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Solid Waste Management State Plan Update 1993 - 2002

Section I: Municipal and Industrial Solid Waste

State of New Jersey
Department of Environmental Protection and Energy
Division of Solid Waste Management



Jim Florio, Governor
Scott Weiner, Commissioner

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INTRODUCTION AND PURPOSE OF STATE PLAN UPDATE

Solid waste management is a critical social issue that has captured national attention in an era of expanding environmental consciousness. The past 20 years have seen significant advances in disposal practices, resulting in massive closures of landfills and incinerators that could not meet rigorous environmental standards. However, the elimination of unsafe disposal facilities has resulted in a nationwide shortage of environmentally acceptable facilities in many densely populated areas, while the amount of solid waste generated by citizens, businesses, institutions and industries continues to increase dramatically with each passing year. This shortage of disposal capacity poses a hands-on challenge to state and local governments, citizens, businesses and industries alike to assume greater responsibility in the development of environmentally acceptable solid waste solutions.

New Jersey has accepted the challenge, and the results have been dramatic. Despite the greatest population density of any state in the country, limited land availability, the presence of sensitive natural resource areas, and unprecedented urban and industrial development, New Jersey has implemented one of the most aggressive source reduction and recycling programs in the nation, reaching an overall recycling rate of 52% by 1991 and projecting a 60% recycling rate by 1996. In addition, New Jersey has developed, and continues to develop, state-of-the-art disposal facilities including landfills, recycling centers, transfer stations and incineration facilities. Finally, New Jersey has reduced its export of solid waste to other states to 18% in 1991 and expects to be fully self-sufficient within the next seven years.

In addition to the dramatic changes in solid waste management practices, there have also been broad-based policy and programmatic changes in the management of sludge and medical waste. Land-based uses for sludge and sludge derived products are receiving increased attention since the ban on ocean dumping of sludge went into effect in March 1991. Sludge products, rich in nutrients and organic matter, are being investigated for beneficial use applications, such as in replenishing top soil. New Jersey's revised policies for sludge management center upon increased development of pollution prevention programs, advancing pretreatment to improve sludge quality, maximizing beneficial use technologies and minimizing incineration and out-of-state disposal.

The regulation of medical waste attracted enormous public and media attention in the late 1980s after medical waste washed up on New Jersey beaches in a number of unrelated incidents, threatening the state's summer tourism industry. Responding to the crisis, the state legislature enacted the Comprehensive Regulated Medical Waste Management Act which, along with accompanying regulations, established an immediate management program for regulated medical waste. In addition, the medical waste act requires the state to adopt a statewide medical waste management plan which will be completed as a separate section of the State Plan as further outlined below.

This 1993 State Plan Update describes New Jersey's current programs and practices for the management of solid waste, sludge and medical waste and sets forth the state's plan for managing those wastes over the next ten years. The development and updating of a statewide plan is a statutory requirement of the New Jersey Solid Waste Management Act. The plan sets

forth broad goals, objectives, criteria and standards by which county and statewide solid waste planning is conducted. In essence, it serves as the backdrop from which the county/state planning process is administered. This 1993 planning initiative will supersede the last adopted municipal and industrial solid waste plan of 1986, update the Statewide Sludge Management Plan of 1987, and represent New Jersey's Comprehensive Regulated Medical Waste Management Plan required by statute. Specifically this 1993 State Plan Update will:

- Outline the state's short and long-term goals for each management program and the legislative, regulatory and policy framework necessary to achieve those goals;
- Describe the current status of solid waste, sludge and medical waste management in the state and evaluate the effectiveness of those programs in light of the requirements of the Solid Waste Management Act;
- Describe how New Jersey's program fits within the national regulatory scheme for the management of solid waste, sludge and medical waste.

The 1993 State Plan Update is divided into three major sections. Section I which follows sets forth the state's municipal and industrial solid waste management plan, which was significantly redesigned in 1990 to establish a hierarchy of management practices based on source reduction and recycling. Section I almost exclusively addresses the management of municipal and industrial solid waste and only provides marginal references to sludge and medical waste for relevant issues which overlap. Section II sets forth the state's revised sludge management plan, which focuses on the development of land-based uses for sludge and sludge derived products. Section III sets forth the state's comprehensive medical waste management plan promulgated in accordance with the requirements of the medical waste act.

Because of the complexity, depth and breadth of the 1993 State Plan Update, the solid waste, sludge and medical waste sections will be adopted by the state in phases. The department will publish a notice of availability for Section I, the solid waste management plan, in the New Jersey Register on February 16, 1993, marking the beginning of the adoption process. A Notice of Availability for Section II, the sludge management plan, and for Section III the medical waste management plan, are scheduled for July of 1993.

Each section of the 1993 State Plan Update begins with an executive summary to provide the reader with a broad-based understanding of the state's goals and objectives for each regulatory program and a description of the plan designed to meet those goals and objectives. After the executive summaries, the specific goals and objectives, current programs and planning initiatives are described in detail and include all documentation and data. The 1993 State Plan Update includes numerous graphics, tables and charts to describe often complex and complicated information in a manageable fashion.

THE STATEWIDE SOLID WASTE MANAGEMENT PLAN 1993 UPDATE

Section I: Municipal and Industrial Solid Waste

Executive Summary

I. INTRODUCTION

Since the passage of the Solid Waste Management Act in 1970, the management of solid waste in New Jersey has evolved from a predominantly unregulated, private function to a highly sophisticated and interactive program of state and county planning activities, technical review and enforcement responsibilities. Prior to 1970, most solid waste was disposed of at privately owned landfills or dumps that were not constructed or operated to include any environmental safeguards. Underlying groundwater was not protected from leachate, and there were no controls to protect against odors, birds, rodents or insects. Local boards of health were responsible for enforcing local health standards, but enforcement efforts suffered from lack of consistency and focus. Responding to increasing environmental concerns posed by unregulated management of waste, the legislature passed the Solid Waste Management Act of 1970, which established a regulatory framework for the implementation of rigorous environmental standards, and the Solid Waste Utility Control Act, which established a system of economic regulation.

In 1975, the Solid Waste Management Act was amended to establish the planning process currently in effect. The 1975 amendments assign primary planning responsibilities, subject to detailed state level review and approval, to 22 solid waste districts, which are comprised of the 21 counties and the Hackensack Meadowlands Development Commission. The act required the districts to develop solid waste systems that maximize the use of resource recovery techniques, including recycling, composting and incineration technologies, in recognition of the state's need to reduce the dependence on landfill disposal. By the early 1980s, the department had approved solid waste management plans for each of the 22 solid waste districts, and actual planning activities began. The majority of the counties, consistent with department policy at the time, planned the construction of incinerators to serve as the cornerstone of the county solid waste system.

By the early 1980s, the department had closed, or was in the process of closing, over 300 unsafe or unregulated landfills that posed serious environmental hazards or had exhausted capacity. However, the department's persistent actions to implement rigorous environmental standards on landfill construction and operations, coupled with a steady influx of millions of tons of waste annually from neighboring states during the 1970s, resulted in a serious shortfall of disposal capacity in the state. A number of the counties, still in the midst of project development, were forced to secure interim disposal arrangements at out-of-state facilities pending completion of planned facilities.

By the late 1980s, the "solid waste crisis" had become a national issue, and New Jersey, the most densely populated state in the union, was at the forefront of both the problem and the solution. Responding to the need to develop safe, efficient systems, by 1990 the state/county planning process had produced 13 new major disposal facilities, including nine landfills with protective liners, leachate collection systems, and other environmental safeguards and four incinerators in Camden, Gloucester, Essex and Warren counties. Despite this remarkable progress, however, a number of additional counties were forced by the continuing capacity shortages to make disposal arrangements with out-of-state facilities pending completion of new facilities, and New Jersey, once a net importer of waste, became a net exporter with peak exports of 28% of all solid waste generated in the state in 1988. As national attention focused on the environmental concerns associated with solid waste management practices, a number of states moved to restrict the importation of waste. On several occasions, New Jersey waste was banned, without notice, from out-of-state facilities, resulting in serious disruptions of service and unhealthy conditions as waste collected in the streets.

It was against this background that Governor Florio signed Executive Order No. 8 on April 6, 1990 and appointed the Emergency Solid Waste Assessment Task Force to re-evaluate the state's solid waste management policies and practices and to recommend an approach to solving the growing crisis. On July 6, 1990, the task force issued a preliminary report, which analyzed the composition and amount of the waste stream and, based on that analysis, identified the amount of waste that could be eliminated at the source, recycled or managed through traditional disposal practices. On August 6, 1990, the task force issued its final report.

The task force acknowledged that the shortage in disposal capacity, the need to eliminate out-of-state disposal practices, and potential environmental issues related to over-reliance on incineration were matters of serious concern. To address these concerns, the task force recommended sweeping changes to the state's existing solid waste management policies and approach. To decrease the amount of waste requiring disposal, the task force recommended that aggressive source reduction measures be initiated at the state and county levels and that the mandatory recycling goal be increased from 25% of the municipal waste stream to 60% of the total waste stream. Disposal capacity planning, long the primary focus of county and state efforts, was viewed as an important secondary function following careful planning to implement source reduction and recycling goals. The one incinerator per county policy was abandoned in favor of the development of regional facilities designed to serve at least two counties. Governor Florio accepted the task force recommendations in November 1990. In June 1991, the department released the "Solid Waste Policy Guidelines" further defining the basic planning approach to implement the revised policies. In those guidelines, the department refined the task force recycling goal to require recycling of at least 50% of the municipal waste stream and at least 60% of the total waste stream by December 31, 1995. The department already has advanced the implementation of the task force goals significantly through the statutory approval process for plan amendments, permits and service and construction agreements for incineration facilities.

The successful implementation of the task force recommendations has far-reaching implications in the allocation of responsibility for solid waste management. Solid waste planning initiatives are no longer relegated solely to state and local governments; all citizens must participate in the solution.

Individual citizens are called upon through this State Plan Update, approved county solid waste plans and local ordinances to change their methods of handling household garbage, separating designated recyclables and household hazardous waste. In addition, all citizens are asked to make purchasing and home management decisions that will reduce the amount of waste generated in each household, including purchasing and reusing durable goods and separating and managing toxic constituents, such as cleansers, paint, anti-freeze, motor oil, lawn fertilizers and pesticides, to avoid contaminating the waste stream.

Businesses are called upon to integrate source reduction and recycling practices into their daily operations, and to conduct waste audits and surveys to develop the most suitable and appropriate management techniques. Businesses are also asked to develop procurement guidelines that encourage and support the purchase of recycled materials.

Industries will be asked to reduce or eliminate excess packaging or produce more consumable, durable and recyclable packaging, to develop labeling and advertising programs to facilitate consumer recycling and informed purchasing, to substitute post-consumer recyclable materials for virgin material where practicable, and to reduce the amount of toxic constituents included in product packaging.

Institutions, including government agencies, will be required to conduct waste audits, implement source reduction and recycling programs consistent with the goals of the department, and revise procurement specifications to provide for the increased purchase of recycled goods.

Although the development and implementation of solid waste programs and facilities traditionally has been a public function, the role of the private sector in achieving the policy objectives set forth in this State Plan Update cannot be underestimated. Currently, private companies perform the majority of solid waste collection and disposal functions in the state, including ownership and operation of recycling centers, transfer stations, materials recovery facilities, landfills and incinerators. Even in publicly owned projects, the public owner generally contracts out the design, construction and operation to private companies. As post-task force planning continues to evolve, the counties will be encouraged to evaluate the availability and adaptability of existing private infrastructures and services prior to commencing new projects. In situations where the existing infrastructure is inadequate or inappropriate to meet service needs, the counties will evaluate and consider private sector capabilities to construct and operate new facilities prior to commencing public sector initiatives.

The task force also envisioned a change in the department's role in the transition from a disposal based system to one predicated on source reduction and recycling initiatives. In addition to its established planning, permitting and enforcement roles, the department has assumed a leadership role in advancing source reduction, the research and evaluation of recycling technologies, market development programs, and the facilitation of regional plans between and among the counties. Given the importance of the participation of private industry in the development of recycling techniques and markets, the department will continue to work cooperatively with other state agencies to identify business opportunities that will advance the state's policy goals and objectives. The department supports legislation to establish new financial assistance programs and will restructure existing programs to fund source reduction and recycling activities through revisions to annual Solid Waste Services Tax guidelines and through the review and approval of county plan amendments identifying uses of Resource Recovery Investment Tax funds.

Beyond the governor's task force initiative, major organizational changes were made within the department and Division of Solid Waste Management to increase the coordination of environmental protection and economic regulation and to refocus the agency toward source reduction and recycling. On August 14, 1991, Governor Florio signed Executive Order No. 38 paving the way for implementation of Reorganization Plan No. 002-1991. These documents effectively merged the functions of the former Board of Public Utilities (BPU) with a reorganized and renamed Department of Environmental Protection and Energy. Under the reorganization, the former BPU staffs in the areas of solid waste regulation and energy planning were consolidated within the Division of Solid Waste Management and a newly created Office of Energy. The BPU remained an autonomous body renamed the Board of Regulatory Commissioners operating within the DEPE to independently oversee ratesetting for the natural gas, electric, water and telecommunications utilities. The most significant aspect of this merger from a solid waste management perspective was to fully integrate environmental and economic regulation functions within one streamlined agency: the Division of Solid Waste Management. The merger was also significant to the state government during the nation's economic recession as the consolidation plan has already saved \$3 million in cost avoidance through elimination of duplicative administrative functions in the two agencies. Subsequent to the DEP/BPU merger, the Division of Solid Waste Management also reorganized to create an Office of Recycling and Planning to fully integrate county/state recycling and solid waste planning, and to create within this office a Bureau of Source Reduction and Market Development to focus upon these critical management areas.

In conjunction with these organizational changes, the department is in the process of adjusting its solid waste fees to reflect both the efficiencies caused by the merger of the two agencies and the true cost of providing its regulatory services. As part of this effort, in December 1991, the department adopted recycling center fees which were 28% lower than those previously proposed and in June 1992 the department introduced rules to reduce fees for the monitoring of incinerators. By March 1993, the department plans to provide its updated fee schedule for solid waste transporters, permit applicants, annual monitoring and economic

regulation. These schedules will be adjusted to reflect the true cost of processing applications while also providing support for the department to meet its ongoing responsibilities. In summary, the merger of the two agencies and the reevaluation of fees has provided and will continue to provide, relief to the regulated sector and, in turn, the public.

New Jersey has been challenged to develop a statewide solid waste system that is self-sufficient and predicated on sound environmental practice. In the two years since the issuance of the task force final report, New Jersey has made significant progress in developing such a system, thanks to enthusiastic compliance by the public and persistent dedication by the counties and the private sector in planning and implementing new programs. According to preliminary calendar year 1991 statistics, 52% of the total waste stream was recycled, and exportation to out-of-state facilities dropped to 18%. Based on current projections, New Jersey expects to achieve the 50% municipal and 60% total waste stream recycling rates by the end of 1995 and to be self-sufficient within the next seven years.

This Executive Summary to the 1993 State Plan Update is designed to orient the reader by providing a concise, general description of 1) the department's objectives, criteria and implementation strategies; and 2) the current solid waste system and management practices, including a summary of capacity and planning requirements necessary to achieve self-sufficiency. However, this Executive Summary is not intended to be a substitute for the State Plan Update itself, which sets forth the department's entire regulatory program in thorough detail, including all backup data and information. While the Executive Summary provides a convenient synopsis, the reader is encouraged to review the entire State Plan Update to attain a full understanding of the state's solid waste management program.

II. OBJECTIVES, CRITERIA, STANDARDS AND IMPLEMENTATION STRATEGIES

The department has assumed, and will continue to assume, a leadership role in the development and implementation of the task force initiatives. The department's activities go beyond its historical planning and technical reviews and approvals; it is working cooperatively and prospectively with the counties to develop source reduction and recycling programs and regional plans. In addition, the department is sponsoring research initiatives for recycling technologies and market development; assisting the private sector in the identification and attainment of business opportunities; and educating county and municipal governments and the public on the benefits of recycling and the purchase of recycled products. Moreover, the department and other state agencies are required by Executive Order 34 to implement the source reduction and recycling goals established by the task force. Governor Florio signed Executive Order No. 34 on June 13, 1991. The order required, among other things, the establishment of programs in all state agencies to achieve a minimum 60% recycling rate. Activities include state agency waste audits, "Grass: Cut it and Leave it" grass clipping programs, expanded food waste separation activities, development of disposal and recycling contracts which reflect waste reduction incentives, amplified recycling in public parklands and forests, and expanded paper collection programs. The most significant state level accomplishments since the signing of Executive Order No. 34 are as follows:

- By September 1991, all 21 departments and an additional 30 agencies had appointed a departmental recycling coordinator;
- A number of state contracts are now in place to purchase reusable products such as laser toner cartridges and motor oils, trans-lubricants, greases and re-refined oil products;
- In December 1991, a contract for the collection of mixed paper in the downtown Trenton, Quakerbridge, and West Trenton areas was awarded. Mixed paper was targeted since it offers the greatest potential for waste reduction through recycling. Beyond standard high-grade office paper, this program includes the collection and recycling of all grades and colors of paper, file folders, envelopes, post-its, magazines, index cards, junk mail and other similar materials. In June 1992, the initial 42 designated buildings and 15,000 employees came on line to recycle mixed grade paper. In December 1992, approximately 32 additional sites in the greater Trenton, Mercer County area began mixed paper collection;
- Over 48,000 "Cut It and Leave It" brochures were printed and distributed to almost every state agency and county recycling coordinator since the program's inception in June 1991. A second printing is anticipated in early 1993;
- With few exceptions, all state properties which require mowing adhere to the "Cut It and Leave It" policy;

- All state parks and forest areas have on site recycling programs with several parks implementing a "carry in-carry out" strategy;
- In September of 1992 the "Waste Audit Manual for New Jersey State Agencies" was distributed to all state agency, county and college recycling coordinators. Beginning in October 1992, waste audit seminars were conducted for state agency, college and county recycling coordinators;
- Through revised Department of Treasury bid specifications, all new copiers ordered must have the capacity for duplexing and using recycled paper.

The following describes the objectives, criteria, standards and implementation strategies to achieve the source reduction, recycling, regionalization and self-sufficiency goals, including the allocation of responsibilities among the state, the counties, the private sector and the public. The specific short and long-term implementation strategies outlined throughout the plan to maximize source reduction and recycling, and to foster regional development of needed disposal capacity and systems, will ensure achievement of the DEPE's predominant public policy objective of achieving self-sufficiency in disposal capacity within the next seven years. Throughout this Update, identified short-term plans pertain to actions begun since Governor Florio accepted the task force recommendations in November 1990 or actions which will at least be initiated within the year following publication of the plan in the New Jersey Register. Long-term planning strategies pertain to initiatives which may, and in some cases should, be implemented during the balance of the planning period from 1994 through 2002.

1. Internal and External Communications

An effective statewide communications and education program is critical as a foundation toward implementation of the DEPE's primary municipal and industrial solid waste policies of source reduction, 60% recycling, regionalization and disposal self-sufficiency. Effective communications include: activities external to the department in the areas of public education, outreach and involvement in the planning and permitting process by all interested parties; steps to provide county and municipal officials with useful education materials and guidance documents; and initiatives within the agency to ensure coordination and efficient administration of regulatory programs. In order to advance internal and external communications toward achievement of specified goals and objectives the department will use the following approach:

Short-Term Approach to Program Implementation

- a. The DEPE awarded a contract during the Fall of 1992 for a statewide marketing/public information program focusing on recycled product purchasing and the development of markets; small business and multi-family recycling program expansion; and the recycling of nontraditional materials, such as used oil, batteries, grass clippings and tires. The contract is anticipated to result in a multimedia effort designed to deliver focused messages to

targeted audiences in the areas specified above.

- b. The "choices" campaign initiated in late 1991 under a federal grant from the USEPA will be expanded to provide consumer education and other environmental management workshops, and update related publications for the public. The choices program was designed to assist individuals with personal decisions in product purchasing and environmental management in everyday life, and promotes such ideas as backyard composting of grass and the proper disposal of used motor oil.
- c. A "Guide to Public Procurement of Recycled Products" was completed and distributed primarily to county and municipal officials in October 1992. This document will provide information on the procurement of recycled products through existing state contracts and is intended to greatly advance source reduction and recycling goals through the purchasing practices of government agencies.
- d. A statewide procurement conference will be held in September/October of 1993 to bring together federal, state, county and local officials, as well as private sector companies and vendors, to exchange information on recycled materials and products and to discuss procurement procedures.
- e. The DEPE will conduct an extensive overview in early 1993 of existing manuals, guides, reports, directories, brochures, fact sheets and newsletters to determine which publications need to be revised and what new publications might be needed.
- f. Two USEPA grants will be used to fund, among other things, procurement of an interactive solid waste display, a poster to be used as an educational tool in the schools and a recycling manual for municipal and county officials. These materials will be available by early 1993.
- g. Seminars and workshops for county and municipal officials, as well as the regulated community and public, were begun in 1992 and will continue throughout 1993 in the following areas: the development of waste audits to advance source reduction and recycling; the review of the DEPE's recycling regulations of November 1991; the Clean Streets - Clean Beaches litter abatement program and Litter-Acy Club project; and various technical topics available through the short courses program presented in cooperation with Cook College, Rutgers University.
- h. The DEPE will work closely with the NJ Environmental Education Commission in developing a comprehensive education plan for the state by Earth Day 1993. The goal of this plan is to help New Jerseyans develop the knowledge, skills, attitudes, values and behaviors needed to maintain, protect and improve the environment.

- i. An internal employee newsletter was first published in January of 1992 and will continue to highlight specific program areas and recognize employee accomplishments. A network of representatives from each DEPE division or program area has also been established to facilitate the exchange of information within the department and to help employees develop better communications skills.

Long-Term Approach to Program Implementation

The DEPE will apply the following long-term strategies to reach its communications objectives:

- a. Continue to utilize funds to train municipal and county officials and educate young people in the development and implementation of environmentally beneficial solid waste management practices;
- b. Expand and develop publications relating to solid waste, including the updating of the existing teacher's guide to solid waste currently in circulation;
- c. Increase voluntary participation of citizen and school groups in existing projects such as the Clean Streets - Clean Beaches Program, the New Jersey Waterways Audit and the NJ Association of Litter-Acy Clubs over the next year;
- d. Present solid waste courses in universities and colleges throughout the state using the Rutgers University short courses as a model. For more than a decade, the Cook College Office of Continuing Professional Education of Rutgers University has provided extensive short course offerings in environmental management to address the issue of balancing economic growth and environmental protection. Courses vary in length from one day to seven weeks and are offered throughout the calendar year. Current offerings address such solid waste management areas as integrated solid waste management, recycling economics, enforcement, public education strategies, composting, collection technologies, source reduction and landfill management;
- e. Coordinate a seven-day solid waste/recycling course at the New Jersey State Museum for children in grades 4-6, with the possibility of expanding this project into other grade levels in the future;
- f. Conduct solid waste/recycling workshops for teachers at least twice a year through local colleges and universities.

2. The State and County Partnership

The state will implement the objectives articulated in the State Plan Update through the state/county relationship mandated pursuant to the Solid Waste Management Act, whereby the state establishes overall policy objectives and goals and the counties are primarily responsible for

developing the respective county solid waste systems consistent with state goals and objectives. To maintain the integrity and efficiency of this planning system, the department will:

- a. Allow the counties flexibility in developing solid waste systems that accommodate their unique circumstances;
- b. Communicate state goals and objectives clearly and provide ample opportunities for county and public input and feedback;
- c. Require each county to establish a schedule for timely implementation of county plans, monitor county adherence to the schedule, and enforce, where necessary, compliance with the schedule;
- d. Expedite planning and permitting decisions, which began in 1992, to ensure timely implementation of solid waste programs;
- e. Revise and streamline financial assistance programs, which began in 1992, to assist the counties in funding their planned solid waste activities and projects; and
- f. Encourage the counties to evaluate the existing solid waste infrastructure of services and facilities to identify opportunities to integrate, expand or implement private sector programs.

3. Integrated Solid Waste Management and Management Practice Hierarchy

The department and the counties, working cooperatively, will develop and implement an integrated solid waste management plan to maximize the long-term security, stability and efficiency of the solid waste system. The state adopts the following hierarchy of solid waste management practices, presented in order of priority:

- a. Source reduction to reduce per capita generation of waste;
- b. Source separation and recycling to reduce the amount of waste to be disposed of in the system;
- c. Composting of source separated leaves, grass and food waste to reduce the volume of waste to be disposed of in the system;
- d. Household hazardous waste and small quantity generator collection to remove toxic constituents from the waste stream;

- e. Materials recovery systems to enhance source separation and recycling programs;
- f. Solid waste composting to reduce the volume of mixed municipal solid waste to be disposed of in the system;
- g. In-state landfilling at permitted, state-of-the-art facilities which utilize volume reduction systems, such as baling and shredding, to preserve limited landfill space; and regional incineration to reduce the volume of the remaining solid waste stream up to 90% and to produce energy;
- h. Out-of-state landfilling as a short-term measure during the development of a totally self-sufficient system.

4. General Strategy to Implement New Jersey Solid Waste Objectives

The state already has taken significant steps to implement the task force recommendations and will continue to advance the goals and objectives identified in this State Plan Update through the following short and long-term implementation approaches:

Short-Term Approach to Program Implementation

- a. Requiring each county to amend its solid waste management plan to describe its plans to cap and reduce per capita waste stream generation, to achieve at least 50% municipal and 60% total waste stream recycling goals, and to regionalize its solid waste system. As of December 1992, 13 of the 21 counties have submitted at least initial plans to achieve these goals and the department is working with the remaining eight toward formulation and submission of revised plans;
- b. Conditioning the issuance or renewal of solid waste permits on a demonstration that the facility's capacity is sized to accommodate at least 50% municipal and 60% total waste stream recycling; and
- c. Predicating the department's approval of service agreements for the construction and operation of solid waste composting and other high technology facilities upon appropriate facility sizing to accommodate 50% municipal and 60% total waste stream recycling and upon the inclusion, where necessary and appropriate, of a regional partner. In all cases proposals for a new or expanded incinerator project must include a regional partnership involving all or substantial portions of two or more counties.

In addition, the state's solid waste policy and goals as articulated in the task force final report have been furthered through the enactment of major legislation, including the Toxic Packaging and Reduction Act, the Dry Cell Battery Management Act, and the promulgation of comprehensive recycling regulations.

Long-Term Approach to Program Implementation

The department will continue to work cooperatively with the counties and the private sector to implement the objectives set forth in the State Plan Update. However, if the combined voluntary efforts of the public and private sector fail to achieve the targeted results, the department will work with the New Jersey Legislature as necessary to support legislative initiatives or use its regulatory authority to implement the task force recommendations over the long-term, including:

- Consumer labeling programs to advance environmental shopping;
- Packaging bans to advance source reduction goals;
- Additional constituent bans to reduce toxic materials in products and packaging;
- Yard waste bans to prohibit grass and brush from taking up scarce landfill space or other disposal capacity;
- Expanding the list of mandatory recycling commodities for source separation, such as plastic containers, steel cans, white goods, corrugated cardboard and office paper;
- Expanded mandatory procurement goals for recycled materials by state agencies;
- Required priority use by state agencies of composted materials for maintenance of public lands to promote market development;
- Required use by state agencies of recycled asphalt, concrete, nonhazardous ash, glass and other suitable materials in road and other construction projects;
- Development of municipal solid waste and sludge derived product quality standards to allow unrestricted use of compost products and the development of use criteria for material of lower quality.

While most of the above initiatives would require legislative changes to implement, some are being pursued partially at this time, such as: an ongoing effort between the DEPE and Division of Consumer Affairs to challenge present product labeling claims; permit restrictions at incinerators to prohibit the acceptance of grass and other materials; and expansion of designated materials required for recycling through the county planning process.

5. Disposal Self-Sufficiency and Interstate Waste Shipment

As a key policy objective, New Jersey will continue to move toward achievement of self-sufficiency in disposal capacity. The department's objective is to eliminate reliance on out-of-state disposal within a seven-year period. The issue of interstate waste shipment has received enormous attention in Congress and throughout the states over the past several years. The following policy positions respond to the ongoing national debate:

- The federal government must provide leadership in developing markets for recycling and setting standards for packaging to help states manage solid waste.
- Uniform statewide planning requirements should be administered by USEPA for all 50 states so that all states maximize source reduction and recycling.
- Minimum operating standards for disposal facilities should be developed to ensure appropriate environmental protection.
- National standards, including minimum targets of percentages of the waste stream for source reduction and recycling, are supported.
- States that have USEPA approved state plans should be permitted to impose differential fees for imported waste, provided the differential fees are rationally based and uniformly applied.
- Immediate bans or unrestricted differential fees that would thwart New Jersey's aggressive efforts towards source reduction, 60% recycling and regionalization, as well as the efforts of other states in these areas, are strongly opposed.
- Existing contracts for disposal capacity cannot and should not be curtailed through legislative enactments. New Jersey counties that financed, and now own, property rights for the use of air space in out-of-state landfills should be entitled to unencumbered utilization of that property for the term of the contracts.
- The interstate movement of recyclable commodities must remain unaltered by legislative or regulatory restrictions to maintain the free market system of commerce and to maximize opportunities for the marketing of materials.
- New proposals submitted by counties pursuant to New Jersey's county/state planning process which involve the long-term use of out-of-state disposal capacity will not be approved.

The department's strategy to achieve self-sufficiency is reflected in the specific objectives of this State Plan Update. Specifically, the counties will be encouraged to implement aggressive source reduction and recycling programs to reduce the amount of waste to be managed and disposed of by the solid waste system. In addition, the counties will develop regional disposal facilities to take advantage of economies of scale and to minimize potential adverse environmental effects.

On a long-term basis, the counties will need to maintain and further refine their source reduction and recycling programs consistent with demographic changes and technological advances. In addition, the state, counties and the private sector will cooperate in the research and development of beneficial uses for residual ash from the incinerators and in the development of regional ash landfills. Finally, the state will work closely with the counties to develop and implement additional regional disposal facilities to increase available capacity in the state. The table on pages 16 and 17 demonstrates, by year, the anticipated generation and recycling trends necessary to achieve disposal self-sufficiency.

6. Source Reduction

The state and counties will implement aggressive programs to cap per capita waste generation at 1990 levels, cap total waste generation within five years, and reduce total waste generation within ten years.

Short-Term Strategy for Source Reduction

- a. State agencies will continue to develop and implement waste audit and source reduction programs. Waste audit training for each department of state government, as well as county recycling coordinators, began in October 1992. In order to reduce solid waste, it is first critical to know the volume and types of materials generated by sector (municipal, commercial, institutional, industrial). Background information is obtained through a waste audit which is used to formulate waste reduction plans. Initially, counties have been asked to prepare inventories of county and municipal buildings, as well as businesses, to define the scope of a waste auditing program. The DEPE has also prepared a manual for conducting waste audits which was distributed in October 1992. Once inventories are completed, counties are being asked to adopt schedules for the performance of waste audits. It is specifically recommended that counties and municipalities prepare and implement waste reduction and auditing plans for all county and municipal offices in 1993. Further, counties are urged to consider adopting a program for waste audits and waste reduction plans for industries with more than 500 employees by 1993, for industries with more than 250 employees by 1994 and for industries with more than 100 employees by 1995. It is important to note that a number of companies have already taken significant steps towards waste reduction. The DEPE

has been working with counties through the solid waste planning process to establish commitments and specific schedules for conducting waste audits in line with the above timeframes. As of October 1992, six counties have adopted source reduction plans and the remaining 15 were under schedules for the submission of such plans to the department. While significant progress has already been made, the department will supplement the county planning process requirements in the area of waste audits through the development and proposal of regulations during 1993.

- b. Counties will continue to be encouraged to implement municipal per container billing systems for solid waste collection and disposal. By the end of 1992, 18 municipalities in New Jersey had operational per container collection programs. The department will work with the counties to develop financial incentives to municipalities that use the per container billing system.
- c. Counties will continue to be asked to consider the development and implementation of education programs to facilitate on-site management practices for yard waste, and hence reduction in the landfilling of yard waste, in accordance with the department's "Grass: Cut it and Leave it" guidelines which are currently available and actively being distributed. Further, the department has already begun to work with counties and facility applicants to impose permit restrictions against the acceptance of grass and other materials at incinerators. The department also supports enactment of a legislative ban on the disposal of yard waste materials at landfills and incinerators similar to that already in place with respect to leaves. Such legislative action should allow three or four years of developing backyard composting programs and other composting infrastructure for organic materials prior to implementation.
- d. The department will produce a guide to the development of permanent household hazardous waste collection programs by April 1993. In order to fully reuse the residual solid waste stream it is essential for small quantities of potentially hazardous waste to be removed from this solid waste stream and managed separately. The DEPE's ultimate goal is the removal of certain toxic constituents from products, such as packaging and consumer batteries, during their manufacture. The recent adoption of both the "Toxic Packaging and Reduction Act" and the "Dry Cell Battery Management Act" will significantly advance this goal. Where substitution of nontoxic constituents does not take place, recycling and proper management will be critical through the establishment of permanent household hazardous and small quantity generator waste collection sites within each district or on a regionalized basis.

NEW JERSEY SOLID WASTE DATA BASE TRENDS ANALYSIS ACHIEVEMENT OF SELF-SUFFICIENCY IN DISPOSAL CAPACITY (MILLIONS OF TONS)											
		RECYCLING				DISPOSAL					
						TOTAL		IN-STATE		OUT-OF-STATE	
YEAR	GENERATION	TOTAL TONS	% OF TOTAL GENER.	MSW TONS	% OF MSW GENER.	TOTAL TONS	% OF TOTAL GENER.	TOTAL TONS	% OF TOTAL GENER.	TOTAL TONS	% OF TOTAL GENER.
1985	11.40 ⁽¹⁾	0.9 ⁽⁵⁾	8	0.6 ⁽⁵⁾	9	10.5	92	9.7 ⁽⁹⁾	85	0.8 ⁽⁹⁾	7
1986	11.50 ⁽¹⁾	1.1 ⁽⁵⁾	10	0.7 ⁽⁵⁾	12	10.4	90	9.6 ⁽⁹⁾	83	0.8 ⁽⁹⁾	7
1987	12.40 ⁽¹⁾	1.8 ⁽⁵⁾	15	1.2 ⁽⁵⁾	18	10.6	85	9.2 ⁽⁹⁾	74	1.4 ⁽⁹⁾	11
1988	14.00 ⁽²⁾	5.4 ⁽⁶⁾	39	1.5 ⁽⁶⁾	23	8.6	61	4.6 ⁽¹⁰⁾	33	4.0 ⁽¹⁰⁾	28
1989	14.30 ⁽²⁾	6.1 ⁽⁶⁾	43	2.1 ⁽⁶⁾	30	8.2	57	4.5 ⁽¹⁰⁾	31	3.7 ⁽¹⁰⁾	26
1990	14.80 ⁽²⁾	6.8 ⁽⁶⁾	46	2.5 ⁽⁶⁾	34	8.0	54	4.8 ⁽¹⁰⁾	32	3.2 ⁽¹⁰⁾	22
1991	14.70 ⁽³⁾	7.6	52	2.5	34	7.1	48	4.4	30	2.7	18
1992	14.90 ⁽⁴⁾	8.2 ⁽⁷⁾	55	2.7 ⁽⁸⁾	36	6.7	45	4.4 ⁽¹¹⁾	30	2.3 ⁽¹¹⁾	15
1993	15.25 ⁽⁴⁾	9.1 ⁽⁷⁾	60	3.1 ⁽⁸⁾	41	6.1	40	4.0 ⁽¹¹⁾	26	2.1 ⁽¹¹⁾	14
1994	15.35 ⁽⁴⁾	9.5 ⁽⁷⁾	62	3.6 ⁽⁸⁾	46	5.8	38	3.8 ⁽¹¹⁾	25	2.0 ⁽¹¹⁾	13
1995	15.40 ⁽⁴⁾	9.9 ⁽⁷⁾	64	3.8 ⁽⁸⁾	50	5.5	36	3.5 ⁽¹¹⁾	23	2.0 ⁽¹¹⁾	13
1996	15.40 ⁽⁴⁾	10.2 ⁽⁷⁾	66	3.8 ⁽⁸⁾	51	5.2	34	3.8 ⁽¹¹⁾	25	1.4 ⁽¹¹⁾	9
1997	15.40 ⁽⁴⁾	10.3 ⁽⁷⁾	67	3.9 ⁽⁸⁾	52	5.1	33	3.7 ⁽¹¹⁾	24	1.4 ⁽¹¹⁾	9
1998	15.40 ⁽⁴⁾	10.5 ⁽⁷⁾	68	3.9 ⁽⁸⁾	53	4.9	32	3.9 ⁽¹¹⁾	26	1.0 ⁽¹¹⁾	6
1999	15.40 ⁽⁴⁾	10.6 ⁽⁷⁾	69	4.0 ⁽⁸⁾	54	4.8	31	4.8 ⁽¹¹⁾	31	0 ⁽¹¹⁾	0

NOTE: ALL NUMBERS HAVE BEEN ROUNDED FOR PRESENTATION PURPOSES

FOOTNOTES
NEW JERSEY SOLID WASTE DATA BASE TRENDS ANALYSIS

- (1) Generation for 1985 through 1987 calculated by adding NJDEPE Tonnage Grant data to NJDEPE Origin & Disposal data reports for the same years.
- (2) Generation for 1988 through 1990 calculated by adding NJDEPE Tonnage Grant Data, industry sources documenting recycling activity for 1989 and Origin & Disposal data (as corrected by county governments).
- (3) All figures in the 1991 row are based upon preliminary statistics which are subject to change following municipal review of disallowed tonnages, recycling tonnage grants field audits and surveys of private sector recyclers. The same procedures outlined under footnotes (2), (6) and (10) were used to calculate generation, recycling and disposal.
- (4) Generation for 1992 through 1999 has been estimated using Table 14A on page 122 of The State Plan Update to reflect 1995 generation at 15.4 million tons. For the period 1995-1999 it is assumed that the statewide source reduction goal of capping total generation within five years will be realized.
- (5) Recycling for 1985 through 1987 obtained from NJDEPE Tonnage Grant Program data.
- (6) Recycling from 1988 through 1990 obtained from NJDEPE Tonnage Grant Program data augmented with data from industry sources documenting recycling activity for 1989.
- (7) Recycling from 1992 through 1999 has been estimated based upon historical trends and through assuming that the actual Governor's Task Force Final Report goal of achieving a 64% total waste stream recycling rate by December 31, 1995 will be achieved and that modest growth beyond that point will be achievable.
- (8) MSW recycling from 1992 through 1999 has been estimated based upon historical trends and through assuming that the State goal of achieving a 50% MSW recycling rate will be achieved by December 31, 1995.
- (9) Disposal from 1985 through 1987 from NJDEPE Origin & Disposal Reports.
- (10) Disposal for years 1988 through 1990 calculated from NJDEPE Origin & Disposal Reports augmented with information supplied by county governments and by Baker Engineers Out-of-State Disposal Facilities Reports dated 11/18/88, 12/28/88, and May 1991.
- (11) Disposal from 1992 through 1999 has been estimated in recognition of existing in-state disposal capacity and assuming that all the planned projects noted on pages 156 and 157 of the State Plan Update will be operational by the referenced dates and that some mixture of the potential future projects noted on pages 158 and 159 will become operational toward achievement of total self-sufficiency within a seven year period or by December 31, 1999.

Following receipt of the DEPE guidance document noted above, counties should prepare inventories of small quantity generators, analyze how household hazardous wastes are currently handled, develop plans for the siting and development of facilities and identify methods of recycling collected materials, i.e. reuse of paints, anti-freeze, waste oil and batteries, as well as the potential redistribution and reuse of products for their originally intended use. The DEPE will work closely with counties in this process, providing expertise and successful examples of source reduction strategies employed by other jurisdictions.

- e. The department will develop and update educational strategies and materials designed to assist the state government, the counties and the public in reducing solid waste generation. In particular, the following documents will be distributed and periodically updated to achieve this purpose: "A Citizen's Guide to Reducing Solid Waste" (completed September 1989); "Grass: Cut It and Leave It" brochures (completed July, 1991); the "Waste Audit Manual" (completed August 1992); and "Guide to Public Procurement of Recycled Products" (completed in October 1992).
- f. The department will continue to offer financial assistance programs designed to assist the counties in the development of innovative and aggressive source reduction programs. In particular, Solid Waste Services Tax funds will be made available for this purpose.
- g. The state will develop creative procurement strategies to advance source reduction and recycling initiatives. State agencies will be required, and county and municipal governments will be asked to consider the procurement of goods and equipment designed to minimize waste generation. For example, only photocopiers with two-sided copying capability should be purchased. Toward this end, a major procurement conference is planned for September/October 1993.

Long-Term Strategy for Source Reduction

The department's long-term strategy for source reduction is broad in scope, requiring considerable shifts in both producer and consumer behavior. The following describes some examples of long-term source reduction initiatives that will be considered by the department.

- a. The department, in conjunction with the New Jersey Division of Consumer Affairs, will consider establishing standards for environmental claims made by manufacturers. In addition, the department will evaluate the establishment of a consistent and logical labeling program that designates the recyclability of packages, the percentage of post-consumer recycled material used in a package, and/or proper recycling or disposal requirements by category.

- b. The department will coordinate and establish a procurement network to share information with municipal and county governments concerning progressive procurement practices and to assist the private sector in the development of source reduction programs. It is anticipated that the combined procurement power of federal, state and local government to influence and reshape production behavior and drive source reduction initiatives can provide significant impetus to this effort. Efforts to develop a statewide procurement network began in line with the schedule of procurement activities outlined in detail on pages 23 and 24. However, the establishment of a comprehensive network of procurement officials is viewed as a long-term initiative of critical significance.
- c. The department will consider the feasibility of financial incentive and disincentive programs. Incentive programs, such as tax credits, low interest loans, and product surcharges, will be evaluated as a means of subsidizing production changes necessary to implement source reduction measures. Disincentives, such as product and package taxes, also will be considered.
- d. If private industry does not alter packaging practices on a voluntary basis, the department will support the enactment of packaging bans on appropriate materials.
- e. Certain toxic materials of documented concern such as mercury, lead, cadmium and chromium led to the enactment of the "Toxic Packaging Reduction Act," which requires manufacturers to gradually phase out the use of these heavy metals from packaging materials. The Department supports similar legislation that further bans toxic materials from products during the manufacturing process.

7. 60% Recycling

The state shall attain statewide recycling levels of at least 50% of the municipal waste stream and 60% of the total waste stream by December 31, 1995. Beyond 1995, rates in excess of these levels can and should be targeted. Revised targets will be developed in 1995 following detailed evaluation of progress made in municipal waste stream and total waste stream recycling during calendar years 1992-94. If appropriate, revised targets will be established earlier based upon documented levels of recycling. The DEPE recognizes that no recycling goal can be achieved without an appreciation of the economic reality in which recycling activities exist; namely supply and demand. The following implementation strategies are therefore divided into a discussion of (a) short and long-term expansion of the collection (supply) of designated materials and (b) short and long-term programs and policies to stimulate markets (demand) for products.

- a. The department will encourage the expanded collection and separation of recyclable materials by the public and private sectors in order to achieve the 50% and 60% goals. The department's short-term program to encourage materials supply expansion is as follows:

Short-Term Strategy to Increase Supply

- 1) Counties have been amending, and will continue to amend their county plans to designate additional materials for mandatory recycling. All 567 municipalities in New Jersey have mandatory ordinances in place and are recycling newspaper, glass and aluminum cans; approximately 515 provide curbside collection programs; 384 also recycle PET plastic; 366 also recycle tin/bi-metal cans; and 208 also recycle corrugated cardboard. Leaves are also banned statewide from disposal in landfills and incinerators. While additional materials are already being recycled in many communities, future focus will be upon broader designation of the following materials: grass clippings, brush, office paper, junk mail, HDPE plastic, white goods, used motor oil, consumer batteries, wood waste and other construction and demolition materials.
- 2) State agencies are required to implement aggressive recycling programs, including initial and periodic waste stream audits; the adoption of a 60% recycling goal; and separation and collection programs for such materials as mixed office paper, cans, bottles, glass and other recyclable materials. Efforts to substantially increase state agency recycling were required as part of Executive Order No. 34 signed by Governor Florio on June 13, 1991. Major state agency recycling accomplishments pursuant to Executive Order No. 34 have been previously outlined on pages 6 and 7 of this Executive Summary. The waste audit activity will serve as the linchpin in this major expansion of state agency recycling programs. The kickoff to assemble each state agency recycling coordinator and to initiate the waste audit program was held in October 1992.
- 3) Colleges and universities have been, and will continue to be, encouraged to develop and maintain recycling programs that are designed to accommodate the challenges of a multi-use residential and institutional community. A College Recycling Committee was first established in 1990 and is currently made up of representatives of 38 colleges and six universities located all across New Jersey. The group meets monthly and plans to produce a detailed guidance document for establishing and maintaining recycling activities at colleges and universities by the second quarter of 1993.
- 4) The department will implement a statewide educational program for the public, targeting "hard to recycle" items, such as tires, batteries, grass clippings and used oil, and target specific sectors, such as multi-family dwellings and businesses. In addition, the state is in the process of developing a major "buy recycled" education campaign to close the recycling loop through increased marketing and purchasing of products with recycled content. An 18-month, \$750,000 marketing/public information contract was awarded in November 1992 to Keyes Martin to carry out these initiatives.

- 5) State agencies are required to perform waste audits necessary to analyze the waste stream and develop the appropriate recycling strategies. The department will require the counties to adopt waste audit programs for local governments and businesses in their respective county plans. State agency waste auditing activities began in October 1992 and the DEPE has been working through the county/state planning process to obtain commitment to performance of waste audits at all county offices and in the private sector under specific schedules since June 1992.
- 6) The state is restructuring and consolidating, where possible, existing financial assistance programs, specifically the Solid Waste Services, Resource Recovery Investment and Recycling Tax programs, the Bond Act loan program, and the bond allocation system to set priorities for the use of funds for source reduction and recycling purposes. In addition, existing programs are being will be streamlined to ensure timely disbursement of funds to local governments to implement programs on an expedited basis.
- 7) The department has worked through the county planning process beginning in 1992 to encourage the counties to develop or sponsor the development of materials recovery facilities that will extract additional recyclable materials from the solid waste stream to further increase recycling rates beyond the level of existing source separation programs. In addition, the department will expedite permit requests and modifications to construct materials recovery facilities.
- 8) The department will assess the parameters for a program for the recycling of fire retardant treated lumber by April 1993.
- 9) The department supports the goal of establishing a minimum number of used oil collection sites in each county, preferably one in each municipality, and a long-term funding source for recycling and educational activities related to the collection of used oil. The DEPE's goal is to work with the counties to have such a minimum number of permanent collection sites available by the end of 1993 and has already produced Guidelines for Siting Used Oil Collection Tanks to assist counties and municipalities in this endeavor. In addition, the department will assist the counties in developing educational programs concerning the collection and recycling of used motor oil, and promote the re-refining of used oil into lubricant material.
- 10) The department will research the use and properties of chemically treated wood and evaluate its current policy that restricts the processing and recycling of chemically treated wood with untreated wood. Current policy will be revised by July 1993 if deemed to be overly restrictive to recycling of chemically treated wood.

Long-Term Strategy to Increase Supply

Long-term initiatives designed to increase the supply of recyclable materials will require substantial statutory, regulatory or programmatic changes. The following is a brief summary of those initiatives which the department may pursue, independently or through working with the legislature where necessary, should existing programs fail to achieve targeted recycling goals:

- 1) The department, in conjunction with the Department of Community Affairs, anticipates the development of regulations by July 1993 that will require, as part of a construction or demolition permit, an estimate of the amount and types of waste to be generated, and the disposal and recycling centers to be used in the disposition of this waste.
- 2) The department will continue to investigate methods to improve the marketable quality of collected, recycled material, including further separation of materials by residents to avoid contamination and increased manual or mechanical separation at recycling centers or transfer stations.
- 3) The department recognizes the need for additional financial assistance to local governments for recycling and supports legislation to expand, in scope and application, existing solid waste and recycling programs.
- 4) The state will investigate the need for the imposition of additional disposal bans of specific recyclable materials (i) where sufficient end-markets exist for the banned materials; (ii) in the interest of eliminating toxic constituents in the waste stream and (iii) to increase the environmental efficiency of solid waste incinerators.
- 5) The department will revise and expand as appropriate, and encourage the counties to implement, compliance monitoring systems necessary to enforce the recycling goals and strategies adopted by the state and county governments, including a system for inspections, warnings and fines.
- 6) The department will publish a comprehensive guide for construction and demolition contractors that identifies specific source reduction and recycling techniques and programs. This guide will be published by the latter half of 1993.
- 7) The department will promulgate regulations by the latter half of 1993 that will implement and refine the provisions of the container plastics coding system enacted into law in 1991 (P.L. 1991, C. 268). The proposed regulations will be designed to preserve the integrity of the plastics recycling market by requiring consistent, clear coding practices.

- b. In order to ensure the long-term viability and growth of the effective recycling programs currently in place, the state will initiate programs to stimulate demand for recycled products. The implementation of the "demand" initiatives will establish an economy that readily accepts post-consumer materials as substitutes for virgin raw materials in the manufacturing or production process.

Short-Term Strategy to Stimulate Demand for Recycled Products

- 1) The state will continue to develop a procurement system that requires increased purchases of recycled materials by state agencies. The types of procurement initiatives in effect or contemplated include, on paper products a 10% price preference on bid responses proposing recycled paper; consolidation of purchasing power to increase the quantity of recycled materials purchased, resulting in cost savings to state agencies; and the development of standard bid specifications for the purchase of recycled materials. The department has prepared a "Guide to Public Procurement of Recycled Products" that was published in October 1992. In addition, a series of targeted procurement conferences will be held which started in December, 1992 and will extend through September/October 1993. The December conference, jointly sponsored with the Department of Transportation, focused on the use of recycled materials such as crushed glass, crumb rubber from used tires, recycled concrete aggregate and asphalt pavement in highway construction and maintenance.

Beginning in February and extending into April 1993, the department, in conjunction with the Division of Purchase and Property in the Department of Treasury, will be holding a number of regional procurement conferences with county and municipal purchasing officials to explain the state's recycled products purchasing program and the various ways local governments may become partners in cooperative purchasing opportunities with the state.

Also, by April 1993 the department intends to formally announce the functioning of a New Jersey corporate recycled products advisory council. This council will be composed of a mixture of New Jersey's major business and industry employers and is intended to identify and promote recycled paper and other products among New Jersey's corporate business sector.

On May 5th, 1993, the New Jersey Recycling Forum, a non-profit recycling advisory body established in 1981 will hold its annual symposium and recycling awards dinner. This year's symposium will focus on state agency market development efforts, and include presentations on procurement and recycling business development by the Departments of Environmental Protection and Energy, Treasury, Agriculture, Commerce and Economic Development and the Office of

Economic Recovery.

Finally, the department intends to sponsor a two-day procurement conference and recycled products vendor show in September/October 1993, which will highlight a wide range of public and private recycled products procurement initiatives.

Through these various conferences, seminars and other outreach activities, which will involve the various levels of government and the private sector, the department will be firmly establishing a recycled products purchasing network which will serve to expand and diversify markets for recycled products.

- 2) The department will amend the recycling regulations (N.J.A.C. 7:26A-1 et seq.) to address the following initiatives:
 - Exemptions from the need to obtain recycling center approvals for tire reef projects in order to facilitate this important activity;
 - Reporting and approval requirements for out-of-state transport of recycled materials;
 - Regulatory status and operational requirements for scrap metal processing facilities and municipal recycling depots;
 - Approval exemptions for recycling activities on Department of Transportation rights of way;
 - Approval requirements for facilities accepting plastics (other than rigid plastic containers).

The department expects to propose these amendments to the regulations in March 1993.

- 3) The department will continue to support and permit recycling centers that process and recycle construction and demolition debris.
- 4) The department will continue to work with the Department of Transportation to develop research and testing programs for the use of recycled materials in roadway construction and maintenance, as well as standard specifications for the purchase of such materials. To date, specifications have already been put into place or are in field test evaluation that allow for the use of recycled asphalt pavement, mixed glass as an aggregate, recycled concrete aggregate, recycled wood chips, recycled tire rubber, modified asphalt paving, and recycled asphalt roofing scrap. Other

recycled materials and uses to be evaluated at this time include compost derived from a variety of solid wastes and expanded use of recycled glass and asphalt based roofing scrap. The DEPE will also support the establishment of minimum recycled materials content criteria should voluntary efforts not result in documented programs in materials reuse in state roadway construction projects.

- 5) The department will continue its efforts to develop markets for mixed, broken container glass in site drainage applications and roadway aggregate additions. Through the department's efforts, the National Plumbing Code board and the Department of Transportation have already approved the use of mixed, broken container glass for these uses.
- 6) The department will update, on an annual basis, the New Jersey Markets Directory, which provides valuable information to sellers of recycled materials.
- 7) The department will sponsor a study, funded by the USEPA, to evaluate the cost-effectiveness of tire pile clean-up utilizing various tire recycling technologies. The research will be conducted during the summer and fall of 1993, and a final report will be issued to the USEPA in May of 1994.
- 8) The department will continue to work with Camden County, Camden City, and certain lending institutions and a private concern to develop a 600 ton per day waste paper deinking mill on the Camden port. Construction of the mill is anticipated to begin in 1993, with operations commencing in 1994. The mill will process approximately one million tons of mixed office paper wastes per year. The department is evaluating possible financial assistance that could be provided to the project.
- 9) The department will continue to support the development by private industry of glass recycling centers similar to the one to be constructed by Anheuser Busch in Logan Township, Gloucester County.
- 10) Consistent with the distribution formula established in state law, the department will continue to provide low-interest business loans to business and industry in a combined amount equal to 35% of the state recycling fund to develop and implement recycling activities. The DEPE will also attempt to expand the use of loan guarantees in an effort to maximize the application of existing and future funds dedicated to private sector recycling. In this regard, the department has established a priority ranking system and will annually reevaluate the system in order to process loans as quickly as possible. New Jersey's recycling fund was created by the 1987 Statewide Mandatory Source Separation and Recycling Act, which levied a tax of \$1.50 per ton of solid waste accepted for disposal at a landfill in New

Jersey or accepted for transfer to an out-of-state facility for disposal. Monies are allocated under a statutory distribution formula where, generally, 40% goes to municipalities in the form of tonnage grants to help run local programs; 35% goes to provide low interest loans to recycling businesses; 7% goes to state program planning; 8% goes to county program planning; and 10% goes to recycling public education programs.

- 11) The department will continue to work with the New Jersey Department of Commerce, the Port Authority of New York and New Jersey, the South Jersey Port and other industrial development agencies and utilities to identify business opportunities for recycling companies in the state.

Long-Term Strategy to Stimulate Demand for Recycled Products

In the event that private industry is not successful in creating the marketing infrastructure necessary to support the statewide recycling program, the department may support or implement the following initiatives:

- 1) The department may support legislation that requires manufacturers of certain materials -- for example, batteries or motor oil -- to accept the materials for disposal and recycling.
 - 2) The department may support legislation that establishes minimum recycled content standards of certain products offered for sale in the state.
 - 3) The department may evaluate the effectiveness of "pooling" or regionalizing collected materials to enhance marketing opportunities.
 - 4) The department may further expand its efforts to fund, sponsor or support research activities to develop uses and markets for recycled materials.
- c. The department may support legislation that requires the organic constituent in the waste stream to be managed through composting and natural decomposition opportunities at the point of generation.

Short-Term Strategy to Manage Organic Waste

- 1) The department will continue to provide technical and regulatory support for the practice of leaf mulching through the regulations promulgated in 1989 in conjunction with the Department of Agriculture. These regulations greatly expanded the options available to municipalities in proper management of their leaves by allowing for the mulching of up to a six-inch layer of leaves directly onto farmland.

- 2) The department will continue to support the development of small-scale leaf composting facilities (less than 20,000 yards per year) through the permit-by-rule program, which provides for automatic permit issuance to leaf composting projects that certify certain siting and operational requirements. Under this rule, the applicant certifies siting and operations in accordance with the procedures established within the "Leaf Composting Guide for New Jersey Municipalities," and simply registers the site with the department. Through this procedure, municipalities with an appropriate site may initiate leaf composting on an expedited basis without the delay frequently encountered in standard permit issuance.
- 3) The department will continue to encourage the counties to amend their county plans to include a "blanket" inclusion policy for vegetative waste composting facilities that sets forth a modified, expedited amendment process to include specific facilities that meet certain criteria. This will further streamline composting facility development.
- 4) The department will support the development of compost markets by implementing a state procurement mandate for compost-derived products as an alternative to soil amendments, mulches and other organic material used in construction and in the maintenance of state property. In addition, the department will continue to encourage county and municipal governments to implement similar procurement mandates. As part of this planned purchasing requirement, the department will seek to adopt a hierarchy of compost-derived product purchases that ranks product purchases in the following order: municipal solid waste (MSW), sludge, co-compost (sludge and MSW composted together), and vegetative waste. Legislative proposals which address broadened state government procurement mandates have already been introduced. The department actively supports expanded legislative requirements which include compost product purchasing or will consider other means of imposing such requirements for implementation in 1993.
- 5) The department will continue to promote the "Grass: Cut It and Leave It" program for grass clippings as the primary method for managing yard waste to remove it from the solid waste stream.

Long-Term Strategy for Managing Organic Waste

- 1) The department will develop a program for the marketing of municipal solid waste (MSW) compost to support proposed MSW projects in Cape May, Ocean and Somerset counties that will process the organic fraction of the solid waste stream after recycling, including food waste. These are the three counties which, as of September 1992, had formally included MSW compost projects within their solid

waste plans and were given DEPE approval to move forward to the permitting phase. The Cape May project is already under detailed technical review for a permit. Specifically, through the Municipal Solid Waste Compost Utilization Task Force established by the department, research will be performed on the use of container produced ornamental plants, nursery stock and field crop and permanent vegetation for the purpose of establishing agricultural best management practices for compost, developing in-state markets, and educating the public on the benefits of production and use of MSW compost. These efforts are expected to advance the development of other MSW compost projects in the state. The MSW Compost Utilization Task Force noted above is composed of county officials, representatives of the New Jersey Departments of Agriculture, Commerce and Environmental Protection and Energy, the Association of New Jersey Recyclers and the New Jersey Recycling Forum, compost producers, the New Jersey Food Council, agricultural and horticultural trade associations and Procter and Gamble Corporation. Through their efforts, a five-year research agenda for the above project is being finalized and \$500,000 has been committed by the DEPE (50%) and the other task force members (50%) to begin the research.

- 2) The department will widely distribute and apply the findings of research currently being performed by Rutgers University relating to potential health problems associated with leaf composting; the use of grass clippings in the leaf composting process; odor problems related to composting grass clippings; and the use of brush material in the composting process. In addition, the Rutgers research team will update the "Leaf Composting Manual for New Jersey Municipalities" by mid-1993.
- 3) The department will support pilot or experimental projects by private operators of vegetative waste composting facilities that will incorporate certain food wastes into the composting process. Selected waste streams already under consideration or previously approved include food processor waste such as coffee beans and supermarket produce. If successful, as measured by odor production, compost product quality and presence of vermin, the department will assist facilities in amending operating permits.
- 4) The department will design and implement research into the potential health effects associated with municipal solid waste compost and the land application or other use of compost end-product.

8. Regionalization of Programs and Facilities

The counties will continue to be encouraged to develop and implement regional disposal facilities and recycling programs designed to serve more than one county to take advantage of economies of scale and to minimize the environmental consequences associated with siting numerous facilities in a densely populated state. While regionalization does not in all cases

represent best management practice due to site constraints and technological limitations, the careful analysis of opportunities for shared use of infrastructure and regional program planning will be required of county governments as further outlined below.

Short-Term Strategy to Implement Regionalization

- a. The department will continue to use its approval rights over county planning and facility permitting, service agreements and financing plans to encourage counties to develop regional plans and facilities.
 - 1) The counties have been, and will be, required to evaluate fully the feasibility of regionalizing each component of their solid waste program, and based on the evaluation, to develop specific plans to implement the regional program that best accommodates each county's service needs.
 - 2) The department will not approve the construction of a new incinerator that cannot accommodate the disposal of a significant portion of processible waste generated in at least a two-county region.
 - 3) Aside from regionalization of disposal capacity, counties are encouraged to evaluate opportunities to regionalize other solid waste programs, such as bypass and residual landfills, recycling centers and transfer stations, where such regionalization will benefit all of the participating counties.
 - 4) As of December 1992, six significant regional partnerships have been initiated which involve ten of the 21 counties and the Hackensack Meadowlands Development Commission (HMDC). These agreements involve: shared use of the Essex County incinerator by both Essex and Bergen counties; future shared use of the Union County incinerator by Union and Bergen counties when operational in spring of 1994; future shared use of the Mercer County incinerator, if permitted and constructed, and the Atlantic County landfill by both Mercer and Atlantic counties; shared use of the Warren County incinerator by Warren, Somerset and Hunterdon counties; shared use of the Atlantic County landfill by Somerset and Atlantic Counties beginning in February 1993 for bulky waste disposal; and use of the HMDC 1-E landfill for the disposal of MSW generated in Hudson County. All but the arrangements between Warren and Hunterdon counties were initiated after release of the task force final report in August 1990 in direct response to the task force recommendations for the counties to regionalize their solid waste systems. Finally, while not regional between counties, Camden County was inspired by the task force recommendation to regionalize and unify its countywide system by designating its existing incinerator as the county incinerator and canceling construction of a second planned incinerator in Pennsauken. Through the above regional agreements, as well as other actions stemming from the task force final

report, eight formerly planned incinerators have been eliminated in Atlantic, Camden, Bergen, Cape May, Middlesex, Monmouth, Ocean and Passaic counties. In addition, formerly planned incineration projects in Salem and Sussex counties have not advanced beyond initial county plan inclusion and the Hudson County incineration project is currently inactive.

- b. The department will accept a regionalization analysis that includes the following basic steps:
 - 1) A thorough analysis of the county's existing system and plans, including waste generation trends, current/future recycling rates, and existing and planned capacity;
 - 2) Identification of current limitations or deficiencies in the existing county plan;
 - 3) Identification of potential regional partners with complementary needs;
 - 4) Meetings and negotiations held in good faith with potential partners to create a regional partnership;
 - 5) To the extent that a county is not pursuing the development of a regional facility within its borders, it must demonstrate that it has been, or will be, willing to consider opportunities to participate in regional solutions planned by other counties.

The department will facilitate the development of regional plans upon the request of the participating counties.

- c. Each county must amend its county plan to include its regional analysis and its proposed regional plan.

Long-Term Goals to be Accomplished Through Regionalization

- a. The state seeks to eliminate the need to construct solid waste incinerators in the future.
- b. The development of regional collection and processing systems will strengthen and stabilize the markets for recycled materials.
- c. The development of regional collection systems will reduce transportation and equipment costs through economies of scale.
- d. By regionalizing and combining the procurement power of all levels of government, the department hopes to stimulate production changes to advance source reduction initiatives and market development.

- e. Regional cooperation among the counties could foster the development of shared services, including joint use of consulting services, public educational programs, and research initiatives to study common problems.

9. Incineration

Incineration is a disfavored method of long-term solid waste management and the state will reduce current and planned dependence upon incineration, to the maximum extent possible, through the implementation of aggressive source reduction and recycling programs, which will reduce the amount of waste that requires disposal, and through the regionalization of necessary facilities.

Short-Term Strategy to Reduce the Need for Incineration

- a. The department will scrutinize existing and future permit applications for incinerators to ensure that the state's fundamental policy goals relating to the implementation of source reduction, recycling and regional programs are being addressed at the county level. The department will approve plans to expand an existing incinerator only in the context of a multi-county regional plan.
- b. The department will continue to enforce permit conditions for operating incinerators vigorously to ensure the highest standards of enforcement. The department may suspend, on a temporary or permanent basis, facility operations that seriously violate permit conditions.
- c. The department will work with the counties and with facility owners to maximize the capacity of existing landfills and incinerators to continue to eliminate the need for out-of-state disposal.
- d. The department will continue to identify and close all small-scale incinerators that do not meet current environmental standards, including those pertaining to particulate controls, acid gas controls, stack height and pollution control monitoring.
- e. The department will continue to require each incinerator to employ the best available control technology for pollution control and will impose the most stringent emissions standards in air quality permits. The department also will continue to require "fuel cleaning," or the removal of toxic constituents, from the solid waste stream to ensure that emissions standards are met. Materials already restricted by some permits include consumer batteries, wallboard and grass.
- f. The department will complete the work undertaken by the "Task Force on Mercury Emissions Standard Setting" and will recommend an actual standard, as well as identify specific measures to reduce the content of mercury in the solid waste stream in a final

report, by the end of the first quarter of 1993. The Mercury Task Force completed its preliminary report in August 1992 and distributed this document for public comment. The department published its interim report findings and recommendations in December 1992.

- g. The department is requiring, as a permit condition, that incinerator operators be certified by the American Society of Mechanical Engineers.

Long-Term Incineration Strategy

The department's long-term goals with respect to incineration are as follows:

- a. Unless a compelling need is demonstrated, the department will stop approving county plans or permit applications for new incinerators of any kind.
- b. Small-scale incinerators in schools and apartment complexes will be eliminated.
- c. Incineration of hospital waste, both regulated and otherwise, will be minimized in accordance with the Comprehensive Medical Waste Management Plan. As noted earlier in the "Introduction and Purpose" section of this State Plan Update, New Jersey's medical waste management plan will be proposed in the New Jersey Register by July of 1993 as Section III of the overall state plan.
- d. The department will continue to monitor and enforce emissions standards vigorously and require facility owners to upgrade air pollution control systems to incorporate the best available control technologies.

10. Ash and Residuals Management

Incinerator and power facility ash and other residuals materials such as oil contaminated soil, water treatment plant residue, and street sweepings will be appropriately tested and classified and then recycled and reused to reduce the amount of residual material that must be disposed.

