwater and surface water chemistry?

Within the context of normal environmental fluxes, what is the local and regional magnitude of groundwater level and stream flow changes associated with existing and proposed ground water withdrawals?

What changes in the Pinelands ecosystem will result from potential local and regional changes in groundwater level and stream flow, and what can be considered to be ecologically safe water yields?

Resource Strategy: Maintenance of Characteristic Landscapes

Research Questions:

What are the characteristic elements of the Pinelands landscape and ecological mosaic, how are these elements spatially distributed, and how do they change over time?

What ecological criteria can be used to determine the size and sequence of woodland harvests?

Can superior native seedlings for reforestation be developed for use under special conditions?

What forestry management practices can be employed to preserve and maintain characteristic landscape elements, especially Atlantic white cedar swamps?

Table 6.1 (continued)

What are the characteristics of the historical and current fire regimes and what are the long-term and short-term ecological effects of these regimes?

What alternative fire management strategies can be employed to preserve and maintain the Pinelands landscape?

What are acceptable ecological limits of fragmentation created by destructive land uses such as residential development and mining?

What ecologically acceptable materials and methods can be used to reclaim sand and gravel mines?

How do recreational uses such as canoeing and motor vehicle use affect the quality of Pinelands resources?

Resource Strategy: Protection and Enhancement of Plant and Animal Populations and Communities

Research Questions:

What is the relationship between water quality and the structure and function of Pinelands aquatic communities?

What effects do development related impacts such as elevated pH, increased nutrients, and altered groundwater flow have on the structure and function of Pinelands wetlands, and how effective are buffers in mitigating development-related impacts to Pinelands wetlands?

What factors affect the population status of recreationally important wildlife species and selected key indicator species?

What are the specific habitat requirements of selected key indicator animal species, and what is the minimum size of natural reserves required to support viable populations of selected key indicator species?

What types of landscape compatible management practices can be employed to enhance native wildlife species?

What are the detailed life histories of selected rare plants and what management practices can be employed to enhance their populations?

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- (a) Excerpted from A Long Term Research and Management Plan for the New Jersey Pinelands, Council on Pinelands Research and Management, 1986.

CITATIONS FOR COMPLETED STUDIES

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- 13 Buchholz, K. and R.A. Zampella. 1987. "A 30-year Fire History of the New Jersey Pine Plains." Bulletin of the New Jersey Academy of Science 32:61-69.
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CHAPTER VII

INTERGOVERNMENTAL COORDINATION

State, federal and local agencies play an important, on-going role in the management of the Pinelands. Other chapters in this report describe, for example, the role of municipalities in land use planning, coordinated land acquisition initiatives with the Department of Environmental Protection and Energy (DEPE), cooperative enforcement efforts with state and local agencies, cultural resource management activities with DEPE and the National Park Service, and the Pinelands infrastructure trust program which involves extensive coordination with DEPE and municipal and county governments. The purpose of this chapter is to describe other cooperative efforts with government agencies and how they relate to the protection of the Pinelands.

STATE COORDINATION

Coastal Zone

The coastal zone portion of the Pinelands National Reserve (PNR) falls under the regulatory jurisdiction of the Land Use Regulation Element (formerly the Division of Coastal Resources) of DEPE which administers the Coastal Facilities Review Act (CAFRA) and other wetlands and coastal permitting programs. In an effort to address consistency between the Comprehensive Management Plan (CMP) and the Coastal Zone Management Program, as well as to develop a system for coordinating permitting procedures for the portion of the PNR under the jurisdiction of the Division, the Commission and DEPE entered into a Memorandum of Agreement in 1988. As an outgrowth of this agreement, the Commission and DEPE consult with each other when either proposes to amend its regulations or policies. If conflicts arise, the two agencies have agreed to work together to resolve inconsistencies.

The Memorandum of Agreement also provides that the following DEPE permit applications be transmitted to the Commission for review: CAFRA permit applications for development in the PNR; Wetlands and Waterfront Development permit applications for major development in the PNR and for all development applications in the Pinelands Area; and Certifications pursuant to Section 307 of the Coastal Zone Management Act of 1972. The Commission receives up to five CAFRA permit applications per month and issues comments on these applications for the Division's consideration in its decision-making process.

State Development and Redevelopment Plan

The State Development and Redevelopment Plan was begun in 1986 in order to provide for a coordinated statewide approach to land use management.

Although the interim state plan generally relies on the CMP to guide and manage land use within the Pinelands, efforts to better coordinate state planning, coastal area and Pinelands policies within the coastal portion of the PNR have begun. Meetings with representatives of the Department of Treasury, Office of State Planning, coastal counties and municipalities have served to highlight areas in which land use policies appear to be consistent and those which may require more in-depth analysis.

In the coming months as the state plan's "issues resolution phase" progresses, Commission staff will continue to work with all parties to ensure that a comprehensive approach to land use in the PNR is established. It is premature at this time to predict the outcome of these efforts, but they have already served to establish a cooperative framework within which consistent state and local policies can be implemented.

Council on Affordable Housing

The New Jersey Council on Affordable Housing (COAH) was established in 1985 by the Fair Housing Act. COAH has since developed regulations to ensure that housing is made available to those of low and moderate income. The Commission participated in this process and began to consider a complementary set of affordable housing requirements to include in the CMP. However, the Pinelands Protection Act was amended in 1987 which effectively permits COAH to exercise authority over affordable housing issues in the Pinelands to the same degree it does in the balance of the state.

In order to recognize the authority of both the Commission and COAH, promote consistency between the two agencies' regulations and provide clear direction to Pinelands municipalities with regard to affordable housing obligations, the Commission entered into a Memorandum of Agreement with COAH in 1990. By coordinating master plan and housing plan certification responsibilities of the two agencies, this memorandum provides Pinelands municipalities with the opportunity to plan for affordable housing while still meeting the density and environmental standards of the CMP. It is noteworthy that COAH requirements relative to "prospective need" for affordable housing apply only to Pinelands Regional Growth Areas and Pinelands Towns, as was envisioned by

the Commission when drafting its program. This ensures that higher density residential developments are located in those areas most capable of accommodating the development without compromising Pinelands protection goals.

Wastewater and Water Quality Management Plans

Commission staff review proposals for amendments to and adoptions of Wastewater Management Plans, Water Quality Management Plans and Solid Waste Management Plans, which are provided to the Commission by DEPE. The Commission staff comments on the consistency of these plans with regard to applicable requirements of the CMP. DEPE then incorporates these comments into its recommendations regarding the approval, conditional approval, or denial of the plans.

The Commission also works directly with local agencies responsible for solid waste and wastewater planning to promote the development of consistent policies early in the planning process.

New Jersey Pollutant Discharge Elimination System (NJPDES) Permits

The New Jersey Pollutant Discharge Elimination System (NJPDES) is a DEPE permitting program which regulates facilities' discharge of pollutants to surface and groundwater. Upon receipt of draft permits from DEPE, the permit is reviewed by Commission staff for consistency with the standards of the CMP. These determinations are then forwarded to DEPE. Should the Commission's review reveal that the permit is inconsistent with Pinelands requirements, it is recommended that the permit be denied or conditionally approved in accordance with the Pinelands Protection Act.

State Ground and Surface Water Standards

New Jersey's Surface Water Quality Standards (N.J.A.C. 7:9-4.1 et seq) have not changed significantly since 1983 in relation to the requirements of the CMP. Surface waters within the Pinelands Area are classified as "PL" waters. These standards, which are consistent with the requirements of the CMP, require that surface waters classified as PL "shall be maintained as to quality in their existing state or that quality necessary to attain or protect the designated uses."

State Ground Water Quality Standards (N.J.A.C. 7:9-6.1 et seq) have also not been significantly changed as they relate to the requirements of the CMP. The current regulations contain a classification of "GW-1" for an area identified as the "Central Pine

Barrens Area." The water quality criteria for GW-1 require that the groundwater "shall be suitable for potable water supply, agricultural water supply [and] continual replenishment of surface waters to maintain the existing quantity and high quality of the surface waters of the Central Pine Barrens." The limits for certain constituents are specifically listed, and criteria for other constituents are considered to be naturally occurring background levels. The GW-1 criteria are generally consistent with the standards of the CMP.

The description of the "Central Pine Barrens Area" contained in the state water quality regulations does not include the entire Pinelands Area. Portions of the watersheds of the Great Egg Harbor, Mullica and Rancocas Rivers that are within the Pinelands Area are omitted from the description of the "Central Pine Barrens Area." In light of this fact, Commission staff have been working with DEPE to ensure that all permits and approvals issued by DEPE for sites within the Pinelands Area are consistent with the water quality standards of the CMP.

It should be noted that DEPE is in the process of developing proposed amendments to the state Water Quality Standards that would include modifications to the groundwater classification. These amendments would further clarify state groundwater standards in relation to the water quality standards contained in the CMP.

Water Supply Planning

DEPE has undertaken special water supply studies focusing on the metropolitan Camden area, Atlantic and Cape May counties. Because water supply planning in these areas may have a profound effect on the Pinelands, Commission staff have been afforded an opportunity to participate in each of the studies.

The completed Camden area study recommended that the use of the Potomac-Raritan-Magothy aquifer be reduced. Alternative water supply sources other than the Kirkwood-Cohansey aquifer have been identified and should result in minimal, if any, effects on the Pinelands.

The Atlantic and Cape May studies are still in progress. However, it appears that the formulation of water supply strategies which avoid the use of the Kirkwood-Cohansey aquifer may be more difficult to develop than was the case in the metropolitan Camden area.

Hazardous Waste Remediation

The U.S. Environmental Protection Agency (EPA) has established regulations for the clean up and remediation of hazardous wastes in order to implement a series of federal environmental policy acts. Remediation activities, which are considered development according to the CMP, are also regulated by DEPE.

The Commission has drafted a memorandum of agreement with DEPE to ensure that hazardous waste clean ups are done in accordance with both DEPE and CMP standards. The Memorandum of Agreement identifies procedures for handling a variety of hazardous waste permitting issues, such as site testing, monitoring, maintenance, remediation, emergency response, etc. Due to the Commission's responsibility for maintaining the water quality of the Kirkwood-Cohansey aquifer, special emphasis is placed on compliance with the wetlands and water quality standards in the CMP.

This agreement is still under review by DEPE and has yet to be executed. As is discussed in the federal programs section of this chapter, an outstanding issue exists as to the water quality standards which DEPE and the Commission can require when the Environmental Protection Agency assumes lead responsibility for clean ups.

Use of Composted Sludge

Composted sludge is often used as a soil conditioner and fertilizer but concerns about its inappropriate use at a site within Ocean County prompted the Commission to seek an agreement with DEPE regarding its application in the Pinelands. Upon the recommendation of its Public Participation Committee, the Commission endorsed a proposed agreement in 1991 to more clearly define the conditions under which the use of composted sludge in Pinelands would be appropriate. The agreement proposes, among other things, to prohibit the application of sludge-derived products in the Preservation Area District and the Special Agricultural Production Area, generally limit application rates in other areas to one-half inch, establish procedures for revising land application proposals, and initiate an ecological monitoring program at several sites.

The Department has yet to execute the agreement and the Commission's Public Participation Committee is continuing to explore ways to improve the proposed policies. A September, 1991

meeting, at which experts from government, industry and academia discussed environmental issues with the Committee, may provide an impetus to reach a final agreement with the Department.

Joint Enforcement Efforts

Many of the Commission's enforcement efforts also involve violations of DEPE environmental regulations. As more fully discussed in Chapter V, the Commission and various DEPE agencies have sought to coordinate enforcement actions for quite some time. The recent establishment of a central Office of Enforcement Policy within DEPE may afford a greater opportunity to coordinate these activities in the future.

Division of Parks and Forestry

In 1987, the Commission entered into a Memorandum of Agreement with DEPE, Division of Parks and Forestry, in recognition of the agencies' common interests and review responsibilities associated with forest resources within the Pinelands Area. The Memorandum of Agreement establishes inter-agency agreements regarding forestry activities on state owned lands.

Later that year, because of public concerns about state forestry practices, the Commission established a Forest Advisory Committee to assist it in reviewing harvesting and forestry management plans of state agencies and to provide advice on other forestry-related matters. In addition to reviewing proposed harvesting operations, the Forestry Advisory Committee also participates in the development of management plans for the state forests within the Pinelands Area. Members of the committee have varied backgrounds (e.g., wildlife conservation, botany, and forestry), thereby ensuring a more comprehensive review of proposed forestry activities on state lands. For example, one proposed harvest on state lands was canceled due to the discovery of threatened and endangered species by members of the advisory committee.

Since 1981 the Commission has also encouraged the Division to develop comprehensive plans for the state parks and forests that it manages within the Pinelands. Unfortunately, the Division has not yet presented any plans to the Commission for its formal review and approval.

Division of Fish, Game and Wildlife

DEPE's Division of Fish, Game and Wildlife has prepared a plan for the wildlife management areas under its administration which fall within the Pinelands Area. In 1988, the Commission and the Division entered into a Memorandum of Agreement, which specifies instances under which the submission of development applications to the Commission will be necessary, prescribe standards for capital improvement projects, and identify resource management practices consistent with the objectives of state and federal Pinelands legislation. Activities which continue to require applications are generally those involving major development.