Short-Term Strategy to Manage Ash and Other Residual Material

- a. All incinerators are required to implement rigorous ash or residuals testing programs.
- b. The department's primary goals for residuals management are to leave materials in place where appropriate through on-site treatment methods or to have materials used, as opposed to exhausting limited remaining disposal capacity. To advance this latter goal, the department will apply a basic procedure to approve use or reuse proposals which demonstrate that:

- the material in question is nonhazardous;
 - markets exist for reuse of the material;
 - the end market facility has all necessary approvals to operate;
 - written confirmation will be supplied to the department, certifying receipt, tonnage and use of materials.
 - organizationally, the responsibility for administering the review of specific requests to reuse nonhazardous oil contaminated was transferred from the Division of Solid Waste Management to the Division of Responsible Party Site Remediation in November 1992 to eliminate the redundancy and inefficiency of having two DEPE programs handling soil reuse. Under the revised system the same case manager overseeing remedial actions will also evaluate specific reuse plans where contaminated soils must be removed from a cleanup site.
- c. The department will continue to encourage the development of recycling centers for Class B materials to process nontoxic or nonhazardous residual materials.
 - d. The department will continue to sponsor or co-sponsor research initiatives designed to develop recycling and reuse options and markets for residual materials.

Long-Term Strategy to Manage Ash and Other Residual Material

- a. The department will support programs designed to advance general pollution prevention and pretreatment themes and reduce toxins used in the manufacturing process to ensure a cleaner residual material.
- b. The department will continue to refine and develop residual testing programs based on the most current scientific expertise to promote proper identification of physical characteristics to ensure proper management techniques.
- c. The department will continue to sponsor and fund research initiatives designed to increase recycling and reuse alternatives for residual materials. At present, the DEPE, along with four other New Jersey and New York public agencies, is participating in a research project to evaluate the economic and environmental impacts associated with the handling, storage, and processing of incinerator ash as an aggregate substitute in asphalt paving. In addition, the DEPE is funding the preparation of a health and ecological risk assessment for ash residue based on the data generated from ash reuse projects approved by the DEPE. Finally, the DEPE completed an evaluation of processes to separate and recover trace metals from incinerator ash in March 1992. This evaluation assessed the physical, chemical and leaching properties of untreated and treated ash and identified

potential markets for treated ash products. The draft final report, a detailed 300-page document, is undergoing the last phase of internal DEPE peer review and will be available in final form in early 1993. The primary finding of the study indicates that heavy metals, particularly lead and cadmium, can be efficiently recovered from fly ash, along with calcium salt. Further, preliminary economic analysis in the study reveals that the operating costs of establishing a processing facility to remove trace metals from ash would be competitive with current ash disposal costs.

11. Enforcement of Solid Waste Programs

The laws relating to the management, collection, transportation and disposal of solid waste will be vigorously enforced in a fair, timely and predictable manner to protect the health and safety of the public and the environment.

Short-Term Strategy to Enforce Solid Waste Programs

- a. The department will continue the internal staff development process toward integrating environmental and economic analysis functions as part of the enforcement program. The DEP and BPU merger of enforcement staffs, which physically took place during 1992, has already resulted in improved coordination of the environmental and economic aspects of solid waste regulation and has resulted in a more cost effective service for the public.
- b. The department will shut down unpermitted operations and aggressively enforce waste flow rules to promote competition and environmentally sound management.
- c. The department will continue to reach agreements with participating states concerning illegal interstate disposal of solid waste in contravention of the waste flow rules. A memorandum of understanding was signed by Governor Florio and Governor Evan Bayh of Indiana in August 1991 which sets forth an aggressive interstate cooperative effort to crackdown on illegal solid waste transporters. A similar agreement was signed by Governor Florio and Governor George Voinovich of Ohio in October 1992. Additional negotiations are currently ongoing with officials of West Virginia.
- d. The department will continue to refine the A-901 review process, which requires a background check for personal integrity, fitness and competency to perform, of all potential applicants for a license to conduct solid waste activities to ensure thorough, but timely, issuance of approvals and to eliminate backlogs. The department's goal is to have an average processing time of seven months for applications submitted after January 1, 1993.

- e. The department will develop a program to enforce the provisions of the Solid Waste Collection Regulatory Reform Act, which establishes a four-year program to deregulate the rates in the collection industry in order to foster a competitive market. This enforcement program will emphasize the requirement to submit uniform tariffs, maintenance of tariff data, and the establishment of procedures to monitor the effect of rate reform on prices and on competition in the solid waste collection industry.
- f. The department will modify and refine its existing enforcement program to provide the appropriate support for the implementation of the source reduction and recycling programs mandated by this State Plan Update, including development of additional data and reporting systems.
- g. In early 1993, the department will promulgate regulations that will supplement and strengthen the existing program of enforcement penalties to more effectively discourage violations of the Solid Waste Management Act.
- h. The department will continue, through the administration of the County Environmental Health Act (CEHA), to delegate enforcement responsibilities to the counties and their implementing agencies and to provide training and education to the counties in the assumption of those responsibilities.
- i. The department will revise existing regulations to strengthen the regulatory program for the management and disposal of asbestos and asbestos-containing waste consistent with USEPA standards.

Long-Term Strategy for Enforcement

- a. The department will allocate additional resources to strengthen the enforcement effort and to reduce the amount of backlog related to the processing of administrative orders and administrative consent orders.
- b. Once the A-901 backlog is eliminated or substantially reduced, the department will focus the A-901 program on compliance enforcement.
- c. The department will work with the counties to increase the role and responsibilities of CEHA-approved county agencies in the enforcement of solid waste programs.
- d. The department will continue to monitor asbestos abatement programs and will evaluate new technologies for handling and disposing of asbestos that minimizes human exposure.

- e. The department will continue to develop and refine its program to enforce the provisions of the Solid Waste Collection Regulatory Reform Act.

12. Landfill Closure

The department will establish a priority system to evaluate landfills which have terminated operations, but have not been properly closed consistent with DEPE closure requirements, identify responsible party funding sources to pay for proper closure, expedite review and certification of closure plans, and, where necessary, remediate sites that are polluting the air and ground water of the state.

Short-Term Strategy for Landfill Closure

- a. The department will expedite closure plan reviews for registered landfills required by statute to submit plans. The Division of Solid Waste Management currently considers 168 landfills to be required to submit detailed technical and financial closure plans and 18 other facility owner/operators have voluntarily agreed to submit closure plans, thus bringing the total to 186 sites. The department will develop a plan to streamline the review and approval of closure plans which have been backlogged. This plan will identify procedures by which a major action (approval, denial, detailed notice of deficiency) will be taken as quickly as possible for each pending plan;
- b. A priority list for evaluating the need for closure, and where appropriate remediation, for all registered landfills will be completed and will be based upon the following variables: status of current closure (for applicable facilities), analysis of ground water monitoring data, facility location, surrounding land use, type of wastes known to have been accepted, and other site or area specific technical criteria;
- c. The department will perform site assessments and initiate any required enforcement action on a "worst-case-first" basis. Such action will include negotiating with responsible parties, and signing control documents such as administrative consent orders, to ensure proper technical and financial aspects of closure in accordance with a site specific schedule.
- d. The department will conduct a preliminary assessment, site inspection and responsible party investigation for unregistered and unconfirmed sites. The information gathered during this process will provide the basis for ranking the sites on potential human health and environmental risk so that the worst sites can be remediated first.
- e. For facilities with unapproved and unsubmitted closure plans, the department will utilize the "Voluntary Cleanup Outreach Program" in an attempt to provide an opportunity for any party to conduct a cleanup on a voluntary basis with departmental review. In such

cases a control document, such as an administrative consent order, is developed to guide closure/remediation on a specific schedule and costly, time-consuming legal proceedings are avoided.

- f. It is the department's experience, from both a technical and economic perspective, that the strict application of comprehensive technical closure requirements is not the most effective management approach due to the characteristics of each facility or site and available funding sources. As a result, the department may utilize existing regulatory authority or draft changes to regulations in order to apply a balanced approach to properly closing each site. While costs are recognized as a factor, such consideration will not limit the department's commitment to approving plans which are protective of human health and the environment. This approach would utilize a case-by-case evaluation to determine if any modifications to the technical closure standards are appropriate for each facility or site. A decision on use of the case-by-case approach will be made following completion of individual site assessments for registered and unregistered sites and an open and collaborative public process.
- g. The department will explore potentially available funding sources to accomplish proper closure consistent with the established priority list. Available Hazardous Waste Bond Fund monies and the monies in existing DEPE escrow accounts will be utilized as appropriate. Further, the department will encourage municipalities to develop closure plans which identify future funding sources to supplement insufficient accounts. These plans will allow closure work to begin at the highest priority municipal facilities while remedial costs are recouped in subsequent years through municipal tax collections or from other identified sources.
- h. Beyond the relatively limited scope of currently available funds dedicated to landfill closure, the department will consult with the Attorney General's Office, develop necessary regulations and/or work with the legislature to allow for usage of monies currently collected as part of the Resource Recovery Investment Tax, the Sanitary Landfill Contingency Fund, or other appropriate sources of funding. This analysis of using these available sources of monies for closure purposes will be completed by July 1993.

Long-Term Strategy for Landfill Closure

- a. Based upon the analysis of sites, development of priority lists and identification of available funding sources, the department will begin the aggressive implementation of approved closure plans for registered sites.
- b. Once the short-term implementation plan has been completed, the department will develop a long-term funding plan which will estimate financial needs to address the

overall closure priority list. When completed, the department will work with the legislature and the federal government to structure the needed funding measures into New Jersey law to implement a comprehensive landfill closure program. One option for long-term funding is a bond supported grant or low interest loan program for municipalities and responsible parties dedicated to landfill remediation.

13. Statewide Contingency Planning

The state will work with the counties to develop contingent disposal plans in the respective county plans which provide expedient disposal arrangements that will protect the health, safety and welfare of the public.

Short-Term Contingency Strategy

In the event that interruptions in out-of-state disposal service should occur within the next year, the department will work with the counties to activate existing back-up contracts for disposal, if available, or to negotiate new short-term contracts for out-of-state disposal. In addition, the department may exercise its regulatory power under an emergency situation to redirect waste to in-state facilities with available capacity depending on the nature and the extent of the crisis.

Long-Term Contingency Strategy

- a. Depending upon future developments nationwide to ban the interstate transportation of waste, the department will work with the counties to make sure that there is adequate in-state contingency back-up disposal capacity in the event of an emergency situation.
- b. The department may perform an expanded study to determine the feasibility of reopening closed landfills that have the potential for vertical or horizontal expansion. The DEPE initiated a limited landfill reopening study in 1989. It became evident from this work that the reopening concept, on either a short-term interim or long-term basis, may be severely limited for a number of significant reasons, including: land uses at or adjacent to old landfills have changed in many cases thus prohibiting reopening possibilities; many old landfills were very poorly sited, often within wetlands or near water bodies such that reopening would be inconsistent with current regulations; for old facilities with vertical reopening potential, difficult engineering obstacles would need to be overcome in placing suitable environmental safeguards, such as liners and leachate collection systems, on top of previously landfilled solid waste; large sums of money which are not currently available would be necessary to implement any form of reopening plan; and environmental claims liability would represent a substantial legal concern needing to be addressed on a case-by-case basis. Given these substantial

limitations, the DEPE would only give serious consideration to more detailed study of landfill reopening should broad interstate restrictions develop that threaten basic solid waste disposal services.

- c. The department will support the evaluation by counties and municipalities of landfill mining opportunities and the implementation of experimental or pilot projects, since a successful mining operation could result in additional capacity at the mined site.

14. Tire Pile Management

Programs to manage existing tire piles, prevent the creation of additional tire piles, and identify and evaluate technologies for processing tires in piles must be developed and implemented.

Short-Term Strategy to Manage Tire Piles and to Recycle Tires

- a. The department will encourage the development of diverse tire recycling options, such as the creation of tire reefs and tire chipping, to ensure the availability of cost effective, environmentally sound recycling alternatives in the state. The department's short-term goal is to recycle 30% of all tires generated.
- b. The department will continue to work with the Department of Transportation to develop uses for recycled tires in road construction and maintenance, including rubber modified asphalt. The NJDOT has already constructed highway sections with rubber modified asphalt, and has incorporated tire chips in sub-base. In addition, the DOT has tested the recyclability of rubber modified asphalt, by removing a section of pavement in Newark, reprocessing it and relaying the material on the road surface. This project showed that from a materials point of view asphalt pavements containing ground tire rubber can be recycled successfully.
- c. The department will complete the EPA funded research project that evaluates alternative tire recycling technologies by the spring of 1993. This project will enable the DEPE to rank existing tire recycling technologies based upon cost and environmental impact. This information can then be used to recommend the most cost-effective and environmentally sound processes for which public funds can be expanded in the remediation of the tire piles.
- d. The department will continue to provide additional funds under the tonnage grant programs for the development of tire recycling projects and as a direct subsidy to municipalities to offset the cost of tire recycling.
- e. The department has completed an inventory of tire piles in the state and, following detailed site inspections, ranked each based upon potential public health and

environmental threat. To date, eight major tire piles have been identified, all of which are located in the southern portion of the state, which are estimated to contain some 5.2 million illegally discarded tires. The department has also met with the Public Service Electric and Gas Company toward investigating the co-firing of chipped tires with fossil fuels in existing utility boilers in the state as an outlet for remediating these piles. A preliminary assessment of feasibility is anticipated by early 1993.

- f. The department will continue to work with the Northeast Waste Management Officials' Association (NEWMOA) to standardize the regulation of tires in all of the northeastern states. NEWMOA is working with member states to develop model scrap tire legislation and regulations which are anticipated to be completed by the end of January 1993.

Long-Term Goals to Manage Tire Piles and to Recycle Tires

- a. The department will work with the legislature toward the establishment of a scrap tire management fund. The fund revenues will be used to subsidize end-markets for use of scrap tires and reimburse municipalities and counties for the costs of transportation and processing of scrap tires.
- b. The department will consider instituting permitting and bonding requirements for scrap tire haulers.
- c. The department will develop state procurement mandates to investigate the purchase, wherever feasible, of retread tires for state automobiles.
- d. The department will support a ban on the disposal of tires at in-state landfills. Initially the ban would preclude the disposal of whole tires, permitting only the disposal of chipped or sliced tires until a total ban is feasible.
- e. The department will consider assigning disposal responsibility, including cleanup responsibility of existing tire piles, to tire manufacturers.
- f. The department will continue to research and develop recycling technologies and management techniques for tires.
- g. The long-term goal for tire recycling is to achieve a 95% recycling rate through the above initiatives.

15. Waste Flow Enforcement and Franchises

The department will continue to issue and enforce waste flow orders consistent with the development of county plans and to award franchises to support the development of disposal

facilities.

Short-Term Strategy for Waste Flow and Franchises

- a. The department will regularly and consistently enforce its waste flow rules to promote fair competition and environmentally sound disposal. This will ensure proper updating of the rules to reflect changes in county plans. The DEPE will hold appropriate public hearings on a statewide or regional basis to accept comment on formal waste flow changes and will complete response to comment documents and rule adoptions annually or more frequently in cases where emergency redirection orders have been adopted and require rulemaking.
- b. The department will continue to award franchises to counties or their implementing agencies when such an award fulfills the statutory requirements and is necessary or beneficial to the development of a disposal facility.
- c. The department formally proposed a "mixed loads" rule in the September 21, 1992 edition of the New Jersey Register. A public hearing on the proposal was held on October 21, 1992. The proposed rule provided, among other things, that when a hauler has collected waste from multiple waste flow districts and deposits that load at a transfer station, the disposal of that waste will be governed by origin of the waste, rather than the location of the transfer station. In addition, a rule provision was provided to allow monetary payment to be sent to disposal facilities, instead of solid waste, in an amount proportionate to the amount of waste which was collected from the geographic area serviced by the disposal facility. This provision will provide greater flexibility, reduce transportation costs and protect the financial interests of disposal facilities and ratepayers by providing for payments which allow for the same level of fixed costs recovery as would have otherwise occurred. Generally, through the rule proposal, the DEPE has attempted to balance the existing waste flow rules and their enforceability with the benefits of the continued operation of a limited universe of approximately 25 relatively small private transfer stations and materials recovery facilities. These facilities serve a valid public purpose in performing recycling activities consistent with statewide goals. The department viewed the rule proposal as a continuation of a longstanding policy which was amended to more adequately meet the waste flow enforcement needs of solid waste regulatory agencies.

The DEPE is in the process of reviewing all comments received during the public comment period and at the public hearing. Opposition to the rule proposal was expressed by many counties during the public comment period. Based upon the comments received and the significance of the waste flow issue, the DEPE will give serious consideration to modifications to the proposed rule. A decision on the scope of the rule revisions is anticipated by March 1993.

- d. The department will support the development of more stringent measures to require solid waste collectors and transporters to comply with the waste flow rules, including the enactment of the currently proposed Solid Waste Crimes Act. This proposed legislation recognizes that the unlawful handling of solid waste is a form of economic crime and would provide the DEPE with substantially increased enforcement tools against violators.

Long-Term Strategy for Waste Flow and Franchises

- a. After the adoption of the State Plan Update, the department will evaluate the feasibility and benefits of a revised waste classification system that classifies waste solely in accordance with its origin (e.g., municipal, commercial or industrial) as opposed to the current classification system that combines origin and physical characteristics.
- b. Under certain circumstances the department will support waste flow control over recyclables toward achievement of the minimum 50% and 60% recycling rates. The task force final report noted that counties should be provided the ability to coordinate and aggregate curbside recycled materials. No legislative or regulatory action has been taken to date to authorize any form of county/state flow control over recyclables. The department would support such legislation, initiated by a county or region, in cases where a county government has developed an intermediate processing facility or other central collection infrastructure and a definitive showing can be made that the pooling of recycled commodities will improve product marketing. Counties would also need to consider the role of the private sector and existing recycling infrastructure as part of any plan to require the waste flow of recyclables.
- c. Upon adoption of the Comprehensive Statewide Medical Waste Management Plan, the department will direct the flow of regulated medical waste to specific treatment and disposal facilities as specifically required by statute. It is anticipated that regulated medical waste flow rules will be developed at the completion of the one-year county medical waste planning process currently scheduled for 1993/1994. A statewide waste flow system would therefore be developed and implemented in the latter half of 1994.

15. Economic Regulation and Collector Rate Reform

a. Collection Company Rate Reform

Objectives and Criteria: The passage of the Collection Company Rate Reform Act in December 1991 presents the department with the opportunity to be a catalyst in the redefinition of the solid waste collection industry to one where open, active, fair competition assures quality service at reasonable fees. During the period 1992 to 1996 the department's goal is to transfer its regulatory approach to one with necessary

flexibility to promote competition with ongoing surveillance and standard setting to assure fairness and opportunities for small and large collection companies.

Short-Term Implementation Strategy

- 1) Implementation of a customer bill of rights to be provided to all customers of solid waste collection services by March 1993. The bill of rights will make customers aware of their choice of solid waste services and assure that informed customers self-enforce industry competition.
- 2) Rapid and effective implementation of the uniform tariff among collectors so that flexible rate band pricing, which allows collectors to charge customers between a specified range of their filed tariff, can occur and consumers can encourage more competition.
- 3) Development of uniform standards for municipal procurement of collection services. These standards will permit greater competition with improved service and pricing for municipal collection services.
- 4) Clear definition and development of effective competition in the industry. Mergers, acquisitions, expansions of service territory and fee setting will be reviewed to assure that effective competition is encouraged and assured. Specific attention will be paid to assure that pricing or acquisition policies do not unfairly harm the economic viability and competitiveness of small and medium-sized collection companies.
- 5) Assistance and encouragement to collectors, municipalities and counties in the development of per container rates. Per container rates not only will promote source reduction and recycling but will more appropriately assess costs on the basis of generation and, thereby, prevent subsidies between consumers who generate a lot of garbage and those who generate lesser amounts of garbage.

Long-Term Implementation Strategy

- 1) Collection and analysis of industry data, and regulatory action as necessary, to assure that the industry is competitive in all sectors of New Jersey.
- 2) Preparation of a report to the legislature in 1994 which will assess the impact of rate reform and recommend legislative changes, if necessary, to assure quality service at reasonable fees.

b. Economic Regulation of Disposal Utilities

Objectives and Criteria: Disposal facilities with waste flow directed to them have increasingly taken on the form of traditional utilities. They represent significant investment by counties and, most important, provide monopoly services to customers. As such, their economic regulation is critical to protect consumers, contain municipal solid waste collection costs and provide for nondiscriminatory treatment to collectors so that collection industry competition is encouraged.

Short-Term Implementation Strategy

- 1) The department will continue to evaluate disposal company fees as the basis of each utility's cost of services recognizing only those costs which are just and reasonable and non-recurring.
- 2) In rate cases, the department will review utility cost control and purchase practices to assure that consumers bear only those costs which are necessary to private service.
- 3) The department will conduct a review of all payment and security deposit procedures and other terms and conditions of service to assure that they do not impose an undue burden on small and medium sized collectors.
- 4) The department will assure that all long-term debt financings are undertaken on a competitive basis unless a clear demonstration of the benefits of negotiated financing is made. Since many of the utilities under the department's jurisdiction are also public authorities, the department is reevaluating its procedures to assure that they are consistent with the unique institutional structure of these authorities, as well as with Division of Community Affairs' oversight. The department will modify its rules as necessary to achieve this consistency.

Long-Term Implementation Strategy

- 1) The long-term strategy is continued progress in marrying the department's economic and environmental responsibilities to encourage the plan's policy goals, especially regionalization, source reduction and recycling efforts. Review of service and interdistrict agreements for resource recovery services will incorporate consideration of the policy goals of regionalizing recycling and source reduction.

III. CURRENT STATUS OF THE STATEWIDE SOLID WASTE PROGRAM

As previously noted, preliminary data for 1991 revealed a statewide generation rate of 14.7 million tons, 7.6 million (52%) of which was recycled and 7.1 million (48%) of which was disposed of. Of the total 14.7 million tons generated, 4.4 million (30%) was disposed of in-state and 2.7 million (18%) disposed of out-of-state. From these figures the state's commitment to self-sufficiency is evident as comparably, 26% was exported in 1989. While the 1991 data are encouraging from both a recycling and waste export perspective, the recycling tonnage grants portion of the data base has not yet undergone the final stage of municipal review of DEPE disallowed tonnage. This final auditing activity should be completed by February 1993 and is not anticipated to materially alter the summary figures outlined above. However, due to the fact that detailed analysis of the entire 1991 data base has yet to be completed, the State Plan Update relies primarily upon 1990 figures as further outlined below.

Since New Jersey's last State Plan Update was adopted in 1986, tremendous changes have taken place in the development and implementation of the statewide solid waste system. The primary emphasis of solid waste policy has shifted to source reduction and recycling and away from sole reliance upon disposal capacity planning. Mandatory recycling has been legislatively enacted and aggressively implemented by the counties and municipalities, and the public has responded with enthusiastic compliance. Exports of solid waste to other states peaked in 1988 and are significantly declining. Finally, 14 major disposal facilities have commenced operations, providing a significant increase in available capacity. As evidenced by this status report, New Jersey's current solid waste system demonstrates the state's growing commitment to source reduction, recycling and regionalization as the means of developing a totally self-sufficient system that does not rely on out-of-state disposal.

The purpose of this section of the Executive Summary is to provide a brief description of New Jersey's existing solid waste system and programs. All of the data provided in this section are supported in great detail by the charts, tables, graphics and information set forth in Sections C. 1 and 2 of the text of the State Plan Update, and the reader is encouraged to refer to those sections for a more specific analysis and reference.

1. Waste Generation and Recycling

In 1990, New Jersey generated approximately 14.8 million tons of nonhazardous solid waste, representing almost a 30% increase in solid waste generation since 1985.

2. Recycling

Of the 14.8 million tons generated in 1990, approximately 6.8 million tons (or 46%) was recycled, representing a dramatic increase in recycling since 1985, when only 8% of the waste stream was recycled. Preliminary figures reveal that the recycling rate increased to

approximately 52% in 1991. The greatest increase in recycling rates occurred after the passage of the Mandatory Source Separation and Recycling Act in 1987; recycling rates increased in 1988 to 39% from a 1987 total of 15%. Today, all 567 municipalities have mandatory recycling ordinances in place; all collect newspaper, glass and aluminum cans; 515 have curbside collection; 384 additionally recycle PET plastic; 368 additionally recycle tin/bi-metal cans; and 208 recycle corrugated cardboard. A wide array of additional materials are being targeted for recycling within county plans and incorporated within mandatory ordinances at the local level for implementation in the residential, commercial and/or institutional sectors. Such materials as white goods, tires, batteries, wood, asphalt, concrete, office paper and junk mail have been designated for recycling in a number of county plans.

3. Disposal of Waste

Of the 14.8 million tons of solid waste generated in 1990, 54% was disposed of at a combination of in-state and out-of-state disposal facilities, reduced from a 92% total disposal figure for 1985. (These figures reflect the increased recycling rate from 8% to 46% as discussed above.) Of total solid waste generated in 1990, 32% was disposed of at New Jersey facilities and 22% was exported out-of-state, primarily to Pennsylvania landfills. Preliminary information for 1991 shows a drop in out-of-state disposal to approximately 18%.

Of the 21 counties, 13 (Cape May, Camden, Cumberland, Burlington, Essex, Gloucester, Hudson, Monmouth, Middlesex, Ocean, Sussex, Salem, and Warren) have implemented predominantly self-contained or in-state disposal systems. Hunterdon, Somerset and Bergen counties dispose of significant portions of their waste at in-state incinerators under regional agreements, but remain predominantly exporters. The balance of the counties -- Atlantic, Mercer, Union, Morris and Passaic -- rely almost exclusively on out-of-state disposal practices. However, at this time Union (in conjunction with Bergen), and Mercer (in conjunction with Atlantic) are planning major in-state disposal facilities, which may eliminate reliance on out-of-state disposal practices for those counties. In addition, Atlantic opened a new bulky waste landfill in late 1992 and has entered a 10-year interdistrict agreement with Somerset County for regional use of this facility, thus further enhancing self-sufficiency goals. The following describes the in-state and out-of-state disposal practices:

In-State Disposal

As discussed above, 32% of the total waste stream generated (or 4.8 million tons) was disposed of at in-state facilities in 1990. Of that amount, 28% was processed by the four waste-to-energy facilities located in the state: Camden County (1050 tons per day), Essex County (2250 tons per day); Gloucester County (575 tons per day) and Warren County (400 tons per day). The balance of the waste disposed of at in-state facilities was landfilled in 12 regional/commercial landfills. Eight of the 21 counties -- Cape May, Cumberland, Salem, Burlington, Ocean, Monmouth, Middlesex and Sussex -- dispose of all of their nonhazardous waste in commercial, state-of-the-art landfills located in their respective counties. In addition,

Gloucester, Camden and Warren counties have opened limited-use landfills to dispose of nonprocessible and bypass waste and ash residue from their incinerators.

A number of counties have either recently brought into operation, commenced construction of, or are in the latter planning and development stages of implementing, major disposal facilities. Union County commenced construction of a 1440 ton per day incinerator (also to be used by Bergen County) in January 1992, which is anticipated to be operational by summer 1994. Mercer and Atlantic counties have executed an interdistrict agreement to construct a 1450 ton per day incinerator to be located in Mercer County. The department currently is reviewing the permit application for the Mercer/Atlantic facility. Atlantic County has placed into operation a limited-use landfill for the disposal of construction and demolition waste originating in Atlantic, Somerset and Mercer counties. Finally, Cape May County is developing a 600 ton per day municipal solid waste composting facility. The department also is reviewing the permit applications for the Cape May facility.

Out-of-State Disposal

In 1990, approximately 22% of the total waste stream (or 3.2 million tons) was disposed of at out-of-state landfill facilities. The majority of the waste exported to out-of-state landfills originates in seven counties: Atlantic, Hunterdon, Passaic, Mercer, Morris, Somerset and Union. Preliminary, unaudited figures reveal that the export rate was further reduced in 1991 to 18%.

In 1991, the majority of waste (71%) exported went to landfills located in Pennsylvania. Fourteen percent was exported to Virginia, and nearly all the remaining 15% was exported to West Virginia, New York, Ohio, and Kentucky.

Transfer Stations

Most of the waste exported out-of-state is first delivered and transferred into large transfer trailers at one of the 17 regional transfer stations located in the state. In addition to these 17 regional facilities, approximately 33 other transfer stations serve the in-state disposal systems developed by the counties.

4. Regional Partnerships

Since Governor Florio's acceptance of the task force final report in 1990, six significant regional partnerships have been initiated among the counties. Of those six, five have executed formal interdistrict agreements to implement the regional systems, and one (Bergen and Union) has resulted in a memorandum of intent to implement a regional partnership before construction of the Union incinerator is complete. In addition, Camden County abandoned its plans for a second incinerator in the county and unified the two franchise districts into a single solid waste system. A brief description of those partnerships follows.

Essex and Bergen Counties

On May 1, 1991, Bergen and Essex counties entered into a regional agreement for a three-year period pursuant to which the Essex incinerator processes 250,000 tons per year of processible waste generated in Bergen County. This agreement terminates on March 1, 1994.

Union and Bergen Counties

On October 21, 1991, the Union County Utilities Authority and the Bergen County Utilities Authority (the designated implementing agencies for their respective counties) entered into a memorandum of intent to implement a regional partnership when construction of the Union incinerator is complete in the summer of 1994. Under the terms of the memorandum, Bergen County will deliver 150 tons per year of processible waste to the Union incinerator for a 20-year period. The department has directed Bergen and Union counties to proceed diligently and in good faith to negotiate an interdistrict agreement consistent with the memorandum of intent.

Mercer and Atlantic Counties

Mercer and Atlantic counties have entered into an interdistrict agreement, certified by the department during the planning phase of the project development process, to develop a regional incinerator to be located in Mercer County that will accept 1440 tons per day of waste generated in the two counties. In addition, both counties will share the use of Atlantic County's proposed limited-use landfill and composting facility. The proposed Mercer County incinerator project application was considered administratively complete in September 1992 and is now undergoing detailed technical review. All departmental requirements will have to be met and a public hearing process conducted prior to this facility potentially being permitted and constructed.

Somerset and Atlantic Counties

Somerset and Atlantic Counties signed an interdistrict agreement in January 1993 which calls for the redirection of all bulky (type 13) and dry-industrial (type 27) solid waste generated in Somerset County and processed at the Bridgewater Resources Incorporated (BRI) transfer station, to be disposed of at the Atlantic County limited use landfill. This agreement is for a 10 year period and will result in an additional 30,000-60,000 ton per year reduction in out-of-state exports for disposal in line with the department's self-sufficiency goals.

Warren/Somerset/Hunterdon Counties

Warren and Somerset counties have entered into an interdistrict agreement pursuant to which Somerset delivers 1,400 tons per week of acceptable waste to the Warren incinerator through December 31, 2001, and 1,977 tons per week for a six-year period thereafter. Warren County is granted the ability to share in Somerset County's recycling facility and planned solid waste compost facility.

In a separate interdistrict agreement, Hunterdon County delivers 100 tons per day of acceptable waste to the Warren incinerator through December 31, 2001. Warren County provides for the disposal of ash residue and bypass waste from the incinerator attributable to both Hunterdon and Somerset counties.

Hudson County and the Hackensack Meadowlands District (HMDC)

Hudson County and the HMDC entered into an interdistrict agreement pursuant to which Hudson County's municipal waste is disposed of at the HMDC 1-E landfill facility, with the balance of Hudson County's waste stream (commercial/industrial) exported to out-of-state facilities. This arrangement is short-term pending the implementation of a long-term disposal strategy by Hudson County or the exhaustion of the HMDC's landfill capacity.

Camden County and the Township of Pennsauken

On December 5, 1992, Camden County adopted the Comprehensive, Long-Term, Environmental, Action and Recycling Plan, which provided for the unification of Camden's solid waste system. Previously, two incinerators were being developed in the county: one in Camden City by the Pollution Control Financing Authority of Camden County and one in Pennsauken Township by the Pennsauken Solid Waste Management Authority. In direct response to the task force recommendations to develop regional facilities, the county canceled the plans for the Pennsauken incinerator and designated the Camden incinerator and the Pennsauken landfill as the major disposal facilities to accept and process the majority of Camden's solid waste. Although not technically a "region" within the meaning of the task force report, the department strongly endorsed the county's cancellation of incinerator capacity consistent with the task force report and the hierarchy of preferred disposal practices adopted in this State Plan Update.

5. Tipping Fee Costs

Disposal costs have stabilized since 1985. As of January 1993, the average cost per ton for landfill disposal in New Jersey was \$74 per ton, ranging from a low of \$49 per ton in Burlington County to high of \$116 per ton in Sussex County. The average cost per ton of incineration was \$93 per ton, ranging from a low of \$73 per ton in Essex County and a high of \$122 per ton in Warren County. The average cost per ton for transfer stations in New Jersey is \$111 per ton, ranging from \$102 per ton in Passaic and Union counties to \$124 per ton in Morris County.

6. The Capacity Analysis

The department's fundamental objective is to completely eliminate the exportation of waste to out-of-state facilities and to be totally self-sufficient in disposal capacity in seven years, that is, by December 31, 1999 at the latest. The state's primary means of achieving that objective is the implementation of aggressive source reduction, 50% municipal and 60% total waste stream

recycling, and the regionalization of programs and facilities. The seven year self-sufficiency timeframe has been selected because the successful implementation of major facilities and programs which are referenced in the plan takes, in the department's experience, this relative timeframe to complete from start to finish.

The State Plan Update (see Section C.2.) sets forth an analysis of the anticipated residual capacity that remains after source reduction initiatives and recycling in the year 1995 and sets forth a plan for developing additional facilities to manage that capacity in-state. Generally, the capacity analysis begins by deducting a projected 60% recycling rate from 1995 waste generation figures, leaving 40% of the waste stream to be managed. If no other facilities (other than the Union incinerator, which is currently under construction) are planned, constructed and completed before December 31, 1995, approximately two million tons of solid waste will require out-of-state disposal. If, however, the Mercer/Atlantic incinerator and the Cape May County MSW compost facility are permitted and constructed, and if the Atlantic County limited use landfill and the Pennsauken landfill accept ash residue from the Mercer and Camden county incinerators, respectively, only 1.2 million tons of solid waste will require disposal at out-of-state facilities by December 31, 1995.

This analysis indicates the importance of continued planning efforts to achieve disposal self-sufficiency within the next seven years. Much has been done over the past five years to advance disposal self-sufficiency, but significant challenges remain. In order to eliminate the in-state capacity shortfall, a number of new disposal facilities must be developed based on the character of the remaining waste. For example, a regional ash landfill should be constructed to handle the ash residue from the Union and Essex incinerators. In addition, a regional bulky/construction and demolition processing and recycling facility should be constructed to handle other nonprocessable waste. Finally, the department and the counties should continue to identify methods of maximizing the existing capacity of operating landfills and incinerators, either by permit revisions, capital improvements or regionalization, to dispose of the balance of processible waste at in-state facilities.

IV. CONCLUSION

The foregoing summaries, descriptions and analysis underscore the importance of the policy goals and objectives set forth in this State Plan Update. Achieving disposal self-sufficiency in seven years will be completely dependent on the successful implementation of the task force recommendations. At least 50% of the municipal and 60% of the total waste stream must be recycled with greater amounts thereafter; source reduction initiatives must result in a cap on, and ultimate decrease of, per capita waste generation; and major new disposal facilities must be developed on a regional basis. Although the challenge is great, it is also clear that great progress has been made since the issuance of the final task force report in August 1990. The department believes that the continued efforts and enthusiasm of the public, the contributions of private industry, and the persistent, dedicated planning efforts of the counties, will continue to fuel the forward momentum towards total self-sufficiency and a solid waste management program predicated on sound environmental practice.

Beyond this executive summary, Section C.3. provides county-by-county summaries of current status; source reduction, recycling and regionalization status; future facility planning status and a summary of major county plan deficiencies as of July 1992. Sections C.4. and 5. present overviews of statewide solid waste and recycling financial assistance programs and current research initiatives. Section D. of the update addresses the interrelationship of state and federal solid waste programs and, more specifically, provides an overview of the federal Subtitle D Municipal Solid Waste Landfill Regulations; a preliminary assessment of New Jersey's compliance with these new landfill requirements and the proposed State/Tribal Implementation Rule; and a status report on current federal grants and research initiatives involving USEPA and NJDEPE which contribute significantly to the state's solid waste management program. Finally, Section E. describes the legislative and regulatory framework for the management of solid waste in the state; the relationship of solid waste to other waste types; a historical summary of district planning and a description of the project implementation process. These latter sections of the State Plan Update will not be addressed in greater detail within this executive summary. Please refer directly to the applicable portions of the update for more information in these areas.

NEW JERSEY STATE SOLID WASTE MANAGEMENT PLAN UPDATE
Section I: Municipal and Industrial Solid Waste

January 1993

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I. NEW JERSEY STATE SOLID WASTE MANAGEMENT PLAN UPDATE

Section I: Municipal and Industrial Solid Waste

A. INTRODUCTION

The Emergency Solid Waste Assessment Task Force was appointed by Governor Florio in early 1990 to assess the status of the solid waste system in New Jersey, as well as the policies that governed solid waste management practices. In August 1990, the task force issued its final report, which recommended sweeping policy changes and established a blueprint for revising the statewide solid waste system.

In the final report, the task force recommended that New Jersey recycle 60% of its total waste stream within five years. In recommending that rate, the task force carefully assessed source reduction and recycling options for 25 specific components of the waste stream ranging from yard waste to newspapers to demolition debris. In each case the task force evaluated the "recycling chain" for an individual material, beginning with generation and collection, proceeding through remanufacturing, composting and end use of the material. Cumulatively, these individual projections amount to a 60% recycling rate for the entire waste stream. The final report also recommended a number of strategies to realize these projections, as well as programs to implement source reduction and the regionalization of disposal facilities and solid waste systems.

Following the release of the final report, and Governor Florio's acceptance of the task force recommendations in November 1990, the DEPE began the implementation process. The department's "Solid Waste Policy Guidelines" of June 1991 took the task force final report a significant step further in outlining the basic planning approach to be used to implement revised state policy. (Section B.4. below summarizes this process). The department also modified the state's recycling goal to achieve at least 50% recycling of the municipal waste stream, and 60% of the total waste stream, by December 31, 1995. This State Plan Update adopts the basic recommendations of the governor's task force and the department's solid waste policy guidelines. It frames both short and long-term implementation strategies to achieve self-sufficiency in solid waste disposal capacity through source reduction, maximum levels of recycling and regionalization of needed disposal capacity.

The major shift in policy recommended by the task force and accepted by the governor necessitates revisions to the New Jersey State Solid Waste Management Plan. The purpose of this update is to articulate the revised objectives, criteria, standards and implementation strategies of the state; to detail the current status of the system, including the development of a capacity analysis; to describe the interrelationship of the state's program with federal programs; and to describe the legislative and regulatory framework. These sections can be found on the following pages:

B.	DEPE Objectives, Criteria, Standards and Implementation Strategies	p. 2 to 110
C.	Status of Current Programs	p. 111 to 221
D.	Interrelationship of State and Federal Programs.....	p. 222 to 232
E.	Programmatic Background	p. 232 to 245

The Department of Environmental Protection and Energy is referred to throughout this State Plan Update as the "DEPE" or the "department."

B. DEPE OBJECTIVES, CRITERIA, STANDARDS AND IMPLEMENTATION STRATEGIES

1. Internal and External Communications

Objectives and Criteria: The department has traditionally emphasized the importance of public outreach and targeted educational initiatives in the field of solid waste. As our solid waste management strategy evolved, burning, burying or shipping solid waste out-of-state were questioned as acceptable solutions to getting rid of waste. As a result, the department had to respond to the concerns and criticisms of the environmental community, business and industry, and the general public. The department's commitment to an effective communications and education program became increasingly important as recycling and source reduction, both requiring lifestyle and behavioral changes, became the key components of the state's solid waste management strategy and the recommendations of the governor's Emergency Solid Waste Assessment Task Force were adopted.

The foundation for the achievement of a statewide 60% recycling goal was established in 1987 when the mandatory recycling act was passed and subsequently a three-year contract with the Keyes Martin Public Relations firm was executed. The goals of the contract were to raise public awareness of the new law, develop and implement a coordinated educational and motivational campaign to encourage recycling among the business community and residents, and convince residents that recycling was an integral solution to the solid waste crisis. Through brochures, newsletters, business magazine ads and student magazine inserts, displays, slide shows, and regional workshops, New Jerseyans became familiar with the slogan "SORT IT OUT before you SET IT OUT." Through this contract, the department expanded on the theme with special programs relating to multi-family housing, office paper, leaf composting, yard waste management and source reduction. The firm also assisted with the development of the New Jersey Clean Communities Program. This statewide litter abatement program encouraged partnerships among businesses, civic organizations, youth groups and public agencies in a coordinated effort to promote the cleanliness ethic throughout the state.

In addition, the department began a state contracted program with Rutgers University, Cook College, Office of Continuing and Professional Education, in fiscal year 1986 to provide quality training courses in recycling/solid waste management. The contract provides funding for a seven-day session entitled "Municipal Recycling: Practice and Theory," the principle mainstay of the comprehensive series now totaling 17 short courses offered through Cook College by DEPE. The target audience for these courses continues to be county and municipal solid waste and recycling personnel charged with designing, implementing and maintaining local solid waste/recycling programs in concert with statewide recycling mandates.

Future plans for solid waste management in New Jersey must be communicated effectively to all parties. These parties must be included in the development and implementation process when possible if the state wants to achieve its solid waste and recycling goals. A comprehensive, workable communications strategy that can be used as a foundation to promote and implement the many components of this plan is necessary to achieve success. Listed below are the goals and short and long-term strategies of the department's solid waste management communications plan.

The department's communications objectives are to:

- Assist with the implementation of the task force report recommendations;
- Develop and implement a comprehensive external communications plan which addresses all critical issues and affected audiences;
- Develop and implement an internal communications plan which will promote communications among different elements within the Division of Solid Waste Management (DSWM) and among other areas of the department.

Short-Term Implementation Strategies: The following short-term strategies will be applied in reaching our communications objectives:

- a. **Marketing and Public Relations Contract:** In 1992, the state prepared and disseminated a Request for Proposal (RFP) for a statewide marketing/public relations program focusing on recycled product purchasing and the development of markets, small business and multi-family recycling program expansion, and the recycling of nontraditional materials, such as used oil, batteries, grass clippings and tires. A contract was awarded during the Fall of 1992 to Keyes Martin. This campaign will employ standard multimedia techniques to deliver more focused messages to specific audiences. A total of 15 firms responded to the RFP.
- b. **Choices Campaign:** Many solid waste issues involve personal choices that must be made, such as what to do with grass clippings, which detergent to buy, or how to get rid of used motor oil. The department addresses these and similar issues under the umbrella theme of "Choices." In Fall 1991, USEPA funded the development of a seminar for the "Choices" campaign which could be adapted to different audiences. The department kicked off the first seminar of the series, which was designed for lifestyle and environmental reporters and editors. Clip art, public service announcements, photos and articles were developed and distributed. Additional seminars were held for DEPE employees and for high school students and teachers. A display was also developed to reflect the "Choices" concept. The department plans

to expand the program to provide consumer education and other environmental management workshops and update related publications for the public.

- c. **Market Development/Procurement Program:** The market development/procurement issue will be addressed by county and local government and the business sector. Public and private procurement of recycled products is necessary to support the department's recycling strategy. Collective government purchases can help create the demand for competitive pricing and can permit new products to gain a foothold in the marketplace. Commitment from the private sector to purchase products made from recycled materials can enhance government efforts.

A "Guide to Public Procurement of Recycled Products" was published in October 1992. The guide provides recycling coordinators, procurement officers in state agencies, counties, municipalities, county and state colleges, and other government entities with information on procurement of recycled products. In addition, a series of targeted procurement conferences started in December 1992 and will extend through September/October 1993. The December conference, jointly sponsored with the Department of Transportation, focused on the use of recycled materials such as crushed glass, crumb rubber from used tires, recycled concrete aggregate and asphalt pavement in highway construction and maintenance.

Beginning in February and extending into April 1993, the department, in conjunction with the Division of Purchase and Property in the Department of the Treasury, will be holding a number of regional procurement conferences with county and municipal purchasing officials to explain the state's recycled products purchasing program and the various ways local governments may become partners in cooperative purchasing opportunities with the state.

Also, by April 1993 the department intends to formally announce the functioning of a New Jersey corporate recycled products advisory council. This council will be composed of a mixture of New Jersey's major business and industry employers and is intended to identify and promote recycled paper and other products among New Jersey's corporate business sector.

On May 5, 1993, the New Jersey Recycling Forum, a nonprofit recycling advisory body established in 1981, will hold its annual symposium and recycling awards dinner. This year's symposium will focus on state agency market development efforts, and include presentations on procurement and recycling business development by the Departments of Environmental Protection and Energy, Treasury, Agriculture, Commerce and Economic Development and the Office of Economic Recovery.

Finally, the department intends to sponsor a two-day procurement conference and recycled products vendor show in September/October 1993, which will highlight a wide range of public and private recycled products procurement initiatives.

Through these various conferences, seminars and other outreach activities, which will involve the various levels of government and the private sector, the department will be firmly establishing a recycled products purchasing network which will serve to expand and diversify markets for recycled products.

- d. **Publications Review/Plan:** The division develops and distributes a wide variety of publications. The division's communications office plans to conduct an extensive review of these publications in early 1993 to determine which publications need to be revised and what new publications might be needed. Publications that are available now or will be available in the immediate future are as follows:

Manuals/Guides/Reports/Directories

- **Waste Audit Manual:** Assists county solid waste and recycling coordinators in performing waste audits and provides technical assistance to the private sector;
- **Leaf Composting Manual:** Assists county and local governments in establishing leaf composting programs and is being revised and updated for 1993;
- **Guide to Developing Permanent Household Hazardous Waste Collection Programs:** Assists local government officials in establishing permanent collection programs for household hazardous waste (available in April 1993);
- **Guide to Public Procurement of Recycled Products:** Assists county and local governments in maximizing their purchasing power of recycled products;
- **New Jersey Directory of Recycling Markets:** Provides information on generators, collectors, processors, manufacturers and end-use enterprises that handle or utilize recycled materials;
- **Emergency Solid Waste Assessment Task Force Preliminary and Final Reports:** Task force study and recommendations;
- **Solid Waste Policy Guidelines:** Question and answer format which summarizes DEPE policy positions in response to the Emergency Solid Waste Assessment Task Force Final Report recommendations;

- **Steps in Organizing a Municipal Recycling Program:** Assists municipalities in establishing and expanding recycling programs (available in 1993);
- **School Recycling Manual:** Assists individual schools and school districts in establishing recycling programs (available in 1993).

Brochures/Fact Sheets

- **Grass: Cut it and Leave it:** Provides information on environmentally responsible lawn care (two versions available);
- **Citizens Guide to Reducing Solid Waste:** Provides information regarding what individuals can do to make a difference in reducing waste;
- **Used Oil:** Assists do-it-yourselfers in the proper disposal of used motor oil;
- **Keep New Jersey Clean and Litter Free:** Informs the general public about litter-abatement;
- **Multi-Family Housing:** Provides guidance to tenant councils, superintendents, owners and landlords regarding the implementation of recycling programs in multi-family housing units (two versions available);
- **SORT IT OUT before you SET IT OUT:** Provides general recycling information;
- **State Incentives for the New Jersey Recycling Industry:** Provides a guide for the business community regarding state tax credits and low-interest loans;
- **Fact Sheets:** Provides information on specific materials in the waste stream.

Newsletters

- **Division newsletter for adult audiences;**
 - **Division newsletter for children.**
- e. **Grants:** The Solid Waste Demonstration/Training Model Project involves a \$45,000 grant from the USEPA. The components of this project are the production of a solid waste poster, the development and procurement of an interactive display and the implementation of media and medical waste training seminars.

The Solid Waste Municipal Recycling Model Project is also funded by an EPA grant. The project provides for the development of a complete recycling manual for municipal and county officials. This project was subcontracted to Rutgers University, Cook College, which prepared a draft and distributed it to USEPA and to DEPE. Extensive comments were forwarded for incorporation into the document.

The outputs from both of these grant programs will be available in early 1993.

f. Cooperative Programs/Seminars/Workshops: The division has developed many ongoing projects to increase public awareness about recycling and litter prevention. Seminars and workshops for county and municipal officials, as well as the regulated community and public, began in 1992 and will continue throughout 1993 in the following areas:

- (1) **Waste Audit Workshops:** Upon the issuance of the Waste Audit Manual, the division began conducting training seminars for government and business leaders who need assistance in conducting waste audits at their facilities. Such training sessions began for state and county recycling coordinators in October 1992.
- (2) **Recycling Regulations Seminars:** The DEPE and the County Environmental Health Act agents will hold seminars for local and county government leaders as well as the regulated community to explain the implications and effects of the new recycling regulations.
- (3) **DEPE/DCA Cooperative Program:** The DEPE and the Department of Community Affairs will work together to institute an educational program to encourage local building officials to support the use of those recycled materials now allowed by the national plumbing code.
- (4) **Clean Streets - Clean Beaches Campaign:** The Clean Streets - Clean Beaches Campaign sponsored by the USEPA, DEPE, NYDEC and the City of New York is a public awareness campaign designed to increase the cleanup of streets and waterways especially in the NY/NJ harbor area. The theme is "litter on our streets can end up in the water - don't litter." Passaic, Hudson, Monmouth, Middlesex and Bergen counties participated in the project through their Clean Communities programs. A press conference was held in NYC/NJ on April 30, 1992, to kick off a month of cleanup activities. The campaign has developed into a long-term education program. Press conferences will be held annually to sustain and increase participation in the program. The department has received a grant from EPA to produce litter prevention or abatement related materials for children.

- (5) **New Jersey Association of Litter-Acy Clubs:** The purpose of this network is to educate youth about litter and litter-related topics. Membership is open to any youth group in New Jersey. The only prerequisite for membership is that a club must plan and implement a Litter-acy project, such as a cleanup, a recycling drive, or a visit to a landfill, recycling or resource recovery facility. All club members who have implemented Litter-acy projects are eligible for state awards. On May 1, 1992, the DEPE and the NJ State Museum sponsored the first annual Litter-acy day children's symposium and awards program. Over 1,000 children attended. This will be an annual event.
- (6) **The New Jersey Advisory Council on Solid Waste Management:** The council convenes once a month to discuss and review solid waste plans and issues. In Spring 1992, the 1991 public hearing report was published on composting. The 1992 public hearing topic was landfill reclamation. The annual public hearing was held on November 12, 1992 and attracted solid waste professionals, government officials, consultants, landscape architects, nurserymen and the general public.
- (7) **Solid Waste and Recycling Coordinator Meetings and Seminars:** In order to facilitate the exchange of information, the division coordinates quarterly meetings for county solid waste and recycling coordinators. In Fall 1992, the division sponsored a two-day seminar for coordinators. The purpose of the seminar was to disseminate information to attendees about the division's communications plan, to facilitate the exchange of information among attendees and to promote camaraderie. The session was well attended.
- (8) **Rutgers University Cook College Courses:** In August 1992, the department executed a contract with Rutgers University for a comprehensive training program that leads to voluntary certification of recycling coordinators in New Jersey. This 24-day, 144-hour program will be provided at three locations throughout the state. Some of the topics to be covered include financial issues, public education, administration and human resource management, public policy and technical issues. The contract will also fund short courses in the northern and southern parts of the state and a training program for inmates of the Department of Corrections.

g. Education: The division has actively pursued opportunities to promote the incorporation of solid waste issues into educational publications:

Teacher's Guides

- **Here Today, Here Tomorrow:** Provides teachers for grades 4 - 8 with solid waste management activities (currently being revised and updated);
- **Here Today, Here to Stay:** Provides solid waste activities for grades K - 3 (available in 1993).

Videos

- **Alu-Man-The Can:** Provides recycling information for grades K - 3;
- **Alexandria's Cleanup Fix-up Parade:** Promotes litter prevention for grades K - 3.

Brochures

- **Have Fun With Mr. R. E. Cycle:** Promotes recycling related activities for grades K - 3.

In addition, the NJ Environmental Education Commission is developing a comprehensive environmental education plan for the state to be completed by Earth Day, 1993. The goal of the plan is to help New Jerseyans develop the knowledge, skills, attitudes, values and behaviors needed to maintain, protect and improve the environment. The plan will incorporate both the formal education that takes place in schools and colleges and the informal, lifelong learning that occurs in places such as nature centers, parks, cultural organizations, religious organizations, civic groups, government agencies, businesses and in the home via the media.

This plan will guide the department's future educational endeavors.

- h. Internal Communications:** The department has placed a great deal of emphasis on being open and accessible to the public. However, before external communications can be effective, elements within each division must be open and accessible with each other and all the divisions must work together to help achieve this goal.

The department's reorganization reflects this objective by the establishment of an office of communications. The office includes a public information office that gets information to the media; an environmental education program which provides teachers and students with information and training on how to integrate environmental issues into the core curriculum; an issues team that coordinates topics which affect several divisions within the department; and a publications office and graphics unit that assists with the production of printed materials. In January 1992, a

revised employee newsletter was published. The newsletter highlights programs within the department and recognizes employee accomplishments.

The office of communications also features an internal communications section. A network of representatives from each DEPE division or program area has been established to facilitate the exchange of information and to help employees develop better communications skills. These representatives or liaisons meet twice a month.

Within the division, a communications unit has also been developed to establish an effective external and internal communications program. One of the roles of the communications office is to ensure that all the affected parties are involved in project development and planning from the beginning. This contributes to effective internal communications and improves employee morale. In addition, regular staff meetings, in-house training sessions and special events for staff are scheduled.

Long-Term Implementation Strategies: The division will apply the following long-term strategies to reach its communications objectives:

- a. Continue to utilize funds to train municipal and county officials and educate young people in the development and implementation of environmentally correct solid waste management practices;
- b. Expand and develop publications relating to solid waste;
- c. Increase participation in existing projects such as the Clean Streets - Clean Beaches Program, the New Jersey Waterways Audit and the NJ Association of Litter-Acy Clubs;
- d. Present solid waste courses in universities and colleges throughout the state using the Rutgers University short courses as a model. For more than a decade, the Cook College Office of Continuing Professional Education of Rutgers University has provided extensive short course offerings in environmental management to address the issue of balancing economic growth and environmental protection. Courses vary in length from one day to seven weeks and are offered throughout the calendar year. Current offerings address such solid waste management areas as integrated solid waste management, recycling economics, enforcement, public education strategies, composting, collection technologies, source reduction and landfill management;
- e. Coordinate a seven-day solid waste/recycling course at the New Jersey State Museum for children in grades 4 - 6 and 9 - 12;
- f. Conduct solid waste/recycling workshops for teachers at least twice a year through local colleges and universities.

2. County and State Partnership in Solid Waste Planning and Implementation

Objectives and Criteria: For over 15 years, New Jersey has managed solid waste through a county/state planning process. The Solid Waste Management Act vested primary planning responsibility with each county and the Hackensack Meadowlands District, designated by the act as solid waste management districts. Under the act, each district has the power, "singly or jointly with one or more other districts, to develop and implement a comprehensive solid waste management plan which meets the needs of every municipality" located within the district. Although the districts are responsible for planning their respective solid waste systems, the act provides that the state, specifically the department, is responsible for reviewing and approving county plans to ensure planning consistency with regional and statewide goals and objectives. This basic county/state partnership, which also extends in many areas of solid waste management to municipal government, must continue; but specific guidelines must be framed to ensure the timely achievement of the goals set forth within this State Plan Update. The following principles will be applied to continue to encourage and develop a more cooperative and responsive county and state relationship:

- a. **Flexibility in Planning:** The objectives, criteria, standards and short and long-term implementation strategies adopted within this State Plan Update establish a framework for the county and state partnership. However, the DEPE does not prescribe a singular approach in mandating how each county will achieve the state's broad policy objectives. Each county and region in New Jersey has unique characteristics in such areas as natural resources, environmentally sensitive areas, population, and industrial activity. Therefore, counties have been and will continue to be given opportunities to design solid waste systems that best suit their unique circumstances.
- b. **Clear Communication:** A successful partnership requires clear and frequent communication among all parties. The department places considerable importance on establishing and maintaining the flow of information among the department, the districts and their implementing agencies. The task force final report of August 1990, solid waste guidelines of June 1991, and this State Plan Update are all examples of the state's objective to provide clear and concise summaries of policy initiatives, plans and implementation strategies. The DEPE will continue to conduct business openly and provide opportunities for all levels of government, members of the regulated community, other portions of the private sector, environmental groups and other interested parties and the general public to provide input on departmental activities. Further, where possible, the department will arrange public meetings pertaining to significant departmental decisions prior to formal public hearings to ensure sufficient opportunities for public comment. Finally, the DEPE will fully explain the permitting process to prospective applicants, and provide answers to concerns expressed about decisions made during the permit review process.

- c. **Monitoring and Enforcement by DEPE:** While counties will be given the opportunity to design and implement needed programs and facilities, the DEPE will monitor the timing and development of these programs to ensure compliance with state established objectives, criteria and standards. This function is particularly important if the state is to achieve an overall 60% recycling rate and self-sufficiency in solid waste disposal capacity within the next seven years. The following principles are and will be applied to ensure achievement of established objectives:
- (1) **Development of Schedules:** The counties must develop schedules to implement the various programs and facilities selected by the counties and approved by the state. The state will evaluate the appropriateness of proposed schedules or require the formulation of schedules in its review and approval of plan amendments, permits and proposed financings.
 - (2) **Monitoring:** The DEPE will monitor established schedules carefully and work cooperatively with the counties to resolve problems which interfere with the achievement of established milestones.
 - (3) **Enforcement:** If the counties fail to achieve established program goals and facility development on schedule, the DEPE, as a last resort, will invoke the enforcement provisions, powers and authority set forth in the New Jersey Solid Waste Management Act and other applicable laws and regulations to correct deficiencies. This may include, among other things, the redistribution of Solid Waste Services Tax funds, administration of the county Resource Recovery Investment Tax fund and/or direct DEPE intervention in the planning program of a particular county.
- d. **Expedited Planning and Permitting Decisions:** In 1992, Governor Florio signed into law a package of bills that establish mandatory timetables and procedures for the DEPE's permit review and issuance as a means to enhance the department's accountability to both permit applicants and the legislature. New Jersey law now requires the DEPE to, among other things:
- Keep accurate data and records relating to the permit review process, including information regarding work overloads and backlogs;
 - Educate permit applicants on procedures for completing permit applications;
 - Provide applicants with permit check-lists and notice when the application is complete;
 - Establish schedules and develop technical manuals for permit review; and

- Report to the legislature concerning the status of permit review programs.

The department has historically attempted to streamline solid waste planning and permitting decisions through the use of blanket plan inclusion procedures and, where appropriate, alternative regulatory approaches such as permit-by-rule programs. However, more can be done in these areas, as well as in reducing review times for the planning and permitting process. The DEPE will establish program changes to further implement the recently approved legislation noted above. In addition, the Division of Solid Waste Management will:

- (1) Establish additional procedures to expedite the planning process, and work with counties to ensure the maximum appropriate use of blanket plan inclusion policies;
- (2) Adopt rules, where appropriate, to maximize use of permit-by-rule programs to eliminate the need for lengthy DEPE technical review and permit issuance.

- e. **Revised and Streamlined Financial Assistance:** The DEPE's Division of Solid Waste Management administers numerous financial assistance programs that provide substantial resources to county and municipal governments. Beginning in 1992, the DEPE will restructure and consolidate, where possible, financial assistance program administration to enable the timely annual release of needed funds to county and municipal governments to implement necessary programs. The DEPE will proceed with formal rulemaking to outline eligibility, uses and timeframes for the various financial assistance programs available for recycling and solid waste activities. Further, the department, where possible, will publish a single, annual publication that describes the financial programs available, including eligible uses, amounts, procedures and timeframes. Counties will be able to apply for monies from multiple solid waste funding sources in a single submission. The DEPE will attempt to implement the consolidation of the following programs:

- County recycling program planning grants;
- County recycling education grants;
- Resource Recovery Investment Tax funds;
- Solid Waste Services Tax funds.

- f. **Private Sector Involvement:** While by statute solid waste planning is primarily a county/state function, the role of the private sector is critical to the ongoing provision of reliable and efficient collection and disposal services. The majority of solid waste collection activities are performed by private companies, as are many other functions including the curbside collection of recyclables, ownership and operation of recycling centers, transfer stations, materials recovery facilities, landfills and incinerators and the management of operations at many publicly owned facilities. In the ongoing solid waste planning process, counties must evaluate existing

services and infrastructure available from the private sector prior to implementing new programs. In many cases, best management practice may involve the integration of existing operations within the county solid waste system as opposed to building new, capital intensive projects. Finally, where existing infrastructure is inadequate to meet long-term management needs, counties should carefully evaluate private sector capabilities to construct and operate new facilities or provide services prior to moving forward with public sector initiatives.

3. Integrated Solid Waste Management and Hierarchy

Objectives and Criteria: The fundamental principle of New Jersey's short and long-term management strategy is integrated solid waste management designed to maximize the long-term security, stability and efficiency of the statewide system. Each component of the hierarchy of solid waste management practices outlined below has a role in the state's overall strategy. However, preference of each component has been listed in descending order. Further, each of these components may not fit within the specific implementation plan of each county. In this regard, the department acknowledges the primacy of county government in the planning process and supports a cooperative, as opposed to prescriptive, approach to integrated solid waste management where counties have the opportunity to identify the appropriate mix of options that best accommodate local circumstances. It is the department's objective to work through the county/state planning process to facilitate the appropriate mix of options on a statewide basis to ensure the best possible solid waste management system for the State of New Jersey. Each option is noted below in descending order along with a brief statement of the criteria used to frame its position within the hierarchy:

- a. **Source reduction** to limit the amount and toxicity of material requiring management in the first place;
- b. **Source separation and recycling** to differentiate recyclables from solid waste at the point of generation, thus reducing the amount of contamination from mixing materials, which facilitates efficient collection and improves the marketability of commodities;
- c. **Composting of source separated leaves, grass and food waste** to reduce the volume of material through microbial decomposition, reintroduce compost into the economic mainstream as a mulch or other product, and preserve landfill capacity;
- d. **Household hazardous waste and small quantity generator collection** programs to remove toxic constituents from the waste stream and improve the operations of solid waste composting and incineration systems;
- e. **Materials recovery** systems to gain the extra increment of recycling that is not captured as part of source separation programs and to capture materials that are not normally included within designated programs, such as white goods, wood waste and recyclable construction and demolition debris;

- f. **Solid waste composting** to reduce the volume of organic rich mixed municipal solid waste and to market an end product as a soil supplement or landfill cover;
- g. **In-state solid waste landfilling** at permitted facilities that have been constructed with liners, leachate collection systems, and methane gas and groundwater monitoring systems to properly manage solid waste in a controlled, engineering-based system, and **regional incineration** to reduce the volume of solid waste by up to 90% and produce energy in the form of steam and/or electricity;
- h. **Out-of-state landfilling** at permitted facilities as a short-term measure prior to achieving in-state self-sufficiency in disposal capacity.

4. **General Program Implementation Strategy**

Objectives and Criteria: Various tools are available at the state level to transform the conceptual nature of the task force final report recommendations into specific short and long-term programs. Specific implementation strategies to achieve source reduction, 60% recycling and regionalization objectives are outlined in detail within the following sections. However, the overall program implementation strategy of the department can be divided into immediate/short-term and long-term categories. The immediate/short-term plan pertains to actions already implemented since Governor Florio accepted the task force recommendations in November 1990 or actions which will be at least initiated within the year following publication of the plan in the New Jersey Register. Long-term planning strategies pertain to initiatives which should be implemented over the balance of the planning period from 1994 through 2002. The basic immediate/ short-term and long-term general implementation strategies are described in this subsection:

- a. **Immediate/Short-Term Action Plan:** Since the acceptance by Governor Florio of the task force recommendations in November 1990, the department and former Board of Public Utilities (now consolidated within the restructured Department of Environmental Protection and Energy) have begun and substantially advanced the implementation process. This has been accomplished through the use of established county/state planning, permitting, ratemaking and financing review processes managed by the DEPE. As of January 1993, all 21 counties have been asked or required to amend their district plans to address and adopt the recommendations set forth in the task force final report. Table 1 summarizes, by county, the current status of the district plans in the areas of source reduction, 60% recycling and regionalization. All counties must address the task force goals and provide a plan for self-sufficiency pursuant to the schedules outlined by the department in solid waste plan amendment certifications and other documents. The following is a summary of the ways in which the immediate action plan has been implemented:

- (1) **Plan Amendments** - As counties have submitted solid waste plan amendments for review, the DEPE has taken the opportunity to review not only the specific amendment, but the entire county plan. As part of this process, each county was directed to address

in a formally adopted plan amendment how it intends to achieve the 50% municipal waste stream and 60% total waste stream recycling rates by the target date of December 31, 1995, achieve source reduction through implementation of the programs included in the task force report, and implement regionalization. In each case, a county was directed to submit subsequent plan amendments within 180 days to indicate its individual approach to achieve these major objectives. As of December 1992, 12 of the 21 counties have submitted at least initial plans to achieve these goals. The remaining nine were also under specific deadlines for the submission of task force plan amendments, and in some cases were delinquent in meeting required dates. Those counties which have not amended their district plans to incorporate source reduction, 60% recycling and regionalization programs, despite previously imposed DEPE submission schedules, will be required to do so within 90 days following adoption of this statewide plan update.

- (2) **Solid Waste Permitting** - As part of the permit review process, the DEPE Division of Solid Waste Management has asked for the same information noted in the preceding paragraph prior to permit issuance or renewal for major county projects. This approach was intended primarily to ensure consideration of the impact of 60% recycling upon facility sizing and the associated interrelationship with regional planning.
- (3) **Service Agreement Review** - The DEPE has also asked county governments to meet the same submission requirements outlined above as part of the department's service agreement review process for resource recovery facilities established under the McEnroe procedure of the Solid Waste Management Act. In each case, the department made it clear that consideration must be given to regionalization of solid waste management systems.