New Jersey Expressway Authority

The New Jersey Expressway Authority owns and operates the Atlantic City Expressway, a major portion of which falls within the Pinelands Area. In 1991, the Commission and the Authority entered into a Memorandum of Agreement which defines those projects that do not require a formal application to and approval by the Commission and establishes a procedure for the Authority to follow when submitting projects to the Commission for review. The agreement also addresses existing facilities at the Farley Service Plaza and the limits of future development at that site.

New Jersey Highway Authority

The New Jersey Highway Authority owns and operates the Garden State Parkway, which traverses both the Preservation and Protection Areas of the Pinelands. In 1987, the Commission entered into a Memorandum of Agreement with the Authority to define those activities which do not require formal application to the Commission. Essentially, the agreement permits the Highway Authority to construct underground linear communication lines in disturbed portions of the Garden State Parkway right-of-way without obtaining prior approval from the Commission. However, the Authority must still submit development applications for any communication lines or accessory facilities proposed to be located within wetlands areas.

Department of Transportation

The Commission's staff periodically participate in transportation studies undertaken by the New Jersey Department of Transportation. Various planning initiatives are in progress for transportation improvements in southern New Jersey (e.g. State Routes 40, 47, 49, 50 and 55) which could have significant environmental and land use implications on the Pinelands.

Efforts have also begun to develop a Memorandum of Understanding with the Department regarding directional and informational signs along state highways. The purpose of such an agreement is to ensure that the Department's and Commission's policies regarding directional, informational and advertising signs are consistent.

Stockton State College

In 1990, the Commission entered into a Memorandum of Agreement with Stockton State College in Galloway Township to implement a new college master plan. The master plan recognizes the need for additional college facilities and proposes their location within already developed and disturbed portions of the college's 1,560 acre property.

More than 1,000 acres will be reserved for conservation and recreational uses according to the terms of the master plan and agreement. Galloway Township participated in this planning process and rezoned the area to recognize the development and conservation areas specified in the college's plan.

Department of Corrections

Efforts have been underway for quite some time to resolve environmental problems associated with the Bayside (Leesburg) State Prison wastewater treatment facility. The problems have been aggravated as of a result of expansion activities at the prison.

A draft Memorandum of Agreement with the Department of Corrections and other parties has been prepared to establish a schedule for satisfactory resolution of these problems. It is still being reviewed by the Departments of Corrections and Treasury to ensure that adequate state funding will be available to implement the agreement.

FEDERAL PROGRAMS

U.S. Department of the Interior

Wild and Scenic Rivers Program

In 1986, Congress authorized that the Great Egg Harbor River be studied for possible inclusion in the National Wild and Scenic Rivers System. The National Park Service then undertook a study to gather information about the Great Egg Harbor River, determine its eligibility and suitability in terms of the national system, and develop a river conservation strategy. Commission staff par-

ticipated on the study task force responsible for preparing the Eligibility Report to be presented to Congress. This report is presently undergoing final review by the National Park Service. Commission staff also commented on the National Park Service's draft Study Report as well as provided technical assistance to the Great Egg Harbor Watershed Association.

In 1990, the Commission entered into a Memorandum of Understanding with DEPE; the National Park Service; the Great Egg Harbor Watershed Association; Atlantic, Cape May, Camden and Gloucester counties; Winslow, Monroe, Buena Vista, Hamilton, Weymouth, Egg Harbor and Upper townships; Folsom Borough; the Town of Hammon-ton; and Estell Manor, Somers Point and Corbin cities. The purpose of the agreement was to coordinate the efforts of all parties involved in the development of local river management plans. The Commission agreed to provide local zoning information as well as advice on the delineation of river conservation districts in order to ensure consistency with the standards of the CMP.

A similar process was followed in the study of the Maurice River and its tributaries. Following Congressional authorization in 1987, the National Park Service convened a study task force. Different parts of the river and its tributaries were found to be eligible for the national system, and a report on management alternatives was prepared.

The Commission recommended that the alternative which recognized the river's eligibility for national designation and involved the development of a local review management plan by the five affected municipalities be pursued. Some of the communities have expressed concern about the river's designation and management program. A final study recommendation has yet to be made by the National Park Service.

Cultural Resource Programs

From 1983 to 1989, the Commission received a series of consecutive annual Historic Preservation Fund grants, totaling \$118,000. These grants were obtained through DEPE's Office of New Jersey Heritage from funds appropriated to the National Park Service under the National Historic Preservation Act of 1966. Overall, these grants made a significant contribution to the Commission's planning efforts concerning the preservation of historic and prehistoric sites in the Pinelands Area. Further information on the Commission's cultural resource initiatives can be found in Chapter IX.

Interpretive Programs

In August, 1990 the Commission entered into a Memorandum of Agreement with the National Park Service and DEPE to coordinate development of an interpretive plan for the Pinelands. The plan will outline methods to increase the general public's understanding of the region's natural and cultural heritage. The Commission is also working with the National Park Service to establish a Coastal Heritage Trail. For further information on these efforts, see Chapter VIII.

Other Federal Agencies

The Superfund Program

The federal Environmental Protection Agency (EPA) establishes the National Priorities List (NPL) which identifies hazardous waste sites that are proposed for remediation under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). These sites are often referred to as "Superfund" sites.

Many of the activities associated with the remediation of the NPL sites constitute development as defined in the CMP. They are not formally approved by the Commission because, pursuant to CERCLA, no federal, state or local permit is required for remedial activities conducted for EPA directed sites. Nevertheless, the Commission's staff reviews remedial plans for these sites and advise EPA whether the proposed remediation programs are consistent with CMP environmental standards. Applications for remediation filed by private parties or DEPE are reviewed pursuant to the regular procedural requirements of the CMP.

Although the Commission and DEPE have determined that statewide and Pinelands non-degradation water quality standards apply to NPL sites, EPA has yet to accept this determination. While efforts are underway to resolve this matter, the Commission has authorized litigation if it can not be satisfactorily resolved.

Warren Grove

In 1985, the National Guard Bureau, the New Jersey Department of Defense, the Commission, the National Park Service and DEPE entered into a Memorandum of Agreement for the purpose of implementing the Warren Grove Weapons Range Cooperative Agreement and Management Plan.

The Memorandum of Agreement, which has recently been extended through October, 1994, provides for the coordination of development activities, reclamation of disturbed areas, maintenance of a scientific use and study area, regulation of vehicular use, and controlled access for low intensity recreational uses. Through this agreement, preservation of the unique East Plains has been encouraged and management of the 8,500 acre weapons range located within the Preservation Area has been enhanced. Additionally, the Memorandum of Agreement served as a vehicle for implementing a Rutgers University research project relating to Pine Plains re-vegetation.

US Army Corps of Engineers

In an attempt to eliminate the duplication of wetlands delineation efforts and ensure adequate protection of Pinelands Area wetlands, a local operating procedure between the Commission and the U.S. Army Corps of Engineers, Philadelphia District, was established in 1990. Pursuant to the agreement, the Commission is now the lead agency in verifying the delineations of waters and wetlands within the boundaries of the Pinelands Area. Delineations made by the Commission are now generally accepted by the Corps as delineations of federally regulated waters and wetlands within the Pinelands Area.

Federal Projects

During the past ten years, several important federal projects have been proposed in the Pinelands. Some of the major projects include: the Ground Wave Emergency Network towers in Little Egg Harbor, the Research Center at the Federal Aviation Administration Technical Center near Pomona, the Fort Dix/McGuire sewerage treatment plant in Plumsted and the Northeast Regional Communications Facility towers at Warren Grove.

Since environmental assessments are prepared by federal agencies before undertaking these types of projects, the Commission has had an opportunity to review these potential impacts. Although most have been found to be consistent with the CMP or have been revised to ensure consistency, the Northeast Regional Communications Facility was found to be inconsistent with Pinelands protection goals and was ultimately prohibited by an act of Congress.

Other federal planning initiatives, such as consideration of commercial aviation use of McGuire Air Force Base facilities, are in progress. As mentioned in Chapter I, these types of planning ef-

ports might be better served if comprehensive planning for the major federal facilities located in the Pinelands is coordinated with the Commission.

CHAPTER VIII

PUBLIC PROGRAMS AND EDUCATION

The Commission's public programs and educational initiatives are a direct outgrowth of its primary goal to protect, preserve and enhance the natural and cultural resources of the Pinelands. An informed, educated and involved citizenry clearly provides the strongest of all foundations upon which the future of the Pinelands can rest.

PUBLIC PARTICIPATION COMMITTEE

The Commission's Public Participation Committee provides overall direction for Pinelands public involvement programs and educational initiatives, as well as intergovernmental coordination efforts described in Chapter VII.

In 1989, for example, the Committee gathered testimony from various organizations on issues of concern to the Pinelands. This set the stage for the upcoming review of the Pinelands Plan and enabled the staff to identify many topics which will be considered as the Commission seeks to identify those on which it will concentrate.

The Committee also took a lead role in organizing a seminar and banquet to commemorate the tenth anniversary of the CMP. Held in February, 1991, the seminar drew more than 200 people and over 400 guests attended the banquet.

More recently, the Committee has focused on the issue of the use of composted sludge in the Pinelands. Its efforts to establish a cooperative policy with the Department of Environmental Protection and Energy are more fully described in Chapter VII.

FOUNDATION SUPPORT

Due to the generous support of two foundations, the Commission was able to launch its education program in 1984. Over the course of three years, the Geraldine R. Dodge and Victoria Foundations contributed more than \$160,000 in support of a multi-faceted education program for the Pinelands. This permitted the Commission not only to engage an education coordinator and organize its activities, but also made possible many of the worthwhile teaching materials -- including the Commission's 17 minute audio-visual program, the curriculum guides, the traveling display and other education aids -- discussed in the following sections.

PINELANDS EDUCATIONAL ADVISORY COUNCIL

The nine-member Pinelands Educational Advisory Council was created by the Commission in 1984. Each council member is an experienced educator and represents a particular facet of educational expertise such as elementary and secondary education, university teaching or administration, curriculum development, environmental science, educational broadcasting, history, or sociology. The ninth member, also a qualified New Jersey educator with extensive knowledge about New Jersey's Pinelands, is appointed by the National Park Service. Members' three year appointments are approved by the Commission chairman based on the recommendation of the Public Participation Committee chairman.

Council members meet quarterly and work directly with the Commission's educational coordinator. Their primary responsibility is to recommend ways to improve, expand, and better coordinate Pinelands educational programs and to assist in implementing these recommendations. Many of the following educational initiatives are a result of the council's efforts.

EDUCATIONAL AND TEACHING MATERIALS

Audio-Visual Programs

Two audio-visual programs have been developed by the Commission since 1984. The first, The New Jersey Pinelands, Our Country's First National Reserve, is a 17-minute program that presents an overview of the ecology and cultural history of this region. Viewers are introduced to Pinelands natural resources, cranberry and blueberry agriculture, rare plants and animals, and man's historic use of the region's raw materials for early industry.

The slide-tape version of this program may be borrowed from county audio-visual aids commissions as well as some county libraries. New Jersey Network has also reproduced this program in videocassette format and made it available through its Project T.A.P.E. service. Since its completion in 1984, the videocassette and the slide-tape have been viewed by students, members of civic and service organizations, and the interested general public throughout New Jersey.

A second program, the 30-minute documentary entitled My Pine Barrens Land, was co-produced by the New Jersey Network and the Commission. It describes this 1.1 million acre region of forests, farms, and scenic towns. In the film, the Pinelands is viewed through the eyes of the people who live and work here. This documentary records the natural beauty of the Pinelands and stresses the importance of its vast water supply.

Nominated for an Emmy Award, My Pine Barrens Land has been aired on educational networks throughout the United States and is available in videocassette format. Program development was underwritten, in part, by a \$24,253 grant received from the Geraldine R. Dodge Foundation in 1987.

Curriculum Guides

The Pinelands Curriculum Guides, one for grades four through six and the other for grades seven and eight, have been created to accompany and to serve as an extension of the 17-minute Pinelands audio-visual program, The New Jersey Pinelands, Our Country's First National Reserve. The effectiveness of this program can be enhanced when used with some or all of the activities in the curriculum guides.

Both guides contain six Pinelands topic units: Animals, Fire, People, Plants, Soil and Water. Each topic unit includes activities which develop ideas introduced in the audio-visual program in greater depth. They provide a broader scope of study about New Jersey's Pinelands and a more detailed and thorough understanding of the region for students.

To date, there have been four printings of the curriculum guide for grades four through six. Approximately 580 guides have been distributed to teachers since the package was first made available in November, 1986. There has been one printing of the curriculum guide for grades seven and eight. Approximately 130 of these guides have been distributed to teachers since the package was first made available in October, 1989.

Although most of those receiving the guides have been New Jersey teachers in grades four through eight, some have been purchased by college educators, environmental centers and organizations, and engineers.