Beyond use by the department of the tools noted above, the legislature adopted bills that are directly related to the task force initiative and the overall shift in solid waste policy. As of December 1992, the following legislation and major regulations have been adopted since publication of the task force report in August 1990:

- **The "Toxic Packaging and Reduction Act"** P.L. 1991, c. 520 reduces the total concentration of lead, cadmium, mercury or hexavalent chromium that is intentionally introduced as a chemical element during the manufacturing or distribution process of packaging to specific levels over the next three years and bans the sale of any packaging or packaging component that does not meet those levels. The effective date of the ban was January 1, 1993.
- **The "Dry Cell Battery Management Act"** (P.L. 1991, Chapter 520), limits the amount of mercury that can be contained in batteries sold or distributed in the state. Further, the Act requires

the manufacturers of such batteries to be financially liable for providing for the collection and disposal or recycling of such batteries.

- **Assembly Bill No. 987/Senate Bill No. 1082**, signed into law by Governor Florio on December 2, 1992, mandates the task force recommendation to attain a municipal solid waste stream recycling rate of 50%, and a total solid waste stream recycling rate of 60% by December 31, 1995.
- **The Recycling Regulations (N.J.A.C. 7:26A-1 et seq.)**, promulgated pursuant to the Mandatory Recycling Act of 1987 (N.J.S.A. 13:1E-99.1 et seq.) established clear and consistent rules for, among other things, the development of recycling centers necessary to achieve a recycling rate of at least 50% of the municipal and at least 60% of the total waste stream. (See page 51 for more detail on the scope of the recycling regulations.)

In addition to the legislative and regulatory initiatives described above, as of April 1, 1992, approximately 80 solid waste related bills were pending before the legislature. Of those bills, approximately 40% are intended to assist in the implementation of the task force recommendations set forth in the final report. Examples of the types of legislation being proposed are as follows:

- Emergency powers to shut illegitimate recycling centers; elements of recycling center reviews; separation of solid waste and recycling services; elimination of contracts in county grants (A-747);
- State newspapers required to use newsprint with recycled paper content (A-350);
- Host community benefits provided for municipalities that host recycling centers (A-409);
- Three-year moratorium imposed on construction or expansion of incinerators (A-566);
- Requirement for state agencies to expand procurement of recycled materials (A-676).

The Immediate/Short-Term Action Plan described in paragraph 4a. above will be completed upon the adoption of this update to the statewide plan and the department's approval of the plan amendments adopted by the counties to address the recommendations set forth in the task force final report.

Table 1

Task Force Recommendations			
Status of Plan Amendment Submissions (as of December 1, 1992)			
County	Source Reduction	60% Recycling	Regional Plans
Atlantic	●	●	●
Bergen	#	#	#
Burlington	X	X	X
Camden	*	*	*
Cape May	X	●	X
Cumberland	+	+	●
Essex	X	X	X
Gloucester	#	#	#
HMDC	*	*	*
Hudson	#	#	#
Hunterdon	X	X	X
Mercer	●	●	●
Middlesex	●	●	+
Monmouth	X	X	X
Morris	X	X	X
Ocean	#	#	#
Passaic	#	#	#
Salem	X	X	X
Somerset	+	+	+
Sussex	*	*	*
Union	●	●	●
Warren	X	X	X

● = Plan modified and subject area generally approved by DEPE.

= Plan amendment adopted & submitted to DEPE for review.

* = County under specific schedule to submit plan/revised plan on subject area on or before 12/31/92.

+

x = County delinquent in submitting required plan amendment.

b. **Long-Term Action Plan:** In the longer term, the department will continue as a primary policy objective to work cooperatively with county governments and the private sector to achieve the management goals outlined within this plan. However, in some areas, additional legislation and/or regulations may be needed to implement the state's solid waste program. Some of the areas which may require future legislative or regulatory attention follow and are addressed in greater detail in other portions of this State Plan Update. These measures will be implemented should voluntary efforts by state, county and local government, as well as the private sector, fail to achieve identified policy goals:

- Consumer labeling program for packaging to advance environmental shopping and increased recycling;
- Packaging bans to advance source reduction goals;
- Additional constituent bans to eliminate toxic materials, such as mercury, lead, chromium and cadmium, from products;
- Yard waste bans to prohibit grass and brush from being disposed of at landfills and incineration facilities;
- Expanding the list of mandatory recycling commodities for source separation, such as plastic containers, steel cans, white goods, corrugated cardboard and office paper;
- Mandated targets for state agency procurement of additional products containing post consumer and other recycled materials;
- Required priority use of sludge, municipal solid waste, yard waste and wood waste compost for the maintenance of all public lands as a market development initiative;
- Requirements for public bodies to use a certain percentage of recycled asphalt, concrete, nonhazardous ash, glass and other suitable materials in road construction and other construction projects;
- Development of municipal solid waste and sludge product marketing standards to allow unrestricted use of compost materials meeting high quality standards and the establishment of more limited use criteria for materials of lower quality.

While most of the above initiatives would require legislative changes to implement, some are partially being pursued at this time, such as: an ongoing effort between the DEPE and Division of Consumer Affairs to monitor the accuracy of product labeling claims; permit restrictions at incinerators to prohibit the acceptance of grass and other materials; and expansion of designated materials required for recycling through the county planning process.

5. Self-Sufficiency and Interstate Waste Shipment

Objectives and Criteria: Based upon past experiences where New Jersey counties were cut off from the use of specific out-of-state landfills with virtually no prior notice, and associated piling-up of waste in the streets, the DEPE remains very concerned over in-state capacity shortfalls. This concern has been heightened over the past several years as receiving states have passed executive orders, regulations and statutes targeted at reducing or eliminating the interstate movement of solid waste. At the national level, congress is giving serious consideration to allowing states to restrict the interstate shipment of solid waste. National proposals include bans on export of waste and significant economic costs for the privilege of out-of-state disposal.

New Jersey's objective is to become self-sufficient in disposal capacity within the next seven years. As a primary management strategy, aggressive source reduction and recycling programs will reduce the amount of solid waste requiring disposal. Further, regionalization of existing and future facilities will maximize the use of in-state disposal capacity and be economically and environmentally beneficial to the citizens of our state. (The capacity analysis section of this State Plan Update beginning on page 137 summarizes the assumptions used to meet the self-sufficiency objective).

In terms of interstate waste shipment, New Jersey's solid waste history has had dramatic twists and turns over the last several decades. For most of the century until the middle of the 1980s, New Jersey was a significant importer of solid waste from surrounding states. As recently as 1980, over one million tons of waste from New York and Pennsylvania were disposed of annually in New Jersey landfills. Significantly higher quantities were annually disposed of throughout the 1970s when recordkeeping systems were first put into place. These enormous levels of disposal from out-of-state left New Jersey with two problems which are now in the process of being addressed. First, it led to the exposure of our environment to hazardous waste materials from industrial sources which were dumped into those landfills and which now require extensive cleanup activities. Second, it contributed to the closure of over 300 landfills around the state and the current level of dependence on out-of-state disposal.

New Jersey's geography also has a major influence on our solid waste policy. New Jersey's population density is by far the highest in the nation at 1,039 persons per square mile. Moreover, 22% of the state has been preserved as part of the New Jersey Pinelands Region, which is protected by federal law from development. Beneath the Pinelands sits the Cohansey Aquifer, which is one of the largest aquifers in the United States. Given these limitations and given the fact that there are already over 300 closed landfills around the state, the amount of suitable land area potentially available for landfilling is extremely limited.

While large quantities of solid waste have been exported since 1987, New Jersey recognizes its responsibility to meet and provide for the solid waste management needs of its citizens and businesses. It makes little sense environmentally or economically to continue the dependence on out-of-state disposal. In this regard, New Jersey has formulated and supports the following policy positions in response to the ongoing national debate surrounding interstate solid waste shipment:

- The federal government must provide leadership in developing markets for recycling and setting standards for packaging to help states manage solid waste;
- Uniform statewide planning requirements should be administered by USEPA for all 50 states so that all states maximize source reduction and recycling;
- Minimum standards for the operation of disposal facilities must be developed and enforced to ensure appropriate environmental protection;
- National standards must be developed, including minimum targets of percentages of the waste stream, for source reduction and recycling;
- The imposition of differential fees by receiving states which earn that right by having approved USEPA state plans is supported provided the differential fees are rationally based and uniformly applied;
- Immediate bans or unrestricted differential fees which would place New Jersey in a crisis situation and thwart its aggressive efforts towards source reduction, 60% recycling and regionalization, as well as the efforts of other states in these areas, are strongly opposed;
- Existing contracts for disposal capacity cannot and should not be curtailed through legislative enactments. New Jersey counties which financed, and now own, property rights for the use of air space within out-of-state landfills should be entitled to unencumbered utilization of that property for the term of their contracts;
- The interstate movement of recyclable commodities must remain unaltered by legislative or regulatory restrictions to maintain the free market system of commerce and to maximize opportunities for the marketing of materials;
- New proposals submitted by counties pursuant to New Jersey's county/state planning process which involve the long-term use of out-of-state disposal capacity will not be approved.

Short-Term Implementation Strategy: Section B.4. of this State Plan Update beginning on page 15 frames the immediate plan implementation strategy used since the task force final report was accepted by the governor in November 1990. The task force had explicitly stated that self-sufficiency remains a long-term policy of solid waste management in New Jersey. Therefore, the immediate and intermediate plan implementation strategies which comprise New Jersey's short-term approach to self-sufficiency can be briefly summarized as follows:

- a. **Source Reduction and Recycling:** Both source reduction and recycling goals were established as noted earlier and the department began using the planning, permitting and financial approval processes to require (where necessary) the development of aggressive programs to meet the stated

goals. Continued advancement of source reduction and recycling programs will further reduce the amount of solid waste requiring disposal and thus be significant in achieving self-sufficiency.

- b. **Regionalization:** In addition to requiring (where necessary) counties to perform regionalization analysis as outlined in B.4. above, the department has already worked closely with certain counties to ensure maximum feasible reductions in out-of-state disposal. In working cooperatively, the counties and state have put in place the Essex/Bergen, Union/Bergen, Mercer/Atlantic, Somerset/Atlantic, Warren/Somerset/Hunterdon, Hudson/HMDC and Camden/Pennsauken regional agreements. (See pages 68 and 69 for more details on these agreements.)
- c. **Solid Waste Policy Guidelines:** In June 1991, the department released its solid waste policy guidelines. This document disclosed critical policy positions of the department and explicitly addressed self-sufficiency and interstate waste shipment. Further, the department made it clear that new, long-term contracts for out-of-state disposal would not be approved.
- d. **Completion of Short-Term Approach:** The department will continue to drive solid waste policy through administration of its planning, permitting and financial review processes to complete the immediate action plan already being implemented. As noted in greater detail within Section B.2. above, the department will implement its strategy through the following basic principles/actions toward achievement of self-sufficiency:
 - (1) Flexibility in solid waste planning;
 - (2) Clear and frequent communication;
 - (3) Scheduling, monitoring and enforcement;
 - (4) Expedited planning and permitting decisions;
 - (5) Streamlined financial assistance for program implementation.

Current Status: Since the acceptance by Governor Florio of the task force final report recommendations in November 1990, the department has been aggressively pursuing the short-term implementation strategy framed earlier.

Substantial progress has been made since 1990 through use of the short-term implementation strategy noted above to address self-sufficiency, primarily through regionalizing disposal capacity and the opening of new planned disposal capacity. The impact of these regional agreements, as well as operation of new planned disposal capacity since 1990, has resulted in 2.6 million tons of additional in-state disposal capacity being available for the next 10 - 20 years. The new projects which have come into operation since January 1990 are as follows:

- **Essex County Incinerator:** This 2,250 TPD regional facility commenced full-scale operations in December 1990 and, as of December 1992, was accepting waste from Essex and Bergen counties;

- **Camden County Incinerator:** This 1,050 TPD facility commenced operations in March 1991. Originally planned to accept only a portion of Camden County's waste, the county revised its solid waste plan to permit the incinerator to accept all of the county's processible municipal waste;
- **Gloucester County Incinerator:** This 575 TPD facility that commenced operations in January 1990 and accepts all of the county's processible waste;
- **Sussex County Landfill:** This facility opened in March 1990 and accepts all solid waste generated within Sussex County;
- **Warren County Landfill:** This new landfill accepts all of the ash, nonprocessible and by-pass waste from the Warren County incinerator which services all of Warren County, and portions of Hunterdon and Somerset counties;
- **Edgeboro Landfill Expansion:** A major expansion opened in February 1992 at the Edgeboro Landfill which services all of Middlesex County or approximately 2,600 TPD of solid waste.
- **Atlantic County Landfill:** In February 1992, a limited use landfill permit was issued to Atlantic County. This facility, which began operations in November 1992, will accept all nonputrescible solid waste which cannot be recycled from both Atlantic and Mercer counties. In addition, Atlantic executed an interdistrict agreement with Somerset County in January 1993 which represents a 10-year arrangement for 30,000 - 60,000 tons of Somerset's bulky and dry industrial waste to be disposed of at the landfill annually. It is also possible that this facility could take nonhazardous ash in the future;

In addition to the above projects which are already operational, significant planned capacity is actively being pursued. The following projects will represent major new capacity for New Jersey should permitting ultimately be approved and construction completed:

- **Union County Incinerator:** In December 1991, construction began on a 1,440 TPD incinerator in Union County which will service all of Union County and accept 150,000 tons per year of Bergen County solid waste. The construction schedule calls for start-up in Spring 1994;
- **Mercer County Incinerator:** The Mercer/Atlantic interdistrict agreement was approved by the department in December 1991. Permit applications are currently under review for a 1,450 TPD incinerator which is planned to accept all processible solid waste from both counties. The application for this project was considered administratively complete in September 1992. All departmental requirements will have to be met and a public hearing process conducted prior to this facility potentially being permitted and constructed;
- **MSW Compost Facilities:** Three major municipal solid waste composting projects have been approved for county plan inclusion in Cape May, Ocean and Somerset counties. These projects have a

combined capacity of nearly 2,000 TPD. A permit application is currently being reviewed for the Cape May project with operations, if approved, scheduled for 1995. Applications have yet to be submitted for the Ocean and Somerset projects;

- **Recycling Centers:** As of January 1, 1992, 54 permit applications were pending before the department for new recycling centers. (The types and number of projects are summarized below in Table 2.)

Table 2

PENDING RECYCLING CENTER APPLICATIONS

<u>Class B Recyclable Materials To Be Received</u>	<u>Number Of Applications</u>
Concrete, Asphalt, Brick and Block	21
Multi-Material (Combination of Class B Materials)	13
Wood Waste, Pallets and Tree Stumps/Parts	11
Scrap Tires	6
Nonhazardous Petroleum Contaminated Soil	2
Leaves	<u>1</u>
Total	54
	==

Through implementation of its intensive statewide recycling program and the development of the 11 lined landfills and four controlled incinerators currently in operation, New Jersey has made important strides toward achieving self-sufficiency. Table 3 below summarizes generation, recycling and disposal trends over the past seven years. Actual figures which comprise New Jersey's recordkeeping/data base program are presented for the timeframe 1985 through 1990. Estimated figures for 1991 are also presented. Section C.1. of this State Plan Update summarizes New Jersey's reporting and data management systems in greater detail as a sound basis for the numbers presented in Table 3.

From Table 3, some very significant trends can be observed. Generation has, until very recently, steadily increased since 1985, which is largely due to ever-improving data collection and reporting, as well as expanded definitions to count all solid waste materials within the total waste stream. Increases in generation also demonstrate the need to aggressively pursue source reduction programs to cap per capita generation in line with the goals outlined in Section B.6. of this State Plan Update. Solid waste generation figures for 1991 show a decline for the first time in at least the past seven years. The generation rate is 14.7 million tons, as compared to 14.8 million tons in the calendar year 1990,

representing nearly a 1% decrease. This decline is primarily attributable to the depressed economy and associated reduction in product spending, as well as less construction activity. The decline may also be partially attributable to the implementation of source reduction strategies across the state, such as residents leaving their grass clippings on the lawn as part of the state's "Cut it and Leave it" program and not producing a solid waste at the source.

Recycling rates have increased steadily from voluntary programs in place from 1985 through 1987 and then dramatically following enactment of the Mandatory Source Separation and Recycling Act in 1987. An enormous increase in recycled tonnage was documented in 1988 when most of the mandatory programs began operations for traditional materials, namely newspaper, glass and aluminum cans. Additional increases, on the order of approximately one million tons per year, have also been documented from 1988 through 1990, and are projected for 1991 as curbside programs expanded to include plastic containers, tin, bimetal cans and other designated materials. As of December 1992, all 567 New Jersey municipalities have mandatory ordinances in place with 515 using curbside collection. All 567 collect newspaper, glass and aluminum, 384 additionally collect plastic, 366 tin & bimetal cans, 208 additionally collect corrugated cardboard, as well as a significant number of other materials. (A more detailed breakdown of designated materials for mandatory recycling by county is provided within Section C.3. of this document.)

Finally, in terms of out-of-state disposal, New Jersey has made significant progress following peak exports of 28% of the total waste stream in 1988. Decreases of 3 - 5% per year have been documented since 1988 with current figures for calendar year 1991 showing that approximately 18% of the total waste stream was exported to out-of-state landfills. This rate is expected to continue to be reduced through increased source reduction and recycling, as well as development of the new disposal capacity outlined above. Additional projects needed to achieve self-sufficiency are outlined below within the long-term implementation strategy, as well as within the capacity assessment discussion found in Section C.2.

Long-Term Implementation Strategy: In order to achieve self-sufficiency within the next seven years, New Jersey will need to continue to aggressively pursue the source reduction, recycling and regionalization initiatives outlined in sections 6, 7 and 8 of this State Plan Update. In this regard, per capita generation rates must be capped and eventually reduced through effective source reduction measures; the minimum 50% municipal waste stream and 60% total waste stream recycling rates must be achieved by December 31, 1995; and planned regional projects discussed in Section B.8, if permitted, must be implemented on schedule. Beyond these efforts, it is clear that additional in-state disposal capacity will be necessary to achieve self-sufficiency. The following represents New Jersey's long-term actions to work with counties to achieve self-sufficiency:

TABLE 3

NEW JERSEY SOLID WASTE DATA BASE TRENDS ANALYSIS 1985 THROUGH 1991 (Millions of Tons Per Year)											
		RECYCLING				DISPOSAL					
						TOTAL		IN-STATE		OUT-OF-STATE	
YEAR	GENERATION	TOTAL ⁽⁷⁾ TONS	% OF TOTAL GENER.	MSW ⁽⁸⁾ TONS	% OF MSW GENER.	TOTAL TONS	% OF TOTAL GENER.	TOTAL TONS	% OF TOTAL GENER.	TOTAL TONS	% OF TOTAL GENER.
1985	11.40 ⁽¹⁾	0.9 ⁽³⁾	8	0.6	9	10.5	92	9.7 ⁽⁵⁾	85	0.8 ⁽⁵⁾	7
1986	11.50 ⁽¹⁾	1.1 ⁽³⁾	10	0.7	12	10.4	90	9.6 ⁽⁵⁾	83	0.8 ⁽⁵⁾	7
1987	12.40 ⁽¹⁾	1.8 ⁽³⁾	15	1.2	18	10.6	85	9.2 ⁽⁵⁾	74	1.4 ⁽⁵⁾	11
1988	14.00 ⁽²⁾	5.4 ⁽⁴⁾	39	1.5	23	8.6	61	4.6 ⁽⁶⁾	33	4.0 ⁽⁶⁾	28
1989	14.30 ⁽²⁾	6.1 ⁽⁴⁾	43	2.1	30	8.2	57	4.5 ⁽⁶⁾	31	3.7 ⁽⁶⁾	26
1990	14.80 ⁽²⁾	6.8 ⁽⁴⁾	46	2.5	34	8.0	54	4.8 ⁽⁶⁾	32	3.2 ⁽⁶⁾	22
*1991	14.70	7.6	52	2.5	34	7.1	48	4.4	30	2.7	18

NOTE: ALL NUMBERS HAVE BEEN ROUNDED FOR PRESENTATION PURPOSES

* Based upon preliminary 1991 statistics which are subject to change following municipal review of disallowed tonnages, recycling tonnage grants field audits and surveys of private sector recyclers.

FOOTNOTES
NEW JERSEY SOLID WASTE DATA BASE TRENDS ANALYSIS

- (1) Generation for 1985 through 1987 calculated by adding NJDEPE Tonnage Grant data to NJDEPE Origin & Disposal data reports for the same years.
- (2) Generation for 1988 through 1990 calculated by adding NJDEPE Tonnage Grant Data, industry sources documenting recycling activity for 1989 and Origin & Disposal data (as corrected by county governments) for the corresponding years.
- (3) Recycling for 1985 through 1987 obtained from NJDEPE Tonnage Grant Program data.
- (4) Recycling from 1988 through 1990 obtained from NJDEPE Tonnage Grant Program data augmented with data from industry sources documenting recycling activity for 1989.
- (5) Disposal from 1985 through 1987 from NJDEPE Origin & Disposal Reports.
- (6) Disposal for years 1988 through 1990 calculated from NJDEPE Origin & Disposal Reports augmented with information supplied by county governments and by Baker Engineers Out-of-State Disposal Facilities Report, 11/18/88; Baker Engineers Report of New Jersey's Interim Out-of-State Disposal Program, 12/28/89; and Baker Engineers New Jersey Interim Out-of-State Disposal Report, May 1991.
- (7) Total solid waste stream recycling tonnage.
- (8) Municipal solid waste stream tonnage. (Type 10 municipal and type 23 vegetative).

- a. **Ash Management:** Existing incinerators operating within Essex and Camden counties, as well as the Union incinerator currently under construction, do not at present have in-state ash disposal capacity or immediate plans to develop needed capacity. Further, the regional incineration project planned to service Atlantic and Mercer counties does not provide for in-state ash disposal at present. Finally, not all coal ash from utility boilers or other sources of ash are currently being managed for in-state disposal. To address this situation, the department will continue to pursue research initiatives such as those outlined in Section C.5. in attempts to identify uses of ash, such as in road base construction and mine reclamation. Such use will be in strict conformance with the department's ash management policies referenced in Section B.10.

Beyond use programs for ash, the department will actively work with ash generating counties, as well as the Hackensack Meadowlands Development Commission, and any other interested solid waste district, toward the development of regional ash disposal capacity. It is likely that a single regional facility could accommodate New Jersey's anticipated ash processing or disposal needs of approximately 1,300-2,100 TPD in 1996.

- b. **Expanded Regionalization:** Fifteen of New Jersey's 21 counties are currently self-sufficient or are anticipated to be self-sufficient by December 31, 1999 and throughout the balance of the planning period addressed within this State Plan Update, which is 2002. Complete self-sufficiency by December 31, 1999 will require continued operations of New Jersey's 11 lined landfills and four controlled incinerators; completion of the Union County incinerator currently under construction; permitting and construction of planned facilities in Mercer and Cape May counties or other comparably sized facilities; and development of construction and demolition debris and ash processing facilities/regional landfills discussed in a. above. It is clear that a dedicated effort must be put forth by the counties, state and private sector to make self-sufficiency a reality by the end of the decade.

With these assumptions, as well as achievement of the 50% and 60% recycling rates, New Jersey will still have six counties needing capacity for all or a portion of the waste stream. These six counties can be divided into two categories of need. Both Morris and Passaic counties are totally dependent upon out-of-state disposal at the present time and no new capacity is currently in advanced stages of planning or permitting. The counties of Bergen, Hudson, Hunterdon and Somerset are partial exporters. Hudson, Hunterdon and Somerset have approved plans to develop additional in-county disposal capacity, but uncertainty exists as to the county freeholders' commitment to implement these projects. Further, while Bergen and Hunterdon counties are part of long-term regional disposal plans, neither has a comprehensive plan in place to address significant portions of their waste streams. Toward expanded regionalization and new capacity development to achieve self-sufficiency, the department will:

- (1) Work closely with Morris, Passaic and Bergen counties to formulate regional disposal plans in line with the December 31, 1999, self-sufficiency timeframe;
- (2) Work closely with Somerset, Hudson and Hunterdon counties to ascertain the commitment of currently approved plans and expedite selected project development, as appropriate, or include these counties within regional planning discussions as noted in (1) above. (The capacity analysis section of this State Plan Update beginning on page 137 provides additional background and figures to quantify the above presentation.)

6. Source Reduction

Objectives and Criteria: Source reduction encompasses activities which decrease the amount (weight or volume) or toxicity of products, by-products and packaging entering the solid waste stream, and which increase product durability, reusability and reparability. Source reduction is recognized as the first priority in the state's solid waste management program. The overall objective for source reduction is to cap per capita generation of waste at 1990 levels, cap total waste generation within five years and then reduce total waste generation within ten years.

Short-Term Implementation Strategy: The department's basic short-term strategy is to incorporate source reduction measures into the existing state and county planning process. Specific programs and source reduction concepts have been identified by the department and outlined in its "Solid Waste Policy Guidelines" dated June 1991. As used in this section, short-term refers to programs and strategies which should be implemented within the next year. These programs/concepts are outlined below and are primarily intended for implementation at the local level, although many of these programs will be adopted initially by state agencies:

- a. **Waste Audits:** In order to reduce solid waste, it is first critical to know the volume and types of materials generated by sector (municipal, commercial, institutional, industrial). Background information is obtained through a waste audit which is used to formulate waste reduction plans. Initially, counties have been asked to prepare inventories of county and municipal buildings, as well as businesses, to define the scope of a waste auditing program. The DEPE has also prepared a manual for conducting waste audits, which was distributed in October 1992. Once inventories are completed, counties are being asked to adopt schedules for the performance of waste audits. It is specifically recommended that counties and municipalities prepare and implement waste reduction and auditing plans for all county and municipal offices in 1993. Further, counties are urged to consider adopting a program for waste audits and waste reduction plans for industries with more than 500 employees by 1993, for industries with more than 250 employees by 1994 and for industries with more than 100 employees by 1995. It is important to note that a number of companies have already taken significant steps towards waste reduction.

The DEPE has been working with counties through the solid waste planning process to establish commitments and specific schedules for conducting waste audits in line with the above timeframes. As of October 1992, six counties have adopted source reduction plans and the remaining 15 were under schedules for the submission of such plans to the department. While significant progress has already been made, the department will supplement the county planning process requirements in the area of waste audits through the development and proposal of regulations during 1993.

- b. **Per Container Systems:** Per container billing systems for municipal solid waste collection and disposal are an effective measure to encourage source reduction and recycling. A number of programs are currently in operation in New Jersey. As of December 1992, programs were operating in 18 towns within eight counties including Midland Park, Washington Township, Bound Brook, Flemington, High Bridge, Hampton, Glen Gardner, Plumsted, Roosevelt, Pennsville, Woodstown, Franklin Borough, Washington Borough, Chester Township, Dover, Mendham Township, Mount Arlington and Readington. Numerous other municipalities are in final phases of planning and development of programs. Counties are being asked to consider the development or expansion of such municipal programs. In the absence of voluntary adoption of additional per container programs by counties/municipalities and reductions in per capita waste generation, the department may use its own authority to require the use of per container billing systems. It should also be noted that counties can work with the DEPE to establish financial incentives for municipalities using per container systems.
- c. **Yard Waste Management:** Yard waste comprises a large percentage of the municipal waste stream. On-site management of grass clippings and other organic matter can be a highly effective means of source reduction. Counties are being asked to consider educational programs to encourage on-site management. The DEPE has developed and is currently distributing "Grass: Cut it and Leave it" educational materials to counties and municipalities. Additionally, counties are encouraged to promote on-site management of yard wastes through backyard composting. Educational materials are available from the Rutgers University Agricultural Extension Service, the department and the County Agricultural Extension Agents. Further, the department has already begun to work with counties and facility applicants to impose permit restrictions against the acceptance of grass and other materials at incinerators. The department also supports enactment of a legislative ban on the disposal of yard waste materials at landfills and incinerators similar to that already in place with respect to leaves. Such legislative action should allow three or four years of developing backyard composting programs and other composting infrastructure for organic materials prior to implementation. Finally, counties are also being asked to consider conducting inventories to identify commercial landscaping companies operating within the county and imposing voluntary or mandatory restrictions on grass collection and disposal.

- d. **Small Quantity Generator/Household Hazardous Waste Collection Programs:** In addition to the need to reduce the volume of solid waste generated, it is essential that small quantities of potentially hazardous waste be removed from the solid waste stream and managed separately. The DEPE's ultimate goal is the removal of certain toxic constituents from products, such as packaging and consumer batteries, during their manufacture. The recent adoption of both the Toxic Packaging and Reduction Act and the Dry Cell Battery Management Act will significantly advance this goal. Where substitution of nontoxic constituents does not take place, recycling and proper management will be critical through the establishment of permanent household hazardous waste and small quantity generator waste collection sites within each district or on a regionalized basis. Toward this end, the department is preparing a "Guide to Developing Permanent Household Hazardous Waste Collection Programs," which is scheduled to be released in April 1993.

Following receipt of the DEPE guidance document, counties should prepare inventories of small quantity generators, analyze how household hazardous wastes are currently handled, develop plans for the siting and development of facilities and identify methods of recycling collected materials, i.e. reuse of paints, anti-freeze, waste oil and batteries, as well as the potential redistribution and reuse of products for their originally intended use. The DEPE will work closely with counties in this process, providing expertise and successful examples of source reduction strategies employed by other jurisdictions.

- e. **Education Strategies:** The department has prepared and distributed several educational/technical brochures to assist the public in participating in source reduction activities. These include the "Grass: Cut it and Leave it" brochures, which explain the benefits of an on-site management lawn care program, and "A Citizens Guide to Reducing Solid Waste," which discusses such items as bulk purchasing, packaging reuse, durability, and which the department intends to update on an annual basis; and environmental shopping tours which the department conducts in conjunction with Kings Supermarkets. These tours provide consumers with alternatives in the purchase of consumer-use products which incorporate source reduction principles.

In addition, the department has distributed a waste audit manual which, among other things, provides public and private building managers and procurement staff with methods for achieving source reduction goals in an office setting. The strategies for implementing the source reduction opportunities outlined above are intended to be used by counties in a comprehensive program of public education regarding source reduction. Additional strategies targeting small businesses and schools need to be developed. The department will work with the counties during the next year to develop these programs. The counties will be responsible for detailing how these and other programs will be utilized in a comprehensive education program.

- f. **Financial Incentives:** The state encourages counties to utilize available grant resources (Recycling Fund grants, Resource Recovery Investment Tax funds and Solid Waste Services Tax funds) to implement source reduction activities. Examples of this include defraying administrative start-up costs associated with instituting municipal per-container based solid waste collection; program costs associated with conducting waste audits; and printing and distribution costs associated with public education campaigns. Counties are encouraged to grant requests for other source reduction initiatives as they are developed.
- g. **Procurement Strategies:** Source reduction measures can be implemented to a significant extent by modifying government procurement practices. For example, the development of bid specifications to require two-sided copying capability when purchasing photocopiers should be considered by counties and municipalities as a means of achieving source reduction goals. The state has taken a lead role in developing creative procurement strategies to advance source reduction and recycling. To further advance these initiatives, a procurement conference is planned for September/October 1993. (See pages 48-51 for an overview of state agency procurement initiatives.)
- h. **Case Studies Report:** In Fall 1990, the DEPE's Division of Solid Waste Management mailed a source reduction and recycling activities survey to the top 100 employers in the New Jersey. The survey asked companies to identify and describe their efforts in reducing solid waste through the implementation of source reduction and recycling programs. Fifteen case studies of New Jersey companies were developed as a result of this survey. These studies can be used as examples in the development and expansion of commercial and institutional solid waste management practices. These case studies were updated in Spring 1991.

The case studies are organized alphabetically and provide the following information for each company:

- a. A contact person;
- b. The nature of the company's operation;
- c. The number of employees;
- d. Source reduction and recycling activities employed;
- e. Where available, the associated cost and savings incurred in the implementation of these activities;
- f. Future efforts.

Additional companies are invited to share their experiences in reducing waste by completing a survey found in the appendix. The case studies report was distributed to county recycling coordinators and those businesses that participated in the study during the third quarter of 1992. The department will also update and distribute the report periodically.

Long-Term Implementation Strategy: A number of important source reduction strategies are broad in scope, requiring considerable shifts in both producer and consumer behavior. The following are designated as New Jersey's long-term management objectives in the area of source reduction. In this instance, long-term is defined to mean that implementation would be unlikely for more than a year, and in some cases several years. However, efforts toward evaluating and instituting the following programs should begin now.

- a. **Labeling Program:** Consumers today are bombarded with a wide array of packages in the marketplace which are labeled with environmental symbols indicating recyclability or minimal packaging. It is often difficult to verify the validity of these claims. The DEPE, in conjunction with the Department of Law and Public Safety, Division of Consumer Affairs, will consider establishing standards for the use of environmental claims made by manufacturers. The department will also evaluate the establishment of a labeling program to designate (1) the recyclability of packages, (2) the percentage of post-consumer material used within a recycled package, and (3) proper recycling or disposal requirements by category, such as "household maintenance," "automotive maintenance," "yard maintenance." As of January 1992, the DEPE has already worked cooperatively with the Division of Consumer Affairs in asking manufacturers to submit documentation which validates packaging claims such as "recyclable," "environmentally friendly," "ozone friendly," "biodegradable," "photodegradable."
- b. **Financial Incentives & Disincentives:** As an alternative middle ground between voluntary compliance and packaging bans, the state will consider the feasibility and potential effectiveness of financial incentive and disincentive programs. Such incentive mechanisms as tax credits, low interest loans and product surcharges will be evaluated as a means of subsidizing production changes which implement source reduction objectives. Further, disincentives, such as container deposit fees and product and packaging taxes, will be evaluated. The department is already analyzing the feasibility and appropriateness of predisposal fee systems for products and packaging. Prices for products in the marketplace have traditionally not reflected the cost of disposal. The department's DSWM and Division of Science and Research have begun studying the potential effectiveness of predisposal fees as a means of overcoming the damaging hidden cost of disposal commonly ignored in today's manufacturing system.
- c. **Packaging Bans:** If attempts to encourage companies to voluntarily alter packaging practices to implement source reduction objectives fail, the legislature should consider legislation to enact packaging bans. Specific products, which are considered to be contaminants within the recycling stream, could be considered for initial action.
- d. **Constituent Bans:** In addition to specific packaging bans, constituent bans to eliminate toxic materials from use in products and packaging will also be considered. Legislation which phases out the use of lead, mercury, hexavalent chromium and other heavy metals in packaging has

been enacted. The Toxic Packaging Reduction Act and Dry Cell Battery Management Act, discussed earlier on page 16, are examples of constituent bans already adopted in New Jersey.

- e. **Expanded Yard Waste Bans:** Should the yard waste management initiatives noted earlier prove to be deficient in reducing the generation and disposal of grass clippings, leaves and brush, the state will consider banning the disposal of these materials at landfills and incinerators. (Incinerator permits are already being revised to routinely preclude the acceptance of grass.) Additional regulatory changes would be needed to ban grass and brush from disposal facilities. New Jersey already has a legislative ban against burning or landfilling leaves.
- f. **Procurement Network:** Taken together, federal, state, county and municipal government spending accounts for 20% of the Gross National Product of the United States. This economic force can provide significant purchasing power to reshape production behavior and drive source reduction initiatives. Following initial programs to develop model bid specifications at the state level, a procurement network should be established to share information with county and municipal procurement officials. The short-term waste auditing programs described earlier will complement this effort. Following the establishment of a government procurement network, measures should be developed to bring the same concepts to the private sector. Efforts to develop a statewide procurement network began in line with the schedule of procurement activities outlined in detail on pages 5 and 6.
- g. **Capture and Recovery of Chlorofluorocarbons (CFC's):** It has long been known that CFC's are a prime contributor to upper atmosphere ozone depletion. Ozone depletion in the upper atmosphere increases the amount of ultra violet light that reaches the lower atmosphere, and causes several detrimental effects, including: increased risk of skin cancer and cataracts; diminished functioning of the immune system; and, destruction of plant and marine life by destruction of the photosynthesis cycle of plants. They are used in a variety of applications, including air conditioning, refrigeration, the manufacture of rigid foam products and as solvents and cleaners.

Beginning in 1987 with the ban on CFC's as propellants in aerosol cans, increasingly more stringent regulations have been placed on the manufacture and use of these compounds. The 1990 Amendments to the federal Clean Air Act required, among other things, CFC recovery procedures in order to prevent any releases of CFC's into the environment, effective July 1, 1992. The November 1991 recycling regulations at N.J.A.C. 7:26A-5.1 contained the same requirement.

At the present time, there is a high level of uncertainty surrounding the capture and recovery of CFC's on the part of public and private concerns. There are issues of proper appliance collection, transportation and other handling procedures to prevent CFC release. Also, certification requirements for recovery equipment and technicians has not been established by the EPA. In addition, the waste classification (hazardous/

nonhazardous) for the residual oil/water mix which remains from CFC recovery activities, and the market potential for the recovered CFC's are currently unclear.

In response to the above, the department formed, in July 1992, a committee of appropriate department staff, county officials, metals recyclers, recovery equipment manufacturers and CFC manufacturers/markets. The committee issued a policy document on these and related public education issues in November 1992, including a plan of action for the entire scope of the CFC recovery issue to be implemented over the long term.

7. 60% Recycling

Objectives and Criteria: It is the objective of the department, as indicated in the task force final report and recently mandated with the passage of Assembly Bill No. 987/Senate Bill No. 1082, that the state attain a recycling rate of at least 50% of the municipal waste stream, and at least 60% of the total waste stream, by December 31, 1995.

This rate is ambitious, yet realistic and achievable. In setting this rate, the task force carefully assessed recycling options for 25 specific components of the waste stream, ranging from yard waste, newspapers and other residential waste to white goods, tires, masonry and other parts of the bulky and construction waste streams. This rate can be achieved through a combination of immediate or short-term initiatives and long-term strategies. Since the adoption of the task force report by Governor Florio, New Jersey's recycling results have increased significantly with some counties already closing in on the 60% target. Given the progress made to date, it is appropriate to view the 60% target as a floor with the expectation that, as municipalities, businesses, counties and the state build on preceding successes, a rate in excess of 60% can be achieved. Revised targets will be developed in 1995 following detailed progress made in municipal waste stream and total waste stream recycling during calendar years 1992-1994. If appropriate, revised targets will be established earlier based upon documented levels of recycling.

No recycling goal can be achieved without an appreciation of the economic reality in which recycling activities exist, namely supply and demand. This plan recognizes that reality, and is therefore broadly divided into a discussion of (a) short and long-term expansion of the collection (supply) of designated materials, and (b) short and long-term programs and policies to stimulate markets (demand) for products. Additionally, because of the special nature of the materials covered and the policies related to those materials, the promotion of composting activities will be discussed separately from the supply and demand sections noted above.

a. Expanding the Collection of Designated Materials

Objectives and Criteria: Much of the current success of New Jersey's recycling program, and current attainment of the nation's highest overall recycling rate according to a May 1992 report entitled "U.S. and European Community Solid Waste Management Policies: A Status Report" by Daniel Holland of the University of Illinois, can be credited to the rapid expansion of materials collected through public and private collection

systems largely initiated in the last five years. Though demand for certain materials has lagged behind supply, thus depressing certain commodity prices for the short and intermediate term, it is the policy of the state to continue this expansion of materials collection. The implementation of this policy objective will require action by both state and county government. The primary supply-side objectives of the state are to work with the counties to ensure that the maximum number of materials are designated for mandatory source separation and recycling in all sectors (residential, commercial, institutional and industrial), that appropriate measures are taken to augment capture of materials through separation of recyclables from a mixed waste stream at permitted solid waste facilities, and that available financial assistance is targeted to individual county needs.

Recycling programs implemented by the state for all state agencies will serve the dual purpose of fulfilling its responsibility to meet the minimum 50% and 60% recycling rates while simultaneously establishing model programs that can be duplicated in other office and institutional settings. Additionally, the state will provide basic research and statewide public education campaigns. These and other initiatives are further discussed below.

Immediate and Short-Term Implementation Strategy:

- (1) **Designation of Additional Materials:** As part of the 1987 Mandatory Source Separation and Recycling Act, each county was required to designate at least three materials, plus leaves, to be source separated and recycled from the residential, commercial and institutional waste streams. Implementation of these source separation mandates was a function of local (municipal) source separation ordinances. Table 4 below summarizes the number of mandatory programs in place for each selected major commodity as of May 1, 1992.

The same county planning and local ordinance approach will be used to require the recycling of additional materials. In fact, it will be extremely difficult for counties to achieve the 50 and 60% rates in the absence of additional designated materials. Though the state does not intend to take over the planning function of the counties in this regard, a minimum group of designated materials is necessary for each county for the basic recycling goals to be met. This base-line group of additionally designated materials includes: grass clippings, brush, corrugated cardboard, office paper, junk mail, PET and HDPE plastic containers, steel cans, white goods, used motor oil, consumer batteries, wood waste and other recyclable construction and demolition debris. County designation of additional materials is substantially underway, with the department having reviewed and certified eight county plan amendments as of December 1, 1992 which designate additional materials to be recycled. It is expected that the remaining counties will submit plan amendments incorporating the 50% municipal waste stream and 60% total waste stream recycling goals and the additional material designations by April 1993.

The county-by-county summaries found in Section C.3. list the designated materials adopted by each county.

Calculations must be included in the county plan amendments which clearly indicate that the overall 60% recycling goal will be attainable, given the anticipated increases in recycling of the various materials. Material-specific recycling targets, in tons and as a percentage of total waste generation, should be set. Projections should be included for total waste generation, and for the amount of materials going to existing or proposed county disposal facilities or recycling facilities and to any out-of-state landfills. If any county-owned or operated disposal or recycling facilities are planned, the waste generation projections should be made over the lifetime of the planned facilities.

Table 4

**STATUS OF MANDATORY RECYCLING PROGRAMS
(AS OF MAY 1992)**

- Approximately 515 Municipalities
With Curbside Collection
 - All 567 Municipalities Recycle Newspaper,
Glass and Aluminum Cans
 - 384 Recycle PET Plastic
 - 366 Recycle Tin/Bi-Metal Cans
 - 208 Recycle Corrugated
- (2) **State Agency Recycling Initiatives:** On December 2, 1983, former Governor Thomas Kean signed Executive Order No. 57, which required the institution of high-grade office paper recycling programs in all state agencies, as well as the additional recycling of other materials where practical. Between that date and 1991, all state agencies added aluminum cans, glass containers, and used oil to their programs. Additionally, where practical (based on transportation access and facility storage requirements), food waste, textiles, x-ray film, and mixed metals are being recycled.

In keeping with the tenet that state government should set the example in complying with public policy goals in solid waste management, Governor Florio signed Executive Order No. 34 on June 13, 1991. The order required, among other things, the establishment of programs in all state agencies to achieve a minimum 60% recycling rate. Activities include state agency waste audits, "Grass: Cut it and Leave it" grass clipping

programs, expanded food waste separation activities, development of disposal and recycling contracts which reflect waste reduction incentives, amplified recycling in public parklands and forests, and expanded paper collection programs. (Pages 6 and 7 of the Executive Summary outline state level accomplishments in implementing Executive Order No. 34.)

The waste audit will serve, in many respects, as the linchpin in this major expansion of state agency recycling programs. The audit will educate agency personnel about the composition of the waste generated, the opportunities that exist for increasing the amount and types of materials recycled and the procedures for reporting recycling activities to a central point. As noted on page 29, the department distributed to state agencies a "Waste Audit Manual" in October 1992 to begin this critical project. Through the waste audit program, the state will also develop a detailed source reduction and recycling database of all activities throughout state owned and leased buildings in New Jersey.

Even prior to the completion of agency waste audits, however, the state is significantly altering its high-grade office paper recycling program. This expansion, which became effective during the second quarter of 1992, will provide for the recycling of mixed office paper from some 30 state agency locations in Trenton, affecting some 15,000 state employees. Since in most cases mixed office paper represents over two-thirds of all generated waste, this program alone will establish state government as the example for achieving the 60% recycling rate.

Following the direction of Executive Order No. 34 to expand source reduction and recycling, the DEPE, in conjunction with the Department of the Treasury, will develop specifications for procurement of additional recycled products by state agencies. The department intends to mandate expanded procurement programs for state agencies as soon as the required legislative or executive authority is established. Further, once adopted, the department plans to work through education programs to assist county and local governments in revising their procurement practices toward further procurement of recycled products.

- (3) **University Recycling Programs Work Group:** In August 1990, the department wrote to the presidents of the eight state colleges and Rutgers University, informing them of their responsibility to comply with the recycling goals established by the state and urging their participation in a working group being established by the DEPE.

The group, which now includes private and community colleges as well, is comprised of facility recycling coordinators and department staff. A listing of participating colleges and universities is included as Table 5. Meeting monthly, the group's mission is to address the unique problems of recycling in the college campus setting. The group provides an opportunity to

share experiences related to various program aspects such as dormitory and cafeteria collection programs, recycling of office generated waste paper, used oil, antifreeze and batteries originating from vehicle maintenance yards, and proper yard waste management. Additionally, procurement of products with recycled content is discussed.

Technical assistance on these issues is provided by DEPE staff. The short-term goal of the work group is to determine the breadth of the recycling issues relevant to the college setting and to build a network of college personnel who share responsibility for addressing these issues. The short-term goal of the committee, estimated for the second quarter of 1993, is to develop a guidance document to be used for establishing and maintaining the range of recycling activities required at colleges and universities.

- (4) **Public Education Strategies:** The state awarded an 18-month, \$750,000 marketing/public information contract in November 1992 to Keyes Martin. Contract outputs will address recycled product purchasing, small business and multi-family recycling program expansion and hard-to-recycle items such as tires, used oil, grass clippings and batteries.

In prior years, the statewide education contract has been used to promote the general concept of recycling by focusing on the general benefits of residential source separation of newsprint, aluminum cans, glass containers and selected plastic containers. As indicated above, this campaign will focus more specifically on certain recycling or procurement themes.

The campaign will employ standard multi-media techniques, such as public service announcements, newspaper and business journal advertisements, brochures and guides. The difference between this campaign and former ones, however, is that the messages will be more focused, the target audiences more narrowly selected, the medium more appropriate to the message and the audience, and the objectives (increased recycling or procurement for specific materials) more easily quantified. The marketing/public relations RFP was issued in January 1992. A total of 15 firms responded and the evaluation process resulted in the selection of Keyes Martin in November 1992.

- (5) **Waste Audits:** The "Waste Audits Manual," released in October 1992, provides counties, municipalities and private businesses with the tools necessary to systematically analyze the waste composition of a facility to determine appropriate strategies for increasing source separation mandates and source reduction opportunities. As noted on page 29, it is specifically recommended that counties and municipalities adopt and implement waste reduction plans by the end of 1993. Further, counties should adopt and implement a program for waste audits

and waste reduction plans for industries with more than 500 employees by 1993, with more than 250 employees by 1994, and for industries with more than 100 employees by 1995.

Table 5

**College Recycling Committee
Participating Institutions**

Atlantic County College	Mercer County Community College
Stockton State College	Princeton University
Bergen County College	Rider College
Fairleigh Dickinson University	Trenton State College
Ramapo State College	Westminster Choir College
Seton Hall University	Middlesex County College
Burlington County College	Rutgers University
Camden County College	Monmouth College
Cumberland County College	Drew University
Bloomfield College	Morris County College
Caldwell College	St. Elizabeth College
Essex County College	Georgian Court College
Montclair State College	Ocean County College
NJ Institute of Technology	Passaic County College
University of Medicine & Dentistry of NJ	William Paterson College
Upsala	Salem County College
Glassboro State College	Raritan Valley College
Gloucester County College	Sussex County College
Hudson County College	Kean College
Jersey City State College	Union County College
Stevens Institute of Technology	Centenary College
	Warren County College
	St. Peter's College

- (6) **Restructuring of Solid Waste Financial Assistance:** Existing regulations and policies are available to implement recycling programs and source reduction initiatives. More specifically, the McEnroe Act Solid Waste Services Tax and Resource Recovery Investment Tax programs, Bond Act program, Recycling Tax and Private Activity Bond allocation system will be restructured and consolidated, where possible (see page 13) to provide, as a first priority, funding for source reduction and recycling programs.

Further, the department will restructure the existing financial assistance programs to streamline the disbursement of monies to county and local governments so that planned programs may be implemented as quickly as possible. Efforts in this regard have already been initiated with broad application of more consolidated and streamlined funding to take place in 1993. Where possible,

the state is attempting through legislation to replace lengthy contract procedures with entitlement programs to place funds in the hands of source reduction and recycling program managers as expeditiously as possible.

- (7) **Promote the Recycling of Additional Materials from an Incoming Mixed Waste Stream:** Although the preeminent method for separation of recyclable materials has been, and will remain, separation by the generator at the point of generation, it is recognized that significant quantities of recyclables can, and should be, separated at permitted solid waste facilities from the incoming mixed waste stream. The Recycling Act, P.L. 1987, C. 102, recognized this activity and provided a framework for commercial and institutional waste generators to receive exemptions from municipal source separation ordinances in those instances where the designated recyclable materials are separated at permitted solid waste facilities.

Transfer stations and materials recovery facilities are perhaps uniquely able to perform this function. Typically, solid waste is tipped on a pad prior to reloading for disposal. This activity, coupled with deliberate changes to solid waste collection routes and practices, provides the opportunity for recovery of the additional increment of recyclable materials that are not removed through source separation programs.

The state's role in promoting this activity is to quickly approve permit modification requests for facilities whose current permits do not provide for this activity; encourage other permit holders to request this type of modification; require counties, as part of their 60% recycling plans, to assess the need for permit modifications as well as new facilities which will be designed with this policy in mind, particularly in the area of mixed construction/demolition waste recycling; and to propose regulations which will make it easier to extract materials at transfer stations without infringing on solid waste disposal franchise rights. The first three initiatives discussed above are currently underway.

- (8) **Fire Retardant Treated (FRT) Lumber Project:** Emerging in 1992 as a potential major issue is the disposition of waste roofing material resulting from the large-scale failure of FRT plywood used extensively in the late 1970s and 1980s. FRT plywood is standard plywood that has been treated with various proprietary chemicals and used as roof sheathing in certain buildings. The American Plywood Association has suggested that FRT plywood failed in roof sheathing applications in the presence of heat and moisture, and that reactions leading to failure could vary, based on the geographical location of the structures containing the wood, ventilation of roof structure, color and surface treatment of the roof and its exposure to sunlight. The failure of FRT plywood has prompted the creation of public and private insurance pools to provide roof repairs or replacements. It is estimated that as much as several hundred thousand tons of roofing material (shingles and

plywood) may become waste over a relatively short time, beginning in 1992. The department will be assessing the desirability of allowing the treated wood to enter the wood waste recycling stream as a source of mulch or other ground cover within the first quarter of 1993, and coordinating the movement of roofing shingles into established and to-be-established markets for use as alternative paving/patching material.

- (9) **Used Motor Oil Recycling Program:** Each year, New Jersey's residents who change their own oil (do-it-yourselfers) generate over nine million gallons of used motor oil. Much of this oil is improperly disposed of by residents who are unaware of the harmful environmental effects that result from pouring used oil down the sewer or on the ground, or putting it out with the trash. The department's primary objectives in the area of used motor oil recycling are as follows: 1) ensure that adequate collection capacity is available to residents of each municipality; 2) work with the counties to promote citizens' awareness of local collection programs; 3) support the re-refining of used motor oil to the greatest extent possible; and 4) establish a long-term, secure funding source for used oil collection, recycling and education activities.

The Mandatory Recycling Act requires reinspection stations and retail service stations with a collection tank(s) on the premises to serve as used oil collection centers for the public. There are approximately 5,000 reinspection and other service stations in the state. However, due to concerns about the cost of used oil removal and the fear of accepting oil that has been mixed with brake fluid, pesticides, or other contaminants, many service station operators are reluctant to accept used motor oil from the public. The department is aware of the service station operators' concerns, and is working to minimize potential problems through the dissemination of educational materials. A used motor oil recycling brochure, which targets do-it-yourselfers, has been developed by the department, and will be distributed through service stations, auto parts stores and other points of purchase, and through the county recycling offices.

In addition, the department is encouraging the siting of county or municipally sponsored used oil collection tanks for use by the residents. Over 200 municipalities currently provide such a tank at the local recycling center or public works yard. A used oil collection site database has been developed, and contains information on county and municipally sponsored collection sites. This database is used to communicate information about existing sites, and will be used to target areas of the state which are in need of an increase in collection capacity.

The department supports the goal of establishing a minimum number of permanent collection sites in each county, preferably one in each municipality, to be available by the end of 1993. To this end, the department has developed Guidelines for Siting Used

Oil Collection Tanks. These guidelines discuss the various regulations governing used oil collection sites, and provide suggestions on site preparation, signage. The department also supports making a long-term funding source available to counties during the next several years to cover the costs of tank acquisition and siting.

The department also assisted the USEPA in selecting two municipalities, East Orange in Essex County, and Winslow Township in Camden County, to participate in an USEPA-funded used oil recycling pilot project. The main objective of the project was to establish used oil collection/recycling programs which would serve as models for future publicly sponsored sites. A further goal was to educate the public about surface and groundwater contamination associated with the improper disposal of used oil.

The project also included the development of a used oil collection tank manual, which serves as a "catalog" of representative tank types. The results have been encouraging, and the department believes that this project will serve as a model for other municipalities in the state.

- (10) **Used Motor Oil Recycling Regulations:** Sections 43 and 44 of the New Jersey Statewide Mandatory Source Separation and Recycling Act set forth various signage requirements for motor oil retailers, and signage and collection requirements for reinspection stations and retail service stations which have a used oil collection tank on the premises. Regulations, which will implement these portions of the Mandatory Recycling Act, were proposed by the department during the third quarter of 1992, and will be adopted during the first quarter of 1993. The regulations will establish labelling requirements for motor oil sold at retail; require the posting of signs informing the public of the importance of the proper collection and disposal of used oil; require used oil collection centers to accept used motor oil from the public; provide for an annual update of the used oil collection site database; and require semi-annual reporting of quantities of used motor oil collected for recycling.
- (11) **Chemically Treated Wood Waste Research:** A significant amount of the wood waste entering the solid waste stream has been treated or manufactured with various fire retardants, preservatives, insecticides, paints, glues and other chemicals. Railroad ties, pressure treated wood for decks, telephone poles, waterfront boardwalk and dock wood are examples. Technologies are readily available to process this material into various landscaping products, bulking agent for composting use, or dedicated boiler fuel use as a substitute for fossil fuels. Not having inventoried the extensive list of chemical treatments routinely used on wood or the health and environmental risks associated with the widespread distribution and use of recycled wood products containing these chemicals, the department has

historically taken the position that chemically treated wood may not be processed with nonchemically treated wood at DEPE-approved recycling centers. This material may only be processed separately, and then only for use as a fuel where an authorizing permit from the host state of the boiler has been documented.

In order to maximize valid uses of chemically treated wood waste, the department will undertake necessary studies to: ascertain the percentage of total wood products entering the product stream which contain chemical treatments; the typical uses for chemically treated wood products; the types of chemicals used as treatments on wood products; the average product life of treated wood by use such as telephone poles, decking; and the environmental and health risks which may be reasonably anticipated from an unrestricted use of these products once processed into typical recycled wood products. The department will revise current policy, if warranted, by July 1993. If found to be overly restrictive, the current policy will be changed accordingly. Some of the benefits to a revised policy would include: increased opportunity for reuse of these waste materials; reduced costs for separation, collection and disposal; and increased revenues for approved recyclers.

Long-Term Implementation Plan: It is recognized that certain initiatives designed to increase the supply of recyclable materials will require substantial statutory, regulatory or programmatic changes. These longer-term initiatives need to be identified now in order to gain proper focus toward future implementation. The following are included as intended long-term strategies:

- (1) **Mandate Statewide Recycling of Certain Materials:** Where specific materials are recycled across the state but are not mandated by all counties, consideration will be given to a statewide mandate for materials where a sufficient market and economically viable collection system exists. These materials could include, but not be limited to: PET and HDPE plastic containers, steel cans, white goods, corrugated cardboard and office paper. This course of action will only be taken if expanded county programs do not result in the attainment of statewide recycling goals.
- (2) **Requirements for Construction, Demolition and Road Opening Permits:** The Department of Community Affairs administers the regulations that govern the local issuance of permits for construction, demolition and road openings. These business activities account for the generation of as much as one quarter of the state's waste stream. Current regulations governing permit application criteria, however, are silent regarding the disposition of waste generated by these activities.

This is unfortunate for two reasons: (1) approximately one-half of all waste flow violations involve construction/demolition waste; and (2) the 60% recycling goal requires maximum diversion of

these materials for recycling purposes. Requiring as part of a local building permit application an estimate of the amount and types of waste to be generated, as well as the recycling facilities to be utilized in the disposition of these materials, will greatly advance recycling opportunities. It will also serve more specifically to enhance the efficiency of enforcement activities by local and state officials, provide the means for local recycling coordinators to work with contractors to identify approved recycling opportunities, enhance the supply of recyclable materials to these facilities in an orderly fashion, and provide a necessary planning tool to county and state officials regarding recycling and waste disposal capacity needs. It is anticipated that the department, in conjunction with the Department of Community Affairs, will develop this regulatory change by July 1993.

- (3) **Upgrade the Quality of Materials Collected:** As markets (most notable paper markets) are temporarily glutted by the rapid influx of materials from regional recycling programs, assistance should be provided by the state to recycling program operators on the efficacy of upgrading the quality of materials collected. This could take the form of increased separation on the part of residents or increased manual and mechanical separation of materials as they enter recycling centers in order to increase marketing options which may be available to recycling center operators. Similarly, this could take the form of regionalization of marketing efforts that could efficiently provide a more marketable quantity of higher quality material. The state may undertake those studies necessary to determine the necessity of encouraging these activities.
- (4) **Realign and Broaden Existing Solid Waste Taxes:** Additional funds are needed to assist local governments in the implementation of recycling programs targeting additional materials, for administration of the state market development and technical assistance programs, and for intensive education programs to remind the residents of the state of their responsibility to recycle and to purchase recycled products. The existing solid waste tax program will be restructured and consolidated, where possible, to include tax collection at all solid waste disposal facilities (including incinerator facilities and transfer stations) to provide maximum funding for recycling programs. It is also necessary to revise applicable fund uses to target source reduction and recycling. The department will also support legislation to expand, in scope and application, existing solid waste and recycling financial assistance programs.
- (5) **Disposal Bans:** Similar to the disposal ban currently in effect for leaves, the state will investigate the need for enacting additional disposal bans for the following reasons: (1) where sufficient end-markets exist for materials; (2) in the interest of reducing the toxicity of the remaining waste stream; or (3) to increase the efficiency of municipal solid waste incineration systems. In fact, such disposal bans have already been implemented in several solid waste management districts. For example, in recognition of its

recyclability, Monmouth County, through a DEPE certified plan amendment, banned the disposal of asphalt, concrete and wood waste at the Monmouth County landfill. Batteries have also been prohibited from disposal at Warren County's solid waste incinerator through an administrative consent order in an attempt to reduce the toxicity of the municipal waste stream and to minimize mercury emissions from the solid waste incinerator. In addition, because of the deleterious effects that wallboard and grass clippings have upon the sulfur dioxide (SO₂) and nitrogen oxide (NO) emissions respectively, of solid waste incinerators these materials have also been banned from disposal at certain solid waste incinerators. Gloucester County, for example, has prohibited the disposal of wallboard at its incinerator through the provisions of its solid waste facility permit, while Union County has prohibited the disposal of grass clippings and yard waste at its planned incinerator through the provisions of its air pollution control permit. It is evident that disposal bans such as these serve to improve the quality of the fuel stock that is fed into New Jersey's solid waste incinerators. By removing certain waste materials from the waste stream, cleaner and more efficient incineration can be accomplished.

- (6) **Increase Enforcement Activities:** In order to reach the 60% rate and to ensure that recyclables are kept out of the waste stream, an effective compliance monitoring program needs to be increased at all levels. For example, more stringent municipal curbside inspection programs must be adopted to ensure that recyclable materials are not discarded as solid waste. Furthermore, a system of warnings and fines must be utilized by local officials to ensure compliance with municipal source separation ordinances. In addition, inspections for the presence of recyclable materials in loads of incoming waste at solid waste disposal facilities must be intensified by county enforcement officials. A graduated penalty system should be utilized in conjunction with these inspection efforts. County and local health agencies must also bolster their recycling enforcement efforts, as authorized by the County Environmental Health Act, N.J.S.A. 7:26-3A.21. Also, the penalty provisions of N.J.S.A. 13:1E-9 must be utilized effectively by state enforcement officials to ensure compliance with solid waste and recycling rules. This may require checking at the curb and at all solid waste facilities. The department will continue to use the district planning process to work with counties to establish the above enforcement provisions to be administered at the municipal level through local ordinances.

By having in place a clear and consistent regulatory framework for recycling center approval and operation through adoption of the recycling regulations referenced earlier on page 17, prospective recycling center operators will be able to enter the recycling industry with less confusion and more certainty. Furthermore, the promulgation of these regulations will enhance the effectiveness of enforcement efforts by providing uniform environmental

regulation of recycling centers. Therefore, illegal recycling operations will be more readily eliminated to the benefit of those legitimate recycling operations.

- (7) **Construction/Demolition Contractors Waste Materials Handling Guide:** The task force report indicated that as much as 25% of the total waste stream is made up of construction and demolition waste. This stream includes treated and untreated lumber, tree stumps and other tree parts, asphalt, concrete, bricks, cinderblocks, asphalt-based roofing scrap, wallboard, kraft paper and corrugated containers, siding, carpeting, insulation, various plastics and other waste materials. On an average, as much as 80% of this component of the waste stream is recyclable. In fact, much of this waste stream is currently being recycled by DEPE approved recycling centers into paving aggregates, landscaping products, etc. What is missing, however, is a comprehensive guide for construction and demolition contractors and developers that discusses source reduction opportunities (i.e. "foot printing" new construction to create less tree waste) and enhanced recycling opportunities, such as using wallboard as a soil additive, marketing waste plastics and siding, etc., in addition to a practical guide to on-site separation of various waste materials. This guide, to be developed by the department in consultation with representatives of the construction industry, is anticipated for the latter half of 1993.

- (8) **Container Plastics Labeling Regulations:** With the passage of P.L. 1991, C. 268, the state adopted as law the container plastics coding system developed by the Society of the Plastics Industry (SPI). The SPI coding system was designed to allow consumers and processors to easily identify types of plastic containers for separation and recycling. The numeric code, stamped on the bottom of the container, runs from 1 to 7. PET (Polyethylene Terephthalate) and HDPE (High Density Polyethylene), the two most widely recycled plastics in New Jersey, are labelled 1 and 2, respectively. The remaining codes are as follows: 3, V (Vinyl, Polyvinyl Chloride [PVC]); 4, LDPE (Low Density Polyethylene); 5, PP (Polypropylene); 6, PS (Polystyrene); and 7, Other. The coding system reflects predominant plastic resin type only as determined by container volume, not weight.

Unfortunately, not all like-coded containers can be treated the same for recycling purposes. As end-uses become more sophisticated and more technically demanding, the differences between an injection molded HDPE container and a blow-molded HDPE container becomes critical to the recycling process, and therefore, to the initial separation by the consumer. The department will be proposing numeric coding standards for use by industry, in the form of regulations, by the latter half of 1993. The regulations will rectify those problems now being experienced by recycling markets in dealing with like-coded, but physically different, plastic containers. The regulations will address how the physical discrepancies or uses as food or beverage containers

between containers that are currently labelled with the same number and letter symbol may make these containers incompatible in terms of acceptance in collection programs for recyclables, and may lead to containers that are currently labelled "1" or "2" having to be labelled "7." It is anticipated that a refinement in the codes will be proposed in order to maintain the integrity of the plastic recycling markets.

b. Programs to Stimulate Markets for Recycled Products

Objectives and Criteria: Without question the key to any recycling policy success is the attainment of long-term utilization of recyclables as raw materials in manufacturing processes and the purchase of those products they manufactured. The realization of this objective will come from a combination of incremental changes in a variety of public and private sector activities. For some changes to become effective, legislative, regulatory and administrative actions will likely be required. The goal of these initiatives is to establish an economy that recognizes post-consumer materials of all types as the material of first consideration in the production of new commodities and not just as acceptable substitutes for virgin raw materials. By instituting and expanding networks of public and private recycled product procurement, establishing economic incentives that reverse the historical bias toward use of virgin materials, and, where necessary, imposing legislative mandates on manufacturing processes (such as percent of post-consumer content used in packaging), the state will be able to create a competitive, self-sustaining economic environment for recycled products.

- (1) State Agency Procurement Initiatives:** Public procurement of recycled goods to motivate the development of private markets is necessary to support and expand a recycling strategy. The state has continued its aggressive procurement of products containing post consumer and other recycled materials content, especially in the area of paper and paper products. Using the procurement requirements of P.L. 1987, C. 102 as a catalyst, the state has expanded recycled paper purchases so that currently, nearly 60% of all paper and paper products purchased by the state contains 50% secondary waste paper material. The 10% price preference for recycled paper also supports present procurement practices to purchase recycled paper with the highest post-consumer waste content. New Jersey state income tax forms, state maps, annual reports, and budget message and appropriations handbooks are printed on recycled paper. A number of departments publish brochures on recycled paper as well.

To further expand procurement, the department has developed a Guide To Public Procurement of Recycled Products for distribution to recycling coordinators and procurement officers in state agencies, counties, municipalities, school districts, volunteer fire departments, and county and state colleges. The document was published in October 1992. The information will enable those entities to purchase recycled products from contracts already secured by the state through the Cooperative Purchase Program,

administered by the New Jersey Department of the Treasury, Division of Purchase and Property. The state term contract offers the potential for purchasing items at a lower rate because of the greater quantity of purchases the state can anticipate for the vendor. The state can also conduct quality control and assurance testing on a variety of products, a service not always accessible to smaller political units. Many public entities currently purchase items through this program, but may not be aware of the full scope of items available with recycled content. Table 6 below summarizes existing state term contracts for recycled products, as well as additional contracting opportunities under review.

In order to expand recycling activities, the DEPE, in conjunction with the Department of the Treasury, will develop specifications for procurement of additional recycled products to increase market opportunities. Implementation of revised procurement provisions will require either an additional executive order or legislative enactment, both of which are under development. Procurement changes currently under review include:

- (a) Appointment of a recycled product procurement coordinator in each state agency;
- (b) Review of all procurement specifications to eliminate those that discriminate against the use of products with recycled content;
- (c) Revisions to existing recycled paper and paper product minimums so as to achieve a minimum 65% recycled paper and paper product purchase rate by 1995;
- (d) Revisions to the minimum post-consumer content standards for paper and paper products to achieve a minimum 15% and 25% minimum post-consumer content standard, respectively;
- (e) Maximizing the use of re-refined motor oil, retreaded or remolded tires and recapture of chlorofluorocarbon refrigerant during air conditioner servicing;
- (f) Revisions to printing and other vendor contracts to require use of recycled paper on all state government funded brochures, reports and other documents;
- (g) Maximizing the purchase of products made from recycled metal, glass and plastic;

Table 6

RECYCLED PRODUCTS UNDER STATE CONTRACT

<u>Commodity</u>	<u>Recycled Content</u>
1. Boxes, Record Storage With Lids	75%
2. Buckets, Plastic Recycling	Minimum 10% Post-Consumer
3. Calendar Work Schedules	Cover: 65% Text: 50%
4. Envelopes, Interoffice	50%
5. Laser Printer Toner Cartridges	Recharged
6. Pads	50%
7. Forms, Stock Tabulating	50%
8. Lumber, Plastic	100%
9. Oil, Motor	Re-Refined
10. Paper Napkins	100%
11. Paper, Toilet Tissue	100%

- (h) Utilizing compost made from municipal solid waste, sludge (both sewage and water purveyor), yard waste and wood waste, in this ranked order, for the maintenance of all public lands where appropriate.

Further, once adopted, the department intends to initiate training sessions and other seminars to involve county and local purchasing agents in a "Buy Back Recycled" campaign for those products and practices outlined above.

The department will participate in the "Buy Back Recycled" education campaign by developing fact sheets on alternative recycled products, and a statewide procurement conference to be scheduled for September/October 1993. The fact sheets will provide a concise, timely listing of recycled materials available to governmental agencies for procurement. The fact sheets will also inform municipalities and counties of procedures for purchasing recycled materials directly from vendors, or through the state's distribution center and self-service store (for partial skids of material). The procurement conference will bring municipal and

county purchasing agents together with DEPE and treasury personnel to exchange information on available materials and procurement procedures. The state will also seek involvement from the USEPA Region II since similar procurement seminars have been held in other regions of the country with USEPA coordination. (The department's schedule of procurement seminars and other activities for 1993 was previously outlined on pages 4 and 5.)

Through major expansion of existing state procurement efforts, and adoption of these same purchasing practices by counties and eventually municipalities, a critical public procurement linkage in the development of markets for recycled goods can be achieved. Collective government purchases can help create the demand needed to establish competitive pricing with virgin materials, and to permit new products to gain a foothold in the marketplace. Government purchasing can encourage manufacturers to develop greater capacity, to invest in recycling products research and to introduce new technologies to achieve the final procurement linkage.

- (2) **Recycling Regulation Amendments To Streamline Market Development Opportunities:** The state has undertaken or completed several initiatives to expand recycling in this area and provide for increased market opportunities. The recycling regulations (N.J.A.C. 7:26A) adopted on November 18, 1991 will provide for the orderly expansion of facilities designed to process materials such as concrete, asphalt and other masonry materials, wood waste and tree stumps, roofing scrap, tires to end-use specifications. During the public comment review phase of these regulations, it was determined that additional regulations need to be addressed in the short-term. These additional regulations concern:

- (a) Exemptions from the need to obtain recycling center approvals for tire reef project development;
- (b) Reporting and approval requirements for the out-of-state transport of recyclable materials;
- (c) Regulatory status and operational requirements for scrap metal processing facilities and municipal recycling depots;
- (d) Approval exemptions for recycling activities on DOT rights of way;
- (e) Approval requirements for facilities accepting plastics other than rigid container plastics.

The department is presently developing such regulations and will propose a rule which will supplement N.J.A.C. 7:26A by March 1993.

- (3) **Expanding Capacity for Recyclable Construction & Demolition Debris:** Presently, there are 25 recycling centers approved by the DEPE to receive, store, process or transfer source separated recyclable components of the construction and demolition waste stream, or "Class B recyclable materials" pursuant to N.J.A.C. 7:26A. Of these facilities, ten handle asphalt, concrete and masonry debris, nine handle wood waste and tree stumps, three handle both masonry debris and wood waste, two handle asphalt-based roofing scrap, and one handles nonhazardous petroleum contaminated soil. The department is also currently reviewing 54 additional applications for recycling centers for Class B recyclable materials as noted earlier in Table 2. It has been determined that a recycling infrastructure of this magnitude will be more than adequate for the management of the construction and demolition materials generated in New Jersey.
- (4) **DEPE/DOT Recycled Materials Task Force:** Since mid-1991, the department, in conjunction with the New Jersey Department of Transportation (DOT), has been engaged in a significant effort towards utilization of recycled materials in DOT road construction and maintenance. The goals over the three-year term of the task force are as follows:
- (a) Evaluate current specifications to determine where the most likely changes can be made to incorporate recycled materials in construction and maintenance;
 - (b) Provide a logical, consistent system for evaluating suggested changes to specifications;
 - (c) Conduct basic research and field tests to support recommended specification changes;
 - (d) Establish a system for review, research and field testing of requests for changes to specifications that will be an integral part of the day-to-day functioning of the Materials and Research element of the DOT.

To date, specifications have been put in place, or are in field test evaluations that allow for the use of recycled asphalt pavement, mixed glass as an aggregate, recycled concrete aggregate, recycled wood chips, recycled tire rubber, modified asphalt paving and recycled asphalt roofing scrap. Other recycled materials and uses to be evaluated at this time include compost derived from a variety of solid wastes and expanded use of recycled glass and asphalt based roofing scrap. As it is anticipated that the use of these materials will result in construction cost savings. No further incentives should be needed beyond changing specifications and dissemination of these changes to appropriate construction vendors. However, if this does not result in the increased use of recycled materials desired by the scheduled 1994 end of the joint

task force, the requirement for minimum use of recycled materials in construction and maintenance will be addressed at the appropriate administrative levels.

- (5) **Mixed-Glass Marketing:** Mixed, broken container glass has historically been a major problem in the operation of recycling centers, sometimes accounting for one-half of the container glass stream entering these facilities. Mixed, broken glass cannot be used in new container production due to low color variation tolerances in the manufacturing process. The state has successfully petitioned the National Plumbing Code Board to allow for its use in site drainage applications. This, coupled with the DOT allowance for crushed glass as an acceptable addition to roadway aggregate, has provided an opportunity to alleviate the surplus that currently exists of this by-product. The DEPE in cooperation with the Department of Community Affairs will institute an educational program to encourage local building officials to support the use of those recycled materials that are now allowed by the National Plumbing Code. The DEPE will also, in cooperation with the Department of Transportation, develop incentives to maximize the use of crushed glass in roadway construction.
- (6) **New Jersey Markets Directory:** The March 1992 update of this directory prepared by the DEPE lists over 300 companies engaged in providing some form of recycling service. The directory lists collectors/transporters, intermediate processors, brokers and end-users, and is a snapshot of the private sector infrastructure as it currently exists in New Jersey. Its value for market development is the same as with any business directory: linking all those engaged in a business activity to allow easy access to that activity and thus stimulate that activity. It is intended that the directory will be updated on an annual basis.

The department's directory complements a number of other publications that offer marketing information. New Jersey for A Clean Tomorrow (ACT) has published the New Jersey Business Guide to Recycled Products, a list of recycled products manufactured in-state. The Association of New Jersey Environmental Commissions (ANJEC) offers large business operations the Recycling Handbook for New Jersey Businesses. For small business retail, food and office business operations, the Association of New Jersey Recyclers (ANJR) has produced the Small Business Guide to Cost-Effective Recycling.

- (7) **USEPA Tire Recycling Grant:** The department has been awarded a \$1 million grant from the USEPA to evaluate the cost-effectiveness of tire pile cleanup using various tire recycling technologies. It is estimated that approximately 5.2 million abandoned tires currently exist in tire piles within the state. The grant will help determine which technologies (removal prior to artificial reef production, splitting prior to disposal, chipping prior to fuel production, chipping prior to crumbing) exhibit the most

promise in securing and cleaning up tire piles. It is not anticipated that these activities will lead to wide-scale tire pile cleanup using this limited amount of funds, but instead will provide the basis for a realistic determination of funding needed for tire pile cleanup. Additionally, the results of this study should help the state determine which tire recycling technologies show the most long-term promise, and where to focus our tire recycling development resources.

Proposals were received from interested bidders on March 6, 1992. The research will be conducted during the summer and Fall of 1993, with a final report being issued from the DEPE to the USEPA in May 1994.

- (8) **Camden Paper Mill:** Working with a diverse group of financial lending institutions, local and county governments, authorities and private concerns, the department is investigating the feasibility of limited financial backing to establish a 600 TPD waste paper deinking mill on the Camden port. If financially sound, the mill project would utilize primarily mixed office waste paper grades to provide deinked raw material to a local tissue product producer. The department will evaluate financial assistance opportunities in support of this project. It is anticipated that the mill could begin construction in 1993 and begin production in late 1994, processing one million tons of office wastes paper per year.
- (9) **Anheuser Busch Glass Recycling Facility:** Anheuser Busch recently announced the opening of a 70,000 ton per year glass processing facility in Logan Township, Gloucester County. This facility, which became operational in December 1992, will produce a high-quality furnace-ready cullet which will provide the glass industry the opportunity to increase the amount of post-consumer recycled glass used in manufacturing new containers.
- (10) **Low-Interest Recycling Business Loans and Loan Guarantees:** The establishment and success of businesses and industries which collect, process and convert recyclable materials into new products is essential if the state is to achieve its recycling goals. By statute, up to 35% of the state Recycling Fund has been dedicated to the development and expansion of recycling business and industries. This financial assistance is available either as a direct loan or a loan guarantee. The DEPE will attempt to expand the use of loan guarantees in an effort to maximize the application of existing and future funds dedicated to private sector recycling. In this regard, the department has also established a priority ranking system and annually will reevaluate the system in order to process loans as quickly as possible. New Jersey's recycling fund was created through the 1987 Statewide Mandatory Source Separation and Recycling Act, which levied a tax of \$1.50 per ton of solid waste accepted for disposal at a landfill in New Jersey or accepted for transfer to an out-of-state facility for disposal. Monies are allocated under a statutory distribution formula where, generally,

40% goes to municipalities in the form of tonnage grants to help run local programs; 35% goes to provide low-interest loans to recycling businesses; 7% goes to state program planning; 8% goes to county program planning; and 10% goes to recycling public education programs. Over the first four years of the business loan program, nearly \$14 million has been lent to stimulate the recycling of paper, glass, metals, leaves and construction debris.

Projects that have been funded in the past range from \$90,000 for a baling machine to \$3,000,000 to expand a paper mill's production capacity for recycled products. An integral part of this financial program is the ongoing evaluation of the status of all aspects of recycling in the state by both commodity and geographic location and establishing priorities for the usage of this money based on this evaluation. During the first several years of the loan program, the funding applications totaled less than the amount of money available in the fund. Therefore, there was no need to establish priorities for project funding. However, in the last year, this situation has been reversed, necessitating the establishment of a system to numerically evaluate and rank projects. Generally, those projects that involve a priority material or which will establish a statewide market, are given the highest ranking. The goal of the department in this program is to establish and annually reevaluate this priority ranking system in order to process loan applications as quickly as possible. Table 7 identifies those loans that have been awarded to date.

- (11) **Economic Development Coordination:** Public Service Electric and Gas Co. (PSE&G) has established a marketing group (the Office of Business Development) to identify industrial facilities in their service region that are currently unused and advertise this unused industrial capacity worldwide. PSE&G offers, as part of this function, energy discounts in economically distressed areas of the state and technical assistance, such as information on potential product customers, raw material supply, transportation access. The department has contributed to this effort in the past and to similar efforts involving the New Jersey Department of Commerce, the Port Authority of New York and New Jersey and the South Jersey Port.

Projects currently in development with these agencies include site location visits with a recycled newsprint mill investment company currently based in Connecticut, the deinking mill on the Camden port mentioned above and a manufacturer of marine environment wood-substitute products (docks, pilings, bulkheading) using mixed plastics as the raw material. The department's role is, and will continue to be, identification of sources of post-consumer raw material, dissemination of information on the low-interest loan and investment tax credit programs and identification of finished product customers.

Table 7
NJDEPE DIVISION OF SOLID WASTE MANAGEMENT
BUSINESS RECYCLING LOANS
AS OF APRIL 7, 1992

<u>Loan Recipient</u>	<u>Amount Received</u>	<u>Materials Recycled</u>	<u>Business Location</u>
Zozzaro Brothers	\$350,000	Mixed Paper, Containers	Clifton
Hearthbrite Industries	100,000	Leaves	Trenton
Glass Cycle Systems	200,000	Glass	Butler
R Lobosco & Sons	165,000	All Paper Grades	Paterson
Homasote	300,000	Mixed Newspaper	Ewing
Babek Commercial Tire Service	165,000	Tires	Edison
Kohlbreuner Scrap Metals	245,000	Glass & Metals	Southampton
Papier Jacques Coeur	155,000	Mixed Paper	Elmwood Pk.
Giordano's Scrap Metals	300,000	Paper and Metals	Vineland
Monmouth Processing	300,000	Glass and Metals	Ocean
Jacob Goldberg	188,000	All Metal Grades	Perth Amboy
George's Salvage	200,000	All Metal Grades	Newton
Glass Cycle Systems	100,000	Glass	Butler
S Yaffa's Sons	193,500	Paper and Metals	Camden
Tony Canale	274,800	C & D Debris	Pleasantville
Commercial Recycling	200,000	Mixed Paper	Camden
Tab Inc. (Colontonia)	90,000	Mixed Paper	Camden
R Lobosco & Sons	219,300	All Paper Grades	Paterson
Tab Inc. (Colontonia)	110,000	Mixed Paper	Camden
Gavin Metals	259,540	Mixed Paper	Paulsboro
American Wood Recyclers	300,000	Wood	Camden
Monmouth Process	200,000	Glass and Metals	Ocean
Marcal Paper Mills	3,000,000	Mixed Paper	Elmwood Pk.
Reliable Computer Service	220,500	High Grade Paper	South Brunswick
Jacob Goldberg	312,000	All Metal Grades	Perth Amboy
Atlantic Coast Fibers	500,000	All Paper Grades	Passaic
Paper Board Specialties	1,436,000	Mixed Paper	Paterson
Apache Auto Wreckers	100,000	All Metal Grades	Ridgefield Park
Cholish Salvage	196,000	All Metal Grades	Washington
Green Acres Auto	200,000	All Metal Grades	Berkeley
United Scrap Iron & Metal	200,000	All Metal Grades	Paterson
Grasselli Point Indus. (Wade)	1,675,000	C & D Debris	Linden
Ox Contractors	372,000	Wood	Roxbury
R E I Distributors	<u>1,000,000</u>	Commingled Containers	Newark
TOTAL	\$13,827,540		

The ultimate goal of all of these ongoing activities is attracting to New Jersey companies which will utilize the recycled materials being collected, create jobs and generate additional tax bases.

Long-Term Implementation Strategies: It is anticipated that the short-term initiatives discussed above will greatly enhance the markets for recycled materials. However, special items such as tires, certain packaging materials, motor oil and others may require special legislation to effect long-term solutions. These solutions would include the creation of dedicated funds for material management purposes, requirements for minimum post-consumer material content in packaging and establishment of manufacturer-supported collection systems. The department cannot predict when these legislative "fixes" may be realized, but the department has supported them in the past and will continue to when it is determined that normal private and public investments cannot provide the infrastructure necessary to institute recycling of these materials.

Described below are a number of initiatives which may be pursued following careful evaluation of the success of the existing and short-term programs outlined above:

- (1) **Require Manufacturers to Accept Materials for Either Final Disposal or Recycling:** Certain materials, such as motor oil and dry cell batteries, do not have a well defined recycling mechanism in place. For example, the oil industry needs to develop re-refining capacity for motor oil. This requirement would place the burden of developing technologies for recycling these difficult-to-recycle materials on the manufacturers. Lead-acid battery manufacturers have already developed this mechanism; this should be continued. These systems would require retailers to participate in the collection process. The department may support legislation that requires manufacturers of certain materials to accept the materials for disposal and recycling.
- (2) **Minimum Content Standards:** The state may require the eventual recyclability and minimum recycled content of certain products and packaging offered for sale in the state in an effort to boost markets. Minimum recycled content standards for products and packaging will guarantee the reuse of recyclable materials by product and package manufacturers.
- (3) **Regionalized Marketing of Collected Materials:** The department may undertake studies to determine the appropriateness of encouraging the regionalization, or pooling, of collected materials for marketing enhancement purposes. In addition, the department may evaluate the potential for providing technical assistance where necessary in the development of contracts for this activity. The department has already been involved in isolated regionalized marketing initiatives. It is anticipated that this activity will become more significant beginning in 1993 and into the future. Additionally, where

necessary, due to known or anticipated market conditions, the department will require counties to assess the potential for regionalizing marketing of recycled materials.

- (4) **Research Initiatives:** In accordance with the mandates in the Solid Waste Management Act as set forth at N.J.S.A. 13:1E-6, the department has initiated research projects for the purpose of demonstrating new methods and techniques for the collection, recycling and reuse of solid waste. The department may utilize the results of these research initiatives to expand the scope of recycling efforts in the state. The process will be performed by two methods: (1) by transferring the technical information to the counties for use in their program; and (2) by developing regulatory programs in the department to expand the scope of recycling. (Current and planned solid waste research projects are further summarized in Section C.5.)

c. **Promoting Composting**

Objectives and Criteria: From the department's 1990 data, organic material is estimated to account for approximately 15% of the total waste stream in New Jersey. This organic stream consists of leaves, grass clippings, brush and other yard wastes, tree trimmings, food waste from residential, commercial and institutional sources and food processing wastes from commercial food processors.

Management of these wastes presents a unique opportunity for New Jersey to utilize a varied mix of technologies and policies. Generally speaking, the less reliant the preferred management policy is on mechanical processing technologies, the more reliant its success is on adequate public education. For example, the most appropriate strategy for proper handling of grass clippings is to simply leave them on the lawn after cutting. For this to succeed, however, an intensive, sustained public education campaign is required statewide. Conversely, technologically advanced municipal waste composting systems are more forgiving in terms of material feedstock (i.e. allowable "contaminant" levels), and require much less material segregation for successful operation.

It is the objective of the state that organic wastes be managed through a combination of composting technologies, diversion to farmers and natural decomposition at the point of generation. Policies to achieve this objective include: primary reliance on "Grass: Cut it and Leave it" practices for management of grass clippings and appropriate regulatory and administrative changes to facilitate this goal; continued expansion of municipal leaf composting facilities and farmland mulching of leaves, with integration of grass clippings where appropriate; and support for municipal solid waste composting facilities with maximum pre-composting facility source separation of recyclable materials.

Short-Term Implementation Strategy: Much of the framework for achieving the state's policy indicated above is currently in place. Regulations have been adopted that allow for the mulching of leaves on farmland; a manual that details various leaf composting methods for use by New Jersey municipalities has been prepared and disseminated; brochures explaining the benefits of backyard composting of homeowner generated yard waste and of leaving grass clippings

on the lawn have also been prepared and distributed; many counties have adopted solid waste management plan amendments that provide for automatic inclusion of vegetative waste composting sites; and a ban on the disposal of leaves as solid waste was established by statute in 1987. These activities, in addition to new strategies, will be continued, also discussed below.

- (1) **Leaf Mulching Regulations:** Following the statutory ban on the disposal of leaves as solid waste, effective in 1988, and an amendment to that ban in 1989 which allowed for the mulching of leaves on farmland, the department, with strong technical and regulatory support from the Department of Agriculture, adopted regulations in 1989 which greatly expanded the options available to municipalities in proper management of their leaves, by allowing for the mulching of up to a six-inch layer of leaves directly onto farmland. By providing this alternative, the department also made available to farmers large quantities of organic material for incorporation into the soil. This organic addition is beneficial to much of the soil in New Jersey, and the department will continue to support this option for New Jersey municipalities and farmers.
- (2) **Leaf Composting Facility "Permit-By-Rule:"** At the same time that the department proposed the leaf mulching rule discussed above, a significant change to the leaf composting facility permit process was also adopted. Recognizing that the department had adequate knowledge of the proper siting and operating requirements for small-scale (under 20,000 cubic yards annual capacity) leaf composting facilities, the "permit-by-rule" regulation was adopted. Under this rule, the applicant certifies siting and operations in accordance with the procedures established in the "Leaf Composting Guide for New Jersey Municipalities," as codified in the rule, and simply registers the site with the department. Through this procedure, municipalities with appropriate sites may initiate leaf composting on an expedited basis without the delays frequently encountered in standard permit issuance. Enforcement provisions to address noncompliance remain available to the department under this rule.
- (3) **"Blanket" District Plan Inclusion:** The department will continue to actively support a policy of district solid waste management plan amendments which provide a framework for the expedited inclusion of vegetative waste compost facilities within the respective county plans. Most counties have embraced this policy, which generally requires the proposed owner/operator of the facility to insert a public notice in a newspaper of general circulation indicating an intention to operate such a facility. A 30-day comment period is generally established for the solicitation of public comment on the proposal, followed by automatic plan inclusion, if no substantive negative comments are received. If substantive negative comments are received, the normal public hearing procedure, officiated by the county's board of chosen freeholders, is triggered. The formal plan amendment, if adopted, is then forwarded to the department for commissioner certification. Additionally, the department will require as an element of each county's plan an annual inventory of leaf composting facilities, an analysis of composting capacity needs, and a strategy for correcting any deficiencies in capacity.

- (4) **State Agency Procurement Priority:** The successful realization of any goal of development of sludge (both sewage and water purveyor) or MSW composting facilities will necessitate the development of markets for the compost products produced. As the state is supportive of the establishment of these facilities as a part of the integrated solid waste management mix of technologies, so must the state be committed to assisting in the expansion of markets in this area.

One way in which the state plans to express this commitment is by requiring state agency procurement of compost-derived product as an alternative to the purchase of soil amendments, mulches and other organic material used in construction and maintenance of state property. As part of this planned purchasing requirement, the department will seek to adopt a hierarchy of compost-derived product purchases that ranks product purchases in the following order: MSW, sludge, co-compost (sludge and MSW composted together) and vegetative waste. It is anticipated that such a requirement will be developed for all state agencies during 1993. Further, consistent with other procurement provisions outlined earlier, the department will strongly advocate similar prioritized use of compost at the county and municipal level at parks and recreation facilities, as well as in landscaping applications. Once again, the linkage of all levels of government will stimulate the demand for compost products.

- (5) **"Grass: Cut It And Leave It:"** The task force report identified grass clippings as a significant waste component. If all grass clippings were discarded as solid waste on an annual basis, approximately 800,000 tons of this organic material would require disposal capacity. Realizing this, the department established a working group of turf grass experts, county agricultural extension service agents, private landscapers, and department staff. Their efforts produced two brochures in 1991 explaining the benefits of leaving grass clippings on the lawn. These brochures form the nucleus of the department's "Grass: Cut it and Leave it" campaign. Distributed through county and municipal recycling coordinators and Agricultural Extension Services, these brochures discuss in appropriate technical detail proper cutting cycles and cutting heights, adjusted watering requirements and fertilizing schedules. The brochures are practical, pertinent tools in advancing the adopted policy. The state will continue to print and distribute these brochures and other material as necessary to individual homeowners, commercial landscapers and commercial property owners/managers. Further, in accordance with Governor Florio's Executive Order No. 34, all state agencies are already implementing the "Grass: Cut it and Leave it" strategy in the maintenance of all state owned lands.

Long-Term Implementation Plan: From the discussion above, the necessary framework for the management of leaves and grass clippings is largely in place. Some refinements of this framework are anticipated, as further discussed below. What has been largely missing, however, are actions related to the advancement of MSW composting as a component of the overall strategy. The marketing of this product (MSW compost) will dominate as an issue for the next several years; state actions to promote this are described below:

- (1) **MSW Composting and Product Marketing Standards:** At the time Governor Florio's solid waste task force was convened in April 1990, 19 specific sites were incorporated within 18 New Jersey county plans for future development of incineration facilities. One of the specific recommendations of the task force was to "abandon the policy of encouraging the development of incinerators in most counties." While the task force acknowledged the significant level of volume reduction achieved through incineration, it also concluded that other technologies, such as composting, can be used to provide economical and environmentally sound volume reduction capacity. Further, the task force urged the creation of a statewide planning process that encourages innovation and experimentation by counties in selecting technologies and designing management systems.

As reflected in Section B.4. of this State Plan Update, a fundamental principle of New Jersey's short and long-term management strategy is integrated solid waste management where each component in the hierarchy has a role to play. Mixed solid waste composting is a favorable volume-reduction technology following maximum levels of source reduction; recycling; leaf, grass and food waste composting; household hazardous waste management; and materials recovery. While generally supported by the DEPE, there are currently no operating solid waste composting facilities in New Jersey and incoming feedstock, end product marketability and the development of technical standards for product distribution are all issues which require careful evaluation as projects are proposed for development in the state.

In this regard, the New Jersey Advisory Council on Solid Waste Management, which serves in an advisory role to the Commissioner of the DEPE, dedicated its 1991 research activities to the study of composting, and in particular, mixed municipal solid waste (MSW) composting. Following extensive study, including a conference where experts and private citizens discussed the pros and cons of composting, the advisory council issued a May 1992 report which contained the following policy recommendations:

1. The state should endorse and promote increased selective composting of appropriate source-separated organic components of the waste stream.
2. In the immediate future, the state should consider approving only proposed mixed MSW composting projects under strictly limited circumstances and with certain conditions. For a variety of reasons, the advisory council concurs with the department's decision to review the Cape May County mixed MSW compost facility as a major facility.
3. The state should pursue ongoing research and development to determine if a more favorable policy toward MSW composting may be justified in the future and to determine optimum approaches to selective composting of organics.

4. The state's policies on composting need to be in unison with market forces. If the product from the composting process is not safe, it should not be produced.

The advisory council went further in the area of mixed MSW composting to point out the lack of any established track record for the technology and to link the uncertainty of its future large-scale use with the policy objective of disposal self-sufficiency, cautioning against the department's approval of county plans (other than Cape May's) which rely upon MSW composting as a primary disposal option.

The department is in total support of recommendations 1. and 4. noted above by the advisory council. Further, as noted below in this section, the department has already established a Municipal Solid Waste Compost Utilization Task Force to guide research into, among other things, the effects of MSW compost use on plants; establishing markets for end-product and health and safety issues toward developing product marketing standards. This initiative, as well as the research noted in (3) below on page 64, will address recommendation three of the advisory council. In addition, the department will consider long-term research into potential human health effects from the use of MSW compost product.

In terms of recommendation 2. the department is already carefully evaluating the single technical submission before it for a project in Cape May County. A permit may only be issued following extensive interagency review and the department's satisfaction that the project will be in compliance with all applicable environmental standards. Further, the Somerset County project has only been approved as a pilot operation and no significant activity has been taken as of August 1992 to advance this project. Finally, Ocean County has already completed a one-year pilot program of MSW composting at the Ocean County Landfill and plans to develop its project in phases to ensure its successful operations prior to large-scale use. The county also has significant remaining disposal capacity within the Ocean County Landfill. Based upon the above, the department's actions to date have been consistent with the spirit of recommendation 2. of the advisory council and the council's report will be considered in the context of reviewing future plan amendment proposals for the incorporation of additional mixed MSW composting facilities.

While the department shares many of the concerns expressed by the advisory council, it remains optimistic that, when properly applied, the technology can become an important component of New Jersey's integrated solid waste system. Consistent with the recommendations of the governor's task force, innovative systems must be tried and carefully evaluated to expand the mix of technologies used in the state. As noted, several counties have initiated activities to establish large-scale, commercial municipal solid waste composting facilities, which will accept and compost the organic portion of the waste stream after recycling, including food waste. As these projects have proceeded from the initial planning stage to, in the case of Cape May, the submission of

permit applications, it has become apparent that the state must take an active role in market development activities related to the distribution and use of compost.

Although it is anticipated that the finished product will not be available from the Cape May project (if permitted) until the Summer/Fall of 1994, the department has already initiated discussions with the county and the facility operator relative to compost marketing. The county/company have identified the following as areas in which the state may provide assistance in developing standards for compost use, which will promote MSW composting development in the state:

- (a) Changing topsoil and soil amendment/fertilizer specifications to allow for use of compost by DOT and other state/public agencies;
- (b) Establishing a procurement preference for the use of compost-derived products;
- (c) Allowing use of compost/compost-derived products as daily/intermediate/final cover at landfills;
- (d) Work with the Pinelands Commission to eliminate compost storage restrictions at nurseries, landscape and garden centers located in the Pinelands;
- (e) Establish regional standards with neighboring states to allow for the unrestricted movement of compost within the standards established.

In addition to the activities cited above, the state will undertake certain research initiatives over the next several years. As noted earlier, the department has established a Municipal Solid Waste Compost Utilization Task Force composed of interested county representatives, the New Jersey Departments of Agriculture, Commerce and Environmental Protection and Energy, the Association of New Jersey Recyclers and the New Jersey Recycling Forum, compost producers, the New Jersey Food Council, potential compost users represented by agricultural and horticultural trade associations and Proctor and Gamble Corp. This group represents the key players in compost production and utilization, and is establishing the research parameters that will be addressed by the New Jersey Agricultural Experiment Station and Rutgers Cooperative Extension. The department is currently beginning a review of existing research and regulations nationwide, and determining those "gaps" in research that need to be addressed.

The research will focus on the effects of compost use on container produced ornamental plants, nursery stock and field crop and permanent vegetation. The goals of this project are to establish Agricultural Best Management Practices for compost users; understanding of the safety and value of compost for users; understanding of the needs of users by compost producers; establishment of in-state markets to reduce compost

product transportation costs; elimination of duplicating county compost marketing activities and public acceptance of the benefits of production and use of MSW compost.

Although the entire research agenda is scheduled for the next six years, it is anticipated that significant results on compost use in container produced ornamentals will be realized within three years. As part of the effort, DEPE has committed \$250,000 toward the initial phases of the project and another \$250,000 has been committed by the other members of the task force. Final results on nursery stock, field crops and permanent vegetation will take between four and six years.

- (2) **Grass Clippings Mulching Regulations:** Similar to the leaf mulching regulations adopted in 1989, the department will develop regulations which will establish "loading rates" for the application of grass clippings to farmland. Because of the high nitrogen content of grass clippings, and their propensity to emit odors in a very short period of time, the regulations will likely contain restrictions on land application not found in the leaf mulching regulations. As indicated above, the preferred option for grass clippings management is contained in the supported program and phrase "Grass: Cut it and Leave it," but the state recognizes that acceptable options which ultimately provide the same result (in this case elimination of grass clippings from the disposal stream) should be acknowledged and supported. It is anticipated that the regulations will be proposed in 1993.
- (3) **Yard Waste Composting Research and Composting Manual Update:** With the qualification of small-scale leaf composting facilities brought on by the "Permit-By-Rule" regulations adopted by the department in 1989, a concern has been raised about the potential human health effects from the *Aspergillus Fumigatus* spore, an airborne spore and possible respiratory irritant produced by decaying leaves. The department has contracted with Rutgers University to determine what precautions, if any, need to be taken at leaf composting facilities to control this potential problem.

Also, the department is using this opportunity to have Rutgers research the advisability of composting grass clippings with leaves at municipal composting facilities.

Additional tasks contained in the current contract include: an analysis of the extent of pesticide residues which may be present in leaf and grass clipping compost; the basis of odor generation during grass clippings composting; and the mechanics or advisability of incorporating ground woody material (brush) into operations at vegetative waste composting facilities.

The results of this study will also be useful to counties in assessing current facility capacity as it relates to grass clippings management. The guidelines established in the report to be issued will be used by the department, working with the counties, to assess opportunities for incorporating grass clippings composting into leaf composting operations.

The department will then use this joint assessment to direct the counties to undertake those administrative (plan amendment) and program (collection and handling) changes necessary to implement this strategy.

Finally, Rutgers will complete this project with an update to the "Leaf Composting Manual for New Jersey Municipalities," which is now seven years old. The manual is a practical guide to site selection, site operation and distribution of product for municipal leaf composting facilities. It describes the essential elements of leaf decomposition, explains the biological and chemical processes at work during composting, and weighs the pros and cons of three levels of composting "technology." These three levels include: low level, or multi-year decomposition with a large land area and minimal mechanized equipment; moderate level, essentially a single year decomposition with less land and more frequent aeration of the leaves with some analysis of temperature and moisture content; and high level, which results in decomposition in less than one year using fully-mechanized window turning and appropriate attention to moisture and temperature levels. It is anticipated that all of the above will be completed by mid-1993.

- (4) **Pilot Composting Activities:** The department has recently begun to receive requests from commercial vegetative waste composting operators to incorporate selected organic streams into existing operations. These selected streams include food processor wastes such as coffee beans and supermarket produce. The department supports these innovative activities on a pilot, or experimental basis, at the present time. If successful, as measured by odor production, compost product quality and presence of vermin, the department will actively assist these facilities in amending their operating permits.

8. Regionalization of Programs and Facilities

Objectives and Criteria: Regionalization, along with the source reduction and 60% recycling goals addressed earlier, is a fundamental policy objective of the department. As noted within the task force final report, "counties working together can achieve higher and more efficient recycling rates and more economical and environmentally sound disposal options than each county working alone." The DEPE's policy position is that a county is not, in and of itself, a region. Regionalization is aimed at bringing together counties, which are the traditional solid waste planning entities in New Jersey. Counties cannot act as islands unto themselves, but must build individual plans for implementation to fit within the broader statewide mosaic.

The department's short-term goal is to shift away from past practices, where 21 counties were relatively isolated in their respective planning activities, and to use the planning, permitting and financing approval processes to facilitate regional considerations for each aspect of solid waste planning. In the longer term, the objectives of regionalization would include building the fewest number of additional solid waste disposal facilities possible to achieve self-sufficiency; maximizing the marketing of recyclables through the pooling of commodities; and to utilizing procurement procedures to change purchasing habits by all levels of government, as well as the private sector, to maximize source reduction and recycling.

Short-Term Implementation Strategy: As noted, the primary short-term regionalization objective of the state is to use the planning, permitting and financial approval processes to compel counties (if they haven't already done so) to plan programs and facilities after full consideration of the economic and environmental benefits of regional systems. Regionalization is not, in and of itself, a panacea. There are upper limits to the development of regional disposal capacity due to both site constraints and technological limitations. However, both the governor's task force and the department have adopted regionalization of all elements of countywide and statewide management systems as the preferred approach where careful analysis reveals advantages to all participating counties. As a result, regional analysis of, among other program elements, procurement opportunities, source reduction, recycling systems and infrastructure, materials recovery, and disposal capacity must be performed by each of the state's 22 solid waste districts. To assist in this analysis, the following criteria and procedures are outlined under the short-term implementation strategy, as well as the long-term objectives of the department which follow:

- a. The short-term strategy being employed by the DEPE can be broken down from a policy perspective into three sub-categories described below:
 - (1) **General:** Each county plan must fully evaluate the feasibility of regionalization for each component of the solid waste system and outline specific plans for implementation.
 - (2) **Incinerators:** Since incineration requires significant capital investment and raises strong environmental concerns, the DEPE will only approve incinerators that are part of a regional solid waste plan. Token commitments to build marginal excess capacity into a system are contrary to the spirit of regionalization and will not be approved. To be considered, a regional incinerator plan must involve shared use of capacity for the waste stream of all or a significant portion of two or more counties. (This policy position does not strictly apply to small-scale, sole-source incinerators, which are addressed further within Section B.9. below.)
 - (3) **Other Plan Components:** Opportunities for regionalization must be thoroughly evaluated for each remaining plan component. Plan components ultimately selected for regionalization should be to the advantage of all participating counties.
- b. **Procedures For Counties To Follow In Regionalization:** There are five basic steps which the department has identified for counties to follow in performing their regionalization analysis. The DEPE will be available, upon request of participating counties, to serve in the capacity of catalyst or facilitator to bring counties together, clarify state policies and requirements, and guide the negotiation process. The five basic steps are:
 - (1) A careful analysis of their solid waste systems and existing plans, i.e. generation trends, current/future recycling rates, existing and planned capacity;

- (2) Identification of current limitations or deficiencies in existing plans;
 - (3) Identification of potential regional partners which can satisfy county plan deficiencies and assist in meeting a county's needs;
 - (4) Contact and meetings with candidate partners toward negotiating a regional arrangement;
 - (5) Being receptive to other counties seeking to discuss regionalization options.
- c. **Plan Amendment Requirements:** Each county must submit a plan amendment which addresses regionalization. These submissions must reflect consideration of the following areas:
- (1) The current status of existing in-county or in-state regional processing and landfill capacity;
 - (2) Current or planned dependence upon out-of-state disposal capacity and associated timeframes;
 - (3) Need for new or expanded facilities within the county or as part of a regional plan, such as:
 - (a) Recycling centers;
 - (b) Materials recovery facilities;
 - (c) Construction/demolition processing facilities;
 - (d) Vegetative compost facilities;
 - (e) Solid waste compost facilities;
 - (f) Permanent household hazardous waste collection depots;
 - (g) Municipal waste landfills;
 - (h) Ash and/or bypass landfills;
 - (i) Incinerators;
 - (4) Current interdistrict agreements and status of planned regional strategies. This should also include discussion of specific negotiations held to date regarding facility regionalization;
 - (5) Long-term capacity analysis which considers county solid waste generation trends, recycling rates, remaining disposal capacity, planned capacity for in-county or regional use and associated implementation schedules;

- (6) Identification of current plan deficiencies and needs which can be satisfied through agreements with other counties;
- (7) Economic analysis and financing considerations.

Current Status of Regional Planning: As of December 1992, six significant regional partnerships have been initiated among the counties. Five of those partnerships have involved execution of formal interdistrict agreements to implement the regional systems, and one partnership (Bergen and Union) has been consummated by a memorandum of intent to implement a regional system once construction of the Union incinerator is complete. All but one of these partnerships were initiated after release of the task force final report in August 1990 in direct response to the recommendation that counties regionalize their solid waste systems to maximize economies of scale and to minimize potential adverse environmental impacts. Finally, Camden County was inspired by the task force recommendation to regionalize and to unify its countywide system by designating its existing incinerator as the county incinerator and canceling construction of a second incinerator in Pennsauken. Each of these proposed partnerships, as well as the unified Camden system, is described below in narrative form. In addition, Map 1 below graphically summarizes these current regional plans.

- a. **Essex/Bergen:** Essex and Bergen counties entered into a regional agreement to direct 250,000 tons per year of processible solid waste types 10 and 23 generated within the Bergen District and processed at five private transfer stations in Bergen County to the Essex County RRF. These agreements between Essex County and the BCUA; and Essex County, the Port Authority of New York and New Jersey, and American Ref-Fuel commenced on May 1, 1991, and can extend through March 1, 1994, according to the terms of the agreements.
- b. **Union/Bergen:** The Union County Utilities Authority and the Bergen County Utilities Authority entered into a Memorandum of Understanding (MOU) on October 24, 1991, which provides for the delivery of 150,000 tons annually of processible Bergen County generated solid waste to the Union County RRF, scheduled for completion in Spring of 1994. The MOU also specifies that Union County shall dispose of all ash residue and by-pass wastes which are the subject of the agreement.
- c. **Mercer/Atlantic:** Mercer and Atlantic counties adopted amendments to their county plans on June 11, 1991, and July 9, 1991, respectively, which incorporated an interdistrict agreement between the counties and which were certified by the department on December 6 and 17, 1991. This agreement provides for the shared utilization of the Mercer County RRF for a period of 20 years from commencement of commercial operation (expected to be December 1995); the shared utilization of Atlantic County's bulky waste facility and composting facility, and the use of the G.R.O.W.S. landfill as the primary disposal facility for ash and by-pass waste.
- d. **Warren/Somerset/Hunterdon:** The Warren/Somerset interdistrict agreement, signed on July 11, 1990, provides for the delivery of 1,400 tons per week of processible Somerset County generated solid waste to

the Warren County RRF through December 31, 2001. From January 1, 2002, through November 30, 2008, Somerset County will provide for the delivery of 1,977 tons per week of processible solid waste to the Warren County RRF. Warren County will provide for the disposal of all ash residue and by-pass waste. In return, Somerset County will provide Warren County access to its recycling facilities and to site a pilot solid waste compost facility.

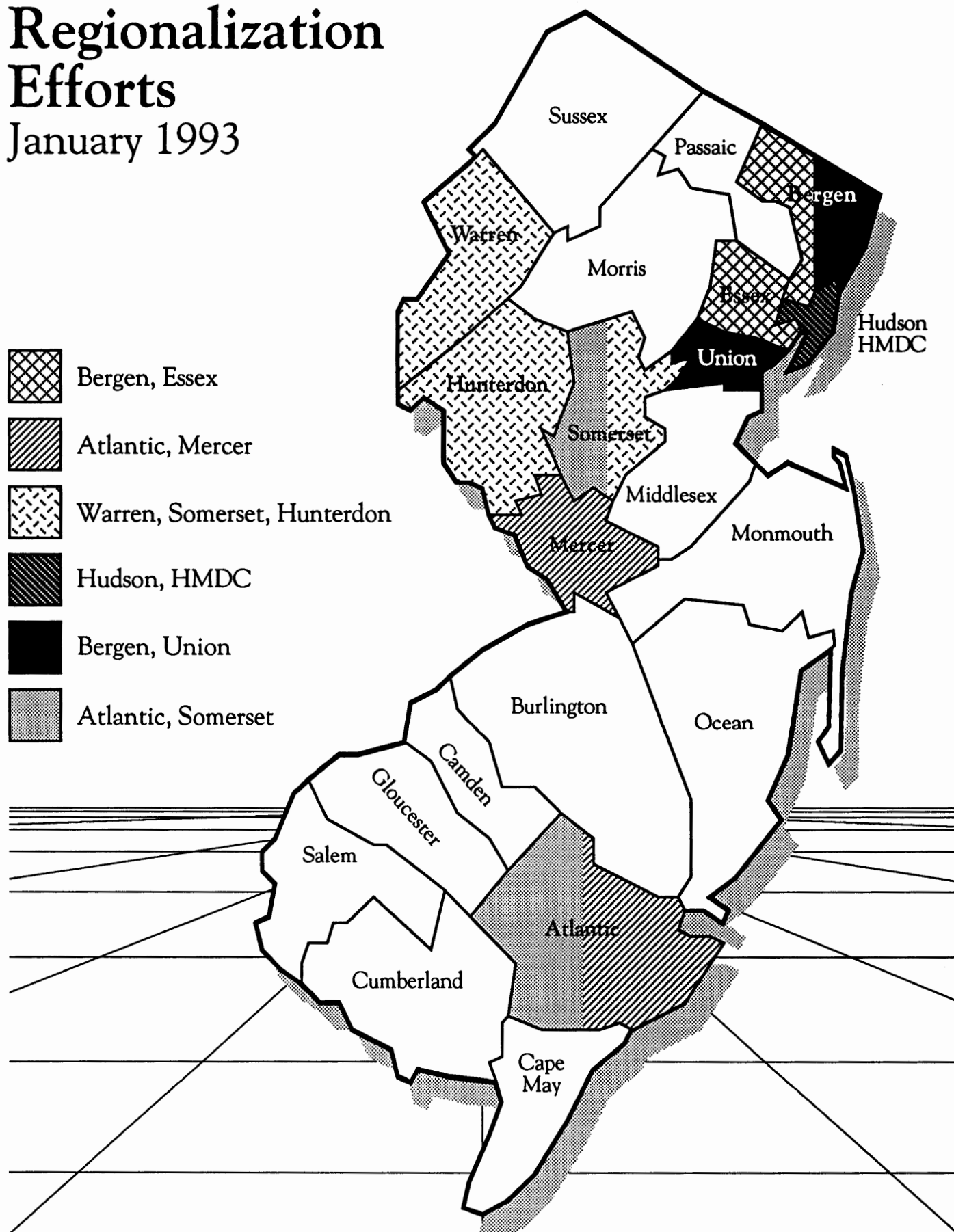
The Warren/Hunterdon interdistrict agreement signed on July 22, 1986 provides for the delivery of 100 TPD of processible Hunterdon County generated solid waste to the Warren County RRF through December 31, 2001. Warren County agrees to provide for the disposal of all ash residue and by-pass waste.

- e. **Hudson/Hackensack Meadowlands Development Commission (HMDC):** On December 27, 1990, and October 3, 1991, Hudson County and the HMDC, respectively, adopted plan amendments to incorporate an interdistrict agreement between Hudson County, the Hudson County Improvement Authority (HCIA) and the HMDC which provided for a short-term disposal strategy for solid waste generated within Hudson County. Under the short-term plan, municipal waste from throughout Hudson County continues to be landfilled in-state at the HMDC 1-E facility and commercial/industrial waste is exported out-of-state. This will maximize the use of remaining capacity for the residents of Hudson County prior to long-term in-county capacity being available or the negotiation of an interdistrict agreement with another New Jersey county for alternative in-state disposal capacity.
- f. **Camden/Pennsauken:** The Comprehensive, Long-Term, Environmental, Action, Recycling (CLEAR) Plan adopted by Camden County on December 5, 1991, develops a unified, countywide solid waste disposal strategy. Previously, the South Camden and Pennsauken solid waste franchises were in operation, and each planned a separate system for disposal of solid waste that included an incinerator. Under the CLEAR Plan, the Pennsauken incinerator has been eliminated, all processible Camden County generated solid waste is delivered to the South Camden RRF, all by-pass and nonprocessable waste is disposed of at the Pennsauken Landfill, and all ash residue is disposed of out-of-state. Under the department's May 1992 approval of this plan, it is likely that ash will also be disposed of in-state at the Pennsauken Landfill in the near future.
- g. **Somerset/Atlantic:** Atlantic County executed an interdistrict agreement with Somerset County in January 1993. Under the terms of the agreement, Somerset will deliver 30,000 - 60,000 tons of bulky and dry industrial waste to the Atlantic County Limited Use Landfill each year. The term of the interdistrict agreement is ten years and the counties will be formally modifying their county plans in early 1993 to incorporate the agreements.

Current Regionalization Efforts

January 1993

Map 1



Long-Term Implementation Objectives: Through the application of the short-term strategy noted above, a number of long-term goals should become achievable. These goals are summarized below:

- a. **Eliminate the Need for Future Incinerators:** Prior to acceptance of the recommendations of the task force, the cornerstone of the state's disposal policy had been the development of the maximum use of resource recovery systems. Historically, through administration of the county planning process, this policy objective resulted in the siting of an incinerator in nearly every county. This policy had been subject to mounting criticism from both the public and the private sectors in the last five years due to persistent questions involving potentially harmful emissions and toxic ash from incinerators, as well as concerns about the economic viability of incinerators over the long term. By implementing an aggressive source reduction and 60% recycling program, the amount of waste to be managed by the solid waste system is greatly reduced, thereby reducing the overall need for incinerator (as well as landfill) capacity. By requiring the counties to develop regional incinerators to handle the remaining processible waste stream, rather than permitting the counties to downsize the capacity of those incinerators planned or under development, the need for additional incinerator capacity has been even further reduced.

The DEPE anticipates that relatively limited to no additional incineration capacity will be needed across the state to meet the goal of disposal self-sufficiency. The Union County incinerator project received final DEPE approvals in December 1991, is currently under construction and is scheduled to be operational in 1994. Thus, the task force recommendations of source reduction, 60% recycling and regionalization have directly or indirectly eliminated the need to continue development of at least eight planned incinerators in Atlantic, Camden (Pennsauken) Passaic, Bergen, Cape May, Ocean, Middlesex and Monmouth counties. In addition, formerly planned incineration projects in Salem and Sussex counties have not advanced beyond initial county plan inclusion and the Hudson County incineration project is currently inactive.

- b. **Maximize the Marketability of Recycled Commodities:** Regionalizing recycling collection and processing programs will provide additional market strength to suppliers of recycled materials. Suppliers compete to sell their materials in a national or international market, so the value of recycled material will be enhanced by the accumulation of higher, more predictable volumes associated with a regional system. In addition, consistent, increased supplies of recycled material are expected to stimulate the demand side of the market.
- c. **Reduction of Transportation and Collection Costs:** The development of regional collection systems is expected to reduce transportation costs due to in-state management as opposed to current long-haul out-of-state transport in some counties, as well as equipment costs through economies of scale.

- d. **Procurement:** The department's view of regionalization extends far beyond shared processing or disposal capacity between counties. A significant opportunity exists for regional procurement of products which can expand markets for recycled goods and directly implement source reduction goals. As noted earlier on pages 48 - 51 the department hopes to stimulate production changes to advance market development by aggregating the purchasing power of all levels of government in New Jersey. Through the shared use of term contracts, government agencies can revise specific purchasing habits to ensure, for example, that post-consumer materials are contained within toilet tissue and paper towels, and that all photocopiers are capable of accepting recycled paper and of two-sided copying. Once purchasing habits change, the broader demand for recycled products and products which advance source reduction should stimulate greater supply, and hence markets for recycled materials.

In the longer term, the department will work with the Department of the Treasury to revise bid specifications and contracts to maximize state government purchasing of products with post-consumer material and which advance source reduction goals.

These contracts will also be shared with county and local governments as planned through the Guide To Public Procurement of Recycled Products referenced on page 48. It is strongly advocated that county solid waste and procurement officials also work together to enter regional agreements to adopt bulk purchasing strategies through state contracts and through the development of new and innovative bid specifications as part of procurement procedures. To be effective, the department must also seek to work closely with private sector corporations toward adoption of similar purchasing practices.

- e. **Shared Services:** Opportunities for regionalization also exist at the county level for shared services to address common needs. This concept has long been used at the municipal level in such areas as police and fire protection, road maintenance and solid waste collection. Counties should explore regional cooperation in such areas as joint use of consulting services for public education programs, research initiatives to study common problems, and development and production of materials for public education.

9. **Incineration Policy**

Objectives and Criteria: As reflected within the hierarchy outlined within Section B.3., incineration is considered a disfavored solid waste management strategy in New Jersey. Incineration requires significant capital investment and raises strong environmental concerns, primarily in terms of air emissions. As a result, a major shift in policy direction was forged by the solid waste task force and supported by Governor Florio to maximize source reduction and recycling, and minimize the need for new and costly disposal capacity, particularly incinerators, through aggressive pursuit of regional solid waste planning and implementation. It is New Jersey's objective to reduce current and planned dependence upon incineration to the maximum extent possible by:

- Implementing the short and long-term strategies outlined within Section B.6. for source reduction;
- Achieving at least 60% total waste stream recycling by December 31, 1995, and implementing the short and long-term strategies outlined within Section B.7. to go beyond the 60% rate;
- Maximizing use of existing long-term landfill and incinerator capacity at state-of-the-art facilities pursuant to approved county solid waste plans, facility permits and formal interdistrict waste flow agreements;
- Heavily scrutinizing any new or pending applications for incinerators to ensure that maximum efforts are being put forth by the proposed host county to implement source reduction and recycling plans; that the application is for a regional system involving all or a significant portion of two or more counties' processible waste; and that the additional incinerator capacity is needed on a statewide basis. With the December 1991 service agreement approval of the Union County incineration project, it will become increasingly difficult to obtain a permit for a new solid waste regional incinerator in New Jersey.
- Continuing to monitor and enforce against small-scale incinerator operations which are not utilizing modern air pollution control devices. Systems currently used within hospitals, apartment complexes, schools, private corporations must be upgraded or shut-down.

Short-Term Implementation Strategy: The department's short-term action strategy has been summarized earlier, in general within Section B.4., and specifically with respect to source reduction, recycling and regionalization within Sections B. 6, 7 and 8. Described below are specific criteria and standards regarding short-term plans to reduce dependence upon incineration.

- a. **Future Permitting:** The DEPE will carefully scrutinize existing permit applications pending for Mercer and Hudson counties, as well as any new proposals, to determine consistency with the policy objectives outlined above and will consider permit issuance only if the criteria established within this State Plan Update are met.
- b. **Expansion of Existing Incinerators:** Incinerators currently in operation were, in most cases, sized in anticipation of achieving a 25% recycling rate of the municipal waste stream. As counties implement source reduction measures and move toward attainment of the minimum 60% total waste stream recycling rate, excess capacity will become available at existing incinerators. As a result, counties with incinerators in operation at this time must consider regional plans to assure full use of their systems' capacities.

Expansions of existing incinerators as part of a multi-county regional plan will be considered. However, as with a. above, the feasibility and sizing of any expansion will be carefully scrutinized in the context of specific regional plans where a formal agreement (memorandum of understanding, interdistrict agreement) has been developed. Consistent with this standard, expansion requests will not be entertained in the absence of

Table 8
SMALL SCALE INCINERATORS - 1992

Hospital	38
School	68
Apartment	126
Sludge	10
Pathological	34
Crematorium	33
Miscellaneous	98
	—
Total	407
	===

Source - DEPE: Air Pollution Enforcement Data System (APEDS)

documentation of capacity needs, the consideration of a 60% recycling rate and legally binding agreements signed by the participating counties for regionalization.

- c. **Enforcement:** Permit conditions for operating incinerators in Camden, Essex, Gloucester and Warren counties will continue to be rigorously enforced to ensure the highest standards of compliance. Noncompliance will continue to be handled through penalty assessments. Further, any serious episodes of noncompliance will result in suspension of operations on a temporary or permanent basis depending upon severity and the ability to suitably correct the cause of the problem.
- d. **Maximizing Existing Capacity:** In order to aggressively pursue the state's self-sufficiency goals, as outlined earlier within Section B.5., and to reduce the need for future disposal capacity, existing capacity must be maximized. In this regard, the DEPE will continue to advocate the regional use of landfills and incinerators through the consummation of interdistrict agreements between counties. As noted in Sections B.2. and 8., the department will work cooperatively with counties toward entering new or expanded regional agreements and has no current plans to force counties to accept solid waste for disposal against their wishes. However, it must be stated that the department is prepared to utilize its authority pursuant to the New Jersey Solid Waste Management Act to respond to emergency conditions and to address failure to implement approved plans.

- e. **Small-Scale Incinerators:** The DEPE has, since 1990, been implementing a program to upgrade or close existing small-scale incinerators. Existing small-scale incinerators without proper controls are significant contributors to air quality problems, particularly in northeastern New Jersey. In response, the regulated industry has been placed on notice that more stringent standards pertaining to particulate controls, acid gas controls, stack height and monitoring will be imposed should existing air monitoring show permit violations, or upon expiration of a facility's five-year air pollution control permit. Table 8 summarizes the number of existing incinerators within the state in August 1992 and the type of service provided.
- f. **Emissions Control and Technical Research:** The department is committed to the use of best available air pollution controls at existing facilities, as well as application of the most stringent standards within permits. The department is currently working as part of the "Task Force on Mercury Emissions Standard Setting," toward development of a statewide mercury emission standard for municipal solid waste incinerators, involving both air quality control technologies and identification and implementation of specific measures to reduce the content of mercury in the solid waste stream. The mercury task force completed its preliminary report, which includes an evaluation of both environmental and health issues and technical and regulatory issues, in August 1992 and distributed this document for public comment through November 1992. A public hearing on the preliminary report was held on October 26, 1992. The department published its interim report findings and recommendations in December 1992. After completion of the study on mercury emission standards, the department will continue to work closely with incinerator operators to have system modifications installed to implement use of best available control technology to achieve this standard. A pilot study, to control mercury emissions by injecting activated carbon, was also conducted at the Camden County Resource Recovery Facility by the USEPA and is expected to be completed in early 1993. The final report is currently undergoing final technical review by the USEPA. Finally, the department will continue to impose stringent "fuel cleaning" criteria within permits for the removal of materials of concern, such as consumer batteries, fluorescent light bulbs, thermometers, thermostats, heavy metal containing packaging, wallboard, and grass from the waste stream. Planned source reduction, recycling and household hazardous waste programs will also help achieve this goal.
- g. **Certification of Resource Recovery Operators:** The DEPE will require operators of incinerators, as a permit condition, to undergo a rigorous certification procedure developed and administered by the American Society of Mechanical Engineers (ASME). The certification procedure consists of two parts. First, the applicant is required to pass a general written examination, given over a six-hour period that tests the operator's general knowledge of resource recovery technology and operating and safety procedures. The second part consists of an oral examination given by a three-member board of examiners, made up of one ASME member, one technical expert in the resource recovery industry and one expert in regulatory, legislative and permitting issues. This second part tests and evaluates the operator on the basis of his or her technical knowledge,

ability to solve problems and understanding of integrated plant operations. The board of examiners recommends whether to certify an applicant within two hours of completion of the oral examination. The ASME certification procedure will ensure that facility operations will be conducted in a manner that protects and maintains environmental and health standards.

Long-Term Implementation Strategy: With aggressive application of the short-term plan above, the department plans to implement the following long-term policy objectives:

- a. Stop approving plans or permits for any new solid waste incinerators of any kind where a definitive finding of need has not been made;
- b. Eliminate the use of small-scale incinerators in apartment complexes and schools;
- c. Minimize the use of incineration in hospitals as further addressed in detail within the department's Comprehensive Medical Waste Management Plan. As noted earlier in the "Introduction and Purpose" section of this State Plan Update, New Jersey's medical waste management plan will be proposed in the New Jersey Register by the end of the first quarter of 1993 as Section III of the overall state plan.
- d. Continue to monitor air emissions from operating facilities, as well as study national and international literature, and require upgrading of air pollution control systems to ensure that best available control technologies are employed.

10. Ash and Other Residuals Management Policy

Objectives and Criteria: Ash from incinerators, power plants and other residual material, such as oil contaminated soil, water treatment plant residue, street sweepings, etc. comprise a significant quantity of solid waste which requires policy attention. (Sewage sludge will not be considered within this section and will be addressed from a policy perspective within a formal update to the Statewide Sludge Management Plan later in 1993.) The general standard of the DEPE is that all ash and residual materials must be tested and characterized to ensure that proper management takes place. Following case-by-case testing, materials which are hazardous and intended for disposal must be managed through the hazardous waste system unless treated to be nonhazardous; materials which are clean or achieve a standard below regulatory concern may be used as a clean fill or product with limited or no supplemental DEPE approvals; materials which are nonhazardous but of regulatory concern may be used following specific DEPE review and approval of reuse applications. The DEPE's most basic goal in ash and residuals management, in consideration of the policy framework above, is to maximize the reuse and recycling of materials on a case-by-case basis and minimize residual disposal. In this regard, the legislative initiatives regarding the reduction of toxic substances in packaging and batteries noted on page 16 and other pollution prevention and pretreatment strategies advocated by the department such as "cleaning-up the waste stream" are closely

related to the DEPE's policy of reuse of ash and other materials since the residuals also will be free of toxic substances, therefore increasing potential reuse opportunities.

Short-Term Implementation Plan: The DEPE's short-term program focuses on testing the residual material and developing opportunities for reuse. A short description of the standards applied within the testing program and research initiatives follows, and it should be noted that the DEPE currently is developing a more comprehensive residual testing program that will be codified into the Chapter 26 regulations governing solid waste (current testing programs are implemented as department policy).

- a. **Solid Waste Incinerator Ash Testing:** All solid waste incinerators must, at a minimum, undergo an eight-week residual ash characterization phase. This testing period is initiated when it is determined that the facility is operating in a steady-state condition. The steady-state condition is determined when the facility is operating in a manner representative of a normal load. Prior to the characterization testing, the facility is required to sample, analyze, classify and dispose of the residual ash in the same manner as during the characterization phase, except that the results are not attributed to the eight-week characterization phase. At a minimum, a residual ash sample is collected every hour from a point in the disposal stream that is representative of the ash slated for disposal. The hourly samples are composited into a daily sample and further composited into a weekly sample. The weekly composite is analyzed for the Toxicity Characteristic Leaching Procedure (TCLP) metals, organics and for total 2,3,7,8, Tetrachlorinated Dibenzo-Dioxin (2,3,7,8, TCDD). At a minimum, four separate aliquots of the composited samples are analyzed to determine the average property of the residual ash. During this characterization testing phase the residual ash is stored on-site awaiting the results of the analysis and classification prior to disposal. The minimum eight-week characterization phase can be extended by the department in order to fully characterize the residual ash generated by the facility. The facility can move into operational confirmatory residual ash testing only if all eight weeks of the start-up characterization phase are classified as passing the TCLP.

During the confirmatory testing phase, the facility is required to continue sampling the residual ash on at least an hourly basis and to composite the results into a monthly sample. If the confirmatory sampling indicates that the average residual ash properties are not within the range established during the characterization phase, the facility is required to recharacterize the residual ash as described above. During this confirmatory phase the residual ash can be disposed of as generated. If the residual ash is being disposed of in New Jersey, it is generally monofilled in a state-of-the-art facility that meets the performance standards required by the department for disposal of industrial waste.

Prior to commencement of operations, the department requires the submittal for approval of a residual ash sampling/analytical plan as part of the final operations and maintenance manual. This plan must detail how and where the facility plans to sample the ash, how and where the ash will be stored, identification of the collector/haulers to transport the residual

ash, and a contingency plan that details how the ash will be managed if it fails a characterization test, including transportation and disposal facility arrangements.

- b. **Small-Scale Incinerator Ash Testing:** All small-scale incinerators that have received a new permit or have been issued a renewed permit (small-scale incinerator permits have a five-year duration) must undergo, at a minimum, a four-week ash characterization phase. Testing for this ash stream is very similar to that outlined in 10.a. above. This four-week testing period is initiated when the facility is determined to be operating in a steady state condition representative of normal operations. The grab samples are composited into a weekly sample which is analyzed for the TCLP metals, and organics and for total 2,3,7,8, TCDD. At a minimum, four aliquots are analyzed for each weekly event in order to evaluate the average property of the residual ash. During this period the facility must make arrangements to store the ash while awaiting the analysis and classification of the ash weekly batch. If all four weeks of the characterization phase are classified as passing the TCLP, the facility is allowed to enter into an operational mode for reconfirmatory testing. During the operational phase the facility is sampled as during the four-week characterization period. The samples are composited into a quarterly sample for analysis. If the material is confirmed to be nonhazardous, the facility may then dispose of the ash on an "as-generated" basis. If monthly testing indicates the average residual ash properties are not within the range established during the characterization phase, the facility must undergo another characterization phase for a redetermination of the classification of the residual ash for disposal.
- c. **Utility and Residual Material Testing:** The generator is responsible for developing a sampling and analytical plan for the residual waste (e.g. boiler ash, coal ash, water treatment residuals, petroleum containing soils and other industrial sludges or residues resulting from industrial processing). The sampling and analytical plan are dependent on the management option and the quantity of waste for disposal or reuse. If the residual waste is a continually generated waste stream, it must be sampled over time in order to characterize the average property of the residual. If the residual waste is a waste pile, the grab sampling must be able to characterize the average property of the waste pile. For total volatile organic compound testing, the DEPE recommends one sample per 20 cubic yards. Five samples can be composited per each 100 cubic yards. If the generator is characterizing the residual for disposal, the requirements set forth in N.J.A.C. 7:26-8 must be sampled and analyzed. These tests allow for the determination for classification of a solid waste as hazardous/nonhazardous. They include ignitability (N.J.A.C. 7:26-8.9), corrosivity (N.J.A.C. 7:26-8.10), reactivity (N.J.A.C. 7:26-8.11), TCLP (N.J.A.C. 8:27-8.12) total PCB (N.J.A.C. 7:26-8.20[b]), and total petroleum hydrocarbon content (N.J.A.C. 7:26-8.13(b)5.).

If the residual ash is to be reused, the sampling and analytical requirements include a characterization of the total metal (priority pollutants), polycyclic aromatic hydrocarbons (PAH) and pesticides, PCB's, volatile organics and cyanide. The sampling and analytical plan is dependent of the contaminants present in the residual waste. If the

contaminants and their approximate concentration are known from historical data, the plan can be developed based on this information. Based on the concentration of contaminants in the residual waste a reuse plan must be submitted as described in Section 10.a. above.

d. Material Reuse and Recycling: The department's objective is to have materials used, where possible, as opposed to exhausting limited remaining disposal capacity. Provided ash or residual materials prove to be nonhazardous, the DEPE has been applying the following basic criteria to review case-by-case applications for reuse or recycling. (This procedure does not apply to sites undergoing any form of hazardous waste remediation. In such cases, the DEPE's primary management objective is on-site treatment to allow contaminated soils to stay at the source.):

- An applicant applies to the DEPE's Division of Solid Waste Management for approval of a reuse or recycling option. The applicant must document, through submissions of analytical test results from certified laboratories, that the material to be reused is nonhazardous;
- An applicant must submit written documentation that a market for reuse is available, along with a letter from the prospective purchaser or user that it will accept the specific material in question;
- If out-of-state use is proposed, a letter from the appropriate regulatory agency which certifies that the end market facility and use are consistent with the laws of the receiving state is required. If the end use involves regulatory control from the receiving state, a copy of the applicable permit must be provided. End market users in New Jersey must possess an approval from the DEPE to operate a recycling center for Class B materials or be a registered sanitary landfill which has received DEPE approval to use residual material, such as nonhazardous oil contaminated soils, as a cover material;
- Following approval by the DEPE of the proposed reuse, the applicant must supply written documentation which certifies the receipt of the material, the date, tonnage and use of the material;
- Copies of incoming application materials and any DEPE reuse authorization letters are sent to the host county to keep it informed of the potential reuse or recycling activity.

Through application of the above procedure, the DEPE has already approved or is considering authorization of the following type of reuse proposals:

- Use of coal ash as an admixture to soil for landfill cover and as soil stabilization in roadway construction;
- Use of coal ash in mine reclamation;

- Use of water treatment plant sand media in on-site road construction;
- Use of water treatment plant residue for landscaping applications;
- Use of nonhazardous petroleum contaminated soils in asphalt plants and as landfill cover and, depending on concentration levels when thermally or biochemically treated, as fill material.

Organizationally, the responsibility for administering the review of specific requests to reuse nonhazardous oil contaminated soils was transferred from the Division of Solid Waste Management to the Division of Responsible Party Site Remediation in November 1992 to eliminate the redundancy and inefficiency of having two DEPE programs handling soil reuse. Under the revised system the same case manager overseeing remedial actions will also evaluate specific reuse plans where contaminated soils must be removed from a cleanup site and apply the same procedure outlined above.