The Commission's staff annually participates in a minimum of six teachers conferences, conventions, and in-service days that introduce educators to Pinelands curriculum guides and related teaching aids. These include the New Jersey Science Convention, the Environmental Education Conference, the Council for Elementary Science International-NJ Conference, the New Jersey Association for Supervision and Curriculum Development, New Jersey Council for the Social Studies, and in-service days for school districts such as Cherry Hill, Stafford Township, Pemberton Township, and the Gateway Group.

Pinelands Poster

A \$5,000 grant from Star Enterprise, the marketing branch of Texaco, coupled with a \$3,500 Victoria Foundation grant, has made it possible for the Commission to have a double-sided environmental/education poster designed and printed in early 1991. Approximately 7,000 of the 15,000 posters have already been distributed to educators, legislators, and interested members of the general public.

Pinelands artist Glenn Malsbury captures the essence of springtime in New Jersey's Pinelands in this graphite and water-color painting of a Pleasant Mills bog scene. Facts about Native Americans, the Cohansey aquifer, cranberry growing, Pinelands history and culture, and plant and animal life are included on the poster's reverse side. The poster complements information presented in both of the curriculum guides.

Pinelands Display

The Commission's seven-foot by ten-foot free standing display has been in circulation since 1985. Entitled "New Jersey's Pinelands, A Land of Subtle Beauty," this display depicts many aspects of life in the region. Twelve pictures, two maps, and accompanying text are mounted on silver-gray panels. Color images include scenes such as a Pleasant Mills bog, the Batsto iron master's mansion, cranberry harvest, hand decoration of Lenox china, and shellfishing near the Maurice River. The maps show the region's location in relation to the mid-Atlantic seacoast and major land use designations.

During the past six years, the display has been placed in a variety of locations including the New Jersey State Library, Somerset County Park Commission's Environmental Center, the Ocean County Library, Batsto Visitors Center, the Forsythe Wildlife Refuge Visitors Center, Cherry Hill Free Public Library, the Hackensack Meadowlands Environmental Center and AT&T Bell Labs in Holmdel.

Pinelands Educational Materials Register (PEMR)

The PEMR, an extensive computer database that includes information about Pinelands texts, audio-visual aids, speakers, curriculum guides and recreational opportunities, is the product of a long-term cooperative effort between the Pinelands Commission, the National Park Service and the New Jersey Network (NJN). Today it resides as a searchable database on New Jersey Link, an online computer system and statewide clearing house for educational resources operated by NJN public television and the state Department of Education. An annual Link subscription provides

educators with personal logins, print materials, user manuals, and toll-free access to the service, 24 hours a day, 7 days a week.

Pinelands Information Packet

Since its introduction in June 1985, approximately 1,000 information packets have been distributed to the public. Designed for educators and serious students of the region, each packet contains Pinelands related articles, maps, and information sheets. Of special interest are copies of articles reprinted from Frontiers magazine, a publication of the Academy of Natural Sciences of Philadelphia, that address Pinelands issues such as surface water quality, vegetation, vertebrates, and fire ecology.

Pinelands Guide: Recreational Opportunities, Historic Sites, Nature Centers, & Field Trips

This guide has been written in response to the often asked question, "Where can I go to see New Jersey's Pinelands?" Ready for October, 1991 distribution, 16 entries describe locations where the Pinelands visitor may explore a historic site, visit a nature center, or hike a woodlands trail. Not every site listed is located in the "heart" of the Pinelands, but every entry will introduce people to Pinelands-related experiences. Included in addition to location descriptions are addresses and phone numbers, a map of the region, a suggested reading list, and a matrix showing visitor facilities at a glance.

EDUCATIONAL EVENTS FOR STUDENTS, TEACHERS, AND THE GENERAL PUBLIC

Pinelands Short Course

On March 10, 1990, the Office of Professional Education of Cook College at Rutgers University joined the Commission to co-sponsor the first annual Pinelands Short Course at the Cook/Douglass Campus in New Brunswick. The overall objective of the course was to familiarize teachers with curriculum guide use, a variety of Pinelands resources, and the natural and cultural components of this region. Hour-long workshops were related to the curriculum guides' six topic units: animals, fire, people, plants, soil, and water. Instructors included college professors, a public school curriculum coordinator, a cranberry farmer, a folklife specialist, and a biologist with the Avian Rehabilitation Center. Four hundred eighty registrants exceeded all attendance estimates and made it unnecessary to use a \$3,500 Victoria Foundation grant to underwrite the course.

Based on this initial success, a similar course was held in 1991 and one is planned for 1992. Each year the course has received New Jersey Education Association (NJEA) endorsement, and those educators who have participated have been given NJEA Professional Development Certificates.

Tours for Teachers

Each May members of New Jersey's Energy Education Council sponsor a series of free energy-related tours for interested sixth through twelfth grade teachers. Council members represent a variety of energy providers such as Atlantic Electric, Jersey Central Power and Light Company, GPU Nuclear Corporation, and Public Service Electric and Gas Company as well as the Department of Environmental Protection and Energy, Youth Environmental Society, and the Pinelands Commission.

The Commission organized two tours in 1991: "Schooners on the Delaware Bay--Historic Use of Wind and Water Power," and "Historic Uses of Energy at Batsto Village." Plans for the May, 1992 tours are underway.

Essay Contests

The Commission sponsored three spring essay contests between 1985 and 1987. Five hundred eighty-seven sixth grade students from 27 school districts in eight southern New Jersey counties participated in the third and most successful contest. That year students wrote essays addressing the theme, "Occupations and the Pinelands--Things that Work Together." Three winners were selected from Pinelands municipalities and three from non-Pinelands municipalities.

Every student winner received a \$100 Series E savings bond and a framed certificate of participation. Each teacher of a winning student author received a check for \$100 to be used for environmental education in his or her classroom, and each participating school selected either a hard cover edition of Pinelands Folklife or a videocassette of the Pinelands program, The New Jersey Pinelands, Our Country's First National Reserve.

Unfortunately, the essay contest was discontinued because of increasing demands on Commission staff to prepare other classroom materials and programs that reach many more students and teachers.

"New Jersey Pinelands: Tradition and Environment" Symposium

The Commission joined with the New Jersey State Council on the Arts, the New Jersey Historical Commission, the New Jersey State Museum, and the Folklife Center of the Library of Congress in sponsoring the day-long symposium in 1987. This symposium accom-

panied the Pinelands exhibit that was housed in the museum from January 24 through April 5, 1987. The opening day "Pinefest" attracted 4,000 visitors, the largest single day attendance the museum had ever enjoyed, and the reception drew 1,000 invited guests. Overall, the exhibit's two-month visitation record doubled the museum's previous attendance record for any exhibition.

Speakers Organization Directory

This free directory contains the names, addresses, and phone numbers of over 50 speakers who are knowledgeable about New Jersey's Pinelands. It is designed so that a program chairman or teacher may directly contact a specific speaker. Forty-five Pinelands topics including animals and plants, historic sites and lost towns, and fire ecology are listed.

Since annual printing of this publication began in 1987, over 8,000 directories have been distributed to New Jersey residents and more than 400 presentations have been given. Overall, the largest number of presentations are given in the seven southern New Jersey counties. Teachers most frequently request speakers for classroom presentations; however, historical societies, natural science clubs, garden clubs, and senior citizens groups often invite speakers to give Pinelands presentations to their members. Over the years, the three most popular Pinelands topics have been plants, general overview, and animals.

APPLICATION LIAISON OFFICE

In order to serve the public more efficiently, the Commission contracted with Radzik & Emek, business consultants, to analyze the Commission's system of managing and responding to inquiries related to zoning and development applications.

As a result of this effort, an applicant liaison office was established to centralize the response network, provide more timely responses to zoning and development inquiries, and remove this responsibility from individual staff in the development review and public programs offices. This office has improved telephone contacts and provided more efficient handling of unscheduled office visits while allowing other staff to spend more time on the review of development applications. On-line computer capability has also been established so that the liaisons can provide immediate responses to applicants.

Since its establishment in the spring of 1990, the applicant liaison office has handled more than 18,000 inquiries, almost three-quarters of which are answered on the same day. During this period, the public programs office was able to refocus its

attention on inquiries about the Pinelands and the CMP; it was able to respond to 80 percent of the more than 1,700 inquiries it received on the same day.

PUBLIC PROGRAMS MATERIALS AND RESOURCES

Public Program Publications

Periodicals available from the Commission include the Annual Report and the Pinelander newsletter which is distributed to more than 5,000 people. The Pinelander, previously written on a quarterly basis, is now produced semiannually because of budgetary constraints.

An additional 78 publications and flyers are also available to the public. The publications cover a wide variety of topics that range from general to specific interests. These topics include a summary of the CMP, a listing of native Pinelands plants for landscaping, a list of Pinelands videotapes, recreational brochures from the Division of Parks and Forestry, a guide for landowners with septic systems, and an instructional handbook on the use of Pinelands Development Credits.

The hearing registry is another publication available to the public. For a modest yearly subscription fee, the public can receive special notices on upcoming Pinelands hearings. The Commission and its staff conduct four types of public hearings: those regarding local development actions which may violate CMP standards, hearings on revisions to master plans and land use ordinances of Pinelands municipalities and counties, hearings on changes to CMP regulations, and special hearings on issues of importance to the Pinelands.

Also available is a printout on the status of the development applications. This monthly report identifies new applications and lists any actions that have been taken on applications.

Area Repositories

To ensure that information on the Pinelands and the Commission is widely available, the Commission has entered into agreements with three libraries to serve as repositories for Commission publications. The three repositories are the Burlington County College Library, Rutgers University Library-Special Collections and Archives, and the State Library.

Publications distributed to the repositories include Commission publications mentioned previously, Commission studies, consultant studies conducted on behalf of the Commission, Annual Reports, the Pinelander newsletter, Commission meeting minutes and current newspaper articles about the Pinelands.

**INTERPRETIVE EFFORTS:
NATIONAL PARK SERVICE AND THE COMMISSION**

The National Park Service has for years expressed an interest in developing an interpretive program that will enhance public understanding of and appreciation for New Jersey's Pinelands. Current interpretive plans representing joint National Park Service, Pinelands Commission and New Jersey Department of Environmental Protection and Energy efforts include the Pinelands Interpretive Plan and the New Jersey Coastal Heritage Trail.

Public Law 100-486, enacted by Congress in October, 1988, calls for the study of and recommendations for interpretive and educational programs that will enhance "public understanding, awareness, and appreciation with respect to the natural and cultural resources of the Pine Barrens area of New Jersey." The Congress has appropriated \$191,000 for creation of an interpretive plan. In August, 1990 the Commission entered into a Memorandum of Agreement with the Department of Environmental Protection and Energy and the National Park Service for the purpose of coordinating efforts in the preparation of the interpretive plan. Sites are being inventoried and alternative approaches for interpreting the Pinelands are now being developed.

The Commission also works with the National Park Service and other state agencies in developing the New Jersey Coastal Heritage Trail. Public Law 100-515, enacted by Congress in October 1988, calls for the establishment of a vehicular tour route along existing public roads in the state to promote "public appreciation, education, understanding and enjoyment, through a coordinated interpretive program of certain nationally significant natural and cultural sites associated with the coastal area." The first theme trail, a maritime trail, is scheduled to be opened September, 1992.

IN RE: [Name]
[Address]
[City, State, Zip]

NATIONAL [Name]

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CHAPTER IX

CULTURAL RESOURCES

Cultural resources are the physical record of mankind's habitation and use of the Pinelands. Of the ten thousand years that Native Americans occupied the land, the resources are, in fact, the only record we will ever have and, for all periods, the only unbiased record. Their protection and management is a goal of the Pinelands Protection Act and is incorporated into the Comprehensive Management Plan.

CULTURAL RESOURCE MANAGEMENT PLAN

Historic Period Planning

At the end of 1983, the Commission disseminated a draft Pinelands Cultural Resource Management Plan for Historic Period Sites (CRMP). The plan was based on the federal Resource Protection Planning Process which divided cultural resources into "study units." These are functionally related groupings of historic sites that are analyzed together for their impact on culture over time. This organizational approach dictated the basic structure of the plan through numerous drafts and two adopted versions (March, 1986 and April, 1991). The "Resource Groups" (the term used in place of "study units" by the Commission) have remained constant since their initial definition in 1982. They reflect the specific responses and adaptation of people to the unique Pinelands environment since European settlement began in earnest in the mid to latter 17th century. The resource groups are nine in number and include the following: Agricultural Sites and Gristmills, Glasshouses, Iron Forges and Furnaces, Maritime Activities, Minor Industries, Sawmills, Settlements, Transportation Routes and Railroads, and Residential Architecture.

An extended period of public review followed the release of the 1983 draft. As a result of public comment and considerable input by the National Park Service and the Office of New Jersey Heritage, the size and scope of the original draft was greatly expanded. A historic summary of the Pinelands was added as well as explanatory information about certificates of appropriateness and the process for identifying and evaluating historic sites. Each of the resource group chapters was further improved by the inclusion of research priorities, which were developed during a series of meetings with professional preservationists in 1984. Also, the sections on resource treatment within each resource group were thoroughly revised to include step-by-step procedures for evaluating the significance of individual sites and determining their correct treatment. Each of the plan's several

drafts were reviewed by the Cultural Resource Management Plan Advisory Committee, a group of fifteen preservationists, public officials and other citizens appointed by the Commission. When finally adopted early in 1986, the plan was comprehensive in its approach to resource protection.

In 1988, the Commission, in consultation with the National Park Service and the Office of New Jersey Heritage, determined that a simpler, more "user-friendly" version of the CRMP would aid in its implementation at the local level. Consequently, the staff set about devising a more "streamlined" version of the plan that would reduce the steps in the evaluation and treatment process as and eliminate redundancies. The resulting document clarified the process for designating historic structures and even provided additional information on strategies for preservation (such as the Commission's 1988 Guidelines for Comprehensive Municipal Inventories), while still reducing the overall size and complexity of the plan. This revised CRMP was adopted by the Commission in April, 1991 and has been sent to all Pinelands municipalities and counties and interested agencies and organizations.

Predictive Model and Prehistoric Plan Status

Prehistoric (American Indian) sites are invisible; therein lies the main problem in developing a management plan for their preservation. Unlike historic period sites which usually leave a paper trail of documentary evidence or some surviving surface alteration, these ancient sites are generally buried a foot or more underground. Moreover, because of their great antiquity, they are often oriented toward natural features (stream courses and periglacial depressions) that no longer exist, making their detection even more difficult. Even under ideal circumstances, prehistoric sites leave only a bare scatter of obscure stone tools at the surface. For these reasons the critical component of any regional preservation plan is the "identification" element, which simply seeks to locate prehistoric sites across the landscape.

Even before final adoption of the plan for historic period sites in 1986, the Commission had begun the groundwork for development of a predictive model of prehistoric site occurrence, which was to be the basis for the prehistoric sites plan. The model was to combine field investigation -- to establish the actual incidence of prehistoric sites along selected transects in the Pinelands -- with statistical analysis. The results of the analysis would be a projection of probable site occurrences, given a variety of environmental settings, throughout the Pinelands.

With the assistance of a federal Historic Preservation Fund (HPF) grant, the Commission engaged a Temple University consultant to draft a detailed work plan, including estimates of time,

effort and cost, for development of the model. The work plan that emerged envisioned a three year program, at the end of which a preliminary model would be in place. In 1988 grant funds were again used to initiate the first year's fieldwork on the model. Unfortunately, the HPF grant allotment for New Jersey was greatly reduced in 1989 and work on the predictive model had to be discontinued. The Commission still hopes to secure funding so that the preliminary model can be completed and tested.

DESIGNATION OF HISTORIC RESOURCES

Local Designation

Designation of historic and prehistoric sites is the means whereby the significant cultural resources of the Pinelands are acknowledged and protected. Designation can be accomplished by entry onto the State or the National Register of Historic Places or by specific action by the Commission or a municipality. Several Pinelands municipalities, with the assistance of the Commission staff, have designated historic districts. The Townships of Hamilton, Evesham and Medford and the Boroughs of Medford Lakes and Berlin and the City of Estell Manor have all adopted ordinances to establish and regulate historic districts. The Town of Hammonton established a historic preservation commission in preparation of defining a district. The Commission has assisted most of these communities by attending local organizing meetings, reviewing draft ordinances, and offering advice on identifying historic sites and complying with state law. The Commission staff also held two workshops in 1989 specifically to acquaint local officials with the strategies available for historic preservation. Eighteen Pinelands municipalities sent representatives to the workshops held in Eastampton and Hamilton Townships.

However, the Commission's major effort to promote local designation of historic sites was the publication in 1988 of the Pinelands Model Historic Preservation Ordinance. This is a comprehensive ordinance which reflects 1987 amendments to both the Comprehensive Management Plan (CMP) and the Municipal Land Use Law. The model ordinance includes a preface with a bibliography and background information and an extended introduction that contains a series of alternative approaches to each of the provisions presented in the ordinance. The ordinance itself is in the form of an amending ordinance so that it can be adopted virtually verbatim by a municipality. It includes a series of definitions as well as provisions which create a historic preservation commission and allow for the establishment and regulation of historic landmarks and districts. What makes the ordinance unique to the Pinelands, however, is the inclusion of procedures for the identification and evaluation of previously undesignated sites in the review of development applications, as required by the CMP.

The model ordinance provides Pinelands municipalities with the full "tool kit" available to effect the protection of their cultural heritage.

Inventory of Pinelands Designated Cultural Resources

The sites listed on Table 9.1 are Pinelands-designated by virtue of their entry onto the State or National Register of Historic Places or by designation by the Commission.

DEVELOPMENT REVIEW

Cultural resource surveys are required as part of a development application whenever a proposed project might conceivably affect a historic or prehistoric resource. Guidelines for the conduct of these surveys were first published by the Commission in 1981 and incorporated into the CRMP in 1983. In 1990 a complete overhaul of the guidelines was undertaken as part of the revisions to the CRMP. The reasons for the changes to the guidelines were fourfold:

- o to improve and standardize the quality of the reports submitted;
- o to expedite the review of the reports by the Commission staff and other agencies;
- o to allow for ease of data entry once the Commission inventories are fully computerized; and
- o to promote effective use of the reports by future researchers.

The guidelines are now in the form of a report format, with specific headings and subheadings which must be repeated in the body of a report and addressed individually. Detailed guidance as to the proper types of information that should be contained under each heading is included. This uniform reporting format will help to ensure that all the historic and prehistoric resources of the Pinelands are correctly recorded.

As previously mentioned, it is often difficult to judge whether cultural resources might be located within an area to be impacted by a development proposal. Nevertheless, the Commission attempts to be judicious when determining whether a cultural resource survey should be undertaken. As Table 9.2 indicates, 486 applications, or roughly 11% of all proposals received in the last two and one-half years, were reviewed to determine whether a survey should be undertaken. Of these, surveys were required in 152

Table 9.1
Inventory of Pinelands Designated Cultural Resources (a)
December, 1991

ATLANTIC COUNTY:

Egg Harbor City - Dr. Smith's Sanatorium
Egg Harbor Township - Cap'n John Jeffries Burial Marker
Estell Manor - Estellville Glass Works
Estell Manor - Head of River Church
Folsom - Jacobus Evangelical Lutheran Church
Galloway - L.N. Renault and Sons, Winery
Hamilton - Abbott's Modern Cabins
Hamilton - Mays Landing Historic District
Hammonton - Methodist Cemetery (early 19th century) (b)

BURLINGTON COUNTY:

Bass River Township - Bead Wreck Site
Medford - Singer House (b)
Medford Lakes - Log Cabin Lodge
New Hanover - Hanover Furnace
Pemberton - Benjamin Jones House
Pemberton - Fenwick Manor (b)
Pemberton - Greenberg Prehistoric Locus (b)
Shamong - Atsion Village
Southampton - Retreat Village (b)
Washington - Batsto Village
Woodland - Shamong Hotel

CAMDEN COUNTY: Chesilhurst - Grant AME Church

CAPE MAY COUNTY:

Dennis - Dennisville Historic District
Dennis - Wm. Townsend House
Upper Township - Tuckahoe Railroad Station
Woodbine - Woodbine Brotherhood Synagogue

GLOUCESTER COUNTY: Monroe - Free Library and Reading Room

OCEAN COUNTY:

Berkeley - Double Trouble Historic District
Jackson - Cassville Multiple Resource Area
Lakehurst - Hangar #1, Lakehurst Naval Air Engineering Center

MULTIPLE COUNTIES: Pemberton (Burlington)/Manchester (Ocean) -
Whitesbog Village; Galloway, Egg Harbor City and Port Republic
(Atlantic)/Bass River and Washington (Burlington) - Mullica
River/Chestnut Neck Historic District

- (a) Except as indicated, these sites are Pinelands-designated because of their entry on the State or National Register of Historic Places.
- (b) Designated by the Pinelands Commission.

Table 9.2
Review of Development Applications for Cultural Resources
(December, 1988 through June, 1991)

CULTURAL RESOURCE SURVEYS

	<u>Total</u>	<u>Percent</u>
Surveys Required	152	31%
Surveys Not Required	334	69%
	486(a)	100%

COMPLETED SURVEY RESULTS

Cultural Resource Identified	80	58%
No Cultural Resources Identified	58	42%
	138	100%

TREATMENT OF SIGNIFICANT RESOURCES

Preservation in Place Required	7(b)	44%
Preservation at Another Location Required	0	0%
Recordation Required	9	56%
	16	100%

-
- (a) The vast majority (approximately 89%) of all development applications submitted to the Commission are not evaluated to determine the need for a cultural resource survey.
- (b) Two certificates of appropriateness were issued by local agencies which permitted moving historic structures. One of these would have allowed demolition if a new owner who would move the structure within a one year period could not be found. Both approvals were called up by the Commission, which eventually required preservation in place in each instance.

cases. Although this represents 31% of those applications that were evaluated, it equates to less than 3.5% of all applications submitted during the period.

During this same period, 138 cultural resource surveys were completed; cultural resources were identified on 58% of the project sites. In many cases, the resources found were not deemed to be significant according to the CMP criteria. However, in 16 cases where the resources were of such significance as to require special consideration, seven were able to be preserved in place and nine were recorded before disturbance or alteration occurred.

OTHER MAJOR ANALYSES

Pinelands Towns and Villages: Historic Area Delineations

The 1987 amendments to the Pinelands Plan extended the requirement for a cultural resource survey to minor development applications, when they will occur in a Pinelands Town or Village. This was an acknowledgment of the fact that even modest developments may adversely impact a significant historic resource if the project will be located in a traditional, long-settled community. However, the Commission also realized that large portions of the Towns and Villages were either undeveloped or historically inconsequential. Since it was highly unlikely that surveys would be fruitful in these areas, the Commission set out in 1988 to identify areas where the survey requirement could be safely waived.

The result was the document entitled Pinelands Towns and Villages: Historic Area Delineations. This is a survey of the 55 Towns and Villages (identified as of 1988) comprising both a review of historic documentary and cartographic evidence and a "windshield" inspection of each settlement. The purpose was to identify areas where clusters of cultural resources occur as well as areas of low historic potential. The Towns and Villages are addressed alphabetically, and for each there is a summary history and a narrative description of the "historically sensitive area," accompanied by a map which clearly illustrates areas with high and low historic site potential.

The study was published by the Commission in August, 1988, and was sent to all Pinelands municipalities.

Comprehensive Municipal Inventory Guidelines (CMI)

The CRMP encouraged municipalities within the Pinelands to develop inventories of historic resources so that they could make well-informed decisions as to the impact of proposed development on their local heritage and avoid the need for individual surveys as specific properties are proposed for development. However, the cost of such a survey could be prohibitive if it were truly

undertaken at sufficient intensity to identify all the historic and prehistoric sites in a municipality. For this reason the Commission published the Comprehensive Municipal Inventory Guidelines (CMI) in September, 1988. The guidelines allow local officials to assess the status of cultural resources within their jurisdiction without undue expense. They include specific standards for both the conduct of a survey and for a final report. The final report must include background documentary information and must divide all sites or areas examined into one of five categories:

- Category I - sites/areas possessing resources that are on or have been determined eligible for the State or National Register or that have been locally or Pinelands-designated.
- Category II - sites/areas possessing resources of possible, but as yet undetermined, significance (as defined by the criteria for Pinelands Designation).
- Category III - areas where access was not gained because of owner objection and thus the historic potential is undetermined.
- Category IV - sites/areas not eligible for Pinelands Designation or the State or National Register, but possessing a cultural remnant reflective of patterns of land use and requiring minimal recordation.
- Category V - sites/areas where there is no evidence of a cultural activity or none that requires further documentation.

Equipped with this information, local permitting agencies can make reliable decisions as to the need for a cultural resource survey at specific development sites.

Prior to their publication, the CMI guidelines were reviewed by the Office of New Jersey Heritage to ensure they conformed to the federal Certified Local Government (CLG) standards. The CLG program provides grant moneys to municipalities to survey their historic resources and develop historic preservation ordinances. After a thorough review, the CMI guidelines were sent to all Pinelands municipalities. As yet, no municipalities have undertaken a comprehensive inventory.

CHAPTER X **OTHER MAJOR ACTIVITIES**

INFRASTRUCTURE

Pinelands Infrastructure Trust Fund Program

In order to accommodate the development anticipated in Regional Growth Areas, to promote the use of Pinelands Development Credits (PDCs), to implement Comprehensive Management Plan (CMP) environmental quality goals, and to ease the financial burden on local taxpayers of providing the necessary infrastructure improvements, the Pinelands Infrastructure Trust Bond Act was enacted on August 23, 1985. The bond issue was approved by the voters in November, 1985, and provides \$30 million in grants and loans for infrastructure projects servicing Pinelands Regional Growth Areas.