- e. **Research Initiatives:** As set forth at N.J.S.A. 13:1E-6, the DEPE sponsors or co-sponsors several research projects designed to support the implementation of the DEPE's short-term and long-term plans relating to maximizing the reuse of ash residuals. At present, the DEPE, along with four other New York and New Jersey public agencies, is participating in an approximately \$1.85 million project to evaluate the economic and environmental impacts associated with the handling, storage and processing of incinerator ash as an aggregate substitute in asphalt paving. In addition, the DEPE is funding the preparation of a health and ecological risk assessment for ash residue based on the data generated from ash reuse projects approved by the DEPE. Finally, the DEPE has completed an evaluation of processes to separate and recover trace metals from incinerator ash in March 1992. This evaluation assessed the physical, chemical and leaching properties of untreated and treated ash and identified potential markets for treated ash products. The draft final report, a detailed 300-page document is undergoing the last phase of internal DEPE peer review and will be available in final form in early 1993. The primary finding of the study indicates that heavy metals, particularly lead and cadmium, can be efficiently recovered from fly ash, along with calcium salt. Further, preliminary economic analysis in the study reveals that the operating costs of establishing a processing facility to remove trace metals from ash would be competitive with current ash disposal costs. These projects are described more specifically in Section C.5. below. As additional funds become available, the DEPE anticipates funding more projects designed to develop reuse alternatives for ash residuals.

Long-Term Implementation Strategy: The DEPE's long-term implementation strategy for the management of residual material is as follows:

- To support programs designed to advance general pollution prevention and pretreatment themes and reduce toxics used in manufacturing processes to promote cleaner, more environmentally acceptable residual materials;

- To continue to refine and develop residual testing programs based on the most current scientific expertise to promote accurate identification of physical properties in residual materials necessary to ensure proper management techniques;
- To increase the residual materials recycled or reused and to decrease the amount to be disposed of by:
 - Developing long-term programs for reuse of the material (based on research results) with other state agencies and private industries. For example, the DOT may use incinerator ash in asphalt-type materials for road construction and repair;
 - Sponsoring and funding on-going research programs to develop additional uses of residual materials, possibly incorporating them into recycled products.

11. **Enforcement Strategy**

Objectives and Criteria: The primary objectives of the solid waste enforcement program are to ensure that solid waste is handled and disposed of in an environmentally sound manner, that the competitive nature of the solid waste industry is protected and enhanced, and that solid waste services are provided continuously and reliably. Achieving these objectives can be optimized by a policy of consistently applying and vigorously enforcing environmental laws and standards in a fair, timely and predictable manner.

Short-Term Strategy: The objectives of the short-term strategy are to complete the consolidation of the Department of Environmental Protection and Energy (DEPE) and the Board of Public Utilities (BPU) solid waste enforcement functions, resolve the immediate backlog in the A-901 program, and establish measures to address emerging responsibilities (e.g. recycling and collection industry rate reform). Unpermitted operations will be shut down and waste flows will be aggressively enforced in order to protect the environment and encourage fair competition. As used in this section, short-term refers to initiatives which should be implemented within the next year.

- a. **Completion of Merger:** The department will continue the internal staff development process toward integrating environmental and economic analysis functions as part of the enforcement program. The DEP and BPU merger of enforcement staffs, which physically took place during 1992, has already resulted in improved coordination of the environmental and economic aspects of solid waste regulation and has resulted in a more cost effective service for the public.
- b. **A-901 Program Backlog:** The purpose of the A-901 program is to eliminate organized crime influence in the solid waste industry and ensure that individuals involved in the solid waste industry possess reasonable qualities in the areas of reliability, expertise and competence. The importance of the A-901 program has become even more significant as a result of the Regulatory Reform Act in the collection industry in that it will provide a supplemental capability to promote competition in the solid

waste industry. The program began in 1984 and was inadequately staffed until recently (of the 1,497 applications processed to date, over two-thirds were processed since January 1991, and most of these were processed within the first six months of 1992). The initiatives implemented in 1992 have brought a complex program under control, and should result in an average application processing time of seven months beginning in 1993.

- c. **Interstate Enforcement Agreements:** The department will continue to reach agreements with participating states concerning illegal interstate disposal of solid waste in contravention of the waste flow rules. A memorandum of understanding was signed by Governor Florio and Governor Evan Bayh of Indiana in August 1991 which sets forth an aggressive interstate cooperative effort to crackdown on illegal solid waste transporters. A similar agreement was signed by Governor Florio and Governor George Voinovich of Ohio in October 1992, which further demonstrates New Jersey's commitment to halt unauthorized interstate waste flow. Additional negotiations are currently ongoing with officials of West Virginia.
- d. **Solid Waste Collection Regulatory Reform Act:** The provisions of this bill became effective April 14, 1992. The intent of the act is to foster competition within the solid waste industry and to establish a responsible state supervisory role to ensure safe, adequate and proper solid waste collection services at competitive rates. The act, in essence, allows increasing flexibility in the determination of rates over the next four years, whereupon a solid waste collector shall have the discretion to adjust its service charge to a sum which shall result in competitive pricing. The DEPE will retain the authority to prohibit anti-competitive practices of undercharging and overcharging. The long-term effect of the act will undoubtedly be simplification of the enforcement effort. However, the short-term effects involve the development of additional training and the implementation of modifications to enforcement strategy. As mentioned earlier, the deregulatory nature of the act re-emphasizes the importance of the A-901 program to a healthy solid waste industry.
- e. **Recycling:** The recycling regulations, as well as other initiatives, such as the proposed "mixed load" regulations, while necessary to optimize recycling efforts and the regional approach, will necessitate a more sophisticated solid waste enforcement program if reasonable control over waste flow is to be maintained. This increased sophistication will especially be required in the areas of data collection and evaluation, and communication. Improvements in supporting mechanisms, such as the O & D forms, will also be necessary. The A-901 program transferred its management information system to a mainframe during the Summer of 1992. The next step is to make this information available to the Department of Law (DOL) and the State Police, which should be accomplished by the end of the first quarter of 1993. The rest of the enforcement program is accommodated by personal computers which have been incorporated into a local area network (LAN). The next step here will be to provide a communications capability for DOL, and the target here is by the end of 1993. Waste flow implications are discussed in Section B.16. below.

- f. **County Environmental Health Act (CEHA):** The CEHA program for solid waste is administered and managed by the DSWM's Office of Investigation and Enforcement. Through inter-agency agreements with county health departments and local lead health agencies, the manpower resources performing solid waste compliance monitoring, complaint and incident response, enforcement and information gathering projects are enhanced. The counties and local departments, in essence, become agents of the DEPE and perform environmental law enforcement activities on behalf of the DEPE.

Through the years, the DEPE has gradually increased both the role and number of CEHA agencies participating in the program. The short-term strategy is to continue to build on that role and further strengthen the state/county relationship. In particular, during this year, the DEPE and CEHA agencies are holding seminars to disseminate and explain the newly enacted recycling regulations to various levels of local and county government, as well as members of the regulated community. Also, the department is developing a statewide enforcement strategy, including outlining the role of each participating agency so that concise and reasonable enforcement programs can be consistently carried out statewide.

- g. **Asbestos:** The DEPE started monitoring asbestos waste generation transport and disposal in 1979 through administration of policy guidelines. The DEPE promulgated a comprehensive regulatory package in 1983 to combat widespread problems in the abatement industry caused, in part, by the fact that there was no legal authority to require strict adherence to the guidelines. From that time, the Office of Investigation and Enforcement within the DSWM has managed the asbestos control program to the point where the compliance rate relative to asbestos handling, transport and disposal is approximately 80% to 85%. In 1983, the DEPE had one of the most comprehensive and stringent asbestos regulations in the nation. However, in 1990 and 1991, the federal government made significant changes in its National Emission Standards for Hazardous Air Pollutants (NESHAPS) regulations (40 CFR 61) and USDOT Title 49 with respect to management and disposal of asbestos. Presently, portions of these regulations are more stringent than the department's and, in some cases, may conflict. Also, the lack of convenient asbestos disposal options in some of the state's solid waste management districts has created severe disposal problems for the small quantity generator of asbestos. In light of these factors, the DSWM will be analyzing the existing regulation package and the problems of the small generator, and will propose and promulgate an updated asbestos regulation package to bring the regulatory program more in line with that of the USEPA and USDOT.
- h. **Reorganization:** In order to more effectively and efficiently accomplish its missions, the Office of Investigations and Enforcement underwent a reorganization that was completed during the summer of 1992. The major aspects of this reorganization include the establishment of a bureau to administer the A-901 program, and the realignment of the Bureau of

Inspection and Investigation and the Bureau of Compliance and Enforcement, to more appropriately address emerging responsibilities in the areas of recycling, tariff issues, waste flow, and medical waste.

- i. **Base Penalties:** The solid waste enforcement program is currently coordinating proposed base penalties to supplement the existing penalty matrix found at N.J.A.C. 7:26-5 et seq. The adoption of base penalties as an assessment tool will enable the program to more effectively discourage noncompliance with the act. It will also further streamline the enforcement process and allow for resources to be utilized more effectively. A draft amendment has been targeted for completion in early 1993, and then it will be forwarded for inclusion in the New Jersey Register publication process. Implementation should occur about one year later.

Long-Term Strategy: In this instance, long-term is defined to mean that implementation will not occur within the year and that completion will likely require several years. The long-term strategy of the solid waste enforcement program is to fully implement the department's enforcement philosophy of prevention. The purpose is to prevent situations that result in major violations and to correct the problems that may exist while they are still minor. The rationale is that the damage done to the environment and to the general public can never be totally remediated, so the long-term objective should be prevention. A preventative enforcement posture can be achieved with an efficient and effective enforcement system. This system must: allow early identification of problem areas, have the capability to rapidly communicate the information to all appropriate parties and have the ability to dispense prompt justice. Below are long-term initiatives that will supplement ongoing activities:

- a. **Case Management Backlog:** Case management refers to that portion of the solid waste enforcement organization that prepares and processes administrative orders (AO's) and administrative consent orders (ACO's), negotiates with the defendants, and represents the case in the various courts. A lack of assets, as well as a lack of balancing workload and assets, has resulted in a backlog that threatens the credibility of the enforcement program. Initial efforts have been directed at defining the magnitude of the problem, and categorizing and prioritizing the backlog. Four new staff members were brought on-board during the Summer of 1992 to help address the backlog. Standard operating procedures have been prepared and are being updated. The balancing of workload and assets among the divisional elements involved in the enforcement effort will be completed during 1993. However, this balancing effort between the two agencies (Law and Public Safety and DEPE) will likely take longer.
- b. **A-901 Program:** The long-term emphasis of the A-901 program will shift from reduction of the backlog to post-compliance enforcement. One priority area will be to ensure that company key employees are portrayed in the disclosure statements. Another will be a detailed look at those companies that have claimed the self-generator exemption. In short, the emphasis will shift to actual enforcement and should result in a further improvement in the quality of organizations involved in the New Jersey solid waste industry. A basic long-term goal for the program is to

evaluate the need for regulatory changes, particularly in the areas of sub-contracting, late fees, brokers and ownership changes. Actual regulatory modifications will take about two years.

- c. **CEHA:** Over the next few years, the DEPE will continue to refine and increase the role of CEHA agencies with regard to all enforcement programs under their jurisdiction, to increase not only the responsibilities and authorities of CEHA agencies, but their respective workloads as well. This would further free up departmental resources to develop new and better environmental programs, as well as provide a greater long-term management role. Initiatives currently being discussed in the legislature indicate that routine enforcement and monitoring programs within the DEPE may be remanded to the CEHA agencies in their entirety. (Routine in this context means a program that has been with the DEPE in excess of three years, has been fully developed, and has been operating smoothly.) The DEPE supports the initiatives under consideration as consistent with the department's long-term goals and objectives.
- d. **Asbestos:** The DSWM will continue to monitor the asbestos industry and enforce its regulations appropriately, but will be preparing for two anticipated changes to occur in the industry. First, since new uses of asbestos are being curtailed and systems are in place to identify and abate those asbestos materials already in the environment, the need for abatement activities will gradually decrease over the next five to ten years and commensurately, the need for compliance monitoring at the removal stage will decrease. Second, the currently accepted technology for proper asbestos handling and disposal is to get it out of the public environment and under the ground (where it originated) as rapidly as possible, while limiting human exposure to where the material was deposited. It is expected that new methods of handling and disposal will be forthcoming in the commercial marketplace. Opportunities for recycling will also be evaluated in the private sector. The DEPE will evaluate and comment on these technologies and compare them to existing methods. These two anticipated factors should decrease the DEPE workload in the traditional areas and allow it to shift its efforts more intensely to identifying and reducing the negative effects of certain uses of asbestos when this material cannot be substituted.
- e. **Rate Reform Act:** The long-term effects of the Rate Reform Act will undoubtedly be to simplify the enforcement effort. However, the short-term effects include additional training and the implementation of major modifications to the development of enforcement strategies. The deregulatory nature of the act not only emphasizes the importance of the A-901 program, but ensures that the A-901 program is vital to a healthy solid waste industry. The immediate modifications to enforcement strategy include a greater emphasis on the requirement to submit uniform tariffs, maintenance of tariff data and the establishment of procedures to monitor the effect of rate reform on prices and on competition in the solid waste collection industry.

12. Landfill Closure Planning

Objectives and Criteria: New Jersey residents and businesses generated over 10 million tons of solid waste each year over the past decade. Historically, this material was disposed of in landfills. Prior to the late 1970s, there were no detailed statewide regulatory requirements governing the manner in which solid waste was landfilled. Material also came into New Jersey from neighboring states in an uncontrolled manner. The material generally was dumped with little or no provision for cover to prevent odor, to control birds, insects and rodents or to minimize long-term environmental impact. Beginning in the 1970s, the state began to register landfills and regulate their operation, imposing increasingly stringent environmental controls. Currently, New Jersey has among the most stringent design and environmental performance requirements for new landfills in the nation. Nevertheless, the legacy of past landfills that were not designed with stringent controls for protection of the environment and which were, for the most part, not properly closed, remains a significant challenge facing the state. Improperly closed landfills present a series of potential problems:

- Natural precipitation percolating through landfills produces leachate which can have a higher concentration of pollutants than untreated domestic sewage. If this material, in the absence of suitable final cover and/or drainage controls, is allowed to discharge to streams or to groundwater, it can produce serious water resource impairment. Most landfills established prior to the mid-1970s lacked any leachate collection or control systems. These landfills will eventually discharge (or are already discharging) leachate to surface and groundwaters;
- Closed landfills that do not have leachate collection/control systems, in many cases require costly retrofitting of such systems to control leachate discharges to surface and/or groundwater;
- Many landfills in operation prior to the implementation of state environmental laws regulating them accepted all types of waste, including industrial and chemical waste. Even after more stringent state regulation of landfills began, industrial and chemical waste continued, in some cases, to be illegally disposed of in landfills permitted for municipal waste. Therefore, many closed landfills may contain varying amounts of hazardous materials. Although many of these landfills containing significant concentrations of hazardous wastes have been "discovered" and are designated within state programs for hazardous site cleanup, new cases of closed landfills containing hazardous wastes are still being discovered;
- Normal municipal solid waste contains minute amounts of many household hazardous materials. This is true because even the average homeowner uses and disposes of paints, cleaning agents, solvents and pesticides/herbicides which contain hazardous materials. When small amounts are aggregated at a disposal site, a significant level of hazardous materials may result. The department is responding to this important area by developing periodic and permanent household hazardous waste and small quantity generator collection sites as further outlined earlier in Section B.6.

With the above referenced concerns in mind, the objectives of the department in terms of landfill closure are to establish a priority system for evaluating landfills which have terminated operations, but have not been properly closed consistent with DEPE closure requirements, identify responsible party funding sources to pay for proper closure, expedite the review and approval of closure plans submitted pursuant to state law, and, where necessary, remediate sites that are polluting the ground and surface waters of the state. The following presentation provides necessary background information to address the scope of the landfill closure issue, as well as an articulation of short and long-term implementation strategies to achieve closure goals.

Universe of Concern: In outlining a landfill closure strategy, it is first necessary to frame the universe of concern. Based upon the regulatory structure of the "Sanitary Landfill Facility Closure and Contingency Fund Act" (Closure Act), N.J.S.A. 13:1E-100, landfill termination date is of critical importance. Facilities which remained in operation beyond January 1, 1982 were subject to comprehensive regulatory controls upon closure. Due to the tax provisions of the Closure Act, facilities operating beyond January 1, 1982 also accrued funds specifically dedicated to landfill closure.

Beyond the critical factors of termination date, the type of landfill is also important in terms of the ability to fund proper closure. The DEPE divides the universe of landfills into three broad categories: regional commercial (larger landfills which accepted solid waste from multiple municipalities and which, in most cases, charged a BPU approved tariff rate or tipping fee); municipal (landfills which almost exclusively accepted municipal solid waste only from the community within which it was located); and sole source (generally smaller landfills which accepted solid waste only from a single source, such as a company landfill for nonhazardous industrial waste or a business landfill, such as that used for the disposal of construction and demolition debris or tree stumps).

A final variable in framing the universe of facilities is regulatory status with the department. There are three broad categories which must be addressed: registered, unregistered and unconfirmed.

There are 347 landfills known to have accepted solid waste that have been registered with the DEPE's Division of Solid Waste Management. Of these, 179 ceased operations prior to January 1, 1982, and are not required to submit closure plans. Plans are required of the remaining 168 landfills.

As the department discharges its various program responsibilities, it occasionally locates previously unidentified landfills. This occurs, particularly as a result of the Environmental Cleanup Responsibility Act (ECRA) program and through the New Jersey Pollutant Discharge Elimination System (NJPDES) program. Through local development and property sale activities involving these programs, an additional 182 sites have been identified which had solid waste deposited within them and which were never registered with the DEPE. They are categorized as "unregistered" since they did not have solid waste facility permits during operations and detailed site specific data is limited in most cases.

Finally, the USEPA performed surveys in the 1970s regarding disposal practices of industries throughout New Jersey. From these surveys, an additional 49 landfills were identified as being used at that time within New Jersey. These "unconfirmed" sites have not undergone detailed evaluation and may not have ever actually operated as solid waste landfills, although from available information it is probable that some were used on a limited basis for landfilling activities.

Taken together, New Jersey has 347 registered and 231 unregistered and unconfirmed solid waste disposal facilities/sites. Table 9 summarizes operational status/date of closure, facility type and regulatory status of the total universe of 578 sites.

Financing Landfill Closure: An additional variable affecting landfill closure is financing and the ability to pay the bill for proper closure. In this area, it is helpful to return to the categorization of "registered, unregistered and unconfirmed" to help explain the scope of the financing issue. For unconfirmed sites the first step in the department's strategy is to determine if the properties in question were in fact used for solid waste disposal. When that question is answered it will be possible to assess financial needs and responsible parties. The unregistered universe is primarily comprised of landfills which closed prior to the effective date of the Landfill Closure Act and, therefore, it is reasonable to assume that no dedicated funds exist for closure. Similarly, the 179 registered landfills which closed prior to January 1, 1992 are unlikely to have any dedicated funding source to address closure. Finally, Table 10 below summarizes, by landfill category, the existing funds accrued as of January 1, 1982 for closure of the 168 facilities which remained in operation beyond the effective date of the Landfill Closure Act.

As indicated in Table 10, some level of funding already exists for the 168 registered landfills which operated beyond January 1982. Generally, regional commercial landfills have significant funds placed within DEPE established and monitored escrow accounts. Municipal landfills often have negligible escrow resources and most sole source facilities are without any dedicated closure accounts. This has partially resulted from the design of the Landfill Closure Act tax program where monies were collected on the basis of cubic yards of solid waste received. Municipal and sole source landfills which closed shortly after January 1982, or which remained open and took very small amounts of waste, have extremely limited escrow reserves. Table 10 demonstrates this point by comparing the number of landfills by type and the cumulative total of DEPE monitored closure reserves.

Table 9

SOLID WASTE FACILITY UNIVERSE OF CONCERN

<u>Regulatory Status</u>	<u>Facility Type</u>	<u>Pre-1982 Closure</u>	<u>Post-1982 Closure</u>	<u>Presently Active</u>	<u>Totals</u>
Registered:	Regional	29	23	12	64
	Municipal	81	83	3	167
	Sole Source	<u>69</u>	<u>25</u>	<u>22</u>	<u>116</u>
	Total	<u>179</u>	<u>131</u>	<u>37</u>	<u>347</u>
Unregistered		182			182
Unconfirmed		<u>49</u>	—	—	<u>49</u>
	Totals	<u>410</u> ===	<u>131</u> ===	<u>37</u> ==	<u>578</u> ===

Table 10

SOLID WASTE LANDFILLS AND FINANCIAL ACCOUNTS

<u>Ownership Category</u>	<u>Number of Landfills</u>	<u>Landfills With Current Escrow Balance</u>	<u>Escrow Balance (000)</u>
Municipal Government:			
<20 Acres	84	41	\$ 979.1
<40 Acres	47	29	1,533.2
>40 Acres	<u>17</u>	<u>17</u>	<u>83,922.3</u>
Subtotal	<u>148</u>	<u>87</u>	<u>\$ 86,434.6</u>
Sole Source:			
<20 Acres	51	17	528.7
<40 Acres	31	17	913.2
>40 Acres	<u>7</u>	<u>1</u>	<u>52.3</u>
Subtotal	<u>89</u>	<u>33</u>	<u>\$ 1,494.2</u>
Regional MSW:			
<20 Acres	12	5	1,648.4
<40 Acres	6	5	8,391.2
>40 Acres	<u>32</u>	<u>36</u>	<u>236,787.1</u>
Subtotal	<u>50</u>	<u>46</u>	<u>\$246,826.7</u>
TOTAL	<u>287</u> ===	<u>168</u> ===	<u>\$334,755.5</u> =====

From the above, it is clear that available financial resources are extremely limited given the scope of even the registered landfills which have not undergone any DEPE guided closure procedure. In this regard, it is important to address what proper closure is and what it may cost. The scope of closure at any particular site is a function of the amount and types of materials known to have been deposited and the results of ground water, surface water and gas monitoring as an indicator of what is being discharged from the facility. Size of the facility, location, length of operation and other variables also interplay in determining needed closure measures.

For presentation purposes, it is possible to estimate closure costs on a per acre basis. Based upon existing DEPE regulations found at N.J.A.C. 7:26-2A.9, all closure activities involve some degree of grading, landscaping, revegetation, site securing, drainage control, capping and groundwater monitoring. Based upon historical experience in the DEPE's solid and hazardous waste management programs, the following broad cost estimates can be made. For a facility which requires the most limited level of closure, involving a soil cap, revegetation, security, drainage control and groundwater monitoring, a cost of \$65,000 per acre can be estimated. A more detailed closure involving a 12 inch clay cap with a single geotextile synthetic membrane could cost approximately \$190,000 per acre. Finally, a full capping scenario involved in a remediation case where substantial contamination has been identified, and where a 24 inch clay cap and double composite geotextile synthetic membrane was used, could cost approximately \$460,000 per acre. Given these rough estimates and assuming a municipal landfill size of 20 acres, the capital cost of closure could range from \$1.3 million to \$9.2 million for a single site.

Short-Term Implementation Strategy: With the total universe, type of landfills and funding issues framed, the following are short-term implementation actions which the department will perform. In January 1992, the department convened an internal agency task force to develop a statewide landfill evaluation plan. The purpose of the plan is to provide information on the status of existing programs related to landfill closure and to develop short and long-term administrative closure strategies. The following represents the basic elements which make up the action plan developed by the landfill evaluation task force:

- a. **Prioritizing of Known Sites:** The department maintains some level of site specific general and analytical information for the 347 registered landfills. A priority list for evaluating the need for closure, and, where appropriate, remediation, will be completed and will be based upon the following variables: status of current closure planning (for applicable facilities), analysis of groundwater monitoring data; facility location; surrounding land use; type of wastes known to have been accepted; other site or area specific technical criteria.

Pre-1982 registered facilities which are not required to submit closure plans should be placed on the list of sites which comprise the Comprehensive Site List (CSL). The list is grouped into three categories: sites that need to be evaluated; sites that have been determined to be contaminated; sites where no further action is required. Once a site

assessment has been performed, the information gathered provides the basis for ranking the sites on potential human health and environmental risk so that the worst sites can be remediated first.

- b. **Expedited Closure Plan Review:** As noted earlier, 168 of the 347 registered landfills must develop and submit detailed closure plans to the department. In addition, 18 facility owners/operators have voluntarily agreed to submit closure plans revising the total to 186 landfills. As of April 1992, 27 of the landfills have been properly closed and 72 owners/operators have submitted closure plans which are in various phases of review within the Division of Solid Waste Management. Fifty-one landfill owners/operators have failed to submit required closure plans and in 36 cases a notice of deficiency has been transmitted to the owners/operators requiring a subsequent technical and/or financial plan submission. The department will develop plans to streamline the review and approval of closure plans which have been backlogged. Such plans will seek to identify procedures to initiate a major action (approval, denial, detailed notice of deficiency) as quickly as possible for each pending plan. In addition, the department will work with the remaining 51 facility owners/operators which have not submitted plans to bring them into compliance or initiate appropriate enforcement actions.
- c. **Initiate Enforcement Strategy:** The department will conduct site assessments for landfills with unapproved or unsubmitted closure plans. Enforcement actions will be conducted and include negotiating with responsible parties (RPs) and the signing of a control document. There are three types of control documents that can be used in the Site Remediation Program: an administrative consent order (ACO) designed for facilities which require full site remediation; an ACO designed for multiple RPs, negotiated on a phased basis, beginning with a remedial investigation of site conditions; and a memorandum of agreement (MOA) that is available for nonpriority sites. The MOAs are entered into one phase at a time and the department is reimbursed for oversight costs in order that the department's resources are not taken away from higher priority cases.
- d. **Investigate and Prioritize Unregistered and Unconfirmed Sites:** The department will evaluate unregistered and unconfirmed sites and perform a remedial priority score assignment. To establish a remedial priority each landfill must be investigated to characterize site conditions. This process, known as the pre-remedial phase, consists of a preliminary assessment, site inspection and responsible party investigation. The preliminary assessment includes a comprehensive file search of federal, state and local files, an aerial photograph review, a potable well search and interviews of site owners and operators. Based on the review of available data, a site inspection which includes a sampling episode may be warranted to document and characterize releases of contaminants to the environment. Finally a responsible party investigation is conducted in order to determine financial liability for the remedial activities needed. Once the pre-remedial phase has been completed, the information gathered provides the basis for ranking a site on potential human health and environmental risk so that the worst sites can be remediated first.

- e. **Initiate Voluntary Cleanup Outreach Program Targeting Landfill Owners:** The department will consider facilities with unapproved and unsubmitted closure plans as candidates for the Voluntary Cleanup Program. The Voluntary Cleanup Program is designed to provide the opportunity for any party to conduct a cleanup on a voluntary basis with department review. There are three types of control documents that can be used in the Site Remediation Program: an ACO designed for facilities with a limited number of viable RPs which requires full site remediation; an ACO designed for multiple RPs, negotiated on a phased basis, beginning with a remedial investigation.
- f. **Case-By-Case Technical Approach:** It is the department's experience, from both a technical and economic perspective, that the strict application of comprehensive technical closure requirements is not the most effective management approach due to the characteristics of each facility or site and available funding sources. As a result, the department may utilize existing regulatory authority or draft changes to regulations in order to apply a balanced approach to properly closing each site. While costs are recognized as a factor, such consideration will not limit the department's commitment to approving plans which are protective of human health and the environment. This approach would utilize a case-by-case evaluation to determine if any modifications to the technical closure standards are appropriate for each facility or site. A decision on use of the case-by-case approach will be made following completion of individual site assessments for registered and unregistered sites and an open and collaborative public process.
- g. **Assessment of Existing Financial Resources:** The department will consider available funding sources and overall needs to accomplish proper closure consistent with the established priority list. Available Hazardous Waste Bond Fund monies and the monies in existing DEPE escrow accounts will be utilized as appropriate. Further, the department will encourage municipalities to develop closure plans which identify future funding sources to supplement insufficient accounts. These plans will allow closure work to begin at the highest priority municipal facilities while remedial costs are recouped in subsequent years through municipal tax collections or from other identified sources.
- h. **Assessment of Other Potential Financial Resources:** Beyond the relatively limited scope of currently available funds dedicated to landfill closure, the department will consult with the Attorney General's office, develop necessary regulations and/or work with the legislature to allow for usage of monies currently collected as part of the Resource Recovery Investment Tax, the Sanitary Landfill Contingency Fund, or other appropriate sources of funding. This analysis of using these available sources of monies for closure purposes will be completed by July 1993.

Long-Term Implementation Strategy: In the future, the department will initiate the following longer-term initiatives needed toward addressing the entire scope of the landfill closure issue:

- a. **Closure Plan Implementation:** Based upon the analysis of sites, development of priority lists and identification of available funding sources, the department will begin the aggressive implementation of approved closure plans for registered sites.
- b. **Long-Term Funding Plan:** Once the short-term implementation plan has been completed, the department will develop a long-term funding plan which will estimate financial needs to address the overall closure priority list. When completed, the department will work with the legislature and the federal government to structure the needed funding measures into New Jersey law to implement a comprehensive landfill closure program. One option for long-term funding is a bond supported grant or low interest loan program for municipalities and responsible parties dedicated to landfill remediation.

13. **Statewide Contingency Planning**

Objectives and Criteria: New Jersey's policy objective of achieving self-sufficiency in disposal capacity within the next seven years is outlined throughout this State Plan and Update, and in particular within Section B.5. Despite this objective, the department estimates that about 18 percent of all solid waste generated is currently being exported to out-of-state disposal facilities. Notwithstanding the existence of contracts for continued use of out-of-state capacity, the department is concerned that measures may be authorized by congress to allow states to ban or severely restrict the interstate movement of solid waste. Given this potential, as well as the possibility of emergencies which affect disposal facilities, New Jersey must be prepared to implement contingency disposal measures expediently in order to protect the health, safety and welfare of the citizenry. In order to accomplish this, both short and long-term contingency strategies are herein adopted or will be developed as follows:

Short-Term Contingency Strategy: Should interruptions in out-of-state disposal services arise within the next year, the following procedures would be followed in priority order:

- a. **Back-Up Contracts:** For counties currently exporting solid waste, activation of back-up contracts for out-of-state disposal;
- b. **New Short-Term Contracts:** Since it is doubtful any interstate waste shipment restrictions will be uniform across the nation, work with affected New Jersey counties to negotiate new short-term out-of-state disposal contracts pending the implementation of planned in-state capacity;
- c. **In-State Redirection:** The DEPE will consider ordering in-state waste flow redirection to facilities with capacity in response to a public health crisis.

Long-Term Contingency Strategy: Beyond the short-term provisions outlined above, the DEPE may develop more detailed contingency strategies as follows.

- a. **County Specific Contingency Plan:** Depending upon future developments at the national level that would restrict the interstate shipment of solid waste, the department will work with the counties to make sure that there is adequate in-state contingency back-up disposal capacity in the event of an emergency situation. Since, as noted, uniform national restrictions on an immediate basis are highly doubtful, the value of such a specific contingency plan may be limited.
- b. **Landfill Reopening:** Over 300 landfills which were formally registered with the department have closed over the past 10-15 years. Most of these sites were not properly closed in an environmentally sound manner and are a potential source of environmental degradation. The DEPE may consider performing a statewide analysis of the potential for landfill reopening of closed sites which have vertical or horizontal expansion capabilities and which have not dramatically changed in land use character. This approach could enable the state to address potential groundwater contamination from improperly closed landfills while adding needed capacity in the event of an emergency situation.

The DEPE initiated a limited landfill reopening study in 1989. It became evident that the reopening concept, on either a short-term interim or long-term use basis, may be severely limited for a number of reasons, as follows:

- Land uses have, in many cases, changed to prohibit reopening possibilities;
- Landfills sited in the 1970s, and earlier, were often placed in totally improper locations, often within low-lying wetlands or near water bodies;
- Most older landfills were very limited in size and would not represent appreciable new capacity from a statewide or regional perspective;
- Any facility reopening would require the use of state-of-the-art environmental safeguards with respect to lining, leachate collection, groundwater monitoring and gas evacuation. For old facilities with vertical reopening potential, difficult engineering obstacles would have to be overcome (i.e. placing a suitable liner on top of previously landfilled solid waste);
- The state does not currently have a contingency management fund which has landfill reopening as an eligible use. Large sums of money would be necessary to implement any form of reopening plan; and
- Environmental claims liability with respect to both old and new site operations would need to be addressed on a case-by-case basis.

Given these substantial limitations, the department would only give serious consideration to further study of landfill reopening should broad interstate restrictions develop and threaten basic solid waste and disposal services.

- c. **Landfill Mining:** A number of municipalities in New Jersey have expressed preliminary interest in exploring the concept of landfill mining. Benefits of such a program may include the recovery of materials for reuse and recycling, the reclamation of land for future development, and the potential for processing landfilled materials to create new disposal capacity. The DEPE supports further study of landfill mining by counties and municipalities and may be willing to authorize pilot projects in this area. Of critical importance will be the level of materials recovery and marketability of the end product. Simply disrupting old landfills and filling limited remaining disposal capacity with substantial quantities of excavated solid waste to allow for future land use development projects will not be approved.

14. **Scrap Tire Management**

Objectives and Criteria: The scrap tire management problem within New Jersey is the result of the combination of the ongoing generation of scrap tires (when consumers replace worn tires) and the eight large scrap tire piles located throughout the state. New Jersey generates approximately 8.4 million passenger tires and 1.28 million truck tires as scrap annually. Tires constitute a tough and durable product. They are designed to resist decomposition from the rigors of the normal environment and are difficult to handle in a landfill or incinerator operation. Therefore, solid waste facilities do not want to accept them and solid waste transporters do not want to collect them. A significant though unknown quantity of scrap tires are simply being "stored" by individuals in garages, basements, presumably in anticipation of publicly sponsored disposal options becoming available. As a result of the above, and given the state of scrap tire recycling currently occurring, it is estimated that between 1/3 and 1/2 of the scrap passenger car tires generated annually in New Jersey are being disposed of in a nonsecure manner in New Jersey and elsewhere, posing public health problems and fire hazards.

The scrap tire piles in New Jersey contain an estimated 5.2 million tires. Fortunately, the tire pile sites are no longer accepting additional tires. Presently, consumers are charged a fee of between \$1 and \$3 for the disposal of all tires when purchasing new tires. It is important that this fee accurately reflect the cost of disposal, and that "tire jockeys" that charge this fee to tire retailers (who pass it on to customers) actually dispose of these tires properly. The department will bi-annually survey the major tire retailers regarding fees charged and intended tire disposition and follow through with an analysis of tire disposal practices by "tire jockeys." However, the department has been unable thus far to secure the required funding for remediation of these piles, so their threat remains unabated. Uncontrolled disposal of tires, as had historically occurred at these tire pile sites, provides a shelter for vermin, and suitable breeding places for encephalitis-carrying mosquitoes. In addition to public health problems, tire piles also pose a danger to life and nearby property because they are potential fire hazards.

Since the scrap tire management problem in New Jersey is really made up of two distinct problems (the ongoing scrap tire generation and scrap tire piles containing previously discarded tires), there are two distinct sets of short and long-term objectives and strategies the state must pursue in addressing the scrap tire situation. For this reason, the objectives and strategies of the department are divided into "tire recycling" and "tire pile" sections for the purpose of clarity.

The short-term tire recycling objective of the department is to stimulate program development activities across the state to attain a minimum 30% recycling rate for the ongoing generation of scrap tires. The short-term tire pile management objectives are to prevent the creation of additional scrap tire piles, and to identify suitable recycling technologies for tires in piles. The long-term tire recycling objective of the department is to attain a 95% recycling rate for tires. The long-term tire pile objective of the department is to remediate all tire piles located within New Jersey.

Short-Term Implementation Plan-Tire Recycling:

- **Recycling Facilities:** Increasing the diversity of tire recycling options is essential if cost-effective and convenient recycling options are to be provided within New Jersey. Presently, two tire chipping operations exist in Newark (Waste Management and Integrated Tire) which accept the majority of tires which are recycled in northern New Jersey. Cape May, Ocean and Atlantic counties operate reef-making projects which handle the majority of tires recycled within those counties. During 1993, a private company, Reef Environments, Inc., anticipates start-up of a reef-making facility in Monmouth County. A crumb rubber operation has obtained approval to start production in Deptford Township (Gloucester County), although no fixed start-up date has been established by the owner. New Jersey tires are also being accepted by a chipping operation (Emanuel Tire) in Baltimore, Maryland, a chipper (Domino Tire Salvage) in Conshohocken, Pennsylvania, and a tire incinerator (Oxford Energy) in Sterling, Connecticut. While the number of tire recycling operations has increased in recent years, New Jersey tires still must travel considerable distances, at high transportation costs to be recycled. The majority of New Jersey tires which are being recycled are being chipped for consumption as fuel or for roadway construction, since this is presently the cheapest method of recycling. The scarcity of tire recycling facilities located in or around New Jersey makes tire recycling expensive, encouraging cheaper, illegal disposal. By approving additional facilities, transportation costs can be minimized and tipping fees lowered as a result of increased competition among recyclers.
- **Department of Transportation/DEPE Task Force:** Continued work with DOT, through the joint DOT/DEPE Recycled Materials Task Force, promotes the use of additional quantities of recycled materials in DOT construction and maintenance projects. DOT has constructed highway sections with rubber modified asphalt, and has incorporated tire chips in sub-base (the support material under the asphalt pavement). In addition, the DOT has tested the recyclability of rubber modified asphalt, by removing a section of pavement in Newark, reprocessing it and relaying the material on the road surface. This project showed that from a materials point of view asphalt pavements containing ground tire rubber

Table 11

**SCRAP TIRE REMEDIATION PROGRAM
TIRE PILE LOCATIONS**

<u>Name</u>	<u>Location Town/County</u>	<u>Estimated No. of Tires</u>
Moore & Sons Tire Center	Rt. 49 & Cohansey Rd Bridgeton, NJ Salem County	10,000
James Brown Properties	a. Pecks Corner-Cohansey Rd (between Rt. 49 inter- section & Telegraph Rd) Quinton, NJ	1,500,000
	b. Pecks Corner-Cohansey Rd Quinton, NJ Salem County	10,000
Clarence Brown Property	Stretch Rd Quinton-Alloway, NJ Salem County	500,000
Perona Brothers	Rt. 40 S. (White Horse Pike & Columbia Rd) Mullica, NJ Atlantic County	1,000,000
Cassidy & Sons, Inc.	1331 Mt. Holly Rd Edgewater Park, NJ Burlington County	100,000
George & Linda Griner Property	Box 518-Elmer Rd Fairfield, NJ Cumberland County	40,000
Mazza/Tinton Falls Twp.	3230 Shafto Rd Tinton Falls, NJ Monmouth County	75,000
Foster Farm	205 Chatsworth Rd Tabernacle, NJ Burlington County	2,000,000

can be recycled successfully. Insuring the recyclability of rubber modified asphalt is of paramount importance to DOT, since all conventional asphalt material DOT removes in the course of repaving projects is presently recycled.

- **USEPA Grant:** The USEPA-funded recycling demonstration project will enable the department to rank existing tire recycling technologies based upon cost and environmental impact. This information can then be used by the department to recommend the most cost-effective and environmentally benign processes for which public funds can be expended in the remediation of tire piles in New Jersey. In addition to the benefit of expanding the department's knowledge of the costs and environmental effects from utilizing various tire recycling options, the study will have the immediate benefit of funding the recycling of several thousand scrap tires from existing tire piles. The study is expected to be completed in the Spring of 1993.
- **Tonnage Grants/Bonus Grants:** The New Jersey Statewide Mandatory Source Separation and Recycling Act (N.J.S.A. 13:1E-99.11 et seq.) established a Tonnage Grant program which rebates money back to municipalities for every ton of material recycled. As an incentive to spur increased recycling of "difficult to recycle" items (including tires), certain items are rebated at a higher dollar amount per ton. These higher rebates are called "Bonus Grants." The use of the Bonus Grants program for tire recycling for purposes other than fuel is intended to provide generators with recycling facilities which can process their tires and provide a measure of cost subsidization to municipalities for their costs of recycling tires picked up from residents. The future continuation of this incentive will be evaluated annually by the department, and its annual decision made known in the fall of each year.

Short-Term Implementation Plan-Tire Pile Management: The short-term strategies of the department to address the scrap tire piles include inventorying all existing scrap tire piles within New Jersey and ranking them based upon environmental threat (already completed), continuing enforcement/legal efforts against illegal scrap tire pile owners to force tire pile remediation in conjunction with the Attorney General and Environmental Prosecutor's offices, continued work with the Northeast Waste Management Officials Association (NEWMOA) to standardize tire regulation and recycling programs among the northeast states, and utilization of information gleaned from the USEPA funded research. The department has also met with the Public Service Electric and Gas Company toward investigating the co-firing of chipped tires with fossil fuels in existing utility boilers in the state as an outlet for remediating these piles. A preliminary assessment of feasibility is anticipated by early 1993. Table 11 identifies the eight existing tire piles which have been identified and quantifies the magnitude of this issue by listing the estimated number of tires at each site.

- **Tire Pile Remediation and Enforcement:** While inventorying the piles has provided considerable information on pile ownership and environmental threat, the department has been frustrated thus far in its efforts to force tire pile owners to remediate their sites due to the extreme costs this will impose on pile owners. Although the Attorney General and

Environmental Prosecutor's offices are preparing cases against the land owners to force remediation of the sites, litigation is often a long and drawn-out process with uncertain results. Therefore, this ongoing short-term tire pile management strategy needs to be combined with a longer-term, publicly funded strategy which will be discussed below.

- **Northeast Waste Management Officials Association:** NEWMOA is a nonprofit entity whose membership is comprised of the state solid and hazardous waste directors in Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont. NEWMOA provides a forum for increased cooperation and communication among member states and USEPA, and assists in the development of unified policies in waste management. NEWMOA is working with the member states to develop model scrap tire legislation and regulations which should be completed by early 1993. Working with NEWMOA is important because tires tend to migrate across state borders, settling in the state with the least expensive disposal costs or least intrusive regulations regarding storage or disposal. It is essential, therefore, that neighboring states have similar regulations to ensure that one state does not become the dumping grounds for tires from adjacent states. Therefore, NEWMOA is preparing a guidance document on scrap tire management which, if followed by all the member states, would standardize scrap tire management policies among them.
- **USEPA Grant:** The USEPA research represents a short-term strategy for tire pile management, in addition to market development activities related to ongoing tire generation, in that the USEPA funding allows the division to conduct research on economic and environmentally benign recycling technologies which may exist now, preventing any delay in the expenditure of public pile cleanup funds when they become available in the future.

Long-Term Implementation Plan - Tire Recycling and Pile Remediation: The long-term management strategy for handling the ongoing generation of scrap tires, as well as tires contained in piles, is based upon the department's recommendation of the establishment of a scrap tire management program. The program is based upon the following tenets, and will require specific legislative authority to implement. Thirty states presently have such legislation in effect, and the federal government is considering similar (though less comprehensive) legislation as a part of RCRA reauthorization. The department will work with the legislature to seek establishment of this fund and program.

- **The Scrap Tire Management Fund:** This fund would be used to distribute rebates directly to end-markets for use of scrap tires and to municipalities or counties which incur scrap tire transportation and processing costs.

A portion of the revenue collected should be used for a dedicated tire recycling research & development and education fund to be administered jointly by the DEPE and the New Jersey Commission on Science and Technology. The fund would be used for state and local enforcement activities for prosecution of illegal dumpers in conjunction with an increase in penalties, as well as for remediation of tire dumps.

Funding should also be provided for the New Jersey Department of Transportation to conduct further tests, as needed, of performance and recyclability of rubber modified asphalt.

- **Hauler and Processor Requirements:** State permitting and bonding requirements for scrap tire haulers and recycled tire processors should be instituted. Tire jockeys should be bonded to insure the ability of the industry to pay for cleanup of any future tire dump sites. Specific legislative authority will be required for the department to initiate this activity.
- **Government Use of Retreaded Tires:** New Jersey state government and its political subdivisions should investigate the use of retreaded and remolded tires for fleet vehicles. State economic development agencies should give retreaded and remolded tire manufacturers and tire recycling processors locating in New Jersey high funding priority. The department will coordinate the required changes to the Department of the Treasury procurement specifications to implement this by April 1993.
- **Tire Landfilling Requirements:** Only chipped or sliced tires should be permitted at New Jersey landfills. As recycling options increase, this ban should be extended to prohibit disposal of tires in any form.
- **Tire Manufacturer Responsibilities:** Finally, the state may wish to consider making tire companies responsible for the tires they sell, up to and including their disposal. Tire manufacturers would be responsible for removal of their product in the amount that it is present in any illegal tire pile.

15. Waste Flow and Franchises

Objectives and Criteria: New Jersey has controlled the flow of solid waste since adoption of the Interdistrict and Intradistrict Solid Waste Flow Rules found in N.J.A.C. 7:26-6 on December 6, 1982. Further, through amendments to the Solid Waste Management Act and Public Utilities Control Act, the former Board of Public Utilities was empowered to award franchises to counties and other parties.

Waste flow control is a critical component of New Jersey's solid waste management program. All 567 municipalities in the state are directed for the purpose of disposal to specific facilities pursuant to rules found in N.J.A.C. 7:26-6 et seq. Through these rules, the state has the authority to direct the flow of solid waste. This power, when combined with data on the amounts and types of solid wastes generated in each town, enables the 21 counties and the state to plan and construct properly sized facilities and ensures that a reliable source of material is available. In addition, this is essential in terms of satisfying the economic commitments associated with solid waste facilities, since the industry is regulated as a utility and disposal rates are specifically set in consideration of projections of the amount of waste which will be delivered. Waste flow control is important in gaining facility financing since a steady source of waste can be identified and essentially guaranteed for delivery. This provides comfort to financial institutions and bondholders that sufficient project revenues will be

generated to pay debt service on and operating costs of the facilities. Waste flow control is applicable to facilities such as MRF's, transfer stations and landfills, but is not applicable to the movement of recyclables.

Short-Term Implementation Plan: As a key component of New Jersey's solid waste management system, waste flow and franchise programs will be improved, as follows, to best achieve planning goals:

- a. **Waste Flow Rule Updates:** The department has implemented a uniform updating procedure in 1992 for formally amending N.J.A.C. 7:26-6 each year on a statewide basis. This will ensure proper updating of the rules statewide to reflect changes in county plans, as well as waste flow modifications resulting from emergency redirection orders. The DEPE will hold appropriate public hearings on a statewide or regional basis to accept comment on formal waste flow changes and will complete response to comment documents and rule adoptions annually or more frequently in cases where emergency redirection orders are adopted as further addressed below.
- b. **Emergency Waste Flow Orders:** The department will continue to utilize the provisions set forth in N.J.A.C. 7:26-6.7 to implement necessary changes to the waste flow rules on an immediate basis. Criteria appropriate for utilization of the procedures set forth within N.J.A.C. 7:26-6.7 shall include, at the discretion of the department, public health emergencies, economic hardship, and/or maximized use of in-state disposal capacity in line with the DEPE's self-sufficiency goals. All emergency redirection orders will be followed by formal rulemaking as quickly as possible.
- c. **Franchise Awards:** The DEPE has the authority to award a franchise to any person engaged in solid waste disposal at rates or tariffs approved by the DEPE (see N.J.S.A. 48:13-5 and Executive Order No. 38, 1991 authorizing the merger of certain solid waste functions from the former Board of Public Utilities to the DEPE). A franchise is defined as the exclusive right to control and provide for the disposal of solid waste within a district or districts as awarded by the DEPE (recyclable materials are not included as part of a franchise whenever markets are available). A franchise must be in the public interest (as determined by the commissioner of the DEPE) and must conform to the approved solid waste plan for the district. A franchise also must be of sufficient area and duration to support the estimated technical and economic needs of the disposal facility that is to serve the district or districts.

A franchise is legally characterized as a property right; that is, the holder of the franchise is deemed to be the "owner" of all of the waste within the franchise area. This designation of a franchise as a property right bestows the franchise holder with rights of enforcement in a court of law against all who interfere with it, including the county, the state and collector/haulers that transport the waste out of the franchise area without authorization. This heightened enforcement power provides comfort to the lenders and sponsors of a project, ensuring the disposal of the necessary amount of waste at the approved rate to generate sufficient revenues to pay the debt service on and operating costs of the facility.

Table 12 sets forth the franchises that have been awarded to date. Note that generally the franchises have been awarded to the county or its implementing agency. However, in some limited instances, the franchise has been awarded to the private owner/operator of a particular disposal facility. The department will award franchises to public, as opposed to private, entities in the future since the franchise is an integral component of solid waste planning which is coordinated by the public sector in New Jersey.

- d. **Waste Flow and Transfer Stations/Materials Recovery Facilities (MRFs):** The department has maintained a long-standing policy position regarding the acceptance by transfer stations and MRFs of solid waste generated in multiple waste flow districts or from out-of-state sources. This policy states that transfer stations and MRFs may accept solid waste from multiple waste flow districts, provided appropriate records are kept and the same waste received from a municipality, or a similar amount and type, is ultimately sent to the appropriate disposal facility designated in the waste flow rules. In this regard, it is also the department's position that transfer stations and disposal facilities identified within the waste flow rules should accept this proportionally similar amount and type of solid waste, despite the fact that the exact material received may be a "mixed load" containing solid waste actually generated within several counties.

It should also be noted that the department's position on the "mixed loads" issue was formally published within the March 4, 1991 New Jersey Register (cite 23 N.J.R. 719) in a response to a comment made at a February 15, 1990 public hearing regarding a proposed amendment to the Interdistrict and Intradistrict Solid Waste Flow Rules (N.J.A.C. 7:26-6.5) for Camden, Gloucester, Essex and Sussex counties.

In September 1992, the department proposed rules to formally adopt its long-standing policy which allows for the acceptance of solid waste by transfer stations and MRF's which are not directed specific waste flow pursuant to N.J.A.C. 7:26-6. A public hearing to receive testimony on the draft rules was held on October 20, 1992. Approximately 25 relatively small private transfer stations and MRFs would immediately be affected by the rule upon future adoption. The proposed rules, which go beyond the historical policy to require more detailed recordkeeping of incoming and outgoing solid waste and recyclables; clarify the relationship between the rule provisions and waste flow rules/franchises, establish timeframes for the return of solid waste residue to the county/state of generation and clarify enforcement provisions applicable in response to documented noncompliance. In the draft rule, the department has attempted to balance the needs of private sector recyclers to operate MRFs and transfer stations in an economic and operationally rational way, with the need for counties and their implementing agencies to be able to track the flow of materials and enforce the state's waste flow rules. Toward advancing opportunities to monitor and enforce waste flow at transfer stations and MRF's, the department has proposed increased right of access to facility records by county representatives, access under

Table 12

FRANCHISE AWARDS

<u>County</u>	<u>Franchise Holder</u>
Atlantic	Atlantic County Utilities Authority
Burlington	The County
Camden	Camden County Energy Recovery Associates (Incinerator)
	Pollution Control Financing Authority of Camden County (Landfill)
Cumberland	Cumberland County Improvement Authority
Essex	The County
Gloucester	SES Gloucester Company (Incinerator)
	Gloucester County Improvement Authority (Landfill)
Hudson	Hudson County Improvement Authority
Monmouth	The County
Morris	MCTS, Inc. (Chambers Development Corp.)
Passaic	The County
Somerset	The County
Union	Union County Utilities Authority
Warren	Pollution Control Financing Authority of Warren County

limited circumstances to customer lists and marketing information, copying of counties and county authorities on all monthly reports generated by facilities, and changes in O & D, daily log and monthly report forms to ensure statewide uniformity and the ability to monitor a comprehensive paper trail. The draft rule also clarifies that it is not a violation of N.J.A.C. 7:26-6 or any approved franchise for solid waste generated in a district to be transported out of that district provided the requirements of the proposed rule are followed.

Finally, the proposed rule also provides an alternative for transfer stations and MRFs to provide monetary payment, instead of solid waste to disposal facilities, in an amount proportionate to the amount of waste which was collected from the geographic area serviced by the disposal facility. This provision, allowing transfer stations and MRFs to send payment, rather than waste to disposal facilities, will provide greater flexibility to transfer stations and MRFs, reduce transporter costs and protect the financial interests of disposal facilities and their ratepayers by providing for payments which allow for the same level of fixed costs recovery as would have otherwise occurred.

The DEPE is in the process of reviewing all comments received during the public comment period and at the public hearing. Opposition to the rule proposal was expressed by many counties during the public comment period. Based upon the comments received and the significance of the waste flow issue, the DEPE will give serious consideration to modifications to the proposed rule. A decision on the scope of the rule revisions is anticipated by March 1993.

- e. **Waste Flow Enforcement:** The importance of waste flow enforcement in the solid waste enforcement strategy has increased significantly as a result of the Solid Waste Collection Regulatory Reform Act (Reform Act). The flexibility in the establishment of collection fees allowed under the Reform Act effectively eliminates this area from enforcement, or will over the next four years. The importance of waste flow enforcement will, therefore, correspondingly increase. Waste flow enforcement will, however, become more complicated with the approval of the proposed mixed load regulation. This regulation, if adopted, will allow transfer stations to accept solid waste from various origins as long as solid waste, or a similar amount and type, is ultimately disposed of at the facility designated in the Interdistrict Waste Flow Rules.

Accordingly, the department's strategy must be based on the employment of measures that will even more strongly motivate transporters (collectors) to comply with solid waste regulations. Such measures would include tougher penalties and simplified litigation such as contained in the proposed "Solid Waste Crimes Act." This proposed legislation, among other things:

- (1) Recognizes that the unlawful handling of solid waste is a form of economic crime which is typically committed by persons or businesses in the hope of reducing their operating expenses associated with the lawful collection, storage, tracking and disposal of solid waste;
- (2) Recognizes the cumulative economic as well as ecological impact of solid waste offenses;
- (3) Provides that the basic solid waste offense may be upgraded by one degree where the defendant's conduct causes significant adverse environmental or economic effect. The definition for such effect is taken from the Clean Water Enforcement Act, but also includes a new provision allowing for a more quantitative assessment of economic impact where the offense results in aggregate pecuniary loss exceeding \$150,000.00;
- (4) Provides for strict liability with respect to the optional result element of causing significant adverse environmental or economic effect. Accordingly, it is not a defense that the defendant did not intend to cause or otherwise did not contemplate causing such adverse impact;
- (5) Provides for mandatory cash fines based on the degree of the offense for which the defendant was convicted. The permissible range of mandatory cash fines is enhanced in the case of a convicted business firm. For example, a natural defendant convicted of a second or third degree crime under this Act must pay a fine of not less than \$24,000.00 nor more than \$125,000.00. A business firm convicted of a second or third degree crime must be sentenced to pay a fine of not less than \$75,000.00 nor more than \$500,000.00;
- (6) Makes clear that the sentencing court may nonetheless impose a still higher fine if such higher amount is otherwise authorized by any provision of the penal code. See e.g., N.J.S.A. 2C:43-3e or 2C:43-4a; and
- (7) Recognizes that solid waste offenses are typically concealed by "spreading out" the unlawfully handled solid waste over a period of time and/or at different sites, or by concealing or falsifying reports, manifests and other records and documents associated with the tracking of solid waste. The first such method of avoiding detection is addressed through the use of the above-mentioned aggregation principle. The second method is addressed through the establishment of a new aggravating factor to be considered at sentencing where a defendant in the course of committing the offense falsifies, tampers with, destroys, conceals or otherwise renders incomplete or inaccurate any report, manifest, document, record, or any other article.

This proposed legislation is expected to be introduced in 1993.

Another measure that will assist solid waste flow enforcement will be the recordkeeping and reporting required by the proposed "mixed load regulations." These requirements are not only extensive, but for the first time, will require uniform procedures and forms throughout the state.

A longer-term measure that will be considered is the establishment of uniform disposal fees on, at least, a multi-district basis. The use of "rate-averaging" would equalize in-state disposal costs and decrease the economic motivation for violating waste flow regulations.

Long-Term Implementation Strategy: In the future, the department will consider a number of potential expansions and modifications to the existing waste flow and franchise system as follows:

a. **Waste Classification System Modification:** Presently, the waste flow rules pertain to the waste identification categories defined in N.J.A.C. 7:26-2.13(g). Briefly, the waste types covered are Type 10 municipal (household, commercial and institutional) waste; Type 13 bulky waste; Type 23 vegetative waste; Type 25 animal and food processing waste; and Type 27 dry industrial waste. In the future the department will consider modifications to this system to eliminate certain categories which no longer justify separate designations and to amend the waste flow rules and facility permits accordingly. Currently, a revised system recognizing three broad categories is being considered and would be based exclusively upon where solid waste is generated, as opposed to the existing system which involves both sector of generation and the physical characteristics of the waste. The categories may be limited to the following:

- **Municipal:** All solid waste generated from the household, commercial and institutional sectors (including bulky, vegetative and animal and food processing waste);
- **Industrial:** All solid waste generated by industrial establishments, with the exception of process residue;
- **Process Residue:** Solid waste material resulting from industrial processes or remedial activities (which would include all nonhazardous ash, sludges, oil contaminated soil and grit and screenings from treatment plants).

Such a revised system would be intended to: provide a better link between the waste flow rules and current modes of collection and transportation; avoid confusion involved in classifying materials by origin or physical characteristics; improve recordkeeping systems; improve the effectiveness of waste flow enforcement. Following the receipt of public comment and final adoption of this State Plan Update, the department will make a decision regarding waste classification system reform, establish a schedule for program development and proceed accordingly.

b. **Waste Flow of Recyclables:** Under New Jersey's existing waste flow program, solid waste must be disposed of pursuant to the waste flow rules. However, source separated or source separated and commingled materials are exempt from waste flow rulemaking.

The task force final report noted that counties should be provided the ability to coordinate and aggregate curbside recycled materials. No legislative or regulatory action has been taken to date to authorize any form of county/state flow control over recyclables. Under certain circumstances such flow control may be appropriate and the department is willing to support this approach toward achievement of the minimum 50% municipal waste stream and 60% total waste stream recycling goals. The department would support legislation, initiated by a county or region, in cases where a county government has developed an intermediate processing facility or other central collection infrastructure and a definitive showing can be made that the pooling of recycled commodities will improve product marketing. Counties would also need to consider the role of the private sector and existing recycling infrastructure as part of any plan to require the waste flow of recyclables.

- c. **Waste Flow of Regulated Medical Waste (RMW):** Pursuant to the New Jersey Comprehensive Regulated Medical Waste Management Act (N.J.S.A. 13:1E-48 et seq.), the DEPE must issue appropriate administrative orders providing for the waste flow of RMW. This requirement is to take place upon submission to the governor and legislature of the "Comprehensive State Regulated Medical Waste Management Plan," which will be published by the end of the first quarter of 1993 as Section III of the statewide Solid Waste Management Plan Update. It is anticipated that regulated medical waste flow rules will be developed at the completion of the one-year county medical waste planning process currently scheduled for 1993. A statewide waste flow system would thereafter be developed and implemented in 1994.

16. Economic Regulation and Collection Industry Rate Reform

a. Collection Company Rate Reform

Objectives and Criteria: The passage of the Collection Company Rate Reform Act in December 1991 presents the department with the opportunity to be a catalyst in the redefinition of the solid waste collection industry to one where open, active, fair competition assures quality service at reasonable fees. During the period 1992 to 1996 the department's goal is to transfer its regulatory approach to one with necessary flexibility to promote competition with ongoing surveillance and standard-setting to assure fairness and opportunities for small and large collection companies.

Short-Term Implementation Strategy:

- (1) Implementation of a customer bill of rights to be provided to all customers of solid waste collection services by March 1993. The bill of rights will make customers aware of their choice of solid waste services and assure that informed customers self-enforce industry competition;

- (2) Rapid and effective implementation of the uniform tariff among collectors so that flexible rate band pricing can occur and consumers can encourage more competition;
- (3) Development of uniform standards for municipal procurement of collection services. These standards will permit greater competition with improved service and pricing for municipal collection services;
- (4) Clear definition and development of effective competition in the industry. Mergers, acquisitions, expansions of service territory and fee setting will be reviewed to assure that effective competition is encouraged and assured. Specific attention will be paid to assure that pricing or acquisition policies do not unfairly harm the economic viability and competitiveness of small and medium-sized collection companies;
- (5) Assistance and encouragement to collectors, municipalities and counties in the development of per container rates. Per container rates not only will promote source reduction and recycling but will more appropriately assess costs on the basis of generation and thereby, prevent subsidies between consumers who generate a lot of garbage and those who generate lesser amounts of garbage.

Long-Term Implementation Strategy:

- (1) Collection and analysis of industry data to assure that the industry is competitive in all sectors of New Jersey;
- (2) Preparation of a report to the legislature in 1994 which will assess the impact of rate reform and recommend legislative changes, if necessary, to assure quality service at reasonable fees.

b. Economic Regulation of Disposal Utilities

Objectives and Criteria: Disposal facilities with waste flow directed to them have increasingly taken on the form of traditional utilities. They represent significant investment by counties and, most important, provide monopoly services to customers. As such, their economic regulation is critical to protect consumers, contain municipal solid waste collection costs and provide for nondiscriminatory treatment to collectors so that collection industry competition is encouraged.

Short-Term Implementation Strategy:

To advance these goals, the department, will follow the ratemaking standards noted below:

- (1) With respect to the utility's procurement practices:
 - Assure that purchases and services are necessary and are procured in an open, fair and competitive manner;

- Assure that the utility maintains cost control over services procured;
 - Assure that the utility regularly reviews its contracts to make sure it is getting the best arrangements;
 - If the services or purchases are procured from an associated or affiliated company, assure that they are fairly priced relative to their cost.
- (2) With respect to the cost allocation procedures of the utility:
 - Assure that the corporate (or government) overhead, salary and other shared costs are reasonably allocated between regulated and unregulated services.
 - (3) Assure that the facilities and plan in service of the utility are "used and useful" in utility services;
 - (4) Assure that the operation and maintenance expenses of the utility include only normal, reasonable and nonrecurring costs;
 - (5) Assure that the depreciation schedules of the utility are reasonable, and that a year end-year rate base, year-end customer and year-end usage are used in order to reflect utility cost levels on a going forward basis;
 - (6) Assure that the utility is not proposing any form of retroactive ratemaking, i.e. that is not proposing to recover previously incurred costs or lost profits or income from its ratepayers;
 - (7) Assure that the utility's operating and planning policies and rate structures are consistent with state policies, especially regionalization, source reduction and recycling initiatives;
 - (8) Assure that the number of employees, their roles and their salaries are reasonable;
 - (9) Assure that working capital levels are reasonable such that if the utility collects funds from ratepayers in advance, or if it holds tax expense for a significant period prior to payment, working capital may be reduced, eliminated or made negative;
 - (10) Assure that the payment and prepayment procedures and other terms and conditions of service do not impose an undue burden on small and medium-sized collectors;
 - (11) Assure that each service offering is carrying its appropriate cost;
 - (12) Assure that debt financings are undertaken on a competitive basis unless a clear demonstration of the benefits of a negotiated financing is made.

In addition, since many of the utilities under the department's jurisdiction are also public authorities, the department is reevaluating its procedures to assure that they are consistent with the unique institutional structure of these authorities, as well as with Department of Community Affairs' oversight. The department will modify its rules as necessary to achieve this consistency.

Long-Term Implementation Strategy: The long-term strategy is continued progress in marrying the department's economic and environmental responsibilities to encourage the plan's policy goals, especially regionalization, source reduction and recycling efforts. In particular, review of service agreements for resource recovery services will incorporate consideration of policy goals.

C. STATUS OF CURRENT PROGRAM

Since New Jersey's last State Plan Update was formally adopted in 1986, tremendous changes have taken place in the development and implementation of the statewide solid waste system. The primary emphasis of solid waste policy has shifted to source reduction and recycling and away from sole reliance upon disposal capacity planning. Mandatory recycling has been legislatively enacted and aggressively implemented by the citizenry. Exports of solid waste to other states peaked in 1988 and then began to significantly decline, and 14 major new disposal facilities have commenced operation, providing a significant increase in disposal capacity. The following chapter briefly summarizes the current status of New Jersey's solid waste program from both a statewide and county-by-county perspective.

The chapter is divided into five sections. The first describes solid waste generation and composition in the state, including an overview of the way that data is collected in New Jersey and used as the basis of statewide and county solid waste planning and program implementation. The second section is a detailed statewide disposal capacity analysis that includes a description of the current status of the system and a capacity analysis in the year 1995. This capacity analysis is the basis for New Jersey's new policy of achieving statewide self-sufficiency within the next seven years. The third section provides county-by-county summaries of current disposal practices, recycling rates, designated recyclable materials, future facility plans and associated timeframes, and plan deficiencies. The fourth and fifth sections describe, respectively, the financial assistance programs available for solid waste activities and various research projects sponsored by the state.

As previously noted, preliminary data for 1991 revealed a statewide generation rate of 14.7 million tons, 7.6 million (52%) of which was recycled and 7.1 million or (48%) of which was disposed of. Of the total 14.7 million tons generated, 4.4 million (30%) was disposed of in-state and 2.7 million (18%) disposed of out-of-state. From these figures the department's commitment to self-sufficiency is evident as a 33% reduction in out-of-state exports has occurred over the past three years. While the 1991 data is encouraging from both a recycling and waste export perspective, the recycling tonnage grants portion of the data base has not yet undergone the final stage of municipal review of DEPE disallowed tonnage. This final auditing activity should be completed by the end of January 1993 and is not anticipated to materially alter the summary figures outlined above. However, due to the fact that detailed analysis of the entire 1991 data base has yet to be completed, the State Plan Update and the chapter which follows rely primarily upon 1990 figures as further outlined below.

1. Solid Waste Generation and Composition

- a. **Total Waste Stream Approach:** For over a decade, the counties have been responsible for planning for the entire nonhazardous waste stream pursuant to the New Jersey Solid Waste Management Act. Traditionally, the statewide planning process was disposal capacity based, and information necessary to ascertain disposal trends was readily available. However, as the state moves closer to a system of disposal self-sufficiency, the

planning focus has shifted to source reduction and recycling in an effort to reduce the overall amount of solid waste for which disposal facilities must be planned. This redefinition and expansion of the "total waste stream" approach requires a commitment to quantify municipal, commercial, institutional and industrial recycling and solid waste disposal activities. Thus, the DEPE has expanded its recycling database to include certain industrial commodities (scrap metal, asphalt, concrete and junked autos) that were often omitted from municipal tonnage reporting because those materials are collected and recycled by private industry in a short timeframe. This more comprehensive accounting system is necessary because if county governments are responsible for planning for the total waste stream, then they must be capable of quantifying generation trends.