The types of projects which are eligible for funding under the Act include the acquisition, construction, or improvement of wastewater treatment, water supply, and transportation systems. Eligible recipients include counties, municipalities, and local authorities or agencies which have the capability to manage these types of projects.

The Trust Assistance program is administered by both the Commission and Department of Environmental Protection and Energy's (DEPE's) Municipal Wastewater Assistance Element. The Commission is charged with identifying, evaluating, and recommending eligible projects for assistance. Once projects have been recommended for approval by the Commission, final awarding is based upon a detailed project application review by DEPE.

Pinelands Infrastructure Master Plan

December 19, 1986 Plan

The Bond Act calls for the Commission to prepare and adopt an infrastructure master plan to be used in evaluating potential projects to be funded under the program. The master plan has been divided into two phases. Sewer service was determined to be the highest priority of the three types of permissible projects; thus, phase I is devoted exclusively to wastewater projects. In making this decision, the Commission also recognized that the provision of sewers alleviates existing problems caused by septic tanks which have public health and environmental implications. Phase II of the master plan may cover water and transportation projects if additional funding becomes available, and if primary wastewater management needs have been met.

The phase I plan consists of the 1986 Pinelands Infrastructure Master Plan (as amended through 1991) and the Pinelands Infrastructure Financing Plan. The December 19, 1986 Plan provided a wastewater capital projects inventory based on the identification of all wastewater projects planned at that time by municipalities and counties within the Pinelands Regional Growth Areas. The inventory was based on the United States Environmental Protection Agency's "Needs Survey" data base and direct contact with Pinelands municipal and county governments.

The inventory identified sixteen projects to be considered for funding assistance. The projects are described in terms of cost, status, conformance with existing plans, numbers of persons served, and expected impact on the environment. A ranking system was devised to evaluate project funding priority. Evaluative criteria focused on the project's ability to accommodate new residential growth, including the use of PDCs, in the Pinelands Regional Growth Areas. Other evaluative criteria included a project's ability to correct existing septic system malfunctions, its cost effectiveness, and evidence of a high level of local commitment to the project. Conformance with Wastewater Management and Water Quality Management Plans was also required.

The December, 1986 Plan also attempted to estimate future wastewater facility needs for municipalities where projects had not been identified in the inventory. This information provides important background data for ongoing regional infrastructure planning efforts by Commission staff.

Pinelands Infrastructure Financing Plan

The Pinelands Infrastructure Trust Bond Act gave the Commission considerable latitude in determining the financing arrangements for eligible projects. On January 9, 1987, the Commission completed a study which addressed the issues of what level of assistance projects should receive and how the proportion of grants versus loans should be determined. The Pinelands Infrastructure Financing Plan analyzed how to construct a program that would be equitable and would provide the assistance necessary to make projects viable, while at the same time provide assistance to as many projects as possible.

To complete the study, Commission staff consulted with grant and loan program professionals throughout the state. The Financing Plan first compared existing federal and state programs which provide funds for wastewater treatment projects. Analyses were then conducted to determine whether funding rates should be fixed or variable, the level of assistance which should be provided, the proportion of project costs which should be funded with grants versus loans, and the interest rate which should be applied to Trust loans.

Based on the recommendations of the Financing Plan, the Commission determined that funding levels should be fixed with Trust grants set at 40% of eligible costs and Trust loans set at 20% of eligible costs. This determination resulted in an effective level of assistance to recipients equal to 54% of the present value of eligible project costs. The Plan also recommended that eligible costs could be increased by up to 10% if bids exceeded estimated costs, subject to the availability of funds.

To accommodate cases where strict adherence to the above financing terms would result in excessive user charges or prevent a sponsor from entering into a service agreement guaranteeing a loan, the Plan provided a hardship provision. The provision would allow, after DEPE and Commission review and approval, a possible reduction in the loan interest rate, an increase in the term of the loan portion, or the conversion of all or a portion of the loan to a grant.

Based on the project ranking in the December, 1986 Plan and on the \$30 million dollar Bond Act authorization, the Financing Plan identified nine projects (refer to Table 10.1) recommended for Trust assistance. The Financing Plan recommended funding levels for the nine projects, the creation of a \$1.4 million contingency fund to cover eligible cost overruns wherever possible, a \$500,000 allowance for bonding and planning costs, and a \$100,000 set aside for infrastructure planning and design grants.

On January 16, 1987, the Commission adopted the plan. On November 30, 1987, the state legislature appropriated funds to DEPE for the projects and amounts identified in the Infrastructure Master Plan.

Plan Amendment of February 2, 1990

On February 2, 1990, an amendment to the Master Plan was adopted which revised project funding recommendations, based on changes in project status and estimated costs, and made revisions to the ranking system.

Two projects, the Chesilhurst interceptor and improvements to the Waterford sewage treatment plant, were removed from the recommended funding list; in the first instance, because responsibility for the interceptor was transferred and Trust assistance was not requested, and, in the second instance, because the plant was to be abandoned in favor of a more environmentally sound approach developed by the Commission when it conducted the study entitled, An Assessment of Sewer and Water Supply Alternatives for Pinelands Growth Areas in the Mullica River Basin, Camden County, May, 1988.

**Pinelands Infrastructure Master Plan Recommendations
Total Recommended Funding^(a)**

<u>Item</u>	<u>P.L. 1968, Chapter 306 Appropriation</u>	<u>February 1990 Recommendation</u>	<u>February 1991 Recommendation</u>
State Administration	\$ 500,000	\$ 500,000	\$ 500,000
Local Planning & Design Grants	100,000	100,000	100,000
Monroe Interceptor	3,124,500	3,124,500	3,124,500
ACUA Coastal Int.	13,800,000	13,800,000	13,800,000
Waterford Sewage Treatment Plant	2,520,000	-0-(b)	N/A
Ridgeway Cabin Branch Interceptor			
OCUA ^(c)	3,648,000	-0-(b)	N/A
OCUA/Manchester ^(d)	N/A	N/A	4,337,848
Chesilhurst Interceptor	307,906	-0-(e)	N/A
Chesilhurst Collection	317,894	2,897,122 ^(f)	2,897,122
Hamilton-Harding Highway Interceptor	855,000	855,000 ^(g)	855,000
Galloway-Pinehurst Interceptor	395,736	395,736 ^(h)	395,736
Stafford-Ocean Acres Skeleton System	2,880,003	2,438,833 ⁽ⁱ⁾	2,438,833
Contingency Grants & Loans	1,550,961	1,550,961 ^(j)	1,550,961 ^(j)
Reserve for Future Use	-0-	4,337,848	-0-
TOTAL	30,000,000	30,000,000	30,000,000

(a) Funding for individual projects amounts to 60% of eligible cost. Of the amount listed, two thirds will generally be in the form of a grant and one third in the form of a loan.

(b) Project has been abandoned.

(c) Manchester and Jackson Twps. service area (interceptor only)

(d) Manchester Twp. service area only (interceptor & collection)

(e) Project to be constructed without Pinelands Trust Assistance.

(f) Finances 53.9% of revised eligible cost; balance to be funded with FmHA grants and loan.

(g) Project qualifies for an additional \$85,500 from the Contingency.

(h) Project qualifies for an additional \$39,573 from the Contingency.

(i) Actual costs were less than estimated.

(j) After allocation of \$85,500 for Hamilton-Harding Highway Interceptor, effective balance is \$1,465,461.

Changes in estimated costs involving two other projects also occurred subsequent to the adoption of the infrastructure master plan. One project, the Chesilhurst Collection System was recommended for increased Trust assistance as a result of revised cost estimates. Similarly, another project, the Stafford Ocean Acres Skeleton System was recommended for decreased Trust assistance as a result of lower than estimated costs.

The available monies left unassigned to any project, as a result of the revised funding recommendations, equaled \$689,848. This amount was recommended for placement in a newly created reserve for future use.

Additionally, the February 2, 1990 Plan amendment revised the ranking system established in the December, 1986 Plan. The revisions attempted to better account for Pinelands Development Credit opportunities and to eliminate the potential for the double counting of points.

Plan Amendment of February 21, 1991

Because a portion of the original \$30 million appropriation remained unallocated to any project, a second round of project solicitations was undertaken in October, 1990. That amount, \$4,337,848, comprised the \$689,848 in reserve funds with \$3,648,000 available from the withdrawal of a third project, the Ridgeway Cabin Branch Interceptor project. The Ocean County Utilities Authority's Ridgeway Cabin Branch Interceptor had been withdrawn from Trust assistance on July 16, 1990 as a result of the sponsor's inability to secure the required local share commitment.

The Commission received seven eligible wastewater proposals in response to its second round of project solicitations. On February 21, 1991, the Commission adopted a Plan amendment which set forth the final rankings of the seven projects. The amendment also revised the ranking system to eliminate the project cost criteria based on recommendations by DEPE's Municipal Wastewater Element and the Commission's engineering and planning staff. The cost criteria was found to be an unreliable indicator of project cost effectiveness and its use introduced a potential bias to the ranking system.

Based on the adopted project ranking, the top ranked project, a scaled down Ridgeway Cabin Branch Interceptor project with a collection system in Manchester Township, was recommended for the balance of the available Trust assistance. Table 10.1 shows the final appropriation recommendations for all projects as of the February 21, 1991 amendment.

Summary of PITF Projects & Status

The following is a description of the seven projects that are expected to proceed to completion with Trust assistance.

Monroe Interceptor & Collection

This project, sponsored by the Monroe Township Municipal Utilities Authority, involves the extension of Monroe Township's interceptor system to service its entire Regional Growth Area and a collection system to service the Victory Lakes area located within the township's Regional Growth Area. This includes 975 existing units, some with reported septic system failures, in the Victory Lakes/Friendly Village area.

In selecting the Monroe Interceptor and Collection project, the Commission addressed several concerns related to future water supply and quality. First, because of the need for baseline hydrologic data to evaluate future requests for additional inter-basin transfers of water and sewage, the Commission has required the Monroe Township Municipal Utilities Authority to fund a hydrologic monitoring program in a portion of the Great Egg Harbor River system.

Because of concerns regarding the potential long term impact of the water transfers from the Atlantic basin to the Delaware basin, no more than three million gallons per day of sewage flow can be generated from water drawn from surficial aquifer sources in the Great Egg Harbor River basin unless prior Commission approval is received. The Commission's decision will be based upon a review of the monitoring data.

Finally, to ensure that the capacity needs of the project service area will be met, the Commission has required the sponsor to evidence a commitment to upgrade the project pumping system to connect with the Gloucester County Utilities Authority, and to request increased plant allocations from the Gloucester County Sewage Treatment Plant as warranted.

Atlantic County Utilities Authority Coastal Interceptor

This regional interceptor project sponsored by the Atlantic County Utilities Authority will serve both Hamilton and Egg Harbor Township's Regional Growth Areas. In addition, the interceptor will correct Hamilton's existing sewerage treatment plant stream discharge problems. Wastewater collected from both townships will be conveyed to the Atlantic County Utilities Authority sewage treatment plant in Atlantic City.

Currently under construction, the project will have the capacity to serve over 33,000 dwelling units. Portions of the project service area include existing dwelling units with reported septic system failures.

Ocean County Utilities Authority Ridgeway Cabin Interceptor & Manchester Collection System

This project revises the original proposal submitted by the Ocean County Utilities Authority in December, 1986. The project as originally proposed involved the construction of a regional interceptor to serve both Manchester and Jackson Townships. The revised project proposes the construction of an interceptor and collection system to serve Manchester Township only. (The interceptor will be sponsored by the Ocean County Utilities Authority. The collection system will be sponsored by the Manchester Township Municipal Utilities Authority.) However, the revised project proposes to retain both sufficient capacity and reasonable proximity to provide for ultimate service into Jackson Township.

The proposed interceptor is estimated to cost \$4.8 million. Estimated cost of the proposed collection system is \$3.5 million. Therefore, total project cost will amount to \$8.3 million.

In selecting the Ocean County Utilities Authority/Manchester project, the Commission noted that any proposed water supply system to serve the project area must not have adverse hydrologic impacts to that portion of the Toms River drainage basin located in the Pinelands. While overall impacts have been evaluated and are thought to be insignificant, the siting of water supply wells in particular subbasins may have localized impacts. These impacts must, therefore, be evaluated in association with the preparation of water supply plans.

Since this project was not recommended for Trust assistance until February 21, 1991, funding has not yet been appropriated.

Chesilhurst Collection System

This project, sponsored by the Borough of Chesilhurst, will provide a collection system for the Borough. When completed, the system will connect to the Atlantic Basin Interceptor. The Atlantic Basin Interceptor, a regional interceptor project which will be built without Trust assistance, received Commission approval June 24, 1991. The regional project proposes the development of a force main and pumping station to convey wastewater from Chesilhurst Borough and Winslow, Waterford and Berlin Townships to the Camden County regional sewage treatment plant in Camden City. Once in place, the system will alleviate potential septic system failures that could result from the presence of unsuitable soils throughout the Borough.

Originally, this project was recommended for \$317,894 in Trust Assistance based on an eligible cost estimate of \$2,986,724 and pre-existing Farmers Home Administration assistance totaling \$2,475,000. The level of recommended Trust Assistance was increased to \$2,897,122 based on a revised cost estimate of \$5,371,622. Currently, the project is in Department of Environmental Protection and Energy's technical design review stage and is awaiting funding reauthorization.

Hamilton-Harding Highway Interceptor

This project consists of the construction of an interceptor along Harding Highway and Cologne Avenue to serve portions of Hamilton Township's Regional Growth Area. The interceptor, which has now been built, carries wastewater to the soon to be abandoned Hamilton Township treatment plant which will be converted to a pumping station. The wastewater will then be conveyed to the Atlantic County Utilities Authority Coastal Interceptor.

Galloway-Pinehurst Interceptors

This project, sponsored by Galloway Township, consists of the construction of two interceptors to serve the Pinehurst portion of Galloway Township's Regional Growth Area. This area includes land to the north of the White Horse Pike (Route 30) and west of the Garden State Parkway.

Construction has now been completed, and eligible project costs came to \$659,560. Since this amount is higher than originally estimated, the Commission has recommended to the New Jersey Department of Environmental Protection and Energy that the project receive the 10% contingency funding amount of \$39,573 in addition to the original award of \$395,736.

Stafford-Ocean Acres Skeleton Collection System

This project, sponsored by the Stafford Township Municipal Utilities Authority, provides a collection system to serve a portion of Ocean Acres in Stafford Township. Ocean Acres is a partially developed community which comprises a major portion of Stafford Township's Regional Growth Area. The area is bounded on the east by the Garden State Parkway and on the south by Route 72.

The Municipal Utilities Authority plans to sewer the entire community in three phases. The Skeletal Collection System, which has been constructed with Trust assistance, represents a portion of phase I. (The remaining collection system for phase I and all of phase II have been funded, but without Trust assistance; the Stafford Township Municipal Utilities Authority intends to

finance a portion of phase III.) All phases of the collection system will convey wastewater to Ocean County Utilities Authority's Southern Wastewater treatment plant.

Sewerage facilities are needed for Ocean Acres due to the predominance of one-quarter acre lots which limit residential development on septic because of water quality concerns.

Pinelands Water Resources Protection Bond Issue

In order to more fully provide protection of Pinelands water resources, Senate bill S-3375 was introduced in early 1991 by Senators Daniel J. Dalton and William Gormley. The bill (commonly referred to as the Pinelands Water Resources Protection Bond bill) authorized \$70 million to provide money for several important purposes.

These purposes included: up to \$60 million in grants and loans for wastewater and water supply capital projects to Pinelands Regional Growth Areas and Pinelands Towns; up to \$5 million in grants and loans for small scale wastewater treatment facilities for schools; up to \$10 million in grants and loans to assist Pinelands counties and municipalities to begin the elimination of direct discharges of wastewater to the Atlantic Ocean and the Delaware River; and, up to \$5 million for Pinelands infrastructure planning, including a study to help determine an environmentally safe yield for the Kirwood-Cohansey aquifer.

The Pinelands Water Resources Protection Bond bill differed from the PITF legislation in several important ways. First, the new bill proposed to increase funding assistance for capital infrastructure projects both in total funding amount and by broadening eligible project areas and types. Specifically, the Pinelands Water Resources Protection Bond bill included Pinelands Town management areas eligible for funding assistance in addition to Regional Growth Areas. The use of PDCs in Pinelands Towns as well as Regional Growth Areas would thus be encouraged. The Pinelands Water Resources Protection Bond bill also sought to target small scale treatment plants which serve school facilities for funding assistance. Such facilities are presently ineligible for Trust Assistance.

Of equal importance, the Pinelands Water Resources Protection Bond bill was unique in its attempt to address specific regional planning concerns. These included the interbasin transfer of ground and surface waters, impacts of continued ocean and river wastewater discharge, the need to explore groundwater recharge, and the need for comprehensive water supply and quality planning for the major aquifer in the Pinelands.

Although the bill passed the Senate in June, 1991, the Assembly combined the major elements of the Pinelands Water Resources Protection Bond bill into a larger bond proposal known as the Clean Water and Natural Resources Bond bill and reduced its authorized funding to \$35,000,000. However, the \$325 million Clean Water and Natural Resources Bond bill did not pass the Senate and consequently was not placed on the November ballot for voter consideration.

Regional Infrastructure Planning

Since 1986, Commission staff have maintained an inventory of needed infrastructure projects in Pinelands communities as a first step toward a comprehensive regional infrastructure plan for the Pinelands. The December, 1986 Infrastructure Master Plan identified future wastewater facility needs for Pinelands municipalities. The inventory was based on the United States Environmental Protection Agency's "Needs Survey" data base and direct contact with Pinelands municipal and county governments.

This inventory has been updated periodically since then and expanded to include future water supply and transportation needs as well. In particular, Pinelands counties and municipalities were contacted again in 1988, 1989 and 1990. Information gathered from these sources was supplemented by data contained in DEPE Municipal Wastewater Assistance Program's Proposed Project Priority Listing for Fiscal Year 1991.

In December 1990, the inventory estimated a need for a minimum of \$102 million for additional wastewater facilities. This data was used as supporting documentation for the proposed Pinelands Water Resources Protection Bond Act.

ECONOMICS

The economic and fiscal impacts of Pinelands land use regulations have been the subject of debate and discussion since the inception of the Comprehensive Management Plan (CMP). The results of a two year study completed in 1983 on the short-term impacts of the Plan on land markets, housing markets, employment, municipal finances, agriculture and sand and gravel mining were documented in the Commission's first Progress Report. An update to this study was prepared in November 1985 and is entitled Economic and Fiscal Impacts of the Pinelands CMP: First Biennial Update. The updated report summarizes trends in land markets, municipal finances and vacant land assessments over a twelve year period for 52 Pinelands municipalities. The major findings of this report, three other independent reports, and an update of selected statistics form the basis of discussion in this section.

Land Markets

Number of Land Sales

Trends in land sale volume are not easily discernible. According to the First Biennial Update, the total number of vacant land transactions occurring in the Pinelands significantly declined during the four year period following the adoption of the CMP when compared to similar transactions occurring elsewhere in the state. This trend is supported, though to a lesser extent, in an Association of New Jersey Environmental Commissions sponsored report by James E. Neumann entitled The Land Market in New Jersey's Pinelands: Past and Present Trends in Land Use and Transfer, September 1987. Neumann analyzed 3,058 vacant land sales for 16 Pinelands municipalities and found a slight decline in land sales for the period 1976 to 1984. Neumann attributes this decline to the possible market attraction of the Jersey Shore and the New Jersey Turnpike/Garden State Parkway areas. Neumann also mentions the CMP as a possible contributing factor.

A third recent study, which compares Pinelands municipalities to land markets in Southern New Jersey, offers an updated and different perspective. The study conducted by W. Patrick Beaton is summarized in a report entitled The Cost of Government Regulations: Volume I, Impact of Open Space Zoning on Property Values in the New Jersey Pinelands, August 1988. Beaton found significantly higher volumes of vacant land sales within and in proximity to the Pinelands Area between 1965 and 1986 relative to other land markets in the general Philadelphia-Atlantic City region.

A possible explanation for the conflicting conclusions reached by these recent reports may be the fact that the studies employed different methodologies and timeframes. The Biennial Update conducted a multiple regression analysis of over 2,300 vacant land sales by management area in 16 Pinelands municipalities. That study also compared the 52 Pinelands municipalities' share of state level land sales for the periods 1970 to 1982. Both of these analyses were conducted to determine whether Pinelands regulations had any effect on land sales.

Beaton's study sampled 2,982 vacant land sales in 39 Pinelands municipalities and 42 other municipalities in southern New Jersey between 1965 and 1986 to obtain a cross-sectional analysis of overall characteristics of real estate markets in South Jersey. Beaton then conducted a time series analysis of 50,422 purchase-resale pairs of vacant land sales in the Pinelands areas and control areas to determine whether Pinelands regulations had any effect.

Land Value

Changes in land values since the adoption of the CMP appear to differ sharply by district. For example, the Biennial Update concluded that the CMP had little effect on the selling prices of vacant land in the Protection Area. But this was not the case in the Preservation Area. An absolute decline in vacant land values in the Preservation Area was reported.

Beaton, expanding upon his earlier findings in a report entitled, The Impact of Regional Land-Use Controls on Property Values: The Case of the New Jersey Pinelands, May 1991, also reported declining vacant land sale values in the Preservation Area, and rebounding vacant land sale values in the Protection Area occurring since the adoption of the CMP. However, the May 1991 study also found that by the end of 1986, vacant land price indexes for both the Preservation and Protection Areas exceeded those of the control areas.

Based on more limited data, Neumann found that, in general, vacant land values were not substantially reduced after Pinelands regulations came into effect. In fact, land values for small, vacant and sewered lots showed a substantial increase in market valuation in the post-CMP period through 1984.

In his 1991 study, Beaton offers some explanation for the apparent contrasting trends in vacant land values by Pinelands district. Beaton suggests that property values respond to anticipated constraints, with the greater the anticipated restriction, the more intense the change in land value. This possible explanation has important implications when one keeps in mind that approximately 50% of vacant landowners surveyed by Neumann in two Pinelands municipalities believed the value of their properties had been affected by the enactment of Pinelands regulations. The survey results also suggest that land purchases are occurring to a greater extent for building rather than for land speculation purposes.

Housing Markets

Studies

Housing markets appear to have been more uniformly impacted, in a positive way, by the adoption of Pinelands regulations. This conclusion was reached by Beaton in both his 1988 and 1991 studies. In his 1991 study, Beaton reported increased values in residential land (defined as a one to four family improvement) in both the Preservation and Protection Areas by more than 10% as compared to control areas in the South Jersey markets of rural Salem, Gloucester, and suburban Burlington counties since 1981. Interestingly, the First Biennial Update found existing home

sales values from the time of the Pinelands Plan adoption through 1984, regardless of district, to be unaffected by Pinelands regulations.

In addition, Beaton's 1988 study found significantly higher volumes of residential land sales within and in proximity to the Pinelands Area between 1965 and 1986 relative to other South Jersey land markets.

Building Permit Trends

Figure 10.1 shows a "share" analysis of New Jersey Department of Labor reported residential building permit statistics. For interpretation, if building permits are declining throughout the state and they are declining at the same rate in Pinelands municipalities, the graph representing the municipalities' share of the state would be a straight horizontal line. This would indicate that the drop in permits observed in the Pinelands merely reflects general economic conditions. On the other hand, if the graph of the share decreases (or increases) over time, then permits are declining (or growing) more rapidly in the Pinelands than elsewhere in the state, indicating that one or more factors which are peculiar to Pinelands municipalities are influencing trends. If a shift in the slope of the trend line is observed after 1978, then the possibility that the Pinelands moratorium or the CMP is responsible for at least part of that shift cannot be ruled out without further investigation.

The Pinelands share of statewide residential permits dropped significantly in 1980, remained relatively stable through the mid 1980s and then increased through the late 1980s. The regional share follows this same general trend but the rates of change are more pronounced. In both cases, the Pinelands share has declined in the past two years. This suggests that housing markets in Pinelands municipalities are reacting more sensitively to the recent economic conditions than the region as a whole. Such volatility may be due to Pinelands municipalities' locations on the rural fringe of major housing markets rather than to any direct impact of the CMP.

Employment/Population

As shown in Figure 10.2, total employment in the seven Pinelands counties increased at a faster rate than employment throughout New Jersey from 1972 to 1990.¹ Pinelands regulations have

¹ Because the 1990 state covered employment trends report was not available at the time of this report, preliminary covered employment summaries were obtained from the Department of Labor.