Critics have charged that the task force approach of expanding the recycling database to include industrial activities artificially increases the recycling rates. However, New Jersey's statutory planning process has involved, from its inception, regulated control of the entire waste stream; other state and local governments plan for the management of only the municipal waste stream, leaving industrial solid waste management to private generators. Given New Jersey's statutory mandate to plan for and manage the entire waste stream, the addition of industrial survey information of private recycling activities was necessary and appropriate in developing a total waste stream database.

Moreover, the inclusion of industrial materials in the database cannot artificially increase the recycling rate since total recycling and municipal solid waste recycling are counted separately. As noted throughout this document, New Jersey's goal is to attain a 50% recycling rate for the municipal waste stream and a 60% rate for the total waste stream by December 31, 1995. The 50% municipal waste stream goal includes traditional commodities such as all paper grades, glass, plastic, aluminum cans, tin and bi-metal cans, yard waste and food waste; industrial materials such as junked autos, asphalt, concrete, masonry, heavy iron and other bulky materials are excluded. Thus, New Jersey's documented municipal waste stream recycling rate of 34% in calendar year 1990 for the traditional commodities noted above stands as a testament to the authenticity of the data system, the legitimacy of the goals, and the commitment of New Jersey's residents to the recycling ethic. Further, the fact that all 567 towns have mandatory ordinances in place; 515 have curbside pick-up of recyclables; all collect newspaper, glass and aluminum cans; 384 additionally collect plastic containers; 366 additionally collect tin and bi-metal cans, and 208 recycle corrugated cardboard dispels any misconceptions or false allegations that New Jersey's recycling activities are being inflated.

- b. **Existing Data System:** Factual data is of critical importance to solid waste planning. It serves as the foundation of source reduction, recycling and disposal capacity planning, as well as a

basis to negotiate regional agreements between counties. Since 1987, the two basic elements of New Jersey's data management system have been the waste origin/waste disposal (O & D) reporting system and the municipal tonnage grants program. As a result of the emergency solid waste assessment task force initiative in 1990, a third data source, industrial surveys was added for the reasons discussed in 1.a. above. These basic reporting systems are summarized below.

- (1) **O & D Reporting:** New Jersey regulations (N.J.A.C. 7:26-2.13) have established an O & D data reporting system requiring the completion and submittal of forms for each truckload of solid waste brought to a transfer or disposal facility in the state. These forms contain information on the amount of waste (i.e. measured in tons if scales exist, or in cubic yards if they do not), the type of waste (i.e. municipal, industrial, bulky, etc.) and waste origin by municipality. Furthermore, O & D data forms are collected on a daily basis by facility operators and summarized in monthly reports submitted to the DEPE. The foundation of the O & D system is waste flow rules set forth in the New Jersey regulations (N.J.A.C. 7:26-6 et seq.). Under this system, solid waste types 10 (municipal, commercial and institutional), 13 (bulky), 23 (vegetative), 25 (animal and food processing) and 27 (dry-industrial) from all 567 New Jersey municipalities are directed to specifically identified transfer and disposal facilities located in each county. (See pages 100 - 107 for more detail on waste flow.)

By regulation, transfer and disposal facilities that receive O & D forms must maintain a daily log of solid waste received. This log serves as a waste flow enforcement tool, as well as a data base foundation. The monthly reports submitted to the department following tabulation of the daily log information, in turn, is compiled into annual reports for the state. This information is shared with county officials for planning purposes. It should also be noted that all major transfer and disposal facilities operating within New Jersey have computerized scales and data recording systems.

- (2) **Tonnage Grants Program:** Another source of data utilized by the DEPE to establish waste generation and recycling figures and projections is the municipal tonnage grants program established pursuant to the Mandatory Source Separation and Recycling Act of 1987. Under this program, municipalities are entitled to an annual grant equal to a portion of the recycling tax monies (\$1.50 per ton collected at landfills and transfer stations) based on the annual documented amount of waste recycled. Each year, municipalities apply for these funds and submit receipts and other documentation to verify, for each material, the

quantities that were recycled. Credit is only given following a careful review by the department of tonnage receipts from vendors or materials markets. The DEPE compiles this recycling data to ascertain overall recycling results in the state and on a county-by-county basis.

- (3) **Industry Surveys:** In developing the task force report, the task force analyzed the DEPE's existing data composed of O & D and tonnage grants information. This analysis revealed that certain recycling and residue disposal activities in the state were not consistently captured within the tonnage grants or O & D system. Certain industrial materials, such as scrap metals, concrete, asphalt, tires and junked autos represent commodities that are often remarketed quickly and were not being counted in the database or comprehensively addressed in the planning process. The oversight of these materials was deemed to be inconsistent with the total solid waste stream management approach of the department.

To address this deficiency, the department has revised its data collection system to survey large generators/recyclers of the above noted materials on an annual basis. Actual tonnage of scrap metal, concrete, asphalt, tires and junked autos generated in New Jersey and recycled, as well as associated residue requiring disposal, is added to the annual figures reported under the O & D and tonnage grants program to develop a more accurate solid waste database for the state. Past surveys have involved the DOT which routinely reuses large quantities of asphalt on a very short-term basis in road construction; the major concrete recyclers in the state; major tire recyclers; as well as the large auto shredders located in the state. Since these materials have fallen outside of New Jersey's traditional data reporting system, origin of generation information by municipality and county is not available. Therefore, the gross tonnages of recyclables and residue from these materials are spread across the twenty-one counties proportionally on the basis of population.

- c. **Specific Methodology:** Sections C.1.a. & b. above outline the foundation and rationale behind New Jersey's data management system. The following is the specific process used (and planned to be used) to formulate existing generation, disposal and recycling rates and to identify individual material target rates for attainment statewide of the 50% municipal and 60% total waste stream recycling goals by December 31, 1995.

The department fully acknowledges that there are limitations to the data. For example, it is known that unauthorized waste flows are entering New Jersey disposal facilities from out-of-state sources, particularly New York City. At the same time, it is also known that volumes of material are being directly hauled to

out-of-state disposal facilities in contravention of New Jersey's Interdistrict and Intradistrict Solid Waste Flow Rules. Due to the difficulty in documenting these unauthorized activities, no attempt was historically made to quantify the balance of incoming and outgoing flows. In the future, as the DEPE enters enforcement agreements with other state environmental agencies, attempts will be made to document unauthorized activities and to institute proper enforcement actions. Efforts in this regard are already underway with officials from the Indiana Department of Environmental Management and the Ohio Environmental Protection Agency. Estimates may also be viewed as limited since they are presented exclusively on a per weight basis, and not a per volume basis. Weight based units of measurement have been used here since the vast majority of statistical reporting in New Jersey is done after the weighing of loads on scales at landfill, resource recovery, transfer station and recycling facilities. Drawing upon the weight based data, any future facility sizing estimates for landfill development would require appropriate conversion to cubic yards.

Despite these limitations, the department believes that the methodology employed annually to establish baseline generation and waste stream composition is sound and represents, based upon the level of documentation and statistical reporting in New Jersey, one of the most detailed characterizations of the total waste stream of any state in the nation. At the same time, the department, in recognition of the extreme importance of accurate data collection, reporting and management, acknowledges that continual review and modification of the existing system may be necessary to achieve the most accurate database figures. Section C.1.d. below summarizes some of the data reform measures under development or actively being investigated. Further, the department is open to public suggestions as to how the data management system can be improved.

- (1) **Definitions and Methodology:** At the outset of this presentation, it is critical to define the term "generation" and to qualify the scope of the waste stream requiring attention. Generation is equal to the total amount of solid waste disposed of from each county in the state, plus the total material recycled from each county. From a management perspective, this definition identifies the statewide responsibility to review current practices and to develop long-term public policies that address both the recycling and disposal options for individual materials. The scope of data analysis in New Jersey encompasses the entire waste stream, considering wastes generated by municipal, commercial, institutional and industrial establishments.

Initially, monthly reports under the O & D reporting system are tabulated for the preceding calendar year on a county-by-county basis. Tonnage grants recycling data is

then compiled into the same table and added to equal a preliminary estimate of calendar year generation. The initial work table is then expanded to add the preceding calendar year final figures for generation, recycling and disposal by county to afford opportunity for comparison. Once the initial work table has been completed, department staff contact, and in most cases meet with solid waste officials in each of the 21 counties to discuss the preliminary figures, correct errors as appropriate, and reach consensus on final reported figures.

Once this process is completed, a summary table of "baseline generation" is prepared for the state. The data provided in Table 13 summarizes total disposal, recycling and generation by county, and includes breakdowns for the municipal/vegetative waste stream and the bulky/industrial waste stream, providing a basis for analyzing the waste stream to determine how the 50% municipal waste stream and 60% total waste stream recycling goals will be met. For presentation purposes, the data has been assembled in Table 13, and are described as "Solid Waste Baseline 1992 Generation Projections." This table is the most accurate and up-to-date generation data per county as of January 1, 1992 for the purposes of establishing baseline information to enable statewide analysis and projection. Note that this table represents the final calendar year 1990 statewide generation figures by county.

The waste type breakdowns for municipal/vegetative and bulky/industrial wastes were calculated following the completion of the "Total Waste Stream" column on the right-hand side of Table 13. Composite average percentages were applied separately to the recycling and disposal generation components. For the disposal calculations, breakdowns of the five solid waste categories covered under the O & D reporting system (Types 10, 13, 23, 25 and 27) were taken from DEPE Monthly Disposal Reports for calendar years 1985 through 1990. Composite average six-year percentages by waste type and county were calculated and multiplied by the total waste disposed of by county to obtain a representative split between the municipal/vegetative (Types 10 and 23) and bulky/industrial (Types 13, 25 and 27) waste streams. Waste type split percentages by county were then multiplied by the total 1990 disposal rate of the county to fill in the remaining disposal columns. For the recycling calculations, 1985 through 1990 tonnage grants data were reviewed and similarly divided into the municipal/vegetative and bulky/industrial categories. While tonnage grants data are not reported by waste types 10, 13, 23, 25 and 27, it was assumed that all ferrous scrap,

non-ferrous metal, auto scrap, asphalt and concrete, automotive batteries, tires and rubber, and wood chips were appropriately classified in the bulky/industrial sector.

All other materials were included under the municipal/vegetative sector. Once again, composite average six-year percentages for these two categories were calculated from tonnage grants reports and multiplied by the total 1990 recycling figure for each county to obtain the component split reflected in Table 13. The state population figures set forth in Table 13 were derived from the 1990 census. Per capita waste generation figures (pounds of waste per person) were calculated by dividing these population figures into actual generation figures for 1990.

Following the completion of Table 13, United States census population projections, as well as estimates of per capita waste generation trends, were used to forecast solid waste generation from 1990-2010. Tables 14A, 14B and 14C represent the three alternative scenarios considered. In each case, population statistics from the 1990 census have been used. These population figures were applied uniformly within the generation estimate columns under each of the three scenarios.

Per capita generation assumptions have been applied differently under each scenario. Table 14A represents an assumption of no change in per capita generation throughout the twenty-year study period. Table 14B assumes the achievement of a 10% reduction in per capita generation by the year 2000 through aggressive source reduction programs. The per capita assumptions remain constant thereafter to the year 2010. Finally, Table 14C considers a 3.6% per capita increase from 1990-1995; a 4.8% increase for years 1995-2000; and an 11.4% increase for years 2000-2010. This scenario also assumes that no advances in source reduction programs will be achieved. The Table 14C assumptions are based upon generation projections in the USEPA document; (EPA/530-SW-90-042A, June 1990) "Characterization of Municipal Solid Waste in the United States: 1990 Update Executive Summary." (See document pages ES-3, ES-9 and ES-13.)

As noted above, Table 13 summarizes baseline data by county and for the state. The table combines reported and adjusted O & D information, documented recycling tonnage grants data and additional private recycling and residue disposal that is not reflected in either the O & D

TABLE 13
SOLID WASTE BASELINE 1992 GENERATION PROJECTIONS (Thousands of tons/year)

		(Lbs)	Municipal & Vegetative Waste Breakdown			Bulky & Industrial Waste Breakdown			Total Waste Stream		
	(1)	(2)	(Types 10 & 23 only)			(Types 13,25 & 27 only)			(All Types Combined)		
	1990	Per Capita	(3)	(4)	(5)	(3)	(4)	(5)	(6)	(7)	(8)
	Census	Generation									
County	Population	Rate	Generated	Recycled	Disposed	Generated	Recycled	Disposed	Generated	Recycled	Disposed
Atlantic (9)	224	17	308	78	230	367	263	104	675	341	334
Bergen (10)	825	10	857	413	444	596	326	270	1,453	739	714
Burlington(11)	395	11	443	143	301	317	189	128	760	331	429
Camden (12)	503	9	403	120	283	429	259	170	832	378	453
Cape May (13)	95	16	119	35	84	152	108	44	271	143	129
Cumberland(14)	138	12	164	43	121	127	89	38	291	132	159
Essex (15)	778	10	704	214	490	764	408	356	1,469	623	846
Gloucester(16)	230	11	271	121	151	184	113	71	455	234	222
Hudson (17)	553	9	450	117	333	462	261	201	913	378	534
Hunterdon (18)	108	7	72	18	54	64	32	32	137	50	87
Mercer (19)	326	16	344	108	236	590	463	127	934	572	362
Middlesex (20)	672	14	757	258	498	903	541	362	1,659	799	860
Monmouth (21)	553	9	513	209	304	445	223	222	958	431	526
Morris (22)	421	9	415	169	245	290	155	135	704	324	380
Ocean (23)	433	11	448	156	293	400	254	147	848	409	439
Passaic (24)	453	9	404	107	297	346	179	166	750	286	464
Salem (25)	65	16	65	8	57	128	39	89	193	47	146
Somerset (26)	240	9	198	59	139	176	86	90	374	145	229
Sussex (27)	131	8	83	22	62	119	81	38	202	103	99
Union (28)	494	8	417	131	285	328	176	152	744	307	437
Warren (29)	92	8	78	9	69	57	30	27	134	39	96
TOTALS	7,729	10	7,513	2,538	4,975	7,244	4,274	2,970	14,757	6,812	7,945

- (1) Source: U.S. Dept. of Commerce Census of Population and Housing, 1990.
- (2) Calculated by multiplying Total Waste Generation by 2000 pounds, dividing by 365 days, divided by population.
- (3) Calculated by adding the waste recycled and disposed figures for the respective waste type breakdowns.
- (4) Calculated from the Recycling Tonnage Grant Program report for 1990, as supplemented by private sector recycling residue tonnages which were spread proportionately across the counties on the basis of population using 1990 state estimates.
- (5) Calculated from Origin & Disposal Reports for 1985, 1986, 1987, 1988, 1989 and 1990; a composite average of percentages of the referenced waste type categories were multiplied by Total Disposed per waste type and multiplied by Total Disposed.
- (6) Calculated by adding Municipal & Vegetative Waste and Bulky & Industrial Waste Recycled and Disposed.
- (7) Calculated by adding Municipal and Vegetative Recycled to Bulky and Industrial Recycled.
- (8) Calculated by adding Municipal and Vegetative Disposed to Bulky and Industrial Disposed.
- (9) Based on ACUA county disposal estimate.
- (10) Based on BCUA county generation estimate minus documented recycling.
- (11) 1990 Origin & Disposal Report data.
- (12) Based on Camden County per capita estimate.
- (13) Corrected 1990 Origin & Disposal data following coordination with county.
- (14) 1990 Origin & Disposal report data.
- (15) Based on Essex County Division of Solid Waste Management disposal estimate.
- (16) 1990 Origin and Disposal Report data.
- (17) Based on HCIA disposal estimate.
- (18) Corrected 1990 Origin & Disposal data following coordination with county.
- (19) Corrected 1990 Origin & Disposal data following coordination with county.
- (20) Corrected 1990 Origin & Disposal data following coordination with county.
- (21) Corrected 1990 Origin & Disposal data following coordination with county.
- (22) Corrected 1990 Origin & Disposal data following coordination with county.
- (23) Corrected 1990 Origin & Disposal data following coordination with county.
- (24) Corrected 1990 Origin & Disposal data following coordination with county.
- (25) 1990 Origin & Disposal Report data.
- (26) 1990 Origin & Disposal Report data.
- (27) Corrected 1990 Origin & Disposal data following coordination with county.
- (28) Based on Union County disposal estimate.
- (29) 1990 Origin & Disposal Report data.

or tonnage grant systems. As noted earlier, these latter estimates have been developed principally through contacts with private industry, primarily in the area of metals and construction/demolition debris recycling for such materials as junked autos, tires, car batteries and heavy ferrous metals (steel beams, girders, etc.). These additional tonnages, which were approximately two million tons for 1990, were added into the waste stream reflected in Table 13 by apportioning the estimated amount by county on the basis of population. It was assumed for each of the additional materials that, due to the nature of their generation, they would fall within the bulky/industrial segment of the waste stream. Therefore, these materials have been added only to this part of Table 13.

Based upon 1990 population figures, per capita waste generation rates (pounds of solid waste generated per person per day) were also calculated for each county. On a statewide basis, the average per capita generation rate is equal to ten pounds per person per day. This figure would, at first glance, appear high when compared to national averages. For example, the USEPA's report, "Characterization of Municipal Solid Waste in the United States: 1990 Update Executive Summary," estimates that, in 1988, 4.0 pounds per person per day of municipal solid wastes were generated. However, it is important to note that these national estimates have not historically considered construction and demolition debris, automobile bodies and other bulky wastes, as well as certain nonhazardous industrial wastes. Since we estimate that over 50% of the total New Jersey waste stream is made up of bulky/industrial waste, the statewide per capita figure of ten pounds/person/day does not appear inconsistent with national estimates. In addition, the density of industrial land uses in New Jersey, relatively high per capita income, and huge influx of summer vacationers may also contribute to higher waste generation rates on a per capita basis. Finally, it should be noted that New Jersey's data is primarily based upon actual scales data from transfer and disposal facilities. Therefore, this data may be more accurate than other national projections using alternative estimation methodologies;

- (2) **Twenty-Year Projections:** As noted earlier, generation projections over a 20-year period were developed using 1990 census figures and three different assumptions relating to per capita generation rates. Tables 14A, 14B and 14C summarize these basic per capita assumptions of no change over time; a 10% decrease in per capita generation from 1990-2000 through aggressive source reduction initiatives, followed by a constant per capita rate from 2000-2010; and a per capita increase scenario which

assumes (based on USEPA projections) a 3.6% increase from 1990-1995, a 4.8% increase from 1995-2000 and an 11.4% increase from 2000-2010.

Table 14A represents the "no per capita increase" generation scenario. For the purposes of calculating this table, as well as Tables 14B and 14C, the initial baseline 1990 per capita rates were kept uniform. For all cases, the statewide per capita rates found within Table 13 were used. With no per capita change, these data indicate that solid waste generation will increase by approximately 9% from 1990-2010. In gross numbers, New Jersey will be generating between 16.1 million tons by the year 2000 and 17 million tons by 2010.

Under the Table 14B scenario, source reduction is anticipated to result in a 2% decrease in generation from 1990 - 2000. Further, by 2010, generation would just exceed 15 million tons. Overall, the aggressive source reduction strategy reflected in this scenario would result in a slight 3.% increase in solid waste generation during the 20-year period from 1990 - 2010.

Finally, Table 14C uses published national per capita generation figures to project additional increases over time based on historical trends. Once again, the source of these estimates is USEPA's June 1990 report entitled "Characterization of Municipal Solid Waste in the United States: 1990 Update Executive Summary." It is somewhat difficult to identify exactly what segment of the waste stream is considered by USEPA in its definition of "Municipal Solid Waste." Therefore, the percentage increases set forth by USEPA were applied to the total New Jersey solid waste stream. From these figures, solid waste generation would increase from the current rate of 14.7 million tons to approximately 17.4 million tons in the year 2000 and 20.6 million tons by 2010. Therefore, with increasing population and per capita generation and no advances in source reduction, New Jersey could expect a sizable increase of 39% in total solid waste generation by 2010.

The per capita decrease scenario embodied within Table 14B clearly demonstrates the significant impact that a 10% source reduction goal could have upon solid waste generation. Conversely, Table 14C identifies the dramatic increases in generation rates that may impact county and statewide planning should historical national trends be applicable to New Jersey over the next 20 years.

TABLE 14A

STATE POPULATION AND GENERATION ESTIMATES: NO PER CAPITA CHANGE SCENARIO: 1990-2010											
				POPULATION				(3)	GENERATION		
		(1)	(2)	(2)	(2)	(2)					
County	Per Capita	1990	1995	2000	2005	2010	1990	1995	2000	2005	2010
Atlantic	17	224	243	263	280	297	675	732	793	844	895
Bergen	10	825	834	850	865	879	1,453	1,469	1,497	1,523	1,548
Burlington	11	395	422	447	465	480	760	812	860	895	924
Camden	9	503	528	551	573	590	832	873	911	948	976
Cape May	16	95	104	113	118	122	271	297	322	337	348
Cumberland	12	138	144	149	153	155	291	304	314	323	327
Essex	10	778	775	779	781	783	1,469	1,463	1,471	1,475	1,478
Gloucester	11	230	242	254	263	271	455	479	502	520	536
Hudson	9	553	555	563	566	571	913	916	930	934	943
Hunterdon	7	108	117	127	132	138	137	148	161	167	175
Mercer	16	326	350	368	383	396	934	1,003	1,054	1,097	1,135
Middlesex	14	672	715	753	782	804	1,659	1,765	1,859	1,931	1,985
Monmouth	9	553	591	626	652	675	958	1,024	1,084	1,130	1,169
Morris	9	421	435	449	463	475	704	727	751	774	794
Ocean	11	433	473	508	540	573	848	926	995	1,058	1,122
Passaic	9	453	471	486	499	507	750	780	805	826	839
Salem	16	65	66	67	68	69	193	196	199	202	205
Somerset	9	240	258	278	291	301	374	402	433	453	469
Sussex	8	131	141	151	159	169	202	217	233	245	261
Union	8	494	493	497	498	498	744	742	749	750	750
Warren	8	92	94	97	99	101	134	137	141	144	147
TOTALS	10	7,729	8,051	8,376	8,630	8,854	14,756	15,414	16,064	16,576	17,026
(1) Source - U.S. Bureau of the Census - 1990											
(2) Source: New Jersey Department of Labor Population Projections 1995-2010: Economic Demographic Model											
(3) All generation estimates derived exclusively from population trends. Throughout the 20 year timeframe, per capita											
generation for each county was assumed to remain constant and no source reduction was considered.											

TABLE 14B

STATE POPULATION AND GENERATION ESTIMATES: PER CAPITA DECREASE SCENARIO: 1990-2010											
				POPULATION				(3) GENERATION			
	1990	(1)	(2)	(2)	(2)	(2)					
County	Per Capita	1990	1995	2000	2005	2010	1990	1995	2000	2005	2010
Atlantic	17	224	243	263	280	297	675	696	713	759	805
Bergen	10	825	834	850	865	879	1,453	1,395	1,347	1,371	1,393
Burlington	11	395	422	447	465	480	760	771	774	805	831
Camden	9	503	528	551	573	590	832	830	820	853	878
Cape May	16	95	104	113	118	122	271	282	290	303	313
Cumberland	12	138	144	149	153	155	291	288	283	290	294
Essex	10	778	775	779	781	783	1,469	1,390	1,324	1,327	1,331
Gloucester	11	230	242	254	263	271	455	455	452	468	482
Hudson	9	553	555	563	566	571	913	870	837	841	848
Hunterdon	7	108	117	127	132	138	137	141	145	151	158
Mercer	16	326	350	368	383	396	934	953	949	988	1,021
Middlesex	14	672	715	753	782	804	1,659	1,677	1,673	1,738	1,786
Monmouth	9	553	591	626	652	675	958	973	976	1,017	1,052
Morris	9	421	435	449	463	475	704	691	676	697	715
Ocean	11	433	473	508	540	573	848	880	895	952	1,010
Passaic	9	453	471	486	499	507	750	741	724	744	755
Salem	16	65	66	67	68	69	193	186	179	182	184
Somerset	9	240	258	278	291	301	374	382	390	408	422
Sussex	8	131	141	151	159	169	202	207	210	221	235
Union	8	494	493	497	498	498	744	705	674	675	675
Warren	8	92	94	97	99	101	134	130	127	130	132
TOTALS	10	7,729	8,051	8,376	8,630	8,854	14,756	14,643	14,458	14,918	15,323
(1) Source: New Jersey Department of Labor Population Projections 1990-2010: Economic Demographic Model											
(2) Source: County population estimates as submitted by District Solid Waste Coordinators.											
(3) Estimates factor in 10% source reduction during 1991 thru 2000.											
Per capita remains constant (at year 2000 levels) during 2001 thru 2010.											

TABLE 14C

STATE POPULATION AND GENERATION ESTIMATES: PER CAPITA INCREASE SCENARIO: 1990-2010											
				POPULATION				(3) GENERATION			
	1990	(1)	(2)	(2)	(2)	(2)					
County	Per Capita	1990	1995	2000	2005	2010	1990	1995	2000	2005	2010
Atlantic	17	224	243	263	280	297	675	758	860	967	1,081
Bergen	10	825	834	850	865	879	1,453	1,521	1,624	1,747	1,871
Burlington	11	395	422	447	465	480	760	841	933	1,026	1,116
Camden	9	503	528	551	573	590	832	905	989	1,087	1,179
Cape May	16	95	104	113	118	122	271	307	350	386	420
Cumberland	12	138	144	149	153	155	291	314	341	370	395
Essex	10	778	775	779	781	783	1,469	1,516	1,596	1,691	1,786
Gloucester	11	230	242	254	263	271	455	496	545	597	648
Hudson	9	553	555	563	566	571	913	949	1,009	1,071	1,139
Hunterdon	7	108	117	127	132	138	137	154	175	192	212
Mercer	16	326	350	368	383	396	934	1,039	1,144	1,258	1,371
Middlesex	14	672	715	753	782	804	1,659	1,828	2,017	2,214	2,398
Monmouth	9	553	591	626	652	675	958	1,060	1,177	1,295	1,413
Morris	9	421	435	449	463	475	704	753	815	888	960
Ocean	11	433	473	508	540	573	848	959	1,079	1,213	1,356
Passaic	9	453	471	486	499	507	750	808	873	947	1,014
Salem	16	65	66	67	68	69	193	203	216	232	248
Somerset	9	240	258	278	291	301	374	416	470	520	567
Sussex	8	131	141	151	159	169	202	225	253	281	315
Union	8	494	493	497	498	498	744	769	812	860	906
Warren	8	92	94	97	99	101	134	142	153	165	178
TOTALS	10	7,729	8,051	8,376	8,630	8,854	14,756	15,964	17,430	19,006	20,572
(1) Source: New Jersey Department of Labor Population Projections 1990-2010: Economic Demographic Model											
(2) Source: County population estimates as submitted by District Solid Waste Coordinators.											
(3) Estimates factor in a 3.6% per capita increase from 1990 to 1995; a 4.8% per capita increase from 1995 to 2000; and an 11.4% per capita increase from 2000 to 2010. These estimates were derived from the Executive Summary of a June 13, 1990 USEPA study entitled "Characterization of Municipal Solid Waste in the United States: 1990 Update".											

- (3) **Waste Composition Analysis:** In addition to defining the amount of waste generated within the state, it is necessary to characterize the waste stream by its various components. This analysis is necessary to gain a comprehensive understanding of the amounts and types of waste material and to establish a foundation for assessing current recycling and disposal activity and planning for future recycling and disposal options. A detailed 25 component breakdown of the waste stream was completed by the governor's task force in 1990. This breakdown serves as the basis for the statewide recycling projection format used for calendar years 1988, 1989 and 1990. The methodology used to subdivide the waste stream is further outlined below.

For the purposes of waste composition analysis, the governor's task force defined the waste stream to include those materials that are classified pursuant to N.J.A.C. 7:26-2.13(g) as ID-10, municipal waste (including household, commercial and institutional), ID-13 bulky waste, ID-23 vegetative waste, ID-25 food processing waste, and ID-27 dry industrial waste.

From this defined waste stream, 25 separate material types were evaluated to determine total available tonnage and percentage composition in the waste stream. Table 15 provides this information by material type. The 25 identified materials include the major categories of yard waste, food waste, paper, plastic, glass, metals, wood, tires, asphalt, concrete, masonry and other waste materials. Moreover, consistent with the methodology used in Table 13, these 25 components were further segregated into two broad categories: municipal/vegetative waste and bulky/industrial waste.

Three primary sources of information were utilized in distributing the waste stream among its various component fractions. These data sources include the following:

1. **County waste characterization/composition studies** for the counties of:

Atlantic	Hudson	Ocean
Bergen	Hunterdon	Passaic
Burlington	Mercer	Somerset
Cumberland	Middlesex	Sussex
Essex	Monmouth	Union
Gloucester	Morris	Warren

2. **"Export Markets For Post Consumer Secondary Markets"** prepared by Franklin Associates for the Port Authority of New York and New Jersey, 1989;
3. **Industry and Trade Information** obtained directly from private sector sources.

The eighteen county studies identified above provided information concerning percentage distribution of materials throughout the waste stream. Where available, the department tried to obtain waste characterization data representing the entire, or composite, waste stream. Eight counties provided information at that level of detail. Nine counties analyzed only the major waste type (ID-10), including waste from municipal, commercial and institutional sources. One county provided a hybrid analysis that analyzed their entire waste stream with the exception of white goods and other nonresource recovery processibles. A bibliography of these 18 county composition studies has been included within Table 16 which, due to its size, takes up the six pages following Table 15.

The Franklin Associates study analyzed the composition of the waste stream by developing a model based on a product or materials flow method. This methodology employs information documenting production and consumption of materials that enter the solid waste stream.

Industry and trade association information was also collected for use in this study. Included were data for material recovery rates, and unit production and unit sales within the state. Industry data was used primarily to quantify existing generation and recycling rates for the noncontainer metals categories and the asphalt, concrete and masonry category.

To compare the various sources of information, Table 16, entitled "Solid Waste Composition Analysis: County Comparisons," was created. This table summarizes every classification category identified by the counties or Franklin Associates, and presents the corresponding compositional percentages in the waste stream. Footnoted in the table is information concerning the date and number of sorts, the sample type or location, and the waste stream fraction (composite or ID-10). As evidenced in this table, for some materials there is little variation within the percentages provided. In most of these cases, an estimated percentage was obtained for a material by discarding the outliers and then identifying the median value from the remaining percentages. In cases where there were not enough data sets to consider taking a median value, either the Franklin Associates percentage or data obtained from industry sources was used.

Where representative percentages of the waste stream were selected from county composition studies or Franklin Associates data, total tonnages by material were calculated. This task was accomplished by determining the waste category the individual material was generated within and multiplying the compositional fraction by the municipal/vegetative or bulky/industrial generation figures presented within Table 13. For the categories where industry and trade information was used, total tonnage rates were obtained and treated as "add-on" tonnages not historically

TABLE 15 - STATEWIDE RECYCLING PROJECTIONS: 5 YEAR GOAL (Thousands of Tons/Year)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Total %	Total	Current Reported Status:		Total	Projected 1995 Goal		1995 Residue	
	Waste	1990			1995				
Materials	Stream	Generation	Rate %	Tonnage	Generation	Rate %	Tonnage	Tonnage	% Total
Yard Waste	10%	1,488	53%	782	1,554	90%	1,398	155	3%
Food Waste	5%	714	10%	71	746	10%	75	671	12%
Newspapers	5%	751	68%	510	785	85%	667	118	2%
Corrugated	6%	850	61%	517	887	85%	754	133	2%
Office Paper	3%	376	68%	256	392	85%	334	59	1%
Other Paper	11%	1,555	3%	41	1,624	20%	325	1300	24%
Plastic Containers	1%	150	7%	10	157	60%	94	63	1%
Other Plastic Packaging	1%	157	0%	0	164	25%	41	123	2%
Other Plastic Scrap	4%	521	1%	6	544	10%	54	490	9%
Glass Containers (10)	3%	383	68%	260	400	90%	360	40	1%
Other Glass	1%	83	0%	0	86	0%	0	86	2%
Aluminum Cans (11)	0%	45	69%	31	47	90%	42	5	0%
Foils & Closures	0%	23	0%	0	24	0%	0	24	0%
Other Aluminum Scrap (12)	1%	81	74%	60	85	80%	68	17	0%
Vehicular Batteries	0%	42	93%	39	44	95%	42	2	0%
Other Non-Ferrous Scrap	1%	80	76%	61	84	95%	79	4	0%
Tin & BiMetal Cans	1%	128	22%	28	133	85%	113	20	0%
White Goods & Sheet Iron	3%	425	73%	311	444	90%	400	44	1%
Junked Autos (13)	4%	625	99%	618	653	99%	646	7	0%
Heavy Iron	7%	1,037	99%	1,026	1,083	99%	1,072	11	0%
Wood Waste	8%	1,225	16%	202	1,280	75%	960	320	6%
Asphalt, Concrete & Masonry	15%	2,282	83%	1,885	2,384	90%	2,145	238	4%
Tires	1%	148	17%	25	155	30%	46	108	2%
Other Municipal & Vegetative	4%	661	4%	25	691	10%	69	622	11%
Other Bulky & Construct/Demo	6%	929	5%	48	970	10%	97	873	16%
TOTALS	100%	14,757	46%	6,812	15,414	64%	9,882	5,532	100%

Footnotes:

- (1) Calculated by dividing the 1990 generation tonnage for each material by the total tonnage figure of 14,757.
- (2) Tonnages derived following the estimation of the percent of the waste stream made up by each material. These percentage estimates were taken from national figures prepared by Franklin Associates LTD. from the report entitled "Export Markets for Post Consumer Secondary materials", from values of the 18 waste characterization studies done by New Jersey counties or from the values of four bulky waste analysis studies performed by New Jersey counties. These percentages were then multiplied by the municipal and/or bulky waste stream totals from the Baseline 1992 Generation Table. In some cases tonnage estimates were obtained directly from industry sources.
- (3) Current recycling rates, which represent documented activity for calendar year 1990, were calculated by dividing the reported tonnage figure by the Total 1992 generation estimates of each material.
- (4) Current tonnages were, in most cases, actual documented figures from the Recycling Tonnage Grant Program for 1990. In a few cases, particularly with glass containers, the metals categories, and asphalt, concrete and masonry, numbers were received directly from industry sources - documenting activity during 1989.
- (5) 1995 generation estimated based exclusively on projected overall population increases of 4.7% by county from the New Jersey Department of Labor Economic Demographic model. No per capita change or source reduction was assumed.
- (6) Projected 1995 recycling percentages represent the goals or targets established by material by the Emergency Solid Waste Assessment Task Force and presented within their August 6, 1990 Final Report.
- (7) Projected 1995 tonnage calculated by multiplying the estimated recycling percentage of the Total 1995 Generation figure by material.
- (8) 1995 residue calculated by subtracting the projected 1995 recycling tonnage from the 1995 total generation figure by material.
- (9) This column represents an estimate of the percentage of 1995 generation residue made up by each material.
- (10) Glass containers figures derived primarily from the Glass Packaging Institute container generation estimates for 1989.
- (11) Based on ALCOA generation estimate of 11 lbs. per capita per year.
- (12) Based on NJ Auto and Metal Recycling Association generation estimate.
- (13) Junked Autos recycling rates are exclusive of shredder fluff.

**TABLE 16: ATLANTIC - MERCER
SOLID WASTE COMPOSITION ANALYSIS: COUNTY COMPARISONS (%)**

MAJOR COMPONENT	SUB COMPONENT	1 ATL	2 BER	3 BUR	4 CUM	5 ESS	6 GLO	7 HUD	8 HUN	9 MER
PAPER		44.26	36.00	44.15	41.37	23.33	42.95	27.66	40.30	42.60
	Newspaper	9.61	9.00	8.70	6.82	5.97	8.83	38.51		8.50
	Corrugated	3.76	12.00	6.83	6.36	17.36		9.49		7.20
	Magazines							3.36		
	Office Paper				1.33			2.86		
	Mixed/Other	30.89	15.00	28.62	26.86		34.12	3.44		26.90
GLASS		9.80	6.00	9.66	8.18	6.83	10.85	10.17	10.10	5.40
	Flint							4.50		
	Amber							2.25		
	Emerald							2.44		
	Flat/Mixed							0.27		
	Recyclable									
	Other							0.71		
METAL		5.34	8.00	7.06	5.92	6.38	4.13	8.93	7.50	5.00
	White							0.11		
	Other									0.20
	FERROUS	3.54		5.53		5.25	3.59			3.50
	Food Cans				3.05			3.02		
	Other Scrap							3.37		
	NON FERROUS	0.36		1.53						
	Aluminum	1.44				1.13	0.47	2.26		1.30
	Alum. Cans				0.60					
	Alum.Foil									
	Alum. Other									
	Other Non-Fer.				2.27		0.07	0.17		
	Recyclable Alum.									

		ATL	BER	BUR	CUM	ESS	GLO	HUD	HUN	MER
PLASTICS		10.90	8.00	6.13	10.60	5.87	5.82	8.22	6.00	5.90
	Film	4.96					3.44	0.80		3.30
	Container				9.51			7.42		
	PET				0.65					0.30
	Rigid Plastic	5.94					2.38			2.30
	HDPE				0.44					
	Recyclable Plastic									
FOOD WASTE		13.43	5.00	11.21	11.73		3.18	10.66	23.20	8.90
YARD WASTE		6.73	14.00	9.63	6.18		15.09	2.86	3.80	9.40
	Leaves							0.82		
	Grass							0.85		
	Brush							1.19		
WOOD		0.85	10.00	2.88	1.43	3.92	1.01	20.70	0.90	9.20
	Pallets							5.19		
	Lumber							2.84		
	Mixed							12.67		
MISC. COMBUSTIBLES		4.53	5.00	4.41	4.73		3.52	7.86	2.90	3.70
	Textiles		3.00	3.26			3.52	5.89	2.90	
	Rubber		2.00					1.97		
	Leather			1.15						
MISC. NON-COMBUSTIBLES		4.49			1.87	5.07	8.09		5.30	10.00
	Dirt/Fines				1.87	5.07			5.30	
	Ceramics	0.12								
	Rock/Brick	0.20					0.17			3.50
	Sweepings	4.17					7.92			6.50
STYROFOAM										
DIAPERS							1.03			
BULKY WASTE							4.36			

		ATL	BER	BUR	CUM	ESS	GLO	HUD	HUN	MER
CONSTR & DEMO.			6.00							
MISC. INORGANICS				4.32	1.73					
ORGANICS					6.25	38.01				
HAZARDOUS WASTE										
AC/WR								2.16		
OTHER/MISC			2.00			10.59		0.79		
SPECIAL WASTES										
TOTALS		100.33	100.00	99.45	99.99	100.00	100.03	100.01	100.00	100.10

FOOTNOTES:

(Date of sorts; Sample type or Sample location; waste stream)

1. Spring/Summer 1987; Municipal samples; Type 10 only.
2. June 1984; Lyndhurst LF; Composite.
3. Composite estimates were prepared by Taylor, Wiseman and Taylor by examining 9 other New Jersey counties.
4. Fall 1989/Winter 1990; Cumberland County LF Complex; Composite.
5. Summer 1980; Composite sample.
6. Fall 1981; Municipal samples; Composite.
7. Winter 1986/Spring, Summer, Fall 1987; HMDC Baler Facility; Composite.
8. Summer 1987; Highpoint LF; Type 10 only.
9. Summer 1986/Winter 1987; Municipal samples; Composite excluding white goods and other nonprocessibles; data projected for 1989.

TABLE 16: MIDDLESEX - WARREN

SOLID WASTE COMPOSITION ANALYSIS: COUNTY COMPARISONS (%)

MAJOR COMPONENT	SUB COMPONENT	10 MID	11 MON	12 MOR	13 OCE	14 PAS	15 SOM	16 SUS	17 UNI	18 WAR	PORT AUTH 1990 MODEL
PAPER		48.00	46.00	45.30	48.70	49.10	46.60	63.70	39.00	49.70	36.80
	Newspaper	5.00	5.70	5.30	13.10	8.20	6.00	5.80	4.90	7.00	6.20
	Corrugated	3.00	5.70	5.30	4.10	8.90	3.70	6.50	7.00	19.50	8.40
	Magazines										3.40
	Office Paper		0.60				1.80			23.20	4.00
	Mixed/Other	40.00	34.00	34.70	31.50	32.00	35.10	51.40	27.10		14.80
GLASS		4.00	2.40	3.80	10.10	6.60	4.00	2.60	2.80	7.20	8.30
	Flint		1.60					1.80			
	Amber		0.30					0.40			
	Emerald		0.30					0.40			
	Flat/Mixed										
	Recyclable	3.00					3.70				7.60
	Other	1.00	0.20				0.30				0.70
METAL		6.00	4.80	8.10	5.60	6.80	5.70	4.50	4.80	10.30	9.01
	White										5.70
	Other										
	FERROUS				4.10		4.00				
	Food Cans	4.00	1.90	6.30		5.00		1.60	3.50	7.70	1.60
	Other/Scrap		1.40					2.40			0.10
	NON FERROUS		0.40						0.30	2.60	0.10
	Aluminum	1.00			1.30		1.10		1.00		
	Alum. Cans		0.40	1.80		0.60		0.40			0.51
	Alum.Foil										0.30
	Alum. Other		0.70			1.20		0.10			0.50
	Other Non-Fer.				0.20		0.10				0.20
	Recyclable Alum.	1.00					0.50				

		MID	MON	MOR	OCE	PAS	SOM	SUS	UNI	WAR	PORT AUTH
CONSTR & DEMO.											
MISC. INORGANICS											1.99
ORGANICS											
HAZARDOUS WASTE							0.80				
AC/WR											
OTHER/MISC				8.70				1.50			
SPECIAL WASTES			0.10				0.20				
TOTALS		101.00	100.00	100.00	100.00	100.00	100.00	100.00	100.20	100.00	100.10

10. Winter/Spring/Summer 1988; Edgeboro and Edison Landfills; Type 10 only.
11. Summer 1988; Monmouth County Reclamation Center; Composite.
12. March 1990; Morris County Transfer Stations; Type 10 only.
13. Summer 1987/Winter 1988; Ocean County & Southern Ocean Landfills; Type 10 only.
14. Summer/Fall 1987; Municipal samples; Type 10 only.
15. Fall 1989; BRI Transfer Station; Type 10 only.
16. November 1988; Sussex County Municipal Utilities Authority Solid Waste Complex; Type 10 only.
17. Summer/Fall 1987; Union County Transfer Stations; Type 10 only.
18. Winter 1981; High Point LF; Composite.

Port Authority: Estimated based Franklin Associates computer generated modeling for 1990.

No Data for Salem County.

included within the O & D disposal or recycling tonnage grants data systems. As a result, these add-on volumes, which amounted to approximately two million tons of primarily metals and asphalt, concrete and masonry materials, were included in the baseline generation numbers found in Table 13 by apportioning volumes across counties on the basis of population.

Once total tonnages were calculated by material, the current recycling status column was derived from 1990 recycling tonnage grants data together with add-on estimates of materials being recycled as reported by industry and trade sources. Current recycling rates by material were calculated by dividing the recycling status tonnage by the total generation tonnage of each material.

In the final step of the waste characterization/recycling projection process, the task force members established increased recycling percentage rate goals for 1995. These goals were developed in recognition of current recycling rates by material and the need for additional programs to attain the 1995 target figures.

With the projected target rates for 1995 established, target rates were multiplied by 1995 total generation figures calculated by the DEPE using the Table 14A scenario to estimate the total tonnage anticipated to be recycled by material. Remaining materials not recycled are quantified under the 1995 residue tonnage column located at the far right hand margin of Table 15. To complete this table, the total remaining residue tonnage of 5,532,000 was divided into each material residue tonnage to indicate the percent of the waste stream that would require alternative forms of disposal.

- d. **Data System Reform:** In its June 1991 "Solid Waste Policy Guidelines", the department committed to revising its data management system. With the revised approach used by the task force, inconsistencies exist in terms of the material categories recognized by the department and the categories used under the Municipal Tonnage Grants reporting system. Currently, the 567 municipalities submit annual tonnage grant claims pursuant to guidelines annually distributed by the department. Concern has been expressed, particularly by officials working in the recycling industry, that towns are overburdened with responsibility for comprehensive data reporting and that some municipal claims may result in double counting. Further, the nature of annual reporting by all 567 municipalities, and the department's case-by-case review of recycling receipts in order to catch double counting, results in a significant lag time in collecting recycling data for the state. (As an example, as of December 1992, the most recent final data for the state is calendar year 1990.)

To address this issue, the department actively investigated implementation of revised tonnage grants reporting requirements. A committee was first assembled in June 1992 to develop system revisions and was comprised of representatives of the New Jersey Recycling Forum, the major recycled paper and metals processors, the Association of New Jersey Recyclers, the New Jersey Association of Counties, the

Association of New Jersey Environmental Authorities, the New Jersey League of Municipalities and the Division of Solid Waste Management. A revised system was developed where towns would report only those collection activities where they are directly involved in the collection and marketing of materials. Other data would be required of permitted recycling centers, end-markets and manufacturers. More specifically, under the revised system, recycled materials tonnage will be reported and credited in the following manner:

- (1) Those materials collected by, or contractually on behalf of municipalities or counties, will be reported to the DEPE by those municipalities or counties and credited to the same;
- (2) Those remaining materials, not reported as in #1 above, originating in the municipal solid waste stream, will be reported directly to the DEPE by the market or transporter (if the material is transported directly out-of-state) and credited to the municipality of origin; and
- (3) Those remaining materials originating in the total waste stream, will be reported to the DEPE and credited to the county of origin or to the counties on a population basis.

The department's "1993 Recycling Tonnage Reporting Manual," which embodies the revised system, was finalized and distributed to each county and municipality in December 1992 and is intended to achieve the following:

- Provide a uniform set of material breakdowns for the municipal and total waste stream, along with definitions of each category;
- Delineate responsibility for accounting and measurement. For example, counties and municipalities will clearly remain responsible for monitoring recycling rates for materials they collect or contract to have collected for standard commodities, such as paper, glass, aluminum cans, etc. However, some of the categories will best be managed at the state level through private sector reporting from markets, such as monitoring the number of junked automobiles on an annual basis;
- Provide more timely and accurate recycled materials tonnage information;
- Eliminate the potential for inaccurate counting of recycled material;
- Reduce the time-consuming burden placed on municipalities to provide recycling program documentation;
- Enable municipal recycling coordinators to devote more time to program needs than to administrative requirements;
- Standardize and simplify the reporting process; and

- Eliminate all other reporting systems currently in use.

Beyond the immediate nature of the above initiatives, the department also intends to perform the following longer term functions with respect to data management.

- (1) Revise and clarify the O & D reporting system by updating O & D forms, daily logs, monthly report forms, etc. These updated forms will result in more uniform and consistent recordkeeping and monthly/annual reporting from recycling facilities, transfer stations, materials recovery facilities, landfills, incinerators and other solid waste facilities.
- (2) Rule revision to N.J.A.C. 7:26-2.13 of the solid waste codes to eliminate antiquated categories, such as type 25 animal and food processing, and expand the type 10 municipal waste category.

2. **Statewide Capacity Analysis**

The following analyzes statewide capacity needs necessary to achieve disposal self-sufficiency. The section is divided into two components. First, in subsection (a), the current status of the statewide solid waste system is described in detail, including historical trends in recycling and out-of-state disposal. Second, in subsection (b), a statewide capacity analysis for 1995 is presented based upon the current status of the statewide system, baseline generation figures discussed above (See Table 13), and the implementation of other solid waste programs currently in the planning process as described herein.

- a. Current Status of the State Solid Waste System:** New Jersey's current solid waste system demonstrates the state's growing commitment to recycling and source reduction and to a system of disposal self-sufficiency with decreased reliance on out-of-state disposal practices. The following describes the status of New Jersey's statewide solid waste system.
 - (1) **Waste Generation and Recycling:** In 1990, New Jersey generated approximately 14.8 million tons of nonhazardous solid waste, representing almost a 30% increase in solid waste generation since 1985. (See Table 17, "New Jersey Solid Waste Database Trends Analysis, 1985 - 1990.")
 - (2) **Recycling:** Of the 14.8 million tons generated in 1990, approximately 6.8 million tons (or 46%) was recycled, representing a dramatic increase in recycling since 1985, when only 8% of the waste stream was recycled. It should be noted that the greatest increase in recycling rates occurred after the passage of the Mandatory Source Separation and Recycling Act in 1987: 1988 recycling rates increased to 39% from a 1987 total of 15%.

TABLE 17

NEW JERSEY SOLID WASTE DATA BASE TRENDS ANALYSIS 1985 THROUGH 1991 (Millions of Tons Per Year)											
		RECYCLING				DISPOSAL					
						TOTAL		IN-STATE		OUT-OF-STATE	
YEAR	GENERATION	TOTAL ⁽⁷⁾ TONS	% OF TOTAL GENER.	MSW ⁽⁸⁾ TONS	% OF MSW GENER.	TOTAL TONS	% OF TOTAL GENER.	TOTAL TONS	% OF TOTAL GENER.	TOTAL TONS	% OF TOTAL GENER.
1985	11.40 ⁽¹⁾	0.9 ⁽³⁾	8	0.6	9	10.5	92	9.7 ⁽⁵⁾	85	0.8 ⁽⁵⁾	7
1986	11.50 ⁽¹⁾	1.1 ⁽³⁾	10	0.7	12	10.4	90	9.6 ⁽⁵⁾	83	0.8 ⁽⁵⁾	7
1987	12.40 ⁽¹⁾	1.8 ⁽³⁾	15	1.2	18	10.6	85	9.2 ⁽⁵⁾	74	1.4 ⁽⁵⁾	11
1988	14.00 ⁽²⁾	5.4 ⁽⁴⁾	39	1.5	23	8.6	61	4.6 ⁽⁶⁾	33	4.0 ⁽⁶⁾	28
1989	14.30 ⁽²⁾	6.1 ⁽⁴⁾	43	2.1	30	8.2	57	4.5 ⁽⁶⁾	31	3.7 ⁽⁶⁾	26
1990	14.80 ⁽²⁾	6.8 ⁽⁴⁾	46	2.5	34	8.0	54	4.8 ⁽⁶⁾	32	3.2 ⁽⁶⁾	22
*1991	14.70	7.6	52	2.5	34	7.1	48	4.4	30	2.7	18

NOTE: ALL NUMBERS HAVE BEEN ROUNDED FOR PRESENTATION PURPOSES

* Based upon preliminary 1991 statistics which are subject to change following municipal review of disallowed tonnages, recycling tonnage grants field audits and surveys of private sector recyclers.

FOOTNOTES
NEW JERSEY SOLID WASTE DATA BASE TRENDS ANALYSIS

- (1) Generation for 1985 through 1987 calculated by adding NJDEPE Tonnage Grant data to NJDEPE Origin & Disposal data reports for the same years.
- (2) Generation for 1988 through 1990 calculated by adding NJDEPE Tonnage Grant Data, industry sources documenting recycling activity for 1989 and Origin & Disposal data (as corrected by county governments) for the corresponding years.
- (3) Recycling for 1985 through 1987 obtained from NJDEPE Tonnage Grant Program data.
- (4) Recycling from 1988 through 1990 obtained from NJDEPE Tonnage Grant Program data augmented with data from industry sources documenting recycling activity for 1989.
- (5) Disposal from 1985 through 1987 from NJDEPE Origin & Disposal Reports.
- (6) Disposal for years 1988 through 1990 calculated from NJDEPE Origin & Disposal Reports augmented with information supplied by county governments and by Baker Engineers Out-of-State Disposal Facilities Report, 11/18/88; Baker Engineers Report of New Jersey's Interim Out-of-State Disposal Program, 12/28/89; and Baker Engineers New Jersey Interim Out-of-State Disposal Report, May 1991.
- (7) Total solid waste stream recycling tonnage.
- (8) Municipal solid waste stream tonnage. (Type 10 municipal and type 23 vegetative).

- (3) **Disposal of Waste:** Of the 14.8 million tons of solid waste generated in 1990, 54% was disposed of at a combination of in-state and out-of-state disposal facilities, reduced from a 92% total disposal figure for 1985. (The amount disposed of bears an inverse relationship to the amount recycled.) Of the 54% disposed of in 1990, approximately 32% of the total waste generated was disposed of at in-state disposal facilities, while 22% was disposed of at out-of-state disposal facilities. Out-of-state disposal peaked in 1988 at 28% of total generation (representing an increase from 7% in 1985) and has been declining on a steady basis since that time. Map 2 identifies those counties that rely predominantly on out-of-state disposal and those that are predominantly self-contained. The following is a summary of in-state and out-of-state disposal facilities.

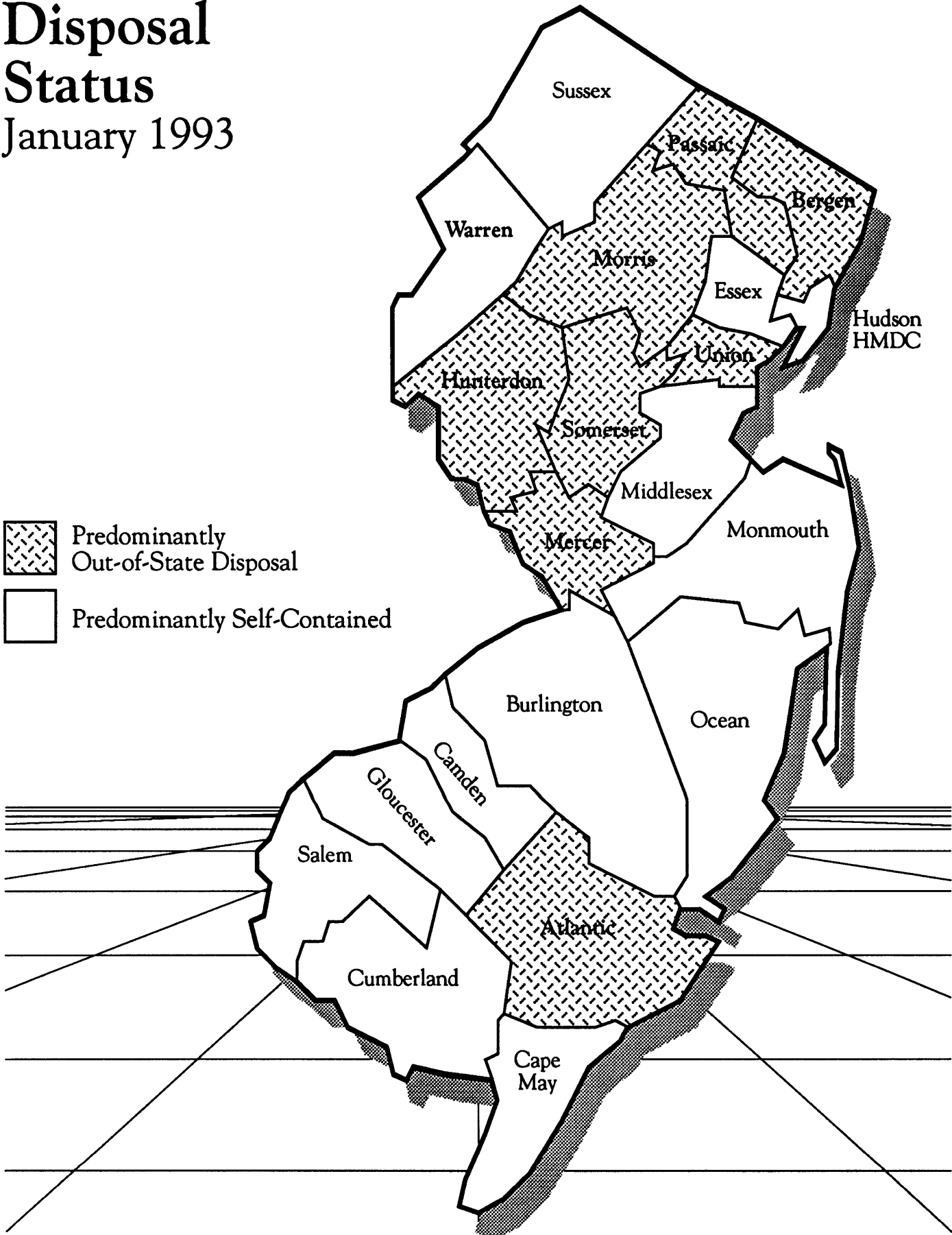
In-State Disposal Facilities: As mentioned above, 32% of the total waste stream was disposed of at in-state facilities. Of that amount, 28% was disposed of at the state's four resource recovery incinerators located in Essex, Camden, Gloucester and Warren counties. Map 3 identifies the resource recovery facilities in the state that are operational, under construction or under development. The related disposal capacity for those facilities are set forth in Table 18.

The balance of the waste disposed of in-state (or 72%) was landfilled. A breakdown of remaining active landfills in the state (municipal, regional, sole source) is set forth in Table 19. Map 4 depicts counties which have major operational landfills in the state. Table 20 also lists the major landfills which remain operational in New Jersey, the location, tons received in 1991, remaining approved disposal capacity and a general indication of additional expansion potential.

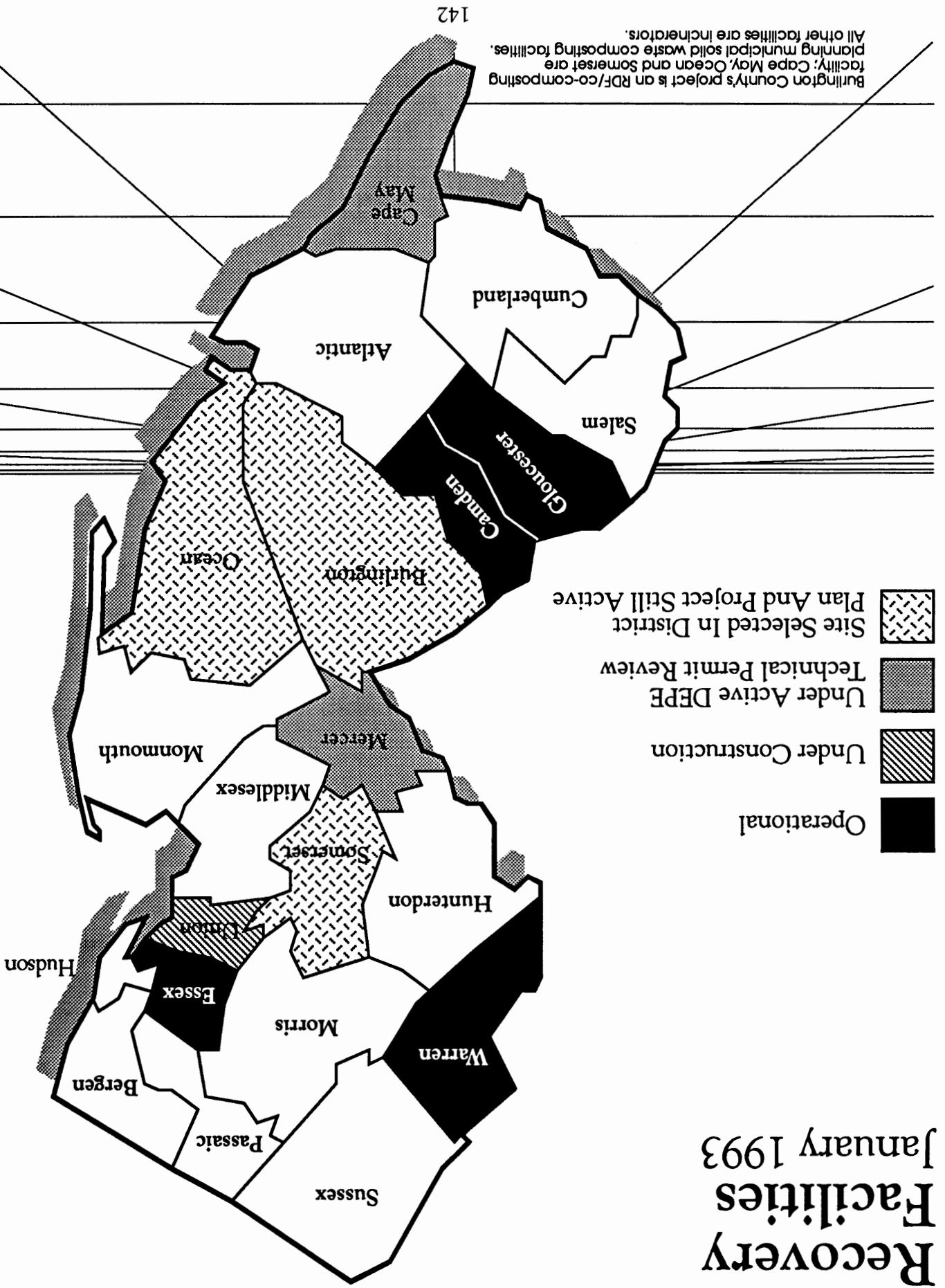
Out-Of-State Facilities: Approximately 22% of the total waste stream, originating in predominately seven New Jersey counties (Passaic, Morris, Union, Somerset, Hunterdon, Mercer and Atlantic) is landfilled out-of-state. The largest percentage of waste exported out-of-state in calendar year 1990 was exported to Pennsylvania (representing about 76% of the total exports) and Kentucky (representing about 17%), with the balance of 7% sent primarily to Ohio, West Virginia and Virginia. Preliminary calendar year 1991 figures show a drop in exports to 18% of the total waste stream and further reveal that 71% of solid waste exported was disposed of in Pennsylvania landfills, with 14% to Virginia, 6% to West Virginia, and the remaining 9% split between primarily New York, Ohio and Kentucky. The main reason for the shift in out-of-state trends from 1990-1991 (other than the

Current Disposal Status

January 1993



Resource Recovery Facilities January 1993



primary use of landfills in Pennsylvania), was a change in the Bergen County disposal contract which shifted disposal from a Kentucky landfill to a Virginia landfill. Table 21, "State of New Jersey Solid Waste Exports, Calendar Years 1990 & 1991" sets forth each state of destination and amounts of exported waste for these years.

Transfer Stations: Most of the waste that is exported out-of-state is hauled to an in-state transfer station and loaded onto tractor trailers prior to export. There are approximately 50 remaining active transfer stations in New Jersey, with 23 of those serving as regional facilities. Table 22 identifies the breakdown of active transfer stations among private, municipal and regional categories.

- (4) **Tipping Fee Costs:** Disposal costs in New Jersey have stabilized since 1988. As of January 1993, the average per ton landfill cost in New Jersey was \$74, ranging from a low of \$49 in Burlington County to a high of \$116 in Sussex County.

The average per ton cost of incineration at the same time was \$93 per ton, ranging from a low of \$73 in Essex County to a high of \$122 in Warren County. Table 23, "Existing Major Disposal Facility Tipping Fee Summary" (January 1993)," identifies the tipping fees for both landfills and incinerators in the state.

The average per ton cost for transfer stations in New Jersey is \$111 per ton, ranging from \$102 in Passaic and Union counties to \$124 per ton in Morris County. Table 24 "Existing Major Transfer Station Tipping Fee Summary (January 1993)," sets per ton tipping fees, by county, for major transfer stations in the state.