Figure 10.1

Pinelands Municipalities Building Permit Shares

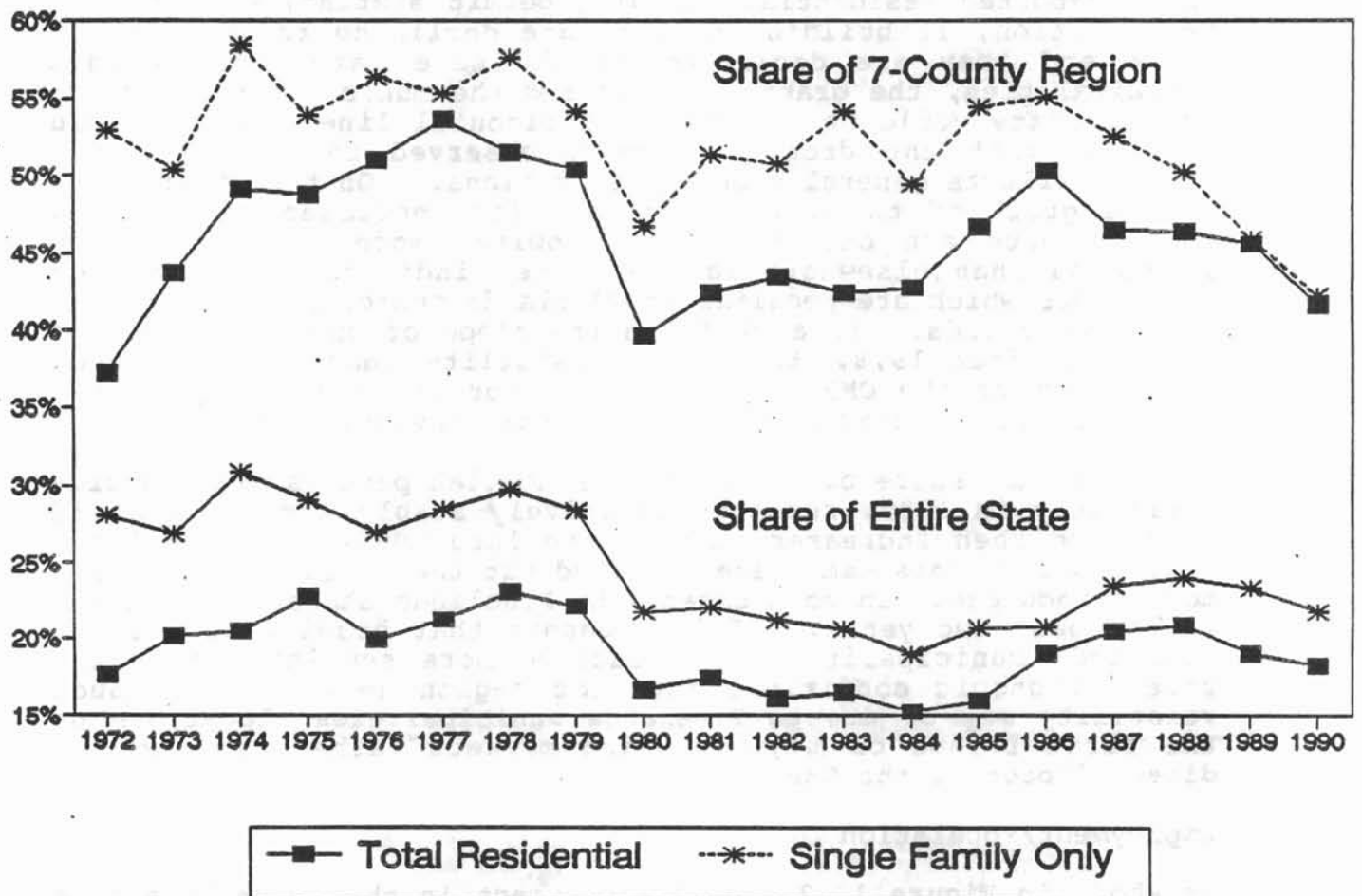
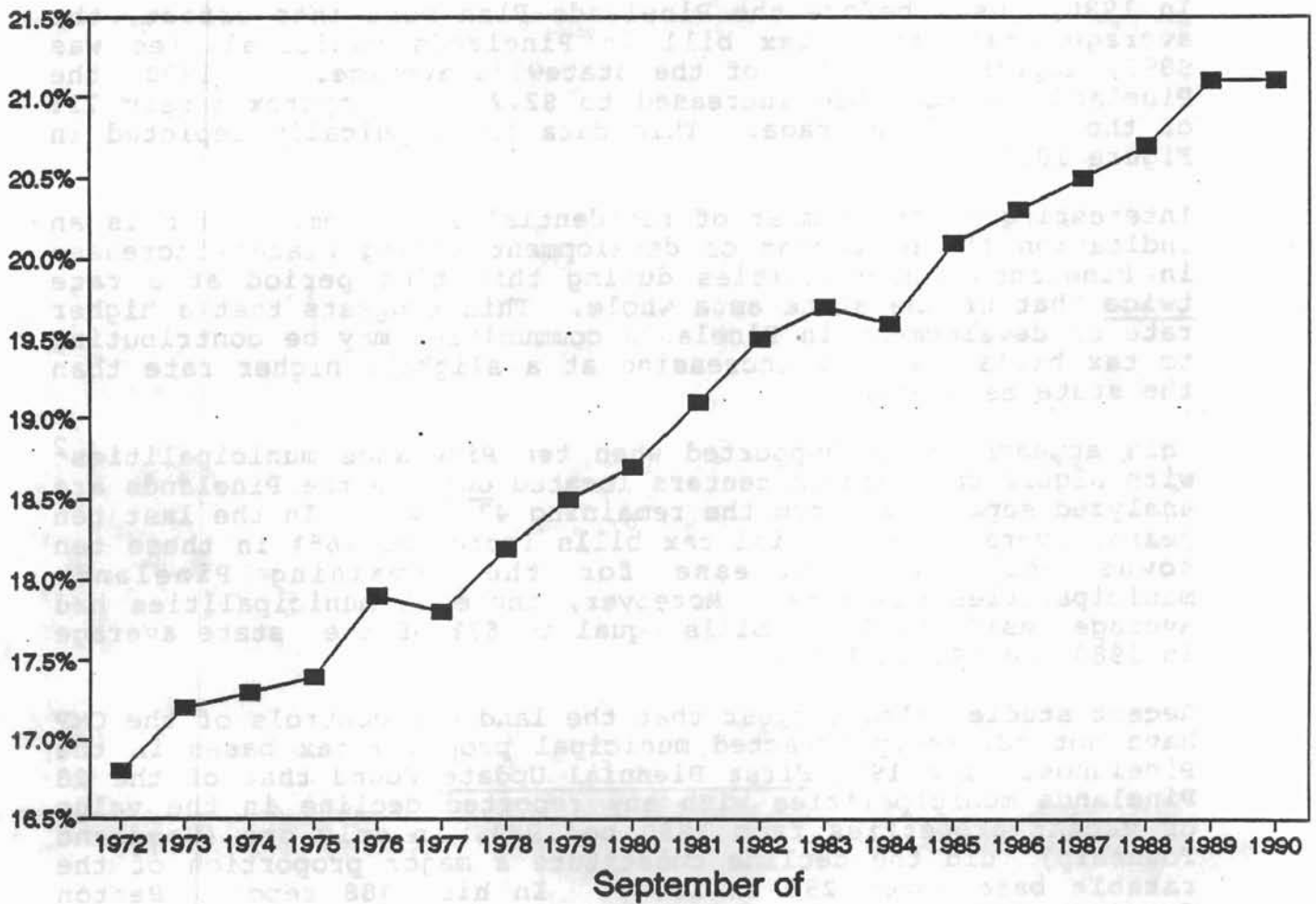


Figure 10.2

Pinelands Counties Shares of State Covered Employment



apparently had no adverse impact on the general level of economic activity and associated employment opportunities in the region as a whole.

A comparison of population levels (Table 10.2) in Pinelands municipalities from 1970 to 1990 suggests a net in-migration of residents to the region. This pattern is consistent with overall growth patterns in southern New Jersey.

Property Taxes

Data Analysis

In 1980, just before the Pinelands Plan went into effect, the average residential tax bill in Pinelands municipalities was \$895, approximately 66% of the statewide average. In 1990, the Pinelands average had increased to \$2,242, or approximately 72% of the statewide average. This data is graphically depicted in Figure 10.3.

Interestingly, the number of residential line items (which is an indication of the amount of development taking place) increased in Pinelands municipalities during this time period at a rate twice that of the state as a whole. This suggests that a higher rate of development in Pinelands communities may be contributing to tax bills that are increasing at a slightly higher rate than the state as a whole.

This appears to be supported when ten Pinelands municipalities² with significant growth centers located outside the Pinelands are analyzed separately from the remaining 43 towns. In the last ten years, average residential tax bills increased 166% in these ten towns while the increase for the remaining Pinelands municipalities was 135%. Moreover, these 43 municipalities had average residential tax bills equal to 67% of the state average in 1980 and 69% in 1990.

Recent studies also suggest that the land use controls of the CMP have not adversely impacted municipal property tax bases in the Pinelands. The 1985 First Biennial Update found that of the 28 Pinelands municipalities with any reported decline in the value of vacant properties from 1980 to 1984, in only one (Woodland Township) did the decline constitute a major proportion of the ratable base (over 25% in 1984). In his 1988 report, Beaton found no aggregate loss of municipal tax base for both equalized

² These municipalities are Barnegat, Berkeley, Dover, Evesham, Galloway, Jackson, Lacey, Little Egg Harbor, Stafford and Vineland.

Table 10.2

**Comparison of 1970, 1980 and 1990 Population Estimates
for Pinelands Municipalities and Counties**

County/Municipality	1970	1980	Percent Change ^(a)	1990	Percent Change ^(b)
	Population	Population		Population	
	Number	Number		Number	
ATLANTIC					
Buena Borough	3,283	3,642	10.9%	4,441	21.9%
Buena Vista Township	4,239	6,959	64.2%	7,655	10.0%
Corbin City	258	254	-1.6%	412	62.2%
Egg Harbor City	4,304	4,618	7.3%	4,583	-0.8%
Egg Harbor Township	9,882	19,381	96.1%	24,544	26.6%
Estell Manor City	539	848	57.3%	1,404	65.6%
Folsom Borough	1,767	1,892	7.1%	2,181	15.3%
Galloway Township	8,276	12,176	47.1%	23,330	91.6%
Hamilton Township	6,445	9,499	47.4%	16,012	68.6%
Hammonton Town	11,464	12,298	7.3%	12,208	-0.7%
Mullica Township	3,391	5,243	54.6%	5,896	12.5%
Port Republic City	586	837	42.8%	992	18.5%
Weymouth Township	998	1,260	26.3%	1,957	55.3%
COUNTY TOTAL	175,043	194,119	10.9%	224,327	15.6%
BURLINGTON					
Bass River Township	815	1,344	64.9%	1,580	17.6%
Evesham Township	13,477	21,508	59.6%	35,309	64.2%
Medford Lakes Borough	4,792	4,958	3.5%	4,462	-10.0%
Medford Township	8,292	17,622	112.5%	20,526	16.5%
New Hanover Township	27,410	14,258	-48.0%	9,546	-33.0%
North Hanover Township	9,858	9,050	-8.2%	9,994	10.4%
Pemberton Township	19,754	29,720	50.5%	31,342	5.5%
Shamong Township	1,318	4,537	244.2%	5,765	27.1%
Southampton Township	4,982	8,808	76.8%	10,202	15.8%
Springfield Township	2,244	2,691	19.9%	3,028	12.5%
Tabernacle Township	2,103	6,236	196.5%	7,360	18.0%
Washington Township	673	808	20.1%	805	-0.4%
Woodland Township	2,032	2,285	12.5%	2,063	-9.7%
Wrightstown Borough	2,719	3,031	11.5%	3,843	26.8%
COUNTY TOTAL	323,132	362,542	12.2%	395,066	9.0%
CAMDEN					
Berlin Borough	4,997	5,786	15.8%	5,672	-2.0%
Berlin Township	5,692	5,348	-6.0%	5,466	2.2%
Chesilhurst Borough	801	1,590	98.5%	1,526	-4.0%
Waterford Township	4,073	8,126	99.5%	10,940	34.6%
Winslow Township	11,202	20,034	78.8%	30,087	50.2%
COUNTY TOTAL	456,291	471,650	3.4%	502,824	6.6%