- b. **Statewide Capacity Analysis - Objectives and Criteria:** This section is divided into two components. First is a residual disposal analysis which, through a step-by-step progression, identifies the amount of solid waste which will require out-of-state management by December 31, 1995 in the absence of implementation of additional in-state disposal facilities. This section also provides an analysis of the type of solid waste which will be left at the end of 1995 with projections of the amounts which are reprocessible and nonprocessible for incineration. The second section demonstrates, through a reasonable set of assumptions, what must be accomplished to achieve in-state self-sufficiency in solid waste disposal capacity within the next seven years. This analysis thus frames the challenge which lays ahead to bring the needed additional capacity on-line. This challenge should not be underestimated. Despite the tremendous progress made to date, particularly in terms of recycling, new facility development and regionalization, and the convenience of the following analysis which demonstrates how self-sufficiency can be achieved by the

Resource Recovery Facilities

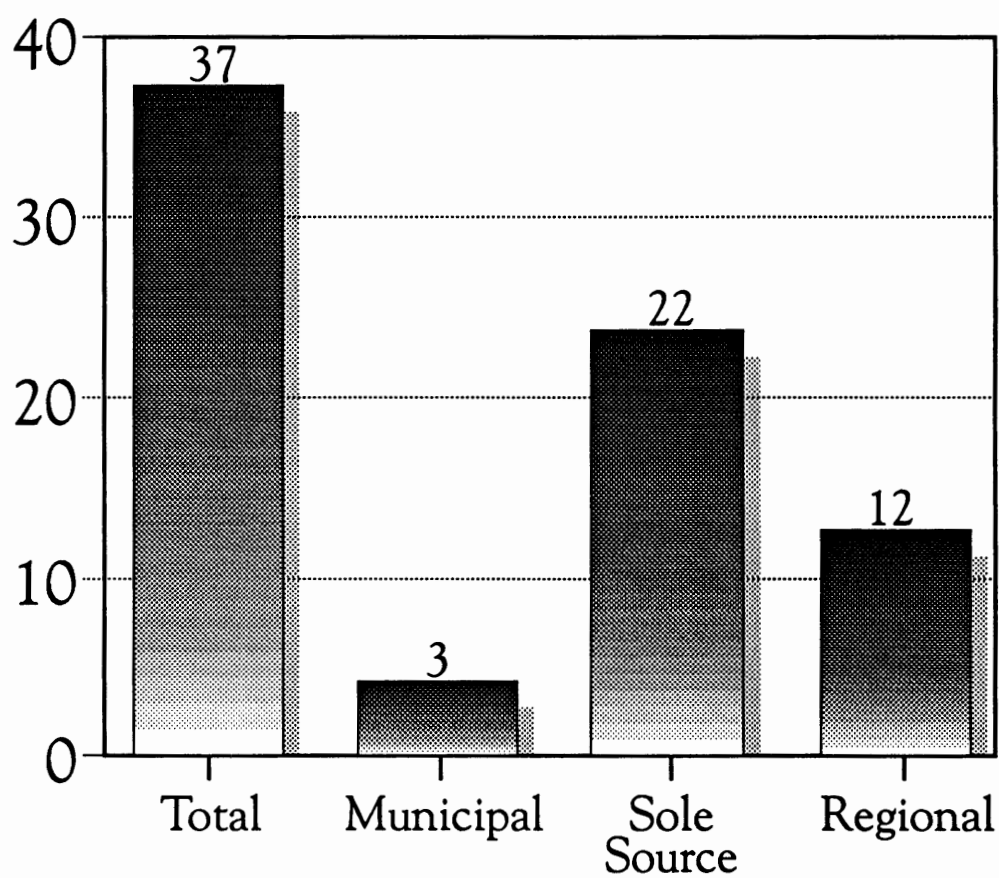
January 1993

Operational Incineration Facilities	Existing and Planned Capacity
Camden County (Camden)	1,050 TPD
Essex County (Newark)	2,250 TPD
Gloucester County (West Deptford)	575 TPD
Warren County (Oxford)	448 TPD
Incinerator Under Construction _____	
Union County (Rahway)	1,440 TPD
Under Technical DEPE Permit Review _____	
Cape May County MSW Compost (Woodbine)	600 TPD
Mercer County Incinerator (Hamilton)	1,440 TPD
* Hudson County Incinerator	1,500 TPD
Site Selected In County Plan _____	
Ocean County MSW Compost	1,200 TPD
* Somerset County MSW Compost	150 TPD
Burlington County RDF/Co-Composting	500 TPD
* Salem County Incinerator	240 TPD
* Sussex County Incinerator	400 TPD

** Noted projects are formally embodied in county solid waste plans and in some cases technical engineering plans have been submitted. However, none of these projects are actively being pursued at this time.*

Remaining Active Sanitary Landfills State of New Jersey January 1993

Number of Facilities



Type of Facilities

Landfill Facilities

January 1993

Map 4

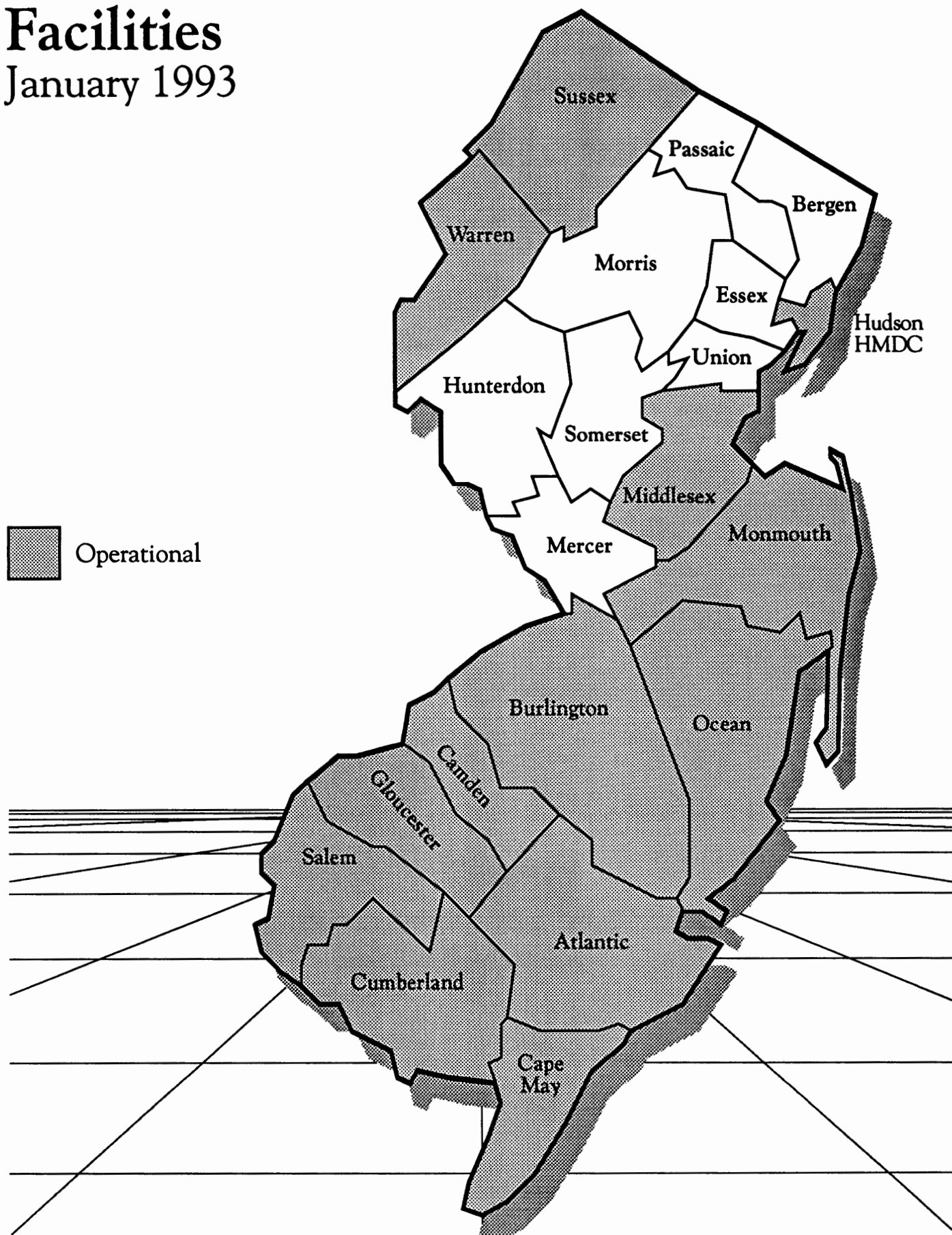


Table 20
Operating Landfills of Regional Significance
Status and Capacity April 1992

Name	Location	Service Area	1991 Tons Received	Remaining Capacity Tons	Remaining Capacity Yards	Remaining Years at Current Loading	Additional Expansion Potential
HMDC 1-E	Bergen	All Hudson	484,480	665,000	1,331,000	1.4	Limited
Burlington County	Burlington	All Burlington	353,644	1,909,000	3,819,000	5.4	Substantial
Pennsauken	Camden	9 Camden Towns	203,987	1,530,000	3,060,000	7.5	Limited
Cape May County *	Cape May	All Cape May	113,465	96,500	193,070	0.8	Limited
Cumberland County	Cumberland	All Cumberland	136,148	3,001,000	5,101,000	22.0	Limited
Gloucester County	Gloucester	All Gloucester	83,968	1,508,000	2,111,000	17.9	Substantial
Edgeboro	Middlesex	Most of Middlesex	489,306	10,000,000	20,000,000	20.4	Substantial
Monmouth County	Monmouth	All Monmouth	459,438	3,236,000	5,182,000	6.0	Substantial
Ocean County	Ocean	All Ocean	365,708	2,842,000	5,774,000	7.7	Substantial
Salem County	Salem	All Salem	71,773	1,334,000	1,741,000	18.6	Substantial
Sussex County	Sussex	All Sussex	82,720	853,000	2,816,000	10.3	Substantial
Warren County	Warren	All Warren	51,310	3,008,000	2,106,000	5.8	Substantial

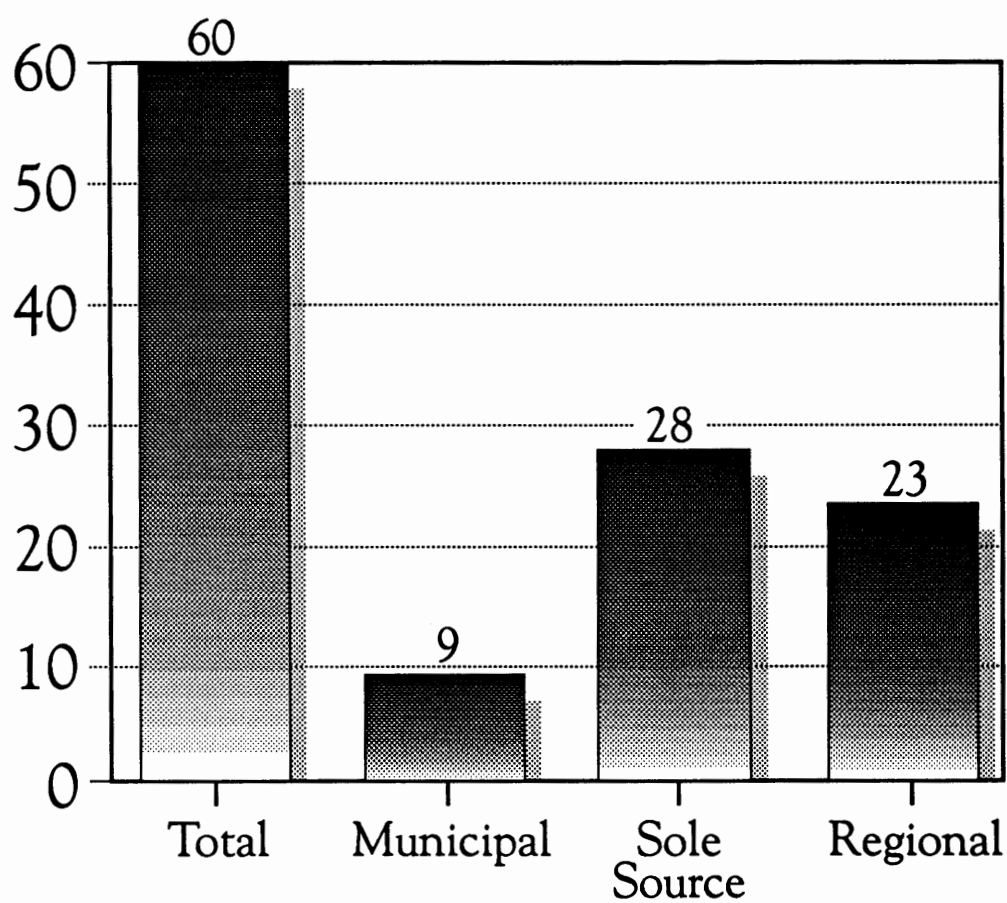
* Located in Pinelands - Scheduled to close May, 1996

State of New Jersey Solid Waste Exports Calendar Years 1990 & 1991

Destination State	Tonnage 1990	Tonnage 1991	% of Total Exports 1990	% of Total Exports 1991
Pennsylvania	2,439,545	1,930,561	76%	71%
Virginia	33,295	371,271	1%	14%
West Virginia	54,097	163,597	2%	6%
New York	0	126,431	0%	4%
Ohio	144,396	73,740	4%	3%
Kentucky	550,042	24,968	17%	1%
Indiana	61	3,035	<1%	<1%
Connecticut	48	0	<1%	0%
Illinois	24	73	<1%	<1%
Michigan	24	0	<1%	0%
All Other Landfills	0	23,365	0%	1%
Grand Total	3,221,532	2,717,041	100%	100%

Remaining Active Transfer Stations State of New Jersey January 1993

Number of Facilities



Type of Facilities

Existing Major Disposal Facility

Municipal Solid Waste Tipping Fee Summary

January 1993

Landfill Facility	Cost (\$) Per Ton
Sussex County	\$116
Cape May County	93
Ocean County	74
Monmouth County	68
Gloucester County	62
HMDC Balefill	62
Salem County	68
Middlesex County	57
Pennsauken	80
Cumberland County	65
Burlington County	49
Atlantic County	94
Average Landfill Cost	\$74
Resource Recovery Incinerator Facility	
Warren County RR	122
Gloucester County RR	98
Essex County RR	73
Camden County RR	80
Average Resource Recovery Cost	\$93

Note: Numbers have been rounded to the nearest dollar and reflect rates for type 10 municipal waste including taxes, host community benefits and surcharges.

Existing Major Transfer Stations

Municipal Solid Waste Tipping Fee Summary

January 1993

Facility	Cost (\$) Per Ton
Bergen/BCUA	\$117
Union/Ellesor	102
Hunterdon	122
Morris/Mt. Olive	124
Morris/Par-Troy	124
Somerset/SIRC	121
Somerset/BRI	115
Mercer	112
Essex/Avenue F	108
Union/AMS	102
Atlantic	104
Passaic/Fulton	102
Passaic/Iowa	102
Passaic/Totowa	102
Average Transfer Station Cost	\$111

Note: Numbers have been rounded to the nearest dollar and reflect rates for type 10 municipal waste including taxes, host community benefits and surcharges.

target date, county, state and local officials, as well as the private sector, must remain committed and dedicated to achievement of the goals and objectives outlined in the state plan update.

Residuals Disposal Analysis: The fundamental assumption of this analysis is that the primary goal of the state is to achieve at least a 50% municipal waste stream and 64% total waste stream recycling rate by December 31, 1995. (The 64% figure represents the actual number identified by the governor's task force as the statewide goal following analysis of the 25 components of the solid waste stream for achievement by December 31, 1995.

For presentation purposes it was rounded to 60% throughout this document.) Given this assumption, the following focuses upon management of the remaining 36% "residue." The step-by-step equation identified below uses additional assumptions to project how much of the remaining 36% will be accommodated within New Jersey and the amount which will continue to require out-of-state disposal in January 1996 in the absence of new capacity being developed.

STEP A:

Table 15 identifies a residual management need to accommodate 5,532,000 tons per year of waste material in 1995. Therefore, the 5,532,000 number will serve as our baseline residual disposal figure. In using this number, the department is assuming that emerging source reduction initiatives, as outlined in Section B.6. of this State Plan Update, will counterbalance any increases in per capita solid waste generation over the next five years. Thus, throughout the following analysis, changes in solid waste generation rates are assumed to be exclusively a function of population trends. In light of this assumption, the generation figures for 1995 have been drawn from Table 14A.

STEP B:

In order to be able to identify management strategies for the residue, it is necessary to categorize the residue into processible and nonprocessable residue. For purposes of the analysis, it is assumed that the portion of the residue in Table 15 representing bulky/industrial waste types are nonprocessable and that the remaining residue represents processible waste types. Based on this assumption, 3,908,000 tons are considered processible waste and 1,624,000 tons are nonprocessable. The percentage of residue in the nonprocessable waste category is therefore 29.4%.

The analysis will address residue capacity for each category, including ash, separately.

STEP C:

Starting with the total processible residue of 3,908,000 tons, it is necessary to subtract the amount of processible residue that under current conditions would be disposed of at existing long-term landfills. For this portion of the analysis, it is assumed that the Burlington, Cumberland, Middlesex, Monmouth, Ocean, Salem and Sussex County landfills would be in operation as of 1995 and will be available, at a minimum, to accommodate the processible residue remaining for each of these counties. As an example, Table 14A, under the state projections column, shows that Burlington County will generate 812,000 tons of solid waste in 1995. Assuming that Burlington achieves the targeted recycling rate by 1995, there would be 292,320 tons of total residue remaining in the county. Applying the processible residue percentage of 70.6%, it is estimated that 206,378 tons of processible residue would be disposed of at the Burlington County Landfill. When applying this same procedure to the other six above referenced counties, it is estimated that at least 1,332,815 tons of landfill disposal capacity will be available in five years for processible residue. It should be noted that this same procedure will be used in the analysis in Step D below dealing with existing landfill disposal capacity for nonprocessable residue.

To arrive at the total remaining processible residue requiring disposal in 1995, the capacity of incineration facilities currently in operation or under construction must be taken into account. For this part of the analysis, the permitted maximum daily capacity was used, as well as an assumed on-line availability of 90% for each plant. The following five facilities were considered based upon their current operational status or, in the case of Union County, level of construction:

<u>County</u>	<u>Permitted Daily Capacity (TPD)</u>	<u>Throughput Capacity (TPY)</u>	<u>Ash* (TPY)</u>
Camden	1,050	344,925	103,478
Essex	2,505	822,893	246,868
Gloucester	575	188,888	56,666
Union	1,440	473,040	141,912
Warren	<u>448</u>	<u>147,168</u>	<u>44,150</u>
Totals	6,018 =====	1,976,914 =====	593,074 =====

* Assume 30% ash by weight after combustion.

Subtracting the existing landfill and resource recovery processible residue capacities from the total processible residue of 3,908,000 tons, the total processible residue remaining in 1995 equals 598,271 tons.

STEP D:

Starting with 1,624,000 tons of nonprocessable residue in 1995, it is assumed that the seven counties mentioned in Step C above will continue to dispose of their nonprocessable residue at their respective landfill facilities. In addition to those counties, it is assumed that Camden, Gloucester and Warren counties will also continue to dispose of their nonprocessable residue at their landfill facilities. Applying the nonprocessable residue percentage of 29.4% to each county's 1995 generation estimate net of 64% recycling, it is estimated that 712,620 tons of nonprocessable waste will continue to be disposed of at these landfill facilities. Subtracting this figure from the total nonprocessable residue, it is estimated that there would remain 911,380 tons of nonprocessable residue requiring disposal.

STEP E:

The last step in the analysis is to address ash generated from the five resource recovery facilities. It is estimated that a total of 593,074 tons of ash will require disposal in 1995. Of this amount, it is assumed that 100,816 tons will continue to be disposed of at the Gloucester and Warren County landfills. Therefore, it is projected that approximately 492,258 tons of ash will remain requiring disposal in 1995.

Steps A - E Equation Summary **Baseline Equation**

$$\begin{array}{rcl} 5,532,000 & & \text{(1995 Total Residue)} \\ -3,908,000 & & \text{(Processible Residue)} \\ \hline 1,624,000 & & \text{(Nonprocessable Residue)} \end{array}$$

Processible Residue Equation

$$\begin{array}{rcl} 3,908,000 & & \text{(Processible Residue)} \\ -1,332,815 & & \text{(Landfill Processible Residue Capacity)} \\ -1,976,914 & & \text{(Resource Recovery Capacity)} \\ \hline 598,271 & & \text{(Total Tons Per Year of Processible Residue} \\ & & \text{Remaining)} \\ 1,639 & & \text{(Total Tons Per Day of Processible Residue} \\ & & \text{Remaining)} \end{array}$$

Nonprocessable Residue Equation

$$\begin{array}{rcl} 1,624,000 & & \text{(Nonprocessable Residue)} \\ -712,620 & & \text{(Landfill Nonprocessable Residue Capacity)} \\ \hline 911,380 & & \text{(Total Tons Per Year of Nonprocess. Residue} \\ & & \text{Remaining)} \\ 2,497 & & \text{(Total Tons Per Day of Nonprocess. Residue} \\ & & \text{Remaining)} \end{array}$$

Ash Equation

$$\begin{array}{rcl} 593,074 & & \text{(Total Ash Residue)} \\ -100,816 & & \text{(Warren \& Gloucester Ash Capacity)} \\ \hline 492,258 & & \text{(Total Tons Per Year of Ash Remaining)} \\ 1,349 & & \text{(Total Tons Per Day of Ash Remaining)} \end{array}$$

Capacity Analysis Summary

The above analysis shows that through implementing the targeted five year recycling rates for the individual waste materials and with existing long-term facility capacity, there would be an additional need for facilities to accommodate 598,271 tons per year of processible solid waste, 911,380 tons per year of nonprocessable solid waste and 492,258 tons per year of ash.

The residual disposal analysis is a projection by the department of the likely amounts of residue remaining to be managed after achievement of the specific waste type recycling goals of Table 15. The analysis can change depending on the long-term disposal method chosen by the counties to handle their residue. For example, if a county with long-term landfill capacity proposes to develop or join in a regional resource recovery facility, the calculation above of the total amount of processible residue in the state remaining and available for processing at a new resource recovery facility would increase due to the reallocation of that county's processible residue from landfill disposal to incineration. Further, in achieving the targeted recycling rates, it is possible that the remaining material suitable for incineration will be of a higher BTU value per pound. As a result, it is possible that existing facilities would be unable to process as much material as is currently planned under anticipated higher heating values. Conversely, some have argued that a higher level of recycling and removal of additional paper, chipboard, cardboard, etc. will result in lower BTU values and the ability to process more material than currently planned. No clear answer is currently available regarding this dynamic situation.

The residual disposal analysis is not meant to replace rigorous analysis of the appropriate sizing of proposed regional resource recovery facilities or of sanitary landfills. Such an analysis must take into account the specific waste characteristics of the counties served and the operational requirements of the particular facility. The sizing analysis should include current waste composition studies and up-to-date county solid waste generation projections for each county being served by the facility. The composition studies should be applied to the generation estimates to give a breakdown of the waste stream by type. The individual recycling targets in Table 15 should then be applied to the breakdown of the waste stream to arrive at residue tonnages by waste type. The residue tonnages should then be segregated into processible and nonprocessable waste types. The waste types that the facility can process will be determined in part by the operational and air emission compliance concerns of the resource recovery vendor. Facility availability will be based on historical data of similar facilities constructed by the resource recovery vendor as well as availabilities of other facilities operating in the state. The department believes that this kind of methodology will ensure the proper sizing of regional facilities while adhering to the recycling goals of the state.

Policy Discussion

From the analysis above, a total of 5,485 TPD or approximately two million tons per year of residue will require disposal as of January 1, 1996 based upon the assumptions indicated. Without development of additional disposal capacity, New Jersey would need to export this tonnage to out-of-state disposal facilities.

Assuming a statewide generation rate of 15,414,000 tons as noted in Table 14A New Jersey would still be exporting approximately 13% of its total waste stream in 1996. Given the state's strong commitment to achieving self-sufficiency in disposal capacity, the following discussion identifies the specific project development activities which must take place over the next seven years to make self-sufficiency a reality.

a. **Potential Future Projects**

It is important in consideration of potential future projects to once again analyze the composition of the waste stream in 1996. From the calculation on page 154, approximately 598,000 tons of processible, 911,000 of nonprocessable and 492,000 tons of ash residue would be left requiring disposal in 1996. This fundamental breakdown shapes future disposal capacity needs and focuses attention upon existing projects in the department's permit pipeline and the need for new additional projects. The following are specific projects and actions which may bring new capacity on-line toward achievement of self-sufficiency on a statewide basis. The inclusion of these specific projects in the discussion will in no way influence the technical review and associated permit decisions which will be based on the individual merits of the projects. The projects noted have been used since they are actively being pursued by the prospective host county and are in areas of the state where capacity shortfalls currently exist or are projected to exist in 1996.

- (1) **Mercer County Incinerator:** This project is currently under technical review by the DEPE and is proposed for 1,450 TPD or approximately 476,325 tons per year of processing capacity assuming a 90% on-line availability. Based upon the analysis on page 154 above, and if Mercer County achieves the other requirements for incineration including regionalization of all its capacity, it appears that enough processible solid waste would be available within the state to potentially justify this project. However, whether the facility is appropriately sized for the area proposed to be served will depend on waste composition, and the plant's actual operational requirements and project economics. Based upon the current status of the project in terms of permit application review, and assuming that it can be permitted and developed on a two-year construction schedule, it is possible that operations could commence in 1995.
- (2) **Atlantic County Limited Use Landfill:** This project received a permit for construction from the department in March 1992 and actually commenced operations in November 1992. It is currently approved to accept bulky waste materials and other nonputrescible waste from both Atlantic and Mercer counties as part of a formal interdistrict agreement approved by the department. Recently, in late December 1992, Atlantic entered an additional interdistrict agreement with Somerset County to accept between 30,000 - 60,000 tons per year of bulky and dry industrial waste per year from Somerset. It is possible, in the future, that this facility could be permitted to accept ash from the Mercer County incinerator (if approved and constructed). If this landfill were to receive a

modified permit, it could handle the 142,897 tons of ash estimated to be generated by the incinerator. Between the proposed Mercer incinerator, Atlantic Limited Use Landfill and planned Atlantic County in-vessel organics composting facility, it is possible that both Atlantic and Mercer counties could achieve self-sufficiency by 1996. The total generation figure of these counties in 1995 after 64% recycling is estimated to be 624,600 tons per year.

- (3) **Cape May Solid Waste Composting Facility:** This project is under technical review by the department and projects a capacity of 600 TPD. Based upon the current status of technical review and the county's projection for construction, this facility could be operational by mid-1994. Pending approval from the New Jersey Pinelands Commission, it is possible that any residue produced from this project could also be landfilled at the existing Cape May County Landfill. Given this assumption, Cape May could be self-sufficient by 1995 for the estimated 106,920 tons of disposal capacity needed for the county's waste stream following 64% recycling. This facility, if permitted as planned, will have substantial excess capacity available to be regionalized with other counties.
- (4) **Pennsauken Landfill For Ash:** In May 1992, the department approved Camden County's Comprehensive, Long-Term, Environmental Action, Recycling (CLEAR) Plan. As part of the approval, the department ordered investigation by the county as to the feasibility of using the Pennsauken Landfill for the disposal of ash. A decision is anticipated in 1993 and it is not unrealistic to assume that all processible waste ash, bypass and nonprocessable waste in Camden County could be disposed of between the Camden incinerator and Pennsauken Landfill as early as 1993. This would accommodate the projected 103,478 tons per year of ash from the Camden incinerator as noted earlier on page 153.

From the above analysis, based on Mercer, Atlantic and Cape May counties being self-sufficient for its solid waste generation net of 64% recycling by January 1, 1996 and ash capacity being available at the Pennsauken Landfill, a total of 216,316 tons of nonprocessable solid waste, 516,454 tons of processible solid waste and 103,478 tons of ash would be eliminated from the statewide residual total of two million tons. This would leave 1.2 million tons to be disposed of in 1996 consisting of 695,064 tons of nonprocessable solid waste, 81,817 tons of processible solid waste and 388,780 tons of ash. It should be noted that if excess capacity exists at any of the Mercer, Atlantic or Cape May facilities, the department would require that such excess capacity be filled with in-state solid waste to further the goal of self-sufficiency. The following is a listing of potential projects and facility expansions needed to achieve self-sufficiency within the next seven years. This date has been selected as a target for achievement of New Jersey's self-sufficiency goal since historical

experience has demonstrated that large-scale projects take at least five years to complete through the siting, permitting, financing and construction phases.

- (a) **Northeast Regional Ash Landfill:** Currently, as referenced on page 153, the Essex and Union County incinerators are projected to produce approximately 388,780 tons per year of residual ash. Neither county has identified in-state disposal capacity nor advanced in-county ash landfill projects to the permit application phase. A regional ash facility is needed for New Jersey and ideally could serve as both a processing facility for metals recovery, as well as for preparing ash for reuse should the research projects identified within Section B.10. result in markets for tested, nonhazardous ash.
- (b) **Northeast Bulky Waste Processing/Disposal Facility:** As referenced elsewhere in this plan, construction and demolition debris and other bulky waste accounts for nearly 25% of the total waste stream. Further, it is estimated from the equation on page 154, that just under one million tons or nearly 46% of all remaining residue in 1996 would be nonprocessable, bulky waste materials. A bulky waste processing/disposal facility is needed in New Jersey, primarily to serve the northeastern portions of the state where older urban areas generate large quantities of construction and demolition debris. The facility should incorporate processing equipment for separation and size reduction of materials for reuse and recycling. An accompanying landfill would be used for residue requiring disposal.

In December 1992, the department approved a plan amendment from the Hackensack Meadowlands Development Commission (HMDC) which incorporated a site for the construction of a regional nonprocessable recycling facility and landfill consistent with the needs expressed above. The project, as proposed, would be a 1,500 TPD facility which would recycle at least 300 TPD and service yet unidentified counties on a regional basis throughout the northeastern portion of the state. This project is in a very early development stage and no technical permit application has been made to the DEPE as of January 1993. If permitted and constructed, this facility could represent substantial new capacity toward achievement of self-sufficiency.

- (c) **Additional Solid Waste Composting Facilities:** An area of the state which is particularly deficient in terms of existing or planned long-term disposal capacity is the Morris, Somerset, Hunterdon region. These counties have no long-term plan in place for all or a significant portion of their waste stream. Somerset County has already amended

their solid waste plan and selected a pilot solid waste compost project of as yet an unspecified size. Morris County is also in the process of evaluating alternative technologies. Hunterdon County has selected a landfill site in their solid waste plan, but has not advanced this project. The department will work with these counties to evaluate the feasibility of developing new disposal capacity on a regional basis for in-state disposal of solid waste generated in this region.

- (d) **Permit Modifications At Incinerators:** Existing incinerators in the state receive both solid waste and air pollution control permits. Each has a permitted capacity based upon, in gross generality, an environmental and health impact assessment regarding, among many other issues, truck traffic and on-site queuing (solid waste permit), and an estimate of the hourly heat release limitations of the system assuming higher heating values of the waste and anticipated on-line availability of the unit (air permit). Experience over the past several years has been that contractual BTU numbers are generally off by as much as 15% and on-line availability significantly higher than the standard 85% estimate. Therefore, provided additional traffic and air pollution modeling were performed, and any other concerns identified within the final environmental and health impact assessment, it is possible that higher volumes of solid waste could be processed at the five incinerators which will be operational in 1996. The department will work with the host counties and facility vendors to evaluate this option further.
- (e) **Expansion of Existing Incinerators:** All four existing operational incinerators in New Jersey have multiple processing lines. As an example, the Essex County facility, with a nameplate permit capacity of 2,250 tons per day, is actually comprised of three nominal 750 tons per day processing units. This design element provides for needed system redundancy to enable operations during both scheduled down-time for routine maintenance and unscheduled down-time under emergency situations. All four existing facilities in Essex, Camden, Gloucester and Warren counties were designed with the capability of adding another processing line. For presentation purposes, if it is assumed that all four facilities added one processing line, it would amount to approximately 1,550 nominal tons per day of capacity or roughly 500,000 tons of annual capacity assuming a 90% on-line availability factor. The department will work with host counties and facility vendors to evaluate this option further. However, as noted within the department's June 1991 "Solid Waste Policy Guidelines," expansions will be considered only where capacity need can be documented for the regional area in question, all participating counties have approved plans for

source reduction and 60% recycling, and binding agreements are signed by the participating counties for regionalization.

Achievement of Disposal Self-Sufficiency

Table 25 below summarizes New Jersey's historical and future path to achieve self-sufficiency in disposal capacity. Calendar year 1985 through 1990 information is based upon documented data. The 1991 disposal information is documented, but preliminary recycling numbers have been projected based upon recent trends. All information for calendar years 1992 through 1999 has been projected. In this regard: Table 14A generation figures were used for 1995 generation, while the years 1991 through 1994 were calculated; recycling rates were calculated from 1991 through 1995 based upon historical trends and with the assumption that the 50% municipal waste stream and 60% total waste stream rates will be achieved by December 31, 1995; in-state and out-of-state disposal figures from 1992 through 1996 were calculated assuming implementation of the specific projects outlined on pages 156 and 157, as well as some mixture of the potential projects noted on page 158 and 159 to achieve a zero out-of-state export rate within the next seven years.

As is clear from Table 25 and the discussion throughout this section, self-sufficiency can only be realized if New Jersey's source reduction goals are implemented to cap, and eventually reduce solid waste generation; the minimum 50% municipal waste stream and 60% total waste stream recycling rates are achieved on schedule; regionalization results in maximized use of existing and future disposal capacity; planned new disposal capacity is brought on-line in a timely fashion; and additional targeted projects are selected and implemented within the next five years. The challenge is great. However, the many initiatives outlined with Section B of this plan as well as the capacity analysis and policy positions outlined immediately above, are intended to transform the concept of self-sufficiency into reality. New Jersey is confident, based upon the tremendous progress documented to date, as outlined on Table 25 for the time period 1985 through 1990, that our goals can and will be achieved.

3. County-by-County Summaries:

Introduction: As noted throughout this state plan update, New Jersey's 21 counties have a critical role to play in solid waste management with primacy in source reduction, recycling and disposal capacity planning, siting, technology selection and program financing. The following county-by-county summaries present, as of December 1992, the current status of solid waste management within each county; progress to date in addressing state objectives and criteria for source reduction, recycling and regionalization; the status of future facility planning and implementation toward New Jersey's goal of disposal self-sufficiency; and an assessment of major county plan deficiencies. In general, nearly every county has made significant progress in developing long-term management systems consistent with statewide goals and objectives and should be congratulated for their efforts. However, as articulated throughout this State Plan Update, the challenges of achieving stated source reduction, recycling, regionalization and self-sufficiency goals will be great, and county governments must move forward to correct the plan deficiencies noted in the pages which follow.

TABLE 25

NEW JERSEY SOLID WASTE DATA BASE TRENDS ANALYSIS ACHIEVEMENT OF SELF-SUFFICIENCY IN DISPOSAL CAPACITY (MILLIONS OF TONS)											
		RECYCLING				DISPOSAL					
						TOTAL		IN-STATE		OUT-OF-STATE	
YEAR	GENERATION	TOTAL TONS	% OF TOTAL GENER.	MSW TONS	% OF MSW GENER.	TOTAL TONS	% OF TOTAL GENER.	TOTAL TONS	% OF TOTAL GENER.	TOTAL TONS	% OF TOTAL GENER.
1985	11.40 ⁽¹⁾	0.9 ⁽⁵⁾	8	0.6 ⁽⁵⁾	9	10.5	92	9.7 ⁽⁹⁾	85	0.8 ⁽⁹⁾	7
1986	11.50 ⁽¹⁾	1.1 ⁽⁵⁾	10	0.7 ⁽⁵⁾	12	10.4	90	9.6 ⁽⁹⁾	83	0.8 ⁽⁹⁾	7
1987	12.40 ⁽¹⁾	1.8 ⁽⁵⁾	15	1.2 ⁽⁵⁾	18	10.6	85	9.2 ⁽⁹⁾	74	1.4 ⁽⁹⁾	11
1988	14.00 ⁽²⁾	5.4 ⁽⁶⁾	39	1.5 ⁽⁶⁾	23	8.6	61	4.6 ⁽¹⁰⁾	33	4.0 ⁽¹⁰⁾	28
1989	14.30 ⁽²⁾	6.1 ⁽⁶⁾	43	2.1 ⁽⁶⁾	30	8.2	57	4.5 ⁽¹⁰⁾	31	3.7 ⁽¹⁰⁾	26
1990	14.80 ⁽²⁾	6.8 ⁽⁶⁾	46	2.5 ⁽⁶⁾	34	8.0	54	4.8 ⁽¹⁰⁾	32	3.2 ⁽¹⁰⁾	22
1991	14.70 ⁽³⁾	7.6	52	2.5	34	7.1	48	4.4	30	2.7	18
1992	14.90 ⁽⁴⁾	8.2 ⁽⁷⁾	55	2.7 ⁽⁸⁾	36	6.7	45	4.4 ⁽¹¹⁾	30	2.3 ⁽¹¹⁾	15
1993	15.25 ⁽⁴⁾	9.1 ⁽⁷⁾	60	3.1 ⁽⁸⁾	41	6.1	40	4.0 ⁽¹¹⁾	26	2.1 ⁽¹¹⁾	14
1994	15.35 ⁽⁴⁾	9.5 ⁽⁷⁾	62	3.6 ⁽⁸⁾	46	5.8	38	3.8 ⁽¹¹⁾	25	2.0 ⁽¹¹⁾	13
1995	15.40 ⁽⁴⁾	9.9 ⁽⁷⁾	64	3.8 ⁽⁸⁾	50	5.5	36	3.5 ⁽¹¹⁾	23	2.0 ⁽¹¹⁾	13
1996	15.40 ⁽⁴⁾	10.2 ⁽⁷⁾	66	3.8 ⁽⁸⁾	51	5.2	34	3.8 ⁽¹¹⁾	25	1.4 ⁽¹¹⁾	9
1997	15.40 ⁽⁴⁾	10.3 ⁽⁷⁾	67	3.9 ⁽⁸⁾	52	5.1	33	3.7 ⁽¹¹⁾	24	1.4 ⁽¹¹⁾	9
1998	15.40 ⁽⁴⁾	10.5 ⁽⁷⁾	68	3.9 ⁽⁸⁾	53	4.9	32	3.9 ⁽¹¹⁾	26	1.0 ⁽¹¹⁾	6
1999	15.40 ⁽⁴⁾	10.6 ⁽⁷⁾	69	4.0 ⁽⁸⁾	54	4.8	31	4.8 ⁽¹¹⁾	31	0 ⁽¹¹⁾	0

NOTE: ALL NUMBERS HAVE BEEN ROUNDED FOR PRESENTATION PURPOSES

FOOTNOTES
NEW JERSEY SOLID WASTE DATA BASE TRENDS ANALYSIS

- (1) Generation for 1985 through 1987 calculated by adding NJDEPE Tonnage Grant data to NJDEPE Origin & Disposal data reports for the same years.
- (2) Generation for 1988 through 1990 calculated by adding NJDEPE Tonnage Grant Data, industry sources documenting recycling activity for 1989 and Origin & Disposal data (as corrected by county governments).
- (3) All figures in the 1991 row are based upon preliminary statistics which are subject to change following municipal review of disallowed tonnages, recycling tonnage grants field audits and surveys of private sector recyclers. The same procedures outlined under footnotes (2), (6) and (10) were used to calculate generation, recycling and disposal.
- (4) Generation for 1992 through 1999 has been estimated using Table 14A on page 122 of The State Plan Update to reflect 1995 generation at 15.4 million tons. For the period 1995-1999 it is assumed that the statewide source reduction goal of capping total generation within five years will be realized.
- (5) Recycling for 1985 through 1987 obtained from NJDEPE Tonnage Grant Program data.
- (6) Recycling from 1988 through 1990 obtained from NJDEPE Tonnage Grant Program data augmented with data from industry sources documenting recycling activity for 1989.
- (7) Recycling from 1992 through 1999 has been estimated based upon historical trends and through assuming that the actual Governor's Task Force Final Report goal of achieving a 64% total waste stream recycling rate by December 31, 1995 will be achieved and that modest growth beyond that point will be achievable.
- (8) MSW recycling from 1992 through 1999 has been estimated based upon historical trends and through assuming that the State goal of achieving a 50% MSW recycling rate will be achieved by December 31, 1995.
- (9) Disposal from 1985 through 1987 from NJDEPE Origin & Disposal Reports.
- (10) Disposal for years 1988 through 1990 calculated from NJDEPE Origin & Disposal Reports augmented with information supplied by county governments and by Baker Engineers Out-of-State Disposal Facilities Reports dated 11/18/88, 12/28/88, and May 1991.
- (11) Disposal from 1992 through 1999 has been estimated in recognition of existing in-state disposal capacity and assuming that all the planned projects noted on pages 156 and 157 of the State Plan Update will be operational by the referenced dates and that some mixture of the potential future projects noted on pages 158 and 159 will become operational toward achievement of total self-sufficiency within a seven year period or by December 31, 1999.

ATLANTIC COUNTY



Current Status:

- In 1990, Atlantic County generated 675,000 tons of solid waste. The county recycled 341,000 tons and disposed of 334,000 tons which calculates to a 51% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 25%.
- A majority of the county's solid waste is disposed of out-of-state via the county's transfer station in Egg Harbor Township. The county has a ten-year contract to use Waste Management, Inc. landfills. The GROWS Landfill in Falls Township, Pennsylvania, and the Tullytown Landfill in Tullytown Borough, Pennsylvania, are the primary disposal facilities for a majority of its waste stream. On November 2, 1992 the county's limited use landfill for nonputrescible bulky waste began operations. In addition, the county has signed an interdistrict agreement with Mercer County which calls for the regionalization of solid waste management for the two counties, whereby the county will send its processible waste to the planned Mercer resource recovery incinerator in Hamilton Township (expected to be operational in 1996) in exchange for disposal of its bulky waste and dry industrial waste at the Atlantic limited use landfill located in Egg Harbor Township. Mercer County also has access to Atlantic County's recycling center and may also choose to use a regional leaf, grass and organic waste composting facility being developed by Atlantic County. Finally, Atlantic executed an interdistrict agreement with Somerset County in January 1993 which represents a ten-year arrangement for 30,000 - 60,000 tons of Somerset's bulky and dry industrial waste to be disposed of in the limited use landfill.

Source Reduction, Recycling and Regionalization Status:

- Atlantic County voluntarily addressed the recommendations of the task force in a July 9, 1991 plan amendment certified by the DEPE on December 17, 1991. The regionalization component was addressed through entering into of the Atlantic County/Mercer County and the Atlantic County/Somerset County interdistrict agreements. The recycling component was addressed through adoption of the task force's recycling goal of 60% of the total waste stream; the expansion of the materials the county has listed

as designated recyclables; expansion of the curbside recycling collection program; simplification of the procedures to modify the county recycling plan; and a recycling enforcement policy. The source reduction component was addressed through capping the 1990 per capita waste generation by 1995 and reducing total waste generation by 2000, the ACUA conducting waste audits at county facilities and offices, municipalities, and public institutions, the endorsement of a recycled products procurement policy for all its departments and divisions, the endorsement of backyard composting, the investigation of per container rate systems, and the encouragement of the development of community and civic reuse centers and programs. The county is encouraged to expand its recycling program as new technologies, markets and facilities become available.

- The county has expanded its list of designated recyclables to include glass containers, newspapers, aluminum cans, corrugated cardboard, leaves, HDPE, PET, LDPE, household batteries, tin and steel cans and telephone books in its residential sector. In addition, it has designated glass containers, newspapers, aluminum cans, corrugated cardboard, office and computer paper, HDPE, PET, LDPE, polystyrene, tin and steel cans and telephone books in its commercial and institutional sectors.
- Beyond its traditional recycling activities, the county plans to compost selected waste stream items including food waste, sludge and wood waste in an enclosed facility.
- The county commenced operations at its new state-of-the-art recycling center, located in Egg Harbor Township, in October 1991.
- Atlantic County currently has a county limited use landfill, two small private demolition landfills, five transfer station/materials recovery facilities, seven leaf composting facilities, eight Class A recycling facilities and two Class B recycling facilities.

Future Facility Planning Status:

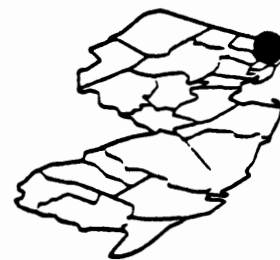
- Atlantic County's enclosed composting facility is in the permitting phase. It could be operational within six months of receiving its final permit.

Major County Plan Deficiencies:

- The county is currently exporting a majority of its solid waste for disposal. Future regional plans have been adopted, with portions already implemented. However, the county plan will remain deficient until self-sufficiency is attained.

- While significant long-term regional plans have been put in place with Mercer and Somerset counties, these plans still rely upon long-term out-of-state disposal of ash. This practice is inconsistent with the department's self-sufficiency goal.
- Atlantic County needs to identify its specific truck routes, complete with projected transportation costs, to all of its designated solid waste facilities.

BERGEN COUNTY



Current Status:

- In 1990, Bergen County generated 1,453,000 tons of solid waste. The county recycled 739,000 tons and disposed of 714,000 tons which calculates to a 51% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 48%.
- More than 250,000 tons per year of the county's processible ID type 10 and 23 solid waste is sent to the Essex County resource recovery incinerator under a regional agreement (memorandum of understanding [MOU]) between the two counties. The balance of the waste which is not composted at numerous in-state or out-of-state facilities or recycled is processed at a number of private transfer stations, pursuant to an agreement with the Bergen County Utilities Authority (BCUA) which is the county's implementing agency, or at the BCUA transfer station in North Arlington prior to out-of-state disposal at the Charles City Landfill in Virginia per contractual arrangements with Chambers Development Corp. until February 1994. Also, pursuant to the MOU, ash from the Essex resource recovery incinerator is disposed of at the Charles City Landfill in Virginia via Chambers.

Source Reduction, Recycling and Regionalization Status:

- On December 16, 1992 the Bergen County freeholders adopted an amendment to their county plan which addressed the Governor's Emergency Solid Waste Assessment Task Force Final Report concerning source reduction, recycling and regionalization. The proposed amendment was later submitted to the department on December 29, 1992 for review.
- The county's list of designated recyclables in its residential, commercial and institutional sectors includes: glass, leaves, newspapers, aluminum, corrugated cardboard and ferrous scrap. Additionally, for its commercial and institutional sector it has

designated high grade office paper and corrugated cardboard. A few municipalities have also designated magazines, plastic, high grade paper and nonferrous scrap.

- Bergen County currently has 16 transfer station/materials recovery facilities, 47 composting facilities, 35 Class A recycling facilities and one Class B recycling facility. Also, one landfill located in Bergen County, which is operated by the Hackensack Meadowlands Development Commission provides disposal capacity for municipal waste from North Arlington and for Hudson County's municipal waste stream.

Future Facility Planning Status:

- Although a resource recovery incinerator (Ridgefield), has been included in the district solid waste management plan since July 31, 1980 as well as a residual landfill sited (North Arlington) in its March 17, 1988 plan amendment, neither is actively being pursued. Further, Bergen County no longer has a contract with American Ref-Fuel for construction of the facility and, as of June 1991, American Ref-Fuel formally requested termination of its solid waste facility permit.

The county is pursuing a long-term regional arrangement with Essex County for continued use of its resource recovery incinerator and/or with Union County for use of its incinerator, which is planned to become operational in 1994. In this regard, Bergen County entered into an agreement effective May 1, 1991 with Essex County for delivery of approximately 250,000 tons per year of processible municipal solid waste to the Essex County incinerator. This agreement extends through February 1994. Also, on July 31, 1992, the department issued a letter setting forth an agreement between the BCUA, Essex County, Chambers and American Ref-Fuel the operator of the Essex incinerator, to amend the interdistrict agreement between the two counties, reflected in the MOU, effective May 1, 1991, to allow Essex County to request additional waste for the RRF from the BCUA from January 4, 1993 through July 31, 1993 on an as needed basis.

Major County Plan Deficiencies:

- With the abandonment of the county's plans to construct an incinerator, Bergen County no longer has a long-term strategy for solid waste management identified within its solid waste management plan. As a result, the county needs to revise its plan to provide for the long-term management of all its waste types.
- While Bergen County has entered into a short-term regional agreement with Essex County, this will only provide for approximately 35% of Bergen's waste requiring disposal. Further, the signing of a memorandum of understanding with Union County to provide 150,000 tons of processible waste annually to the Union County resource recovery incinerator expected to

commence operations in early 1994, will not eliminate Bergen's need to still dispose of a portion of its waste stream out-of-state which is contrary to the state's self-sufficiency policy.

- Bergen County needs to further address regional approaches to solid waste management, particularly in finalizing long-term contractual arrangements with Essex and/or Union counties for use of disposal capacity.
- The county needs to identify its specific truck routes, complete with projected transportation costs, to its designated solid waste facilities. Additionally, the county must also provide a description of its method of financing for its solid waste management program.

BURLINGTON COUNTY



Current Status:

- In 1990, Burlington County generated 760,000 tons of solid waste. The county recycled 331,000 tons and disposed of 429,000 tons which calculates to a 44% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 32%.
- All of the county's solid waste is disposed of at either the 80 TPD Fort Dix resource recovery incinerator in New Hanover Township or the state-of-the-art county landfill which is part of the Burlington County Solid Waste Management Facilities Complex in Florence and Mansfield Townships. This facility is likely to provide sufficient capacity for all solid waste generated within the county for the entire ten-year planning period addressed within this State Plan Update. This is the only county which has integrated long-term plans for sludge and solid waste. Burlington is also the first to pursue a permanent household hazardous waste collection depot which is to be located at its complex.

Source Reduction, Recycling and Regionalization Status:

- Pursuant to an August 16, 1991 certification, the county was directed to submit an amendment addressing the task force recommendations by February 11, 1992. As of December 1, 1992 the county has not addressed the task force recommendations of source reduction, recycling a minimum of 60% of its total waste stream, and a regional approach to solid waste management through the solid waste management plan amendment process.
- The county's list of designated recyclables includes glass containers, newspapers, tin, leaves, aluminum cans and corrugated cardboard in both its residential sector and its commercial and institutional sector. In addition, it has designated office paper in its commercial and institutional sector.

- Beyond its traditional recycling activities, the county has planned for and is currently constructing a co-composting facility which will initially process sludge and wood waste. In future applications, other waste types may be added.
- Burlington County currently has one county landfill and three small private industrial landfills, two transfer station/materials recovery facilities, one incinerator (Ft. Dix), 23 composting facilities, six Class A recycling facilities and two Class B recycling facilities.

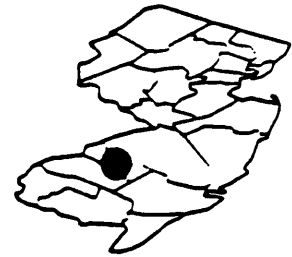
Future Facility Planning Status:

- The county's household hazardous waste collection depot is scheduled for operation in the late Spring of 1993.
- Burlington's co-composting facility is scheduled to be operational in late 1993 or early 1994.

Major County Plan Deficiencies:

- The county anticipated development of a refuse derived fuel facility in conjunction with the co-composting facility at the county landfill site. However, development of this facility is years behind schedule with no anticipated start-up date. The absence of this planned facility has resulted in the landfill's capacity being exhausted at an accelerated rate.
- The county has not formally addressed the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, encouraging backyard composting and incorporating a county recycling procurement policy need to be adopted. Further, the county needs to endorse goals of recycling 50% of the municipal waste stream and 60% of the total waste stream by December 31, 1995. Finally, Burlington County needs to consider a regional approach to solid waste management.

CAMDEN COUNTY



Current Status:

- In 1990, Camden County generated 832,000 tons of solid waste. The county recycled 378,000 tons and disposed of 454,000 tons which calculates to a 45% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 30%.
- All of the county's processible waste is disposed of at the South Camden resource recovery incinerator. Ash from the incinerator is disposed of out-of-state at the Mountainview Reclamation Landfill in Green Castle, Pennsylvania. Camden's bypass and nonprocessable waste is disposed of at the Pennsauken Landfill which also serves as a back-up disposal facility for nonhazardous ash. This landfill is likely to provide sufficient capacity for all nonprocessable and bypass waste for the entire ten-year planning period addressed within this State Plan Update.

Source Reduction, Recycling and Regionalization Status:

- On December 5, 1991, the county adopted an amendment to its district solid waste management plan which incorporates the Comprehensive, Long-term, Environmental, Action, Recycling (CLEAR) Plan. This plan, which was certified on May 19, 1992, endorses a goal of recycling 60% of the total waste stream by December 31, 1995 and includes additional designated recyclables. It also proposes two materials recovery facilities, as well as additional compost facilities and recycling centers, all of which have been identified as potential regional facilities. The CLEAR Plan, although approved, is too general to adequately address the task force recommendations.
- In its CLEAR Plan, the county proposes expanding its recommended recyclables to include glass containers, newspapers, aluminum cans, plastic, tin cans, bimetallic cans, yard waste, leaves, grass, batteries, scrap metal, tires, mixed paper, cardboard, food waste, asphalt, concrete, white goods, paint and used motor oil.

- Camden County currently has one county landfill and one small private vegetative landfill, two transfer station/materials recovery facilities, three Class B recycling facilities and one large-scale incinerator.

Future Facility Planning Status:

- The CLEAR Plan calls for converting the Winslow Township Transfer Station into a materials recovery facility and to construct a materials recovery facility at the Pennsauken Landfill.

Major County Plan Deficiencies:

- Although the Pennsauken Landfill is designated as an in-county back-up for the disposal of ash, the county's primary reliance on out-of-state disposal for this waste is contrary to the department's self-sufficiency goal. The DEPE has ordered the county to evaluate the feasibility of landfilling ash at the Pennsauken Landfill in the future.
- The CLEAR Plan fails to adequately address the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, establishing a permanent household hazardous waste collection program, encouraging backyard composting, and incorporating a county recycling procurement policy need to be adopted. Further, the county is encouraged to consider the designation of additional recyclables and to adopt the goal of recycling 50% of the municipal waste stream in addition to recycling 60% of the total waste stream. Finally, the county needs to consider a regional approach to all of its solid waste facilities.

CAPE MAY COUNTY



Current Status:

- In 1990, Cape May County generated 271,000 tons of solid waste. The county recycled 143,000 tons and disposed of 128,000 tons which calculates to a 53% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rates waste 29%.
- All of the county's waste is disposed of at the Cape May County Municipal Utilities Authority (CMCMUA) Landfill in Woodbine Borough. Most municipalities direct-haul their waste, while others use the CMCMUA transfer station in Middle Township. An intermediate processing facility and a bulky waste recycling facility is also operative at the site of the landfill. This facility was under a waiver of strict compliance dated July 13, 1990 with the Pinelands Commission to cease operations by December 31, 1992. However, litigation regarding closure of the landfill and negotiations to resolve the case between the parties resulted in an agreement for an extension of the landfill closure date until May 1996.

Source Reduction, Recycling and Regionalization Status:

- The county has endorsed goals of recycling 70% of its municipal waste stream and 78% of its total waste stream by December 31, 1995. However, the department's June 27, 1991 certification required the county to address source reduction and regionalization by December 25, 1991, which the county has not complied with.
- Cape May County's designated recyclables include residential/commercial/institutional newspaper, magazines, office paper, corrugated cardboard, kraft grocery bags, glass, aluminum cans, bimetallic containers, tin plated steel food and beverage containers and PET and HDPE plastics.

- Beyond its traditional recycling activities, the county has planned a municipal waste composting facility. Cape May also has an artificial tire reef program, a wildlife hibernaculum and a Christmas tree chipping/mulch project.
- Cape May County currently has one regional landfill servicing the entire county, two transfer station/materials recovery facilities, three composting facilities, eight Class A recycling facilities and two Class B recycling facilities.

Future Facility Planning Status:

- The county's municipal waste composting facility, with a planned capacity of 600 tons per day, is currently under technical permit review within the department, with a planned operation date projected for early 1994.

Major County Plan Deficiencies:

- The county needs to provide a contingency solid waste disposal alternative, including an intensive study of opportunities for short and long-term disposal, including regional agreements for in-state disposal capacity; selection of a facility which the county would utilize for processing and transferring the county's waste out-of-county or out-of-state; and the designation of waste flow to both interim and final disposal facilities. This is necessitated by the pending closure of the CMCMUA landfill.
- Cape May County has not adequately addressed the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, establishing a permanent household hazardous waste collection program, encouraging backyard composting and incorporating a county recycling procurement policy need to be adopted. Further, the county needs to consider a regional approach to solid waste management.
- Additionally, the county must provide a description of its method of financing solid waste management in the district.

CUMBERLAND COUNTY



Current Status:

- In 1990, Cumberland County generated 291,000 tons of solid waste. The county recycled 132,000 tons and disposed of 159,000 tons which calculates to a 45% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 26%.
- All of the county's waste is disposed of at the Cumberland County Landfill which is part of the Cumberland County Solid Waste Complex, located in Deerfield Township.

Source Reduction, Recycling and Regionalization Status:

- In its June 9, 1992 plan amendment, certified on November 17, 1992, the county endorsed the goals of a 60% total waste stream recycling rate and a 50% municipal recycling rate to be achieved by December 31, 1995.
- The county has undertaken an aggressive strategy to stimulate source reduction. Specifically, these programs include methods to cap per capita generation of solid waste by 1995 at 1990 levels; to reduce the per capita generation rate within ten years; to reduce the toxic component of products entering the solid waste stream; to conduct waste audit workshops for the county's 25 largest generators of solid waste and all institutions and businesses with more than 100 employees; to encourage consumers to purchase in bulk to minimize packaging; to reward county and municipal agencies, businesses and institutions for effective source reduction programs; to reduce the amount of junk mail in the waste stream; and to promote backyard composting.
- The county's list of designated recyclables includes: leaves, glass and metal food and beverage containers, plastic (PET) beverage bottles, corrugated cardboard and newspapers in its residential, commercial and institutional sectors.

- Beyond its traditional recycling activities including operations of the county's materials separating facility, the county has proposed a bulky waste recycling facility.
- Cumberland County currently has one regional county landfill, eight composting facilities, 14 Class A recycling centers and one Class B recycling center.

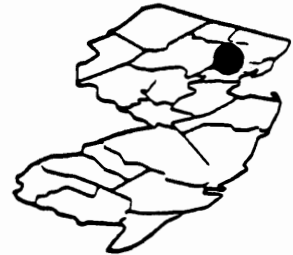
Future Facility Planning Status:

- The county's proposed bulky waste recycling facility is to be located at its Solid Waste Complex. The facility is scheduled for operation by October 1994. The county is investigating the development of a preprocessing and solid waste composting operation, through regionalization or other means.

Major County Plan Deficiencies:

- Cumberland County is encouraged to consider designating additional recyclables in order to achieve its 50% and 60% recycling rates. In addition, the county predicated achievement of its 50% and 60% goals on facilities which have not yet been developed. The development of these facilities will be critical in reaching the recycling target rates. The county needs to identify timeframes for achievement of its waste audit goals, household hazardous waste programs and reduction of the toxic components of packaging. Finally, Cumberland County needs to further consider its regional approach to solid waste management.

ESSEX COUNTY



Current Status:

- In 1990, Essex County generated 1,469,000 tons of solid waste. The county recycled 623,000 tons and disposed of 846,000 tons which calculates to a 42% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 30%.
- All of the county's ID type 10 (municipal) and processible ID types 23 (vegetative) and 27 (dry industrial) solid waste is disposed of at the incinerator in Newark. All other waste is directed to the Solid Waste Transfer and Recycling transfer station in Newark for processing prior to out-of-state disposal at the Harleysville Landfill in Exeter, Pennsylvania. Effective May 1, 1991, Essex entered into a regional agreement (memorandum of understanding [MOU]) with Bergen County whereby it accepts 250,000 tons per year of Bergen's processible ID type 10 and 23 solid waste through February 1994. Also, on July 31, 1992 an additional agreement allowed Essex County to request additional waste for the incinerator from Bergen County on an as needed basis, through July 31, 1993. Ash from the resource recovery incinerator is direct-hauled out-of-state to the Charles City Landfill in Virginia pursuant to an agreement, which extends until February 1994.

Source Reduction, Recycling and Regionalization Status:

- As of December 1, 1992 the county had not addressed the task force recommendations of source reduction, recycling a minimum of 60% of the total waste stream and a regional approach to solid waste management through the solid waste management plan amendment process. Furthermore, the department's January 21, 1992 certification of the county's September 12, 1990 plan amendment required Essex County to address the task force report by July 19, 1992.

- The county's list of designated recyclables includes newspapers, glass food and beverage containers, aluminum cans, used motor oil and leaves in its residential, commercial and institutional sectors. Additionally, it has designated corrugated cardboard and office paper in its commercial and institutional sector.
- Essex County currently has six transfer station/materials recovery facilities, 16 leaf composting facilities, 32 Class A recycling facilities, two Class B recycling facilities and one large-scale incinerator.

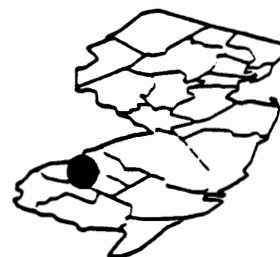
Future Facility Planning Status:

- None formally identified in the county plan.

Major County Plan Deficiencies:

- The county needs to formally designate its solid waste management implementing agency and develop a long-term in-state solid waste disposal strategy for its ash and nonprocessibles. Essex also needs to enter into a long-term interdistrict agreement for its excess capacity at its incinerator.
- As previously indicated, the county has not formally addressed the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, establishing a permanent household hazardous waste collection program, encouraging backyard composting and incorporating a county recycling procurement policy need to be adopted. Further, the county needs to endorse goals of recycling 50% of the municipal waste stream and 60% of the total waste stream by December 31, 1995. Finally, while Essex County has entered into a regional agreement with Bergen County for shared use of its incinerator, Essex County needs to develop a long-term regional approach to solid waste management.
- The county needs to identify its truck routes, complete with projected transportation costs, to all its designated solid waste facilities.

GLOUCESTER COUNTY



Current Status:

- In 1990, Gloucester County generated 455,000 tons of solid waste. The county recycled 234,000 tons and disposed of 221,000 tons which calculates to a 51% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 45%.
- All of the county's processible municipal waste is disposed of at the Gloucester incinerator in West Deptford and all bypass, nonprocessible waste and nonhazardous ash is disposed of at the Gloucester County Landfill in South Harrison. The landfill is likely to provide sufficient capacity for bypass waste, nonprocessibles, and nonhazardous ash for the entire ten-year planning period addressed within this State Plan Update.

Source Reduction, Recycling and Regionalization Status:

- The county voluntarily addressed the task force recommendations in a September 18, 1991 plan amendment certified on March 18, 1992. The county has endorsed goals of recycling 50% of the municipal waste stream and 60% of the total waste stream. Also, the county is endorsing public information/education programs, an enforcement strategy, additional recyclable materials, additional vegetative waste composting facilities, and a county recycling procurement policy to increase recycling. In addition, Gloucester has adopted source reduction measures of conducting waste audits, public information/education programs, encouraging backyard composting, and conducting household hazardous waste collection programs.

- The county has expanded its list of designated recyclables to include glass containers, newspapers, aluminum cans, leaves, ferrous cans and plastic containers (HDPE and PET) for both its residential and its commercial and institutional sectors. Additionally, it has identified polystyrene foam products to be recycled by its commercial and institutional sector.
- Gloucester County currently has one county landfill and two small private industrial landfills, one transfer station/materials recovery facility, five composting facilities, ten Class A recycling facilities, two Class B recycling facilities and one large-scale incinerator.

Future Facility Planning Status:

- None formally identified in the county plan.

Major County Plan Deficiencies:

- The county needs to further consider its regional approach to solid waste management.

HUDSON COUNTY



Current Status:

- In 1990, Hudson County generated 913,000 tons of solid waste. The county recycled 378,000 tons and disposed of 535,000 tons which calculates to a 41% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 26%.
- All of the county's ID type 10 (municipal) waste is disposed of at the Hackensack Meadowlands Development Commission (HMDC) 1-E Balerfill in North Arlington. All other solid waste is disposed of out-of-state at the Empire Landfill in Taylor, Pennsylvania via the HMDC Baler Transfer Station, also located in North Arlington.

Source Reduction, Recycling and Regionalization Status:

- The county's 27, 1990 plan amendment broadly embraced the task force recommendations of source reduction, recycling a minimum of 60% of the total waste stream and a regional approach to solid waste management. However, the county was directed to submit a subsequent plan amendment demonstrating in more detail how it shall achieve these goals. In this regard, on September 26, 1991, Hudson County adopted a plan amendment which, among other things, addressed source reduction measures of household hazardous waste collection, in-house waste reduction, and educational programs in schools and industry. Additionally, this amendment explored the feasibility of a county materials recovery facility, construction and demolition processing and recycling facility and investigated the feasibility of municipal waste composting. Although this amendment was certified by the department on March 16, 1992, the county was again required to submit a subsequent amendment to further address source reduction, recycling and regionalization. On January 13, 1993 the county submitted the required amendment which addressed the elements of the task force report for review. This amendment was adopted by the Hudson County freeholders on December 20, 1992.

- The county's list of designated recyclables includes newspapers, leaves, glass food and beverage containers, aluminum cans, and plastics in its residential sector and corrugated cardboard and high grade office paper in its commercial and institutional sector.
- Hudson County currently has four transfer station/materials recovery facilities, four composting facilities, 35 Class A recycling facilities and one Class B recycling facility. In addition, the county utilizes the HMDC 1-E landfill located in North Arlington, Bergen County for its type 10 waste.

Future Facility Planning Status:

- The county has identified the Koppers Koke site in Kearny for its proposed incinerator. However, development of this project is not being pursued at this time. As previously noted, Hudson County is considering the development of a district materials recovery facility, a construction and demolition debris processing facility and a composting facility for type 10 (municipal), type 23 (vegetative waste) and type 25 (animal and food processing) wastes.

Major County Plan Deficiencies:

- The county needs to provide a long-term in-state solid waste disposal strategy. Capacity at the HMDC 1-E Balefill is relatively limited and Hudson County may soon be a 100% exporter of solid waste with no new in-county facilities actively being developed at this time. Additionally, the county needs to identify its specific truck routes, complete with projected transportation costs, to its designated solid waste facilities.

HUNTERDON COUNTY



Current Status:

- In 1990, Hunterdon County generated 137,000 tons of solid waste. The county recycled 50,000 tons and disposed of 87,000 tons which calculates to a 36% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 25%.
- All of the county's waste is directed to Hunterdon's transfer station in Clinton Township. 100 tons per day of processible waste is directed to the Warren County incinerator in Oxford Township until December 31, 2001 pursuant to the Hunterdon/Warren Interdistrict Agreement. The balance of waste is disposed of out-of-state at landfills operated by Chambers Development Corp.

Source Reduction, Recycling and Regionalization Status:

- Pursuant to a letter dated January 15, 1992 from the department, the county has been directed to submit an amendment addressing the task force recommendations by July 14, 1992. On July 15, 1992, the county submitted a draft amendment to address the task force recommendations of source reduction, recycling a minimum of 60% of the total waste stream and a regional approach to solid waste management through the solid waste management plan amendment process. However, a draft amendment is insufficient to enable formal DEPE review and the county had still not adopted its revised plan as of December 31, 1992.
- The county's list of designated recyclables includes leaves, newspapers, glass containers and aluminum cans in both its residential and its commercial and institutional sectors. Additionally, corrugated cardboard and office paper have been designated in its commercial and institutional sector.
- Hunterdon County currently has one small private industrial landfill, one transfer station/materials recovery facility, two composting facilities and three Class A recycling facilities.

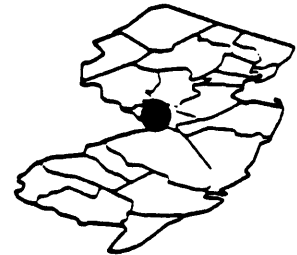
Future Facility Planning Status:

- Hunterdon County has identified, in its solid waste management plan, a district landfill site in Franklin Township. However, the county is not pursuing landfill development of the site at this time.

Major County Plan Deficiencies:

- The county is currently exporting about 50% of its solid waste for out-of-state disposal. Hunterdon County must provide a long-term strategy for in-state disposal and cease reliance on out-of-state disposal.
- No long-term in-county facilities are operational or far along in the planning/permitting process.
- The county needs to identify a transportation plan complete with projected transportation costs, to all its designated solid waste facilities.
- The county needs to provide a description of its method of financing solid waste management in the district.
- As previously indicated, the county has not formally submitted an amendment to address the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, establishing a permanent household hazardous waste collection program, encouraging backyard composting and incorporating a county recycling procurement policy need to be adopted. Also, the county needs to endorse goals of recycling 50% of the municipal waste stream and 60% of the total waste stream by December 31, 1995. Finally, Hunterdon County needs to consider a further regional approach to solid waste management.