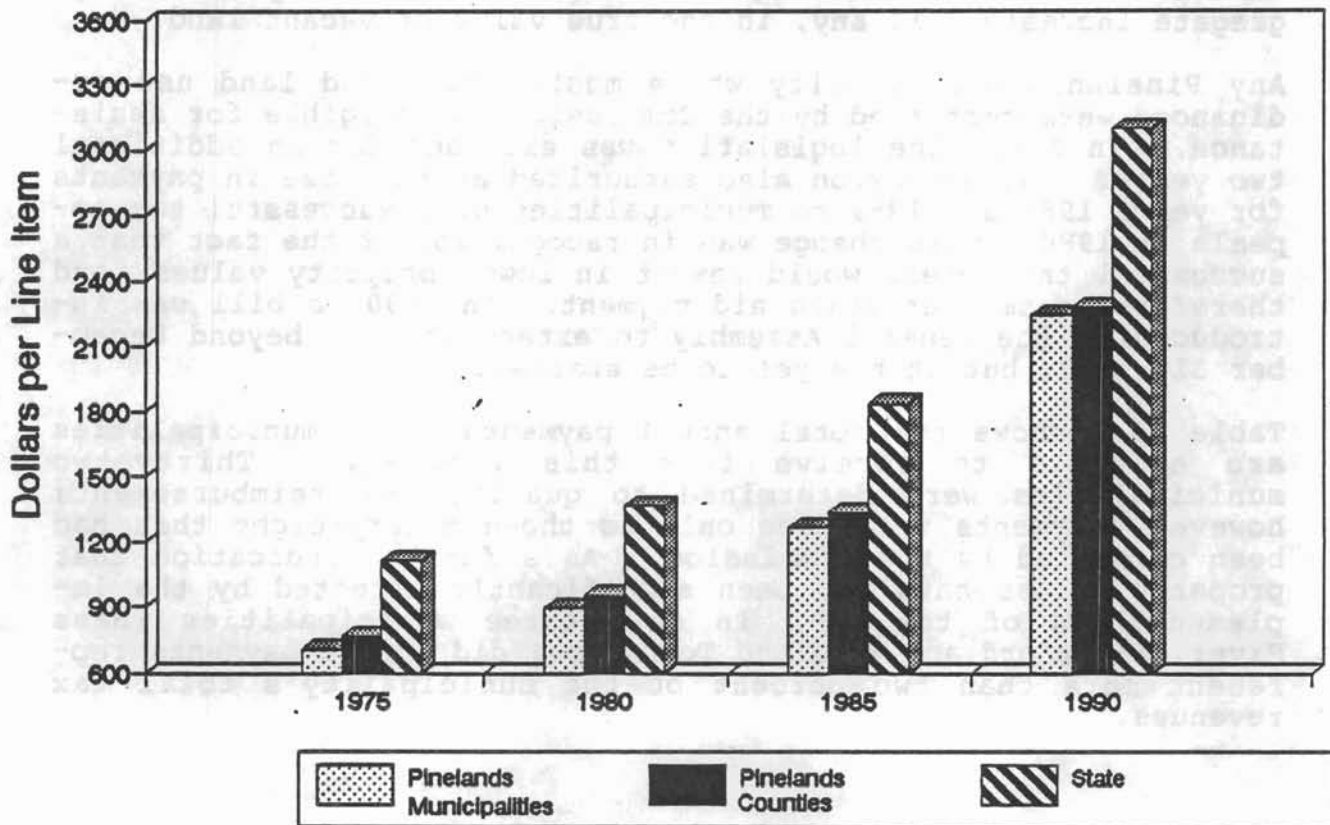
County/Municipality	1970	1980	Percent Change (a)	1990	Percent Change (b)
	Population Number	Population Number		Population Number	
CAPE MAY					
Dennis Township	2,635	3,989	51.4%	5,574	39.7%
Upper Township	3,413	6,713	96.7%	10,681	59.1%
Woodbine Borough	2,625	2,809	7.0%	2,678	-4.7%
COUNTY TOTAL	59,554	82,266	38.1%	95,089	15.6%
CUMBERLAND					
Maurice River Township	3,743	4,577	22.3%	6,648	45.2%
Vineland City	47,399	53,753	13.4%	54,780	1.9%
COUNTY TOTAL	121,374	132,866	9.5%	138,053	3.9%
GLOUCESTER					
Franklin Township	8,990	12,396	37.9%	14,482	16.8%
Monroe Township	14,071	21,639	53.8%	26,703	23.4%
COUNTY TOTAL	172,681	199,917	15.8%	230,082	15.1%
OCEAN					
Barnegat Township	1,539	8,702	465.4%	12,235	40.6%
Beachwood Borough	4,390	7,687	75.1%	9,324	21.3%
Berkeley Township	7,918	23,151	192.4%	37,319	61.2%
Dover Township	43,751	64,455	47.3%	76,371	18.5%
Eagleswood Township	823	1,009	22.6%	1,476	46.3%
Jackson Township	18,276	25,644	40.3%	33,233	29.6%
Lacey Township	4,616	14,161	206.8%	22,141	56.4%
Lakehurst Borough	2,641	2,908	10.1%	3,078	5.8%
Little Egg Harbor Township	2,972	8,483	185.4%	13,333	57.2%
Manchester Township	7,550	27,987	270.7%	35,976	28.5%
Ocean Township	2,222	3,731	67.9%	5,416	45.2%
Plumsted Township	4,113	4,674	13.6%	6,005	28.5%
South Toms River Borough	3,981	3,954	-0.7%	3,869	-2.1%
Stafford Township	3,684	10,385	181.9%	13,325	28.3%
COUNTY TOTAL	208,470	346,038	66.0%	433,203	25.2%
MUNICIPAL TOTAL	374,018	559,454	49.6%	699,778	25.1%
COUNTY TOTAL	1,516,545	1,789,398	18.0%	2,018,644	12.8%

(a) This column indicates the percent change in population from 1970 to 1980.

(b) This column indicates the percent change in population from 1980 to 1990.

Figure 10.3

Average Residential Property Tax Bill for Selected Years



NOTE: Includes payments made to county and school districts

and non-equalized data. In fact, Beaton found the Pinelands region to show a greater increase in valuation between 1971 and 1984 than in non-Pinelands control areas.

Property Tax Stabilization Program

On January 17, 1984, the state legislature passed the Pinelands Municipal Property Tax Stabilization Act. The purpose of the act was to help offset losses of municipal property tax revenues from vacant properties due to the implementation of the Pinelands Protection Act. The act provided for annual payments based on the aggregate decline, if any, in the true value of vacant land (based on equalized tax rates) as compared with the value of such land in the base year (1980). No consideration was given to aggregate increases, if any, in the true value of vacant land.

Any Pinelands municipality whose master plan and land use ordinances were certified by the Commission was eligible for assistance. In 1987, the legislation was extended for an additional two years. The extension also authorized an increase in payments for years 1988 and 1989 to municipalities with successful tax appeals in 1980. This change was in recognition of the fact that a successful tax appeal would result in lower property values, and therefore, a smaller state aid payment. In 1990, a bill was introduced in the General Assembly to extend the act beyond December 31, 1989, but it has yet to be enacted.

Table 10.3 shows the total annual payments which municipalities are eligible to receive from this program. Thirty-two municipalities were determined to qualify for reimbursement; however, payments were made only to those twenty-eight that had been certified by the Commission. As a further indication that property values have not been significantly affected by the implementation of the CMP, in only three municipalities (Bass River, Waterford and Woodland Townships) did annual payments represent more than two percent of the municipality's total tax revenues.

Table 10.3
Pinelands Municipal Property Tax Stabilization Act
Eligibility of Municipalities By Year

County/Municipality	1985			1986			1987			1988			1989		
	Eligible Payment	% Eligible Payment to Tax Revenue	Eligible Payment	% Eligible Payment to Tax Revenue	Eligible Payment	% Eligible Payment to Tax Revenue	Eligible Payment	% Eligible Payment to Tax Revenue	Eligible Payment	% Eligible Payment to Tax Revenue	Eligible Payment	% Eligible Payment to Tax Revenue	Eligible Payment	% Eligible Payment to Tax Revenue	
Atlantic															
Buena Vista Township	\$323	0.0	\$83	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Egg Harbor Township	\$729	0.0	\$621	0.0	\$466	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Galloway Township	\$3,958	0.0	\$3,969	0.0	\$106,927	0.8	\$66,176	0.4	\$71,167	0.4	\$71,167	0.4	\$71,167	0.4	
Hamilton Township	\$3,631	0.0	\$1,251	0.0	\$565	0.0	\$150,126	1.1	\$4,783	1.1	\$4,783	1.1	\$4,783	1.1	
Hammonctown	\$329	0.0	\$0	0.0	\$5,625	0.1	\$3,150	0.0	\$3,511	0.0	\$3,511	0.0	\$3,511	0.0	
Mullica Township	\$2,111	0.1	\$3,587	0.1	\$4,431	0.1	\$2,135	0.1	\$0	0.1	\$0	0.1	\$0	0.0	
Weymouth Township	\$5,283	0.9	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Burlington															
Bass River Township	\$0	0.0	\$55,417	5.4	\$55,369	5.2	\$40,358	3.7	\$28,387	3.7	\$28,387	3.7	\$28,387	3.7	
Evesham Township	\$11,519	0.1	\$24,283	0.1	\$21,287	0.1	\$14,375	0.1	\$8,825	0.1	\$8,825	0.1	\$8,825	0.1	
Medford Township	\$27,930	0.2	\$28,594	0.2	\$26,897	0.2	\$15,392	0.1	\$0	0.1	\$0	0.1	\$0	0.0	
Pemberton Township	\$1,925	0.0	\$4,175	0.1	\$2,566	0.0	\$934	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Southampton Township	\$36,971	0.9	\$34,527	0.7	\$37,162	0.7	\$33,486	0.5	\$34,404	0.5	\$34,404	0.5	\$34,404	0.5	
Washington Township	\$8,176	1.8	\$8,860	1.4	\$8,787	1.4	\$7,950	1.1	\$7,096	1.1	\$7,096	1.1	\$7,096	1.0	
Woodland Township	\$86,367	13.3	\$142,145	22.0	\$122,114	16.3	\$143,785	17.6	\$136,809	17.6	\$136,809	17.6	\$136,809	12.4	
Camden															
Chesilhurst Borough	\$13	0.0	\$128	0.0	\$64	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Waterford Township	\$0	0.0	\$143,051	2.2	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Winslow Township	\$12,422	0.1	\$9,329	0.1	\$11,696	0.1	\$4,577	0.0	\$5,519	0.0	\$5,519	0.0	\$5,519	0.0	
Cape May															
Dennis Township	\$5,404	0.3	\$6,928	0.3	\$5,771	0.3	\$3,653	0.1	\$2,533	0.1	\$2,533	0.1	\$2,533	0.1	
Upper Township	\$53	0.0	\$102	0.0	\$2,805	0.1	\$4,164	0.1	\$2,941	0.1	\$2,941	0.1	\$2,941	0.0	
Woodbine Borough	\$387	0.1	\$411	0.1	\$161	0.0	\$75	0.0	\$96	0.0	\$96	0.0	\$96	0.0	
Cumberland															
Vineland City	\$170	0.0	\$163	0.0	\$158	0.0	\$8,689	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Gloucester															
Monroe Township	\$78,089	0.8	\$84,048	0.8	\$81,363	0.7	\$44,732	0.4	\$72,596	0.4	\$72,596	0.4	\$72,596	0.5	
Ocean															
Barneget Township	\$9,564	0.2	\$7,221	0.1	\$6,173	0.1	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Beachwood Borough	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$1,481	0.0	\$1,481	0.0	
Berkeley Township	\$43,377	0.3	\$55,696	0.3	\$10,179	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Eagleswood Township	\$7,015	0.9	\$5,105	0.6	\$3,439	0.4	\$786	0.1	\$9,179	0.1	\$9,179	0.1	\$9,179	0.7	
Jackson Township	\$7,148	0.0	\$4,383	0.0	\$46	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Lacey Township	\$90,194	1.0	\$84,946	0.8	\$61,457	0.5	\$33,954	0.2	\$0	0.2	\$0	0.2	\$0	0.0	
Manchester Township	\$483	0.0	\$0	0.0	\$256	0.0	\$15,456	0.1	\$0	0.1	\$0	0.1	\$0	0.0	
Ocean Township	\$145	0.0	\$8,759	0.2	\$378	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Plumsted Township	\$0	0.0	\$0	0.0	\$223	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
Stafford Township	\$167,571	1.9	\$141,917	1.4	\$120,377	1.0	\$3,928	0.0	\$0	0.0	\$0	0.0	\$0	0.0	
TOTAL	\$611,287	0.3%	\$859,699	0.3%	\$696,742	0.2%	\$597,883	0.2%	\$389,329	0.2%	\$389,329	0.2%	\$389,329	0.1%	

Source: NJ Division of Taxation

PINELANDS COMMISSION

State Appointees

Candace McKee Ashmun.....Far Hills	Stephen V. Lee.....Tabernacle
B. Budd Chavooshian.....Trenton	Judith Norcross.....Moorestown
Thomas B. Darlington....New Lisbon	Richard J. Sullivan...Hamilton Square
(vacancy).....	Chairman

County Appointees

Brian Lefke.....Atlantic	Brian McFadden.....Cumberland
Michael J. Hogan.....Burlington	Vice-Chairman
Ann Auerbach.....Camden	Michael Ontko.....Gloucester
William J. Brown.....Cape May	Alan Avery.....Ocean

Federal Appointee

James W. Coleman.....National Park Service

Pinelands Commission Staff

Executive Director.....Terrence D. Moore	
John Stokes, Assistant Director Planning and Management	William Harrison, Assistant Director Development Review and Enforcement

<u>Planning and Research</u>	<u>Administration and Support</u>	<u>Development Review and Enforcement</u>
Larry Liggett, Manager	Michael Fletcher, Manager	Charles Horner, Manager
Barry Brady	Donna Connor	Gina Berg
Lois Cristarella	Sharon Griffin, Office Manager	Suzanne Calhoun
Frederick Douthitt	Willa Hopper	Kenneth Carter
Edward Eckels	Gerald Mensinger	Paul Evans
Edward Fox	Kathy Morales	Donna Graham
Susan Grogan	Karen Oakerson	Robert Howell
	Betty Sonsiadek	Donna McBride
<u>Science</u>	Denise Wallace	Norma Milner
Robert Zampella,	Eartha Williams	Patricia Murphy
Science Coordinator	Martha Williams	Kathleen Swigon
John Bunnell	Melody Wood	Susan Uibel
Martha Windisch	Nadine Young	Robert Watson
		Karen Young

Management Information Systems

John LaMacchia, Manager
Julie Edwards
Theresa Melodick
Janet Pierce

Public Programs

Elizabeth Carpenter
Maureen McAnespey

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