MERCER COUNTY



Current Status:

- In 1990, Mercer County generated 934,000 tons of solid waste. The county recycled 572,000 tons and disposed of 362,000 tons which calculates to a 61% recycling rate for the total waste stream. The county documented municipal waste stream recycling rate was 31%.
- All of the county's waste is directed to the county transfer station in Ewing Township prior to disposal out-of-state at the Waste Management Landfill Inc., in Tullytown, Pennsylvania. In addition, the county has entered into an interdistrict agreement with Atlantic County which calls for the regionalization of solid waste management for the two counties whereby Mercer will accept all of Atlantic's processible municipal solid waste stream at its planned incinerator in exchange for disposal of Mercer's bulky waste and dry industrial waste at Atlantic's planned bulky waste recycling facility and limited use landfill to be located in Egg Harbor Township. Mercer County also has access to Atlantic's recycling center and may also choose to use a regional leaf, grass and organic waste composting facility being developed by Atlantic County.

Source Reduction, Recycling and Regionalization Status:

- Per the approved district plan, the county voluntarily endorsed goals of recycling 50% of the municipal waste stream and 60% of the total waste stream. The regionalization component was addressed through the Atlantic/Mercer counties interdistrict agreement. In addition, Mercer has adopted a source reduction strategy which includes capping per capita waste generation by 1995, reducing total waste generation by 2000, conducting waste audits, a household hazardous waste collection and education program, and a per container rate fee structure program.
- The county has expanded its list of designated recyclables to include, for both its residential and its commercial and institutional sectors, mixed paper (newspapers, magazines,

corrugated cardboard), office paper (commercial and institutional only), aluminum, clear, green, and amber food and beverage containers, PET beverage and HDPE beverage and laundry detergent containers, tin-plate steel and bimetallic containers, tires vehicular batteries, white goods, leaves and grass, used motor oil and ferrous automotive scrap.

- Mercer County currently has one private landfill, three transfer station/materials recovery facilities, 11 composting facilities, 13 Class A recycling facilities and two Class B recycling facilities.

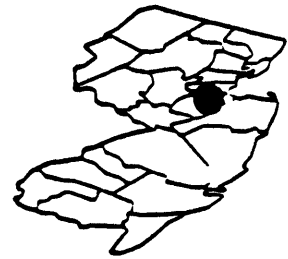
Future Facility Planning Status:

- Engineering designs and FEHIS are currently under review for a incinerator planned to be constructed on Duck Island, in Hamilton Township for operation in 1996.

Major County Plan Deficiencies:

- Mercer County needs to identify its revised truck routes, complete with transportation costs, to its planned incinerator and Trenton Sludge Lagoon Landfill in consideration of the Mercer/Atlantic interdistrict agreement.
- The county is currently a 100% exporter for solid waste disposal. Future disposal plans have been adopted and portions already implemented. However, the county plan will remain deficient until self-sufficiency is attained.
- While significant long-term regional plans have been put in place with Atlantic County, these plans still rely upon long-term out-of-state disposal of ash and bypass waste. This practice is inconsistent with the department's self-sufficiency goal.

MIDDLESEX COUNTY



Current Status

- In 1990, Middlesex County generated 1,659,000 tons of solid waste. The county recycled 799,000 tons and disposed of 860,000 tons which calculates to a 48% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 34%.
- All of the county's waste is disposed of at the Edgeboro Landfill in East Brunswick.

Source Reduction, Recycling and Regionalization Status:

- The county adopted a plan amendment on May 26, 1992 which addressed the task force recommendations of source reduction and recycling 60% of the total waste stream and 50% of the municipal waste stream by December 31, 1995 through the solid waste management plan amendment process.
- The county's list of designated recyclables includes newspapers, leaves, glass, aluminum cans and used motor oil for both its residential and its commercial, industrial, and institutional sectors. In addition, it has designated office paper and corrugated cardboard for its commercial and institutional sector.
- Middlesex County currently has one operating regional landfill and three small private sole source landfills, eight transfer station/materials recovery facilities, 12 composting facilities, 43 Class A recycling facilities and three Class B recycling facilities.

Future Facility Planning Status:

- The county sited an incinerator in Sayreville. However, development of the site has not been pursued and the county freeholders have deleted the facility from the county plan and will utilize source reduction, expanded recycling and landfill disposal at Edgeboro as its solid waste management approach, pursuant to the October 28, 1992 certification of the county's May 26, 1992 plan amendment.

Major County Plan Deficiencies:

- Middlesex needs to identify its specific truck routes, complete with projected transportation costs, to all its designated solid waste facilities. In addition, the county must provide a description of its method of financing its solid waste management program.
- Although Middlesex County has provided a source reduction plan and a recycling strategy plan, the county still needs to address various components of its recycling strategy and to consider a regional approach to solid waste management.
- As a result of the deletion of the Middlesex County incineration project, the county needs to provide a detailed analysis of the total solid waste generated within the county for recycling and disposal to assure the district's utilization of the maximum practicable use of resource recovery.

MONMOUTH COUNTY



Current Status:

- In 1990, Monmouth County generated 958,000 tons of solid waste. The county recycled 431,000 tons and disposed of 527,000 tons which calculates to a 45% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 41%.
- All of the county's solid waste is disposed of at the Monmouth County Reclamation Center shredder and landfill facility in Tinton Falls Borough.

Source Reduction, Recycling and Regionalization Status:

- As of December 1, 1992 the county has not submitted a freeholder adopted amendment which addresses the task force recommendations of source reduction, recycling a minimum of 60% of the total waste stream and a regional approach to solid waste management through the solid waste management plan amendment process. The county was directed through a January 15, 1992 letter from DEPE to adopt a plan amendment addressing these recommendations by July 14, 1992.
- The county's list of designated recyclables includes leaves, glass bottles and jars, aluminum beverage cans, newspapers, used motor oil, asphalt, concrete and wood waste for its residential and its commercial and institutional sectors. In addition, high grade paper and corrugated cardboard are designated for its commercial and institutional sector.
- Monmouth County currently has two landfills including the county landfill and a sole source demolition waste landfill, 25 composting facilities, 31 Class A recycling centers and one Class B recycling center. The county also has an old landfill owned by Waste Management, Inc. whose owners are seeking reopening authorization from the department. While a permit decision is

currently pending, the county freeholders recently adopted an amendment to delete the facility from the county plan which is pending before the department.

Future Facility Planning Status:

- The county had previously included in its district solid waste management plan an incinerator facility to be located in Tinton Falls. However, the specific technology and capacity was later remanded for modification by the department pending the outcome of the Governor's Solid Waste Assessment Task Force recommendations. Also, in a November 1991 referendum, the county voters rejected this facility and the project is no longer considered viable.

Major County Plan Deficiencies:

- Although the county freeholders have decided not to proceed with its previously approved incinerator facility and to study available alternate resource recovery technologies, this action has not been addressed through a plan amendment. The county needs to provide for a resource recovery technology and/or a revised solid waste disposal strategy.
- As previously indicated, the county has not formally addressed the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, establishing a permanent household hazardous waste collection program, encouraging backyard composting and incorporating a county recycling procurement policy need to be adopted. Further, the county needs to endorse goals of recycling 50% of the municipal waste stream and 60% of the total waste stream by December 31, 1995. Finally, Monmouth County needs to consider a regional approach to solid waste management.

MORRIS COUNTY



Current Status:

- In 1990, Morris County generated 704,000 tons of solid waste. The county recycled 324,000 tons and disposed of 380,000 tons which calculates to a 46% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 41%.
- The county relies on out-of-state disposal for all of its solid waste. All waste is processed at transfer stations located in Mt. Olive and Parsippany-Troy Hills, both of which are operated by the Chambers Development Corp.

Source Reduction, Recycling and Regionalization Status:

- Pursuant to an April 19, 1991 plan amendment certification, the county was directed to submit an amendment addressing the task force recommendations by October 16, 1991. As of December 1, 1992 the county has not addressed the task force recommendations of source reduction, recycling a minimum of 60% of the total waste stream and a regional approach to solid waste management through the solid waste management plan amendment process.
- The county's list of designated recyclables includes leaves, newspapers and aluminum cans and glass containers in its residential and its commercial and institutional sectors. In addition, office paper and corrugated cardboard have been identified in its commercial and institutional sector.
- Morris County currently has one small private industrial landfill, two transfer station/materials recovery facilities, 24 composting facilities, 23 Class A recycling facilities and one Class B recycling facility.

Future Facility Planning Status:

- The county had proposed the district plan inclusion of an incinerator site in Roxbury Township. However, the county is not pursuing development of the facility at this time.

Major County Plan Deficiencies:

- The county is currently exporting 100% of its solid waste for out-of-state disposal. Morris County must provide a long-term strategy for in-state disposal and cease reliance on out-of-state disposal.
- No long-term in-state disposal sites are in operation or far along in the planning/permitting stages.
- The county needs to identify a transportation plan complete with projected transportation costs, to all its designated solid waste facilities.
- The county needs to provide a description of its method of financing solid waste management in the district.
- As previously indicated, the county has not formally addressed the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, establishing a permanent household hazardous waste collection program, encouraging backyard composting and incorporating a county recycling procurement policy need to be adopted. Further, the county needs to endorse goals of recycling 50% of the municipal waste stream and 60% of the total waste stream by December 31, 1995. Finally, Morris County needs to consider a regional approach to solid waste management.

OCEAN COUNTY



Current Status:

- In 1990, Ocean County generated 848,000 tons of solid waste. The county recycled 409,000 tons and disposed of 439,000 tons which calculates to a 48% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 35%.
- All of the county's solid waste is disposed of at the Ocean County Landfill Corporation landfill located in Manchester Township. This facility is likely to provide sufficient capacity for all solid waste generated within the county for the entire ten-year planning period addressed within this State Plan Update.

Source Reduction, Recycling and Regionalization Status:

- The county voluntarily addressed the task force recommendations in an amendment of February 19, 1991. This amendment was certified by the department on July 26, 1991. To increase recycling, the county designated additional recyclables and included numerous materials recovery facilities, recycling centers and compost facilities. However, the amendment did not address the issues of source reduction and regionalization. Therefore, the county was directed to address these issues in a subsequent amendment to be submitted by February 28, 1992. As of December 1, 1992, the required amendment had been submitted and is currently under review.
- The county's list of designated recyclables includes leaves, ferrous metal (tin) cans, glass containers, newspapers, aluminum cans, and plastic (PET, HDPE, and PVC) containers in its residential, commercial and institutional sectors. In addition, corrugated cardboard in its commercial sector as well as high grade office paper in its commercial and institutional sectors has also been designated.

- Beyond its traditional recycling activities, the DEPE has approved the district plan inclusion of the Rutgers University Agricultural Field Station Pilot Composting Facility in Manchester Township. This facility will study and determine the optimum composting methods.
- Ocean County currently has one county landfill, two small private demolition landfills, and one small private industrial landfill, two transfer station/materials recovery facilities, 11 composting facilities, 18 Class A recycling facilities, and three Class B recycling facilities.

Future Facility Planning Status:

- The county has proposed a materials recovery facility and a composting facility to be located at the Ocean County Landfill Corporation landfill site. Two of the three materials recovery facility modules are to be constructed by January 1994. The first of three composting facility modules is to be constructed by 1994, while the other two are to be completed by 1996.

Major County Plan Deficiencies:

- As previously indicated, the county has submitted an amendment to address the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, establishing a permanent household hazardous waste collection program, encouraging backyard composting and incorporating a county recycling procurement policy need to be adopted. Further, Ocean County needs to consider a regional approach to solid waste management.

PASSAIC COUNTY



Current Status:

- In 1990, Passaic County generated 750,000 tons of solid waste. The county recycled 286,000 tons and disposed of 464,000 tons which calculates to a 38% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 26%.
- All of the county's waste is directed to the PenPac and Nicholas/PenPac transfer stations in Paterson and the PenPac transfer station in Totowa prior to out-of-state disposal at, primarily, the Southern Allegheny Landfill in Pennsylvania.

Source Reduction, Recycling and Regionalization Status:

- Per the approved district plan, the county voluntarily endorsed goals of recycling 50% of the municipal waste stream and 60% of the total waste stream. In addition, Passaic has also endorsed a source reduction strategy to include county procurement guidelines.
- The county has expanded its list of designated recyclables to include, in its residential, its commercial and its institutional sectors, newspapers, leaves, glass food and beverage containers, aluminum beverage containers, plastic containers (PET and HDPE), plastic film (commercial only), corrugated cardboard, mixed paper (magazines, junk mail and unsoiled scrap), white goods (residential only), ferrous and nonferrous scrap metals, construction and demolition debris (concrete, brick, block, asphalt, asphalt-based roofing scrap and tree stumps/trunks), tires, used motor oil, automotive batteries, grass, brush and high grade paper (commercial only).
- Passaic County currently has six transfer station/materials recovery facilities, 20 composting facilities, 24 Class A recycling facilities and one Class B recycling facility. No landfills are operating in Passaic County.

Future Facility Planning Status:

- The county incinerator planned to be constructed in the City of Passaic is not moving forward, and for all intents and purposes has been cancelled.
- The county expects to establish a bulky waste processing facility and implement a special materials collection program.

Major County Plan Deficiencies:

- While Passaic County adopted a plan amendment on October 14, 1992 to address modification to its source reduction and 60% recycling plans, the county still needs to consider a regional approach to solid waste management.
- The county is currently a 100% exporter for solid waste disposal. Since the county's incinerator will not be constructed, Passaic County must develop a long-term disposal strategy which does not rely on out-of-state disposal. The county plan will remain deficient until self-sufficiency is attained.
- The county's arrangements with PenPac, Inc. for solid waste transfer services and Chambers Development Corp. for out-of-state disposal were temporarily extended until June 1994 and December 31, 1993, respectively. The county must identify its arrangements and long-term disposal strategy to ensure continued service to Passaic County residents.
- In addition, Passaic must provide a description of its method of financing solid waste management in the district.

SALEM COUNTY



Current Status:

- In 1990, Salem County generated 193,000 tons of solid waste. The county recycled 47,000 tons and disposed of 146,000 tons which calculates to a 24% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 12%. These rates are somewhat misleading in that a major corporation (DuPont) generates nearly 50% of Salem County's solid waste and does not contribute significantly to the county's recycling tonnage.
- All of the county's solid waste is disposed of at the Salem County Regional Landfill in Alloway Township.

Source Reduction, Recycling and Regionalization Status:

- As of December 1, 1992 the county has not addressed the task force recommendations of source reduction, recycling a minimum of 60% of the total waste stream and a regional approach to solid waste management through the solid waste management plan amendment process. The county has been directed through a January 15, 1992 letter from the DEPE to adopt a plan amendment addressing these recommendations by July 14, 1992.
- The county's list of designated recyclables includes clear and colored glass, aluminum, newspapers, high grade paper, leaves (residential only), corrugated and other cardboard, magazines and plastic (HDPE and PET) containers in its residential and its commercial and institutional sectors.
- Salem County currently has two landfills including the county landfill and a sole source industrial waste landfill, three composting facilities and four Class A recycling centers.

Future Facility Planning Status:

- The incinerator planned to be constructed in Carney's Point Township is not being pursued, and no other long-term projects are included within the plan for future development.

Major County Plan Deficiencies:

- As previously indicated, the county has not formally addressed the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, establishing a permanent household hazardous waste collection program, encouraging backyard composting and incorporating a county recycling procurement policy need to be adopted. Further, the county needs to endorse goals of recycling 50% of the municipal waste stream and 60% of the total waste stream by December 31, 1995. Finally, Salem County needs to consider a regional approach to solid waste management.
- The resource recovery component of the District Solid Waste Management Plan must be developed and submitted by Salem County.

SOMERSET COUNTY



Current Status:

- In 1990, Somerset County generated 374,000 tons of solid waste. The county recycled 145,000 tons and disposed of 229,000 tons which calculates to a 39% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 30%.
- All of the county's solid waste is initially directed to either the Bridgewater Resources, Inc. transfer station in Bridgewater Township or the Somerset Intermediate Recycling Center in Franklin Township. The Warren County/Somerset County interdistrict agreement provides 1,400 tons per week of processible waste to the Warren County resource recovery incinerator until December 31, 2001 and 1,977 tons per week from January 1, 2002 through November 30, 2008. The Atlantic County/Somerset County interdistrict agreement, executed in January 1993, represents a ten-year arrangement for 30,000 to 60,000 tons of Somerset's bulky and dry industrial waste to be disposed of in Atlantic's limited use landfill in Egg Harbor Township. The balance of waste is disposed of out-of-state at, primarily, the Empire Landfill in Taylor, Pennsylvania.

Source Reduction, Recycling and Regionalization Status:

- On April 7, 1992, the county adopted an amendment to address the task force recommendations certified by the DEPE on October 9, 1992. The regionalization component was addressed through the entering into of the Warren County/Somerset County and the Atlantic County/Somerset County interdistrict agreements. The recycling component was addressed through the adoption of the task force's recycling goal of 60% of the total waste stream; the expansion of the materials the county has listed as designated recyclables. The source reduction component was addressed through the waste audit program for the commercial, industrial and institutional sectors; the investigation of per container rate system; and the program for county and municipal governments procurement policy for recycled products.

- The county's list of designated recyclables includes leaves, aluminum cans, glass bottles, newspapers, magazines and plastic (PET and HDPE) containers, cardboard, office paper, junk mail, lead acid batteries, household batteries, used motor oil, wood, asphalt, concrete, and masonry in both its residential and commercial sectors.
- Beyond its traditional recycling activities, the county plans to site a pilot regional composting facility to compost sludge and solid waste. The concept of developing such a facility was approved within the district plan, but a specific technology and capacity was not designated.
- Somerset County currently has one small private/ municipal landfill, two transfer station/materials recovery facilities, seven composting facilities, six Class A recycling facilities and one Class B recycling facility.

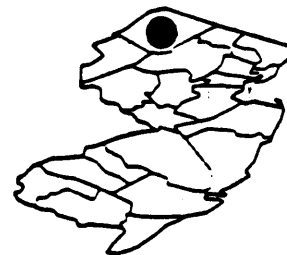
Future Facility Planning Status:

- At this time there is no projected date for the construction of the pilot regional sludge/solid waste composting facility referenced above.

Major County Plan Deficiencies:

- The county is currently exporting about 50% of its solid waste for out-of-state disposal.
- No long-term in-state sites are operational or far along in the planning/permitting phase.
- The county needs to identify a long-term strategy for in-state disposal for the portion of their solid waste not being delivered to Warren or Atlantic counties.
- The county needs to identify a transportation plan, complete with projected transportation costs, to all of its designated solid waste facilities.
- The county needs to provide a description of its method of financing solid waste management in the district.
- The county needs to consider a further regional approach to solid waste management.

SUSSEX COUNTY



Current Status:

- In 1990, Sussex County generated 202,000 tons of solid waste. The county recycled 103,000 tons and disposed of 99,000 tons which calculates to a 51% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 27%.
- All of the county's solid waste is disposed of at the Sussex County Landfill in Lafayette Township. This facility is likely to provide sufficient capacity for all solid waste generated within the county for the entire ten- year planning period addressed within this State Plan Update.

Source Reduction, Recycling and Regionalization Status:

- On January 22, 1992, the county adopted an amendment which is an outline of a strategy for addressing the task force recommendations. The amendment, which was certified on August 28, 1992, proposes a strategy to address source reduction, recycling a minimum of 60% of the total waste stream and a regional approach to solid waste management. The amendment, although approved, is too general to adequately address the task force recommendations.
- The county's list of designated recyclables includes leaves, aluminum cans, glass containers, newspapers, plastic (PET) containers, corrugated cardboard and ferrous scrap in both its residential and its commercial and institutional sectors. In addition, office paper is a designated recyclable in its commercial and institutional sector.
- Sussex County currently has one county landfill and one small municipal landfill, six composting facilities and three Class A recycling facilities.

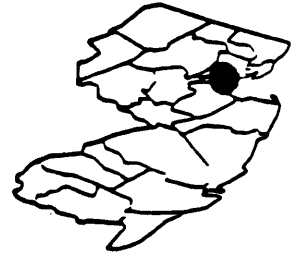
Future Facility Planning Status:

- The county expects to delete its incinerator site from its district solid waste management plan. However, it needs to proceed with development of its concept of a waste conversion facility as a replacement technology.

Major County Plan Deficiencies:

- As previously indicated, the county has adopted an amendment which fails to adequately address the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, establishing a permanent household hazardous waste collection program, encouraging backyard composting and incorporating a county recycling procurement policy need to be adopted. Further, the county needs to endorse goals of recycling 50% of the municipal waste stream and 60% of the total waste stream by December 31, 1995. Finally, Sussex County needs to consider a regional approach to solid waste management.

UNION COUNTY



Current Status:

- In 1990, Union County generated 744,000 tons of solid waste. The county recycled 307,000 tons and disposed of 437,000 tons which calculates to a 41% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 31%.
- Nearly all of the county's solid waste is primarily directed to two transfer stations prior to out-of-state disposal. These are the Ellesor transfer station in Elizabeth and the Automated Modular Systems transfer station in Linden. Primary out-of-state disposal sites are the GROWS landfill in Falls Township, Pennsylvania, the Tullytown Landfill in Tullytown, Pennsylvania and the Arden landfill in Washington, Pennsylvania. The Summit transfer station also processes waste from Summit and New Providence prior to out-of-state disposal. Further, the Linden City Landfill remains in operation and accepts municipal waste from Linden.
- The county signed a memorandum of understanding with Bergen County, whereby Bergen County would provide 150,000 tons annually of processible solid waste to the planned Union County incinerator. Also, Union County signed an out-of-state disposal contract with the Empire Landfill in Taylor, Pennsylvania, to accept all bypass, nonprocessable waste, and ash from the incinerator. With these agreements in hand, the Department issued the last approval (Service Agreement) on December 16, 1991 to authorize construction and operation of the 1,440 ton per day incinerator planned for Rahway. Construction commenced in late December, 1991.

Source Reduction, Recycling and Regionalization Status:

- Pursuant to the Service Agreement review and a July 26, 1991 plan amendment certification, the county was directed to submit an amendment addressing the task force recommendations by January 22, 1992. As of February 18, 1992, the department certified the August 1, 1991 plan amendment which endorsed the

goals of recycling 50% of the municipal waste stream and 60% of the total waste stream. Further, Union County has incorporated source reduction measures of investigating a per container rate fee structure, capping generation rates, conducting waste audits, the endorsement of a landscaping management strategy, and the development of a public information policy. Finally, pursuant to the signing of a memorandum of understanding with Bergen County, the county has designated its planned incinerator, currently being constructed in Rahway, as a regional facility to process acceptable waste from Bergen and Union counties.

- The county's list of designated recyclables includes glass containers, newspapers, aluminum cans, leaves, vehicular and consumer batteries, used motor oil, corrugated cardboard, ferrous cans, plastic containers (HDPE and PET), mixed paper, roofing materials, grass and brush, and white goods for both its residential sector and its commercial, institutional and industrial sector. In addition, it has also designated office paper and wood for its commercial, institutional and industrial sector.
- Beyond its traditional recycling activities, the county must institute a waste diversion program to be in place prior to commencement of operations of its resource recovery incinerator. This program is intended to preclude batteries, drywall, paints, tires, electronics and vehicular parts from reaching the incinerator.
- Union County currently has one small municipal landfill, six transfer station/materials recovery facilities, seven composting facilities, 15 Class A recycling facilities, one Class B recycling facility and one resource recovery incinerator (under construction).

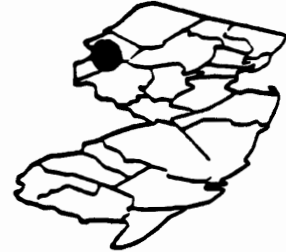
Future Facility Planning Status:

- The county incinerator is expected to commence operations in early 1994.
- On July 16, 1992 the county adopted an amendment to its approved county plan, proposing inclusion of Advanced Recycling Technologies Services, located in Linden, as the county's privatized recycling operation for the curbside collection and processing of its source separated recyclable materials.
- Union County has also planned three additional facilities. A mixed waste processing facility, to recover additional recyclables from the commercial, institutional and industrial sector, is expected to become operational by Spring of 1994. A bulky waste processing facility, to process residential bulky waste, construction and demolition debris, land clearing and manufacturing activities waste, is also expected to become operational by Spring of 1994. Finally, the county's household special waste facility, intended to accept and segregate household hazardous waste products in order to recycle and/or properly dispose of these materials, must be operational prior to the incinerator going on line.

Major County Plan Deficiencies:

- The county needs to identify in-state disposal sites for bypass, nonprocessible waste, and ash from the proposed incinerator.
- The long-term out-of-state ash disposal contract is inconsistent with the department's self-sufficiency goal.
- The county needs to identify its truck routes, complete with projected costs, to all designated solid waste facilities.
- The county needs to provide a description of its method of financing solid waste management in the district.

WARREN COUNTY



Current Status:

- o In 1990, Warren County generated 134,000 tons of solid waste. The county recycled 39,000 tons and disposed of 95,000 tons which calculates to a 29% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 12%.
- o All of the county's processible solid waste is disposed of at the Warren County incinerator in Oxford Township. The nonprocessable waste, bypass and nonhazardous ash is disposed of at the Warren County landfill in White Township. This facility is likely to provide sufficient capacity for the noted waste types for the entire ten-year planning period addressed within this State Plan Update. In addition, the county has signed interdistrict agreements with Hunterdon County and Somerset County. The Warren County/Hunterdon County interdistrict agreement provides 100 tons per day of processible waste from Hunterdon County to the Warren County incinerator until December 31, 2001. The Warren County/ Somerset County interdistrict agreement provides 1,400 tons per week of processible waste from Somerset County to the Warren County incinerator until December 31, 2001, and 1,977 tons per week from January 1, 2002 through November 30, 2008.

Source Reduction, Recycling and Regionalization Status:

- o Pursuant to a January 17, 1991 plan amendment certification, the county was directed to submit an amendment addressing the task force recommendations by May 16, 1991. As of December 1, 1992 the county has not addressed the task force recommendations of source reduction and recycling a minimum of 60% of the total waste stream through the solid waste management plan amendment process. The regionalization component was addressed through the entering into of the Hunterdon/Warren and the Somerset/Warren interdistrict agreements.

- The county's list of designated recyclables includes leaves, glass containers, aluminum cans, tin cans and corrugated cardboard in its residential, commercial and residential sectors. Further it has designated plastic (PET and HDPE) containers, white goods (residential sector only), waste oil, newspapers (residential and commercial) and office paper (commercial and institutional sectors).
- In addition to the above, the county has established a battery recycling program in order to prevent the flow of batteries to its incinerator and, consequently, reduce mercury emissions from the facility.
- Warren County currently has one county landfill and one small private industrial landfill, two composting facilities, two Class A recycling facilities and one large-scale incinerator.

Future Facility Planning Status:

- None formally identified in the county plan.

Major County Plan Deficiencies:

- As previously indicated, the county has not formally addressed the Governor's Emergency Solid Waste Assessment Task Force Final Report. Source reduction measures such as conducting waste audits, capping generation rates, investigating a per container rate fee structure, establishing a permanent household hazardous waste collection program, encouraging backyard composting and incorporating a county recycling procurement policy need to be adopted. Further, the county needs to endorse goals of recycling 50% of the municipal waste stream and 60% of the total waste stream by December 31, 1995.

4. **Financial Assistance Programs**

The Division of Solid Waste Management within the DEPE administers a number of major grant and loan programs to assist local governments in the planning and development of solid waste systems, resource recovery facilities and recycling programs. This section summarizes the state's major financial assistance programs. In summary, as further outlined below, through August 1992: approximately \$250 million has been collected and the vast majority distributed to county governments for recycling, resource recovery and other solid waste system funding through various grant programs; approximately \$75 million in loans were awarded primarily for recycling and resource recovery facility development; \$42 million has been collected and placed within the Sanitary Landfill Contingency Fund to pay third party claims arising from landfill pollution; approximately \$335 million has been placed in landfill escrow accounts to go toward environmentally sound closure; and \$38 million in recycling tax credits were certified by the state. Cumulatively, over \$800 million has been collected in financial assistance programs dedicated to solid waste management.

- a. **The McEnroe Taxes:** The McEnroe Act (P.L. 1985, c. 38) amended the Solid Waste Management Act to provide financial and procurement mechanisms for implementing resource recovery facilities as an alternative to landfills (see Section E below for a more detailed description of the McEnroe Act). The financing portion of the law levies three taxes: the Solid Waste Services Tax, the Resources Recovery Investment Tax (RRIT) and the Importation Tax. The revenues from these taxes are designed to provide funds to implement county plans and to subsidize the initially higher rates associated with the construction and operation of a resource recovery facility. The following is a summary of each tax program:

- **Solid Waste Services Tax (SWST) Grant Program:** A solid waste services tax in the amount of \$.85 (1992 rate, increasing every year by \$.05) is levied on every ton of waste disposed of at a landfill located in New Jersey. The tax revenues are collected and deposited into the SWST fund and allocated to the counties pro rata based upon the amount of waste generated within each county. Grants from the fund are provided to county governments for the purpose of preparing, revising and implementing district solid waste management plans, including the district recycling plan. In addition, grants from the SWST fund have been used to develop innovative alternatives to current landfilling practices. The counties have instituted household hazardous waste and recycling programs, tire recycling projects, resource recovery development, compost projects, waste flow enforcement activities, public information/education programs, transfer station development and an ash landfill study with SWST fund monies.

Approximately \$31,171,653 in SWST's have been collected through calendar year 1991. SWST funds are distributed on a cost reimbursement basis where a county executes a grant contract with the department. Table 25 summarizes the collection and distribution of SWST revenues.

- **Resource Recovery Investment and Importation Tax Programs:** The RRIT fund holds the revenues from two taxes: the RRIT and Importation Tax. The resource recovery investment tax is levied on every ton of solid waste generated in the state and disposed of at an in-state landfill. The RRIT revenues are disbursed to counties in an amount equal to the RRIT tax rate (\$4 per ton) multiplied by the amount of waste generated in a particular county and disposed of at an in-state landfill.

The Waste Importation Tax, however, is collected on every ton of waste generated out of the county, both from other counties in the state and from out-of-state sources. At this time, some landfills in New Jersey accept only marginal amounts of solid waste from out of the state, so virtually all of the Waste Importation Taxes are collected from in-state generators that ship waste to another county's landfill for disposal. The Waste Importation Tax revenues are disbursed to the counties that host landfill facilities and accept out-of-county waste.

A county can use money from the RRIT fund for one or more of the following purposes in priority order:

- To reduce the rates charged to all users by a resource recovery facility serving the county, including direct disposal fee offsets or the implementation of recycling programs to reduce the amount of waste to be disposed;
- To construct and operate landfill facilities for nonprocessible or bypass waste and/or ash residue;
- To construct and operate landfill facilities to be utilized as a primary disposal facility if a county can demonstrate that resource recovery is not feasible in that county;
- To finance the closure costs associated with terminated landfills if the county performs a study to determine the incremental increase of the tax rate necessary to finance the closure (note that only such incremental increases may be used for this purpose).

The county plan must be amended to designate both an acceptable use and disbursement schedule before the funds are released to the county for expenditure. The counties have used the RRIT funds predominately to reduce resource recovery rates through direct subsidies and to implement recycling programs. Since the time the program was implemented, RRIT funds have been used to pay debt service and reserve funds on debt issued to finance incinerators; operating costs for landfills for by-pass or nonprocessable waste; development costs, such as engineering or siting studies for incinerators and landfills; the costs of implementing household hazardous waste programs; and the costs of developing and implementing municipal recycling programs.

The RRIT rate has reached its legislative cap of \$4.00 per ton (initially levied at \$1.00 per ton in 1985). The tax expires on January 1, 1996. Approximately \$150.4 million has been collected through state fiscal year 1991. After being raised to \$4.00 per ton in 1988, the rate increases \$2.00 per ton annually until it expires at a rate of \$18.00 per ton on January 1, 1996.

Fiscal year 1992 taxes (both RRIT and the Waste Importation Tax) collected and deposited into the RRIT fund (plus interest earned) through March 31, 1992 amount to approximately \$14.3 million. Table 27 summarizes the tax revenues collected and the funds distributed from the RRIT fund.

The Importation Tax rate for calendar year 1992 is \$12 per ton. The initial levy was \$1.00 per ton in 1985.

Table 26

Solid Waste Services Tax Fund

Calendar Year	Taxes Collected	Grants Executed	Contracts Under Review/Applications Received
1985	\$ 2,930,200	\$ 2,930,200	-0-
1986	5,277,764	5,277,764	-0-
1987	6,374,036	6,374,036	-0-
1988	4,360,441	3,934,862	425,579
1989	4,544,375	4,098,397	445,978
1990	4,295,979	3,530,914	765,065
1991	3,388,856	*	
Total	31,171,551 =====	26,146,173 =====	1,636,622 =====

* Allocations awarded. Applications filed in September 1992.

Table 27**Resource Recovery Investment Tax Fund**

<u>Fiscal Year</u>	<u>Taxes Collected</u>	<u>Funds Distributed</u>
1986	\$ 18,879,498	\$18,879,498
1987	28,001,930	28,001,930
1988	29,437,395	29,437,395
1989	25,372,552	15,918,744
1990	25,813,371	15,685,741
1991	22,890,055	10,174,243
1992	18,960,000	1,623,000
Total	\$169,354,801 =====	\$119,720,551 =====

Fiscal year 1993 taxes collected (plus interest earned) through August 31, 1992 amount to approximately \$3 million.

- b. **Recycling Tax Program:** The New Jersey Statewide Mandatory Source Separation and Recycling Act of 1987 (P.L. 1987, c. 102) (see Section E.1.) levies a tax of \$1.50 per ton of solid waste accepted for disposal at a landfill or accepted for transfer to an out-of-state facility for disposal. This is the only solid waste tax levied on waste exported via transfer stations. These tax revenues, in addition to a one time \$8 million appropriation from the general fund for recycling start-up activities, finance the recycling fund.

Monies in the recycling fund are allocated and used in the following manner:

- (1) Not less than 40% for annual tonnage grants to municipalities or counties;
- (2) Not less than 35% to provide low interest loans to recycling businesses and industries, and monies for research into collection, market stimulation and reuse techniques for recyclable materials, or for market studies;
- (3) Not more than 7% for state recycling program planning, including administrative expenses (the only program enumerated herein which is allocated a portion of the fund for administrative costs);
- (4) Not more than 8% for county recycling program planning, including administrative expenses;
- (5) Not less than 10% for public information and education programs concerning recycling activities.

The following is a brief description of these recycling fund programs.

- **Tonnage Grants:** Since 1982, more than \$29.5 million has been granted to municipalities and counties based upon the tons of documented, allowable materials reported as recycled from residential, commercial and institutional sources. These materials have included post-consumer products such as glass, plastics, aluminum and other metals, paper and paperboard, yard and food waste. The 1987 Statewide Mandatory Source Separation and Recycling Act allows a portion of the funds to be allocated as bonus grants for those municipalities and counties that provide, at their own expense, for the collection of recyclable materials. A separate tonnage grant rate for bulky materials such as asphalt, concrete, wood and ferrous scrap has also been established.
- **Program Administration and Public Education Contracts:** Approximately \$10.3 million has been granted to counties and municipalities to establish, administer and/or expand recycling programs. Funding has been used to purchase recycling equipment and reimburse personal costs and other administrative expenditures. In addition, counties have been provided funds for the cost of publicity materials, school recycling awareness programs, advertisements and other public information activities.
- **Private Sector Programs - Public Education Contracts:** In 1987 a \$2.4 million three-year contract was awarded to Keyes Martin Public Relations, Inc. to promote recycling and litter abatement. This contract provides funds for the cost of radio and television public service announcements, billboards, bus and train posters, beach tow-plane advertising, school recycling awareness programs, and a variety of brochures and promotional materials.

In addition, the DEPE has contracted with Rutgers University since 1985 to provide training courses for municipal and county officials. Educational conferences on topics such as leaf collection and composting, plastics recycling and seminars for school teachers and administrators have been funded through these contracts.

- **Market Development and Research Contracts:** Over \$500,000 has been awarded for market research and development activities. Notable among these contracts was a market development study for waste paper, plastics, ferrous automotive scrap, tires and batteries. The study examined current and future supply and demand for recycled materials and recommended state initiatives to expand the markets for these materials.

Other research and development activities have included a yard waste compost research program; an assessment of the environmental impact from the manufacture and disposal of consumer packaging; evaluation of the biodegradability of plastic film; and a research project designed to examine the utilization of used newsprint as animal bedding.

- **Business Recycling Loans:** Business recycling loans, ranging from \$50,000 to \$500,000 (higher for certain projects that are deemed necessary by the DEPE) are available to qualified businesses. The maximum term of each loan is ten years with a fixed interest rate set at three points below the prime rate. A minimum 10% equity contribution of the total cost of the project is required from the business.

New Jersey businesses which collect, separate, process or convert post-consumer waste materials into new or marketable products are eligible for these loans. Recyclable materials include paper, metal, glass, plastics, textiles, tires, food waste, motor oil, leaves, wood and wood products, asphalt, brick and concrete.

Since the first business recycling loan was granted in July 1985, over \$14.7 million has been loaned to New Jersey recycling businesses.

- **Recycling Equipment Tax Credits:** The Statewide Mandatory Source Separation and Recycling Act provides for the availability of a 50% tax credit to corporations operating in New Jersey which purchase recycling equipment. The 50% recycling equipment tax credit is applied directly (i.e. dollar-for-dollar) against the New Jersey State Corporate Business Tax. To be eligible:

- Recyclable materials must be post-consumer in origin;
- Recycling equipment must have been purchased October 1, 1987, or thereafter, and used exclusively in New Jersey. Vehicles used to collect recyclable materials must be used primarily (at least 50% of the time) in New Jersey, but may transport materials out-of-state for marketing purposes;
- Equipment purchased must be certified as eligible by the Office of Contracts and Financial Management;
- Not more than 20% of the total tax credit can be applied in any one year (i.e. five year minimum tax application) and a corporation must pay a minimum of 50% of its New Jersey State Corporate Business Tax liability while drawing down its eligible credit.

During the four years since the enactment of the legislation, this department has certified tax credit applications in the amount of \$38,133,874. This represents new investment by the private sector in recycling equipment totaling \$76,267,748. The availability of these credits is a positive step in encouraging businesses to participate in the recycling initiatives promoted by New Jersey. This financial incentive assists in the following ways:

- Stimulating the creation of new markets for materials not previously recycled;

- Promoting investment by small businesses as well as major corporations in operating in New Jersey;
- Encouraging manufacturing enterprises to remain in or relocate to New Jersey;
- Stimulating investment in business which has a positive impact on the state's economy;
- Contributing to the reduction of the solid waste stream in the state by reuse of materials which once were destined for landfills.

The recycling equipment tax credit program is a demonstrated success in diverting recyclable materials from landfills while creating new markets, new jobs, increased production, attracting investment, and sending a signal of a positive, cooperative business climate to recycling businesses in the state.

- c. **The Bond Act Loan Program:** The Natural Resources Bond Act of 1980 and the Resource Recovery and Solid Waste Disposal Facility Bond Act of 1985 established a revolving loan program designed to provide low or no interest loans for the development of resource recovery facilities and/or environmentally sound sanitary landfills. To be eligible for funding, projects must be included in the appropriate approved county solid waste management plan.

Under current legislation, \$168 million is available for established purposes:

- o \$50 Million - Natural Resources Bond Act of 1980 (P.L. 1980, c. 70);
- o \$85 Million - Resource Recovery and Solid Waste Disposal Facility Bond Act of 1985 (P.L. 1985, c. 330);
- o \$33 Million - Appropriated from the General Fund to the Resource Recovery and Solid Waste Facility Fund (P.L. 1985, c. 332).

At this time, the legislature has approved appropriations of \$137,821,550 in zero interest loans to 11 counties. Of that amount, \$57,999,244 has been distributed. In addition, a total of \$71,500,000 in appropriations for four counties is pending before the legislature.

Rules governing the program set out eligibility requirements for the receipt of loan funds, application procedures, criteria for prioritizing loan applications, specific loan terms, disbursement procedures and other program requirements.

d. **Resource Recovery Implementation Planning Grants:** During the late 1970s, New Jersey moved aggressively to implement the recently enacted Solid Waste Management Act (N.J.S.A. 13:1E et seq.) by providing a total of \$1.3 million in state aid during fiscal years 1978 and 1979 to the 22 solid waste management districts (each of the 21 counties and the HMDC) for the purpose of formulating and developing their required ten-year solid waste management plans. Once the 22 plans were approved, the department provided \$3.3 million between fiscal years 1980 and 1989 for implementation planning grants. As a result, a grand total of \$4.6 million has been provided to county governments for the purposes of solid waste planning. The RRIP grant program expired in 1989.

e. **Landfill Assistance Programs:** The following programs provide financial assistance for costs associated with closure and environmental improvements at landfills:

- **The Sanitary Landfill Contingency Fund,** established pursuant to N.J.S.A. 13:1E-106, was established to provide funds for 1) any damages to real or personal property resulting from the operations or closure of a landfill facility, 2) the cost of restoring any natural resource, including potable water; and 3) the cost of any personal injuries resulting from the construction or operation of the landfill. In addition to the use of fund monies to satisfy claims, the contingency fund act provides that the funds may be used to fund closure activities, including the installation and maintenance of methane gas monitoring systems and vents and leachate monitoring well and collection systems.

As of December 31, 1991, the fund balance was \$42 million. Potential claims against these funds is approximately \$18.6 million, which leaves an available balance of \$23.3 million. Since the inception of the fund a total of 345 claims have been awarded totalling \$6,672,000. On average approximately 38 claims/year have resulted in \$19,300/claim award.

- **The Sanitary Landfill Closure Escrow Accounts,** established pursuant to N.J.S.A. 13:1E-109, requires every owner/operator of a landfill to deposit an amount equal to \$1.00 per ton into an escrow account for every ton of waste accepted for disposal. The escrow funds may be used to ensure proper closure and are distributed in a manner consistent with a department approved closure plan.

As of October 31, 1991, the cumulative escrow balance, including interest, for 146 facilities was \$123.1 million.

- **BPU Environmental Improvement Escrow Accounts:** The Board of Public Utilities (now consolidated within the DEPE) historically required certain landfill operators of large, commercial facilities to deposit funds into a separate escrow account to fund environmental improvements upon closure that are not covered by funds from the closure escrow account as described above. The board included the amount of funding required and specified the uses for such funds in the order issued by the board for a specific facility.

As of October 31, 1991, the cumulative escrow balance, including interest, for 20 accounts was \$211.7 million.

f. **Other Programs:** In addition to the above, the following financial assistance is available to counties, municipalities and project sponsors, depending upon the program:

- **Host Community Benefits:** The Solid Waste Management Act requires that municipalities that host resource recovery facilities, landfills and transfer stations be compensated in an amount not less than \$1.00 per ton. Host community benefits are paid annually and may be in the form of payments in lieu of taxes, exemptions from fees and charges for the disposal of waste from the municipality, a lump sum cash payment or any combination of the above. Host community benefits collected from a landfill or resource recovery facility may be used for any public purpose. However, benefits collected from a transfer station are used to compensate for reasonable municipal costs associated with the facility, for example, traffic and road improvement, road maintenance, traffic control, and police and fire protection, monitoring and enforcement activities. Host community benefits are negotiated between the facility owner and the municipality, subject to rate approval by the DEPE, and range in amount from the \$1.00 per ton minimum at a regional landfill to \$6.50 per ton at a transfer station.
- **Private Activity Bond Allocations:** A common form of financing for resource recovery projects, such as incinerators and compost facilities, is the issuance of tax-exempt private activity bonds. The cumulative amount of such bonds that are issued in the state is limited by a per capita amount as required by the U.S. Tax Reform Act of 1986. Each year, the Department of the Treasury allocates to DEPE a portion of the available statewide bond allocation. The DEPE, in turn, allocates a portion of its allocated bond amount to specific solid waste projects based on such factors as project readiness (technical and financial), project need, and an economic assessment of the impact of tax-exempt financing on the overall financing plan and the tipping fees for the facility. Typically,

treasury has allocated approximately 35 to 40% of the annual, overall state allocation to the DEPE's Division of Solid Waste Management, representing approximately \$556 million in the years 1986 through 1989.

5. Research Initiatives

In accordance with the authority and legislative mandate as set forth at N.J.S.A. 13:1E-6, the DEPE sponsors numerous research projects designed to develop solutions to and alternatives for solid waste management practices in the counties consistent with the goals and objectives of the DEPE. Funding for research is allocated based on policy priorities established by the DEPE on an annual basis. Since the issuance of the task force final report in August 1990, the DEPE's research priorities in the solid waste management area primarily have focused on programs designed to implement the state's policies of achieving 60% recycling, and implementation of aggressive source reduction programs. Accordingly, the DEPE's research program, consisting of approximately 20 state-sponsored projects, is designed to encourage market development for recyclables, reduce and regulate packaging materials and develop environmentally sound uses for ash residue produced by incinerators. A brief description of each of those research projects is set forth in Table 28.

In addition to the state-sponsored research programs, the federal government, through USEPA, also sponsors (or co-sponsors) various research initiatives designed to promote recycling, including recycling of nontraditional materials, such as tires and batteries, and to measure the regional impacts of certain solid waste practices in the metropolitan New York area. Those research projects are described in Section D.4. below, "Interrelationship of State and Federal Programs, Current Grants and Research Initiatives."

Table 28

STATE-SPONSORED RESEARCH PROJECTS

<u>Funded By</u>	<u>Amount</u>	<u>Project Description</u>
Recycling Fund Council of State Governments	\$ 75,000 \$400,000	<u>Source Reduction: Packaging Assessment.</u> Assessment of environmental and economic impacts of the production and disposal of packaging materials, including air emissions, air and water pollution, energy and raw materials consumption.
Spill Fund	\$100,000	<u>Recycling: Petroleum-Contaminated Soil.</u> Assessment of environmental impacts associated with reuse of petroleum contaminated soils in asphalt and concrete construction materials, including air emission and leachability impacts resulting from handling, storage and production of products utilizing petroleum contaminated soils.
DEPE	\$153,000	<u>Effects of Incinerator Emissions.</u> Reference total quality and vapor levels of TCDD, PCD and Mercury in dairy cows and fish and soil samples around the Warren County, New Jersey incinerator.
Recycling Fund	\$125,000	<u>Composting: Grass Clippings.</u> Identifies health concerns associated with airborne spores of fungus <i>Aspergillus Furmigatus</i> at compost sites and test alternative approaches for composting grass clippings.
Recycling Fund (DEPE)	\$200,000	<u>Recycling: Ash Residue.</u> Evaluate economic and environmental impacts associated with the handling, storage and processing of incinerator combustion ash residue as an aggregate substitute in asphalt paving.
Long Island Regional Planning Bd	\$150,351	
NY Energy & Development Authority	\$577,144	
NJ Dept. of Transportation	\$420,000	
Port Authority NY & NJ	\$500,000	
Recycling Fund *	\$ 99,000	<u>Recycling: Ash Residue Risk Assessment.</u> Review and evaluate data generated by DEPE ash reuse demonstration projects and prepare a health and ecological exposure risk assessment.

* Completed Project

+ Pending Project

Table 28

STATE-SPONSORED RESEARCH PROJECTS

<u>Funded By</u>	<u>Amount</u>	<u>Project Description</u>
Recycling Fund	\$ 40,000	<u>Air Emissions: Protection of Ozone.</u> Develop a database to support a program to reduce emissions of ozone-destroying halocarbons and assess economic, technical and regulatory barriers or incentives to developing such a program. Identify emission prevention and collection/recycling strategies.
Recycling Fund *	\$ 90,000	<u>Source Reduction: Hazardous Materials.</u> Quantify and develop a program to reduce the amount of heavy metals, household hazardous waste and small quantity generator waste in the State's waste stream.
Recycling Fund *	\$ 60,296	<u>Source Reduction & Toxic Packaging Regulation.</u> Develop criteria to enable the DEPE to evaluate which products and packaging may require regulation due to environmental and/or disposal impacts.
Recycling Fund *	\$ 98,000	<u>Source Reduction and Recycling: Market Research.</u> Market research to determine market potential for environmentally-friendly products and services, consumer motivations and barriers, potentially successful source reduction programs, innovative educational strategies, and methods for influencing packaging decisions made by industries.
Recycling Fund *	\$ 50,000	<u>Source Reduction & Recycling: Fee Systems.</u> Analysis of optional predisposal fee systems for products and packaging.
A-280	\$ 50,000	<u>Recycling: Water Treatment Residuals.</u> Evaluate chemical composition of water treatment residuals and their leaching potential to determine suitability as a soil amendment/erosion control material.

* Completed Project

+ Pending Project

Table 28

STATE-SPONSORED RESEARCH PROJECTS

<u>Funded By</u>	<u>Amount</u>	<u>Project Description</u>
Recycling Fund *	\$ 67,000	<u>Recycling: Incinerator Ash.</u> Evaluate processes to separate and recover trace metal from incinerator residuals. Evaluate physical, chemical and leaching properties of untreated and treated ash. Identify potential markets for treated ash products.
Recycling Fund	\$ 2,400	<u>Recycling: Treated and Composite Wood Products.</u> Recycling/disposal policy study for treated, composite and laminate wood products in the waste stream, including development of database of amounts and categories of materials, determination of recycling limits and constraints.
Recycling Fund	\$ 7,500	<u>Recycling: Collection Practices.</u> Develop specific guidelines for best collection practices and programs; develop standard contract/guidance document; and evaluate cost effectiveness of commingled versus complete separation in fifty NJ communities.
NJDOT/Recycling Fund	\$130,000	<u>Recycling: Highway Construction Uses.</u> Evaluate the potential use of various recyclable materials in highway construction, including incinerator ash, tire rubber, crushed container glass in bituminous concrete, organic compost in landscaping and coal fly ash in portland cement concrete.
Recycling Fund	\$ 32,606	<u>Recycling: Plastics.</u> Develop construction materials from commingled post consumer and industrial waste plastics and establish standards for mixed plastics products through the ASTM.

* Completed Project

+ Pending Project

Table 28

STATE-SPONSORED RESEARCH PROJECTS

<u>Funded By</u>	<u>Amount</u>	<u>Project Description</u>
Recycling Education Grant Fund	\$1.5 Million (Over 3 yrs.)	<u>Recycling.</u> Encourage purchase of recycled products by businesses and industries; develop and implement a two-year educational and motivational program to encourage recycling by small business and residents of multi-family units; and design and implement a strategy for incorporating recycling of n-traditional materials into existing recycling programs.
Council of Northeastern Governors (CONEG)	Amts. available in budget fund- ed by members	<u>Packaging Reduction of Toxins.</u> Develop model legis- lation for reduction of toxins in packaging; established the Source Reduction Council, including member states, industry and environmental associations, to develop and implement preferred packaging guidelines.
NEWMOA/NJDEPE		<u>Technical Paper on Solid Waste Management Practices in the State.</u> Prepare a technical paper that describes current management practices in the State for scrap tires, construction & demolition waste, white goods and combustion residuals, as well as the legal and regulatory framework for solid waste management.

* Completed Project
+ Pending Project

D. INTERRELATIONSHIP OF STATE AND FEDERAL PROGRAMS

1. Introduction:

On July 31, 1979, the USEPA published in the Federal Register "Guidelines for Development and Implementation of State Solid Waste Management Plans." These guidelines were required by the Solid Waste Disposal Act as amended by Subtitle D of the Resource Conservation and Recovery Act (RCRA) of 1976. RCRA was enacted to promote the protection of health and the environment and to conserve valuable material and energy resources. To accomplish this, RCRA established a national program to improve solid waste management including control of hazardous wastes, resource conservation, resource recovery, and environmentally sound disposal practices. The national program was to be implemented through a cooperative effort among federal, state, substate governments and private enterprise.

USEPA's involvement in state solid waste management planning has been historically limited to development of the guidelines and providing limited financial assistance to the states in developing their plans. The USEPA also historically reviewed state solid waste plans. Unlike Subtitle C of RCRA where the USEPA administers and enforces hazardous waste programs, Subtitle D delegates the states with the responsibility of planning and operation of solid waste management programs.

New Jersey developed its first unified Statewide Solid Waste Management Plan document in 1982. A more comprehensive plan was released in July 1985 with the "Solid Waste Management Plan 1985-2000." This plan update was later adopted by New Jersey in June 1986 after a public hearing was held and an addendum and a response to comment document was prepared. Copies of all relevant documents were sent to the USEPA as they were completed. Finally, the USEPA approved the 1985 plan in the October 14, 1988 issue of the Federal Register. However, approval of the plan was conditioned upon New Jersey's submission of additional information regarding the open dump inventory. New Jersey was required to either certify that it has completed its evaluation of all solid waste disposal facilities or inform the USEPA of its ongoing process for completing the evaluation and classification of facilities, as open dumps, which do not meet the criteria set forth at Subtitle D 40 CFR Part 257.

Throughout New Jersey's process of developing its initial 1982 state plan document and its 1985 update, direct involvement from the USEPA was limited. However, over the past several years, USEPA has taken a more proactive role with the states in assisting them in developing solid waste programs as called for under RCRA. In February 1989, the USEPA published its "The Solid Waste Dilemma: An Agenda for Action." This publication offered a strategy for improving the nation's management of municipal solid waste and established an ambitious agenda for accomplishing specific tasks. Some tasks are identified below:

- Establish a clearinghouse for solid waste information;

- Establish a peer matching program;
- Develop state planning strategies;
- Minimize toxic constituents and materials in waste;
- Minimize amount of waste generated;
- Study potential source reduction policies;
- Stimulate markets for secondary materials;
- Establish national recycling council.

Thereafter, in November 1989, the USEPA published the "Decision Makers Guide to Solid Waste Management." Within this document the USEPA further identified its systems approach to managing municipal solid waste comprising a hierarchy of: 1) source reduction; 2) recycling; and 3) combustion and landfilling. Also, in October 1991, the USEPA issued its revised criteria for municipal solid waste landfills, found at Subtitle D 40 CFR Part 258. These criteria represent the imposition of more stringent standards for landfills than had previously been required by the federal government encompassing location restrictions, operating and design criteria, groundwater monitoring, closure and post-closure requirements, and financial assurance criteria.

Finally, the USEPA is in the process of developing the State/Tribal Implementation Rule which will be the basis by which state landfill permit programs are deemed to comply with the new landfill criteria.

This section of the State Plan Update provides an overview of the Subtitle D Municipal Solid Waste Landfill Regulations, a preliminary assessment of New Jersey's compliance with these new landfill requirements and the proposed State/Tribal Implementation Rule, and a status report on current federal grants and joint research initiatives of the USEPA and the DEPE which contribute significantly to the state's solid waste management program. An update to New Jersey's Open Dump Inventory in order to satisfy the additional information requirement specified in the USEPA's 1988 conditional approval of the 1985 State Plan Update is under active development and will be submitted to the federal government under separate cover during the first half of 1993. This timing should be consistent with adoption of the 1993 - 2002 State Plan Update contained herein.

2. USEPA SUBTITLE D MUNICIPAL SOLID WASTE LANDFILL REGULATIONS

On October 9, 1991 the USEPA adopted as final the solid waste disposal facility criteria for municipal solid waste landfills at Subtitle D 40 CFR Part 258 of the federal regulations. This rule establishes federal requirements for municipal solid waste landfills. Specifically, the rule covers location restrictions, facility design criteria, operational standards, ground-water monitoring, and corrective action measures, conditions for facility closure, and financial assurance criteria.

The regulations apply and take effect for all municipal solid waste landfills that receive waste after the October 9, 1993. If a landfill stopped taking waste before October 9, 1991, the requirements do not apply. If the landfill stops taking waste after the October 9, 1991 date but before the October 9, 1993 date, the landfill has to only comply with the final cover requirements.

The USEPA regulations built in extensive flexibility regarding technical requirements and implementation in states with USEPA approved permitting programs.

Management standards for municipal solid waste landfills cover six areas:

- **Location Restrictions:** Siting near airports, wetlands, flood plains, fault areas, seismic zones and unstable areas is restricted. The facility owner or operator must demonstrate compliance with performance standards to utilize these areas;
- **Operational Requirements:** Landfills must develop operations programs to ensure safety procedures, keep out regulated hazardous waste, apply daily cover, control run-on, vectors, monitor and control gases, restrict public access, control run-off and keep records;
- **Design Standards:** Although a composite liner is required, landfills can be designed with alternative systems to ensure drinking water standards are not exceeded in groundwater or with a single composite liner system;
- **Groundwater Monitoring and Corrective Action:** Landfills must have a monitoring well system to detect any groundwater contamination. If groundwater is impacted, the landfill is required to clean up to acceptable standards to protect human health and the environment (effective dates October 9, 1994 - October 9, 1996);
- **Closure and Post-Closure Care:** Landfills must develop a final cover system which, along with other environmental controls and monitoring systems, is maintained for 30 years;

- **Financial Assurance:** Landfills must develop financial mechanisms to cover the cost of closure, post-closure care and potential cleanup or corrective action that may be required (effective date April 9, 1994).

The federal criteria apply to landfills receiving municipal solid waste or municipal solid waste and other types of solid waste. The criteria do not apply to landfills which receive only industrial waste, construction/demolition waste or sewage sludge. These rules do not apply to waste piles or surface impoundments.

The 1984 Hazardous and Solid Waste Amendments to RCRA require the DEPE to have a permit program adequate to ensure compliance with the federal criteria within 18 months of the promulgation of the criteria. The USEPA will evaluate the adequacy of New Jersey's MSWLF permit program in relationship to the criteria. The DEPE sanitary landfill (SLF) technical requirements are as stringent or more comprehensive than the federal criteria. However, minor revision to the DEPE regulations will be needed to insure that there are no inconsistencies.

Training on the federal criteria was made available to state and county solid waste officials, as well as MSW sanitary landfill owner/operators by the USEPA in the spring/summer of 1992.

Preliminary Compliance Assessment: The DEPE has preliminarily reviewed the final federal Part 257 and 258 criteria as they relate to the New Jersey solid waste rules and regulations at N.J.A.C. 7:26-2 and 2A. Overall, the rules in N.J.A.C. 7:26-2 and 2A are more stringent or equivalent to the federal criteria. The state's primary short-term strategy is to identify areas of N.J.A.C. 7:26 that need to be revised and initiate the rulemaking to develop consistent regulations.

Based on preliminary review, the department would have to modify the following sections of the regulations to be equivalent to the federal Part 257 and 258 criteria:

- a. Several definitions at 258.2 would have to be included in N.J.A.C. 7:26-1.4 Definitions, including:
 - (1) Active life;
 - (2) Active portion;
 - (3) Aquifer;
 - (4) Operator;
 - (5) Owner.

These terms are used in N.J.A.C. 7:26 with the same meaning defined in Part 257. However, they are not specifically included in N.J.A.C. 7:26-1.4.

- b. Demonstrate consistency between the sections in N.J.A.C. 7:26-2A.4 and 2A.7 in regard to seismic impact zone requirements of 258.14. Section 258.14 requires the demonstration by the owner/operator of the MSWLF that all containment structures are designated to resist maximum horizontal acceleration in lithified earth material for the site. Given that almost all of New Jersey is in the seismic impact zone identified by this section, except for a small portion of Cape May, all New Jersey SLF's would be impacted by this section. New Jersey SLF foundation analysis requires the strength of the foundation to be stable under all conditions long-term, short-term and at the end of construction for static and seismic conditions which is equivalent to the demonstration required.
- c. The requirements at N.J.A.C. 7:26-2A.8 would have to be modified to be equivalent to the Section 258.50 procedure for excluding the receipt of hazardous waste. While the rules at N.J.A.C. 7:26-2A.4 prohibit hazardous waste from disposal at SLF's, the procedural requirements are detailed in the review of the preliminary and final operations and maintenance (O&M) manual for each facility. The final O&M manual must be reviewed and approved by the department prior to operations. The revisions to N.J.A.C. 7:26-2A.8 would specifically include and delineate the procedures now approved through the O&M review in order to be equivalent.
- d. The regulation at N.J.A.C. 7:26-2.4 would have to be revised to exclude bulk liquids from disposal in SLF's to be equivalent to Section 258.28. New Jersey statutes prohibit the acceptance of bulk liquids at landfills without leachate collection systems and no New Jersey facility is currently permitted to receive bulk liquids which are classified as solid waste type ID 27.
- e. N.J.A.C. 7:26-2A.7 and 9 would have to be revised to include the specific standards set forth in the Section 258.60 closure criteria. Currently, N.J.A.C. 7:26-2A.9 requires the installation of a final cover after closure, but does not specify design and construction criteria. New Jersey currently uses a technical guidance document to review and evaluate final cover systems. No New Jersey landfills are currently permitted with less than the requirements set forth at Section 258.60.

DEPE will work with the USEPA Region II to insure adequacy with the MSWLF regulations. This adequacy review will be managed through the State and Territories Implementation Rule (STIR) currently being developed by the USEPA. The USEPA has yet to propose the Implementation Rule.

3. State Implementation Rule

The State and Territories Implementation Rule (STIR), currently being developed by the USEPA, will be the basis for determining the adequacy of New Jersey's MSW sanitary landfill permit program in comparison with the federal criteria.

The application to the USEPA will include a transmittal letter from the Commissioner to the USEPA Region II Administrator designating DEPE as the lead agency. The transmittal will include the following:

- a. A narrative description of the permit program explaining jurisdiction and responsibility of the DEPE. The narrative is to include and demonstrate that DEPE's permit program provides for issuance of permits that reflect the technical requirements of the federal Subtitle D criteria, compliance monitoring, enforcement and public participation. The narrative further is to describe the number of regulated MSW landfills and the level of staff to manage the permit program;
- b. A legal certification by New Jersey's Attorney General's office certifying that the DEPE has the statutory and regulatory authority to implement the permit program;
- c. Copies of all statutes, regulations and technical guidance documents used in implementing the MSW landfill permit program.

The draft of the STIR indicates the regional administrator must make a completeness determination within 30 days of receipt of the application, and a final determination of adequacy must be made within 180 days of receipt of the complete application. After review of the complete application, the regional administrator will make a tentative decision on the adequacy of the program and publish this notice in The Federal Register. This notice will include a statement on areas of concern, if any, and may indicate the convening of a public hearing. The notice will afford the public at least 30 days to comment on the tentative determination. If a public hearing is held, it will be scheduled at least 45 days from the publication of the public notice.

The DEPE has a draft copy of the USEPA technical guidance document for adequacy determination and has worked with the USEPA Region II to finalize the side by side review. This review was completed in December 1992.

- a. The implementation strategy being employed by the DEPE can be detailed as follows:
 - (1) Preliminary areas identified in N.J.A.C. 7:26 which may need to be revised;
 - (2) Confer with the USEPA on identified areas and finalize list;

- (3) Initiate development of technical guidance documents or rulemaking as needed for identified areas requiring revisions;
- (4) Prepare STIR transmittal, based on draft rules, to USEPA Region II for their review, based on procedures outlined above;
- (5) Propose and adopt rules, based on review procedures.

Current Status: DEPE has received copies of the draft STIR and the technical guidance document worksheets for the adequacy review of the 40 CFR, Part 257 and 258, solid waste disposal facility criteria. The USEPA Region II has contracted for professional services to perform the line-by-line review as established in the technical guidance document. The DEPE has preliminarily reviewed Part 257 and 258 rules and the technical guidance document, and identified five areas that may need revision to ensure equivalency with the federal rules as outlined in Section E.1. above. The DEPE will meet with the USEPA Region II, its contractor and finalize the preliminary equivalency evaluation. The DEPE has reviewed the STIR and initial evaluations are that the department can submit a complete document for adequacy review in a timely fashion. The DEPE estimates a submission by February 1993. Based on the review procedures identified in the STIR, we would expect a final decision by October 1993.

Long-Term Implementation Goal: To establish and maintain a more formal working relationship with the USEPA Region II in regard to the management of solid waste in New Jersey and the region, the long-term goal will be accomplished by maintaining an approved program in accordance with the procedures outlined in the STIR.

4. Current Grants and Research Initiatives

Introduction: The DEPE's Division of Solid Waste Management (DSWM) has received grants from several federal funding sources to carry out numerous research projects and also in some cases programmatic requirements. This supplemental funding has been critical to the department. Without such funding, the DSWM would not have been able to carry out most of the activities described below. The USEPA has provided funding in areas such as for research of medical waste treatment and disposal technologies and tire management research. USEPA has also provided funds for carrying out medical waste enforcement generator compliance inspections and outreach activities. The following is a brief summary and current status report of programs which have received federal funding through USEPA or are anticipated to be approved in the near future.

a. New Technology for Treatment and Destruction of Medical Waste:

Source: USEPA
Amount: \$122,266
6,438 plus 5% state match
Total \$128,704

New Jersey's medical waste law, The Comprehensive Regulated Medical Waste Management Act (Comprehensive Act), requires the department to do an investigation into alternative technologies to incineration. This federal grant provides funding for the investigation and assessment of new technologies for the treatment and destruction of regulated medical waste. Most of the grant activities are being carried out in the DSWM by the Bureau of Medical Waste and Residuals Planning. An important aspect of the state regulated medical waste program is to investigate and assess new technologies for managing medical waste. Traditionally, incineration has been used to dispose of most highly infectious and pathological medical wastes. The technology investigation involves revealing published literature and experimental data on the performance of new technologies to determine whether they are capable of treating medical waste in accordance with the existing guidelines. The division's investigation centers around seven types of treatment methods with over fifteen different devices actually being examined. Data obtained from the investigation will aid USEPA and the department in planning for the on-going management of regulated medical waste. The department completed its investigations under this grant during 1992.

b. Medical Waste Compliance Inspections:

Source: USEPA
Amount: \$612,000
32,211 plus 5% state match
Total \$644,211

One of USEPA's major goals during its Demonstration Program for regulated medical waste management was to ensure compliance with the regulations by carrying out numerous compliance inspections of generators and transporters and disposal facilities. To promote the ability of states to carry out inspections, the USEPA is providing funding to New Jersey for this purpose. USEPA has obtained funding from the Dyer Emergency Supplemental Appropriation Act of 1989. New Jersey intends to apply the entire grant to compliance inspection and enforcement activities: New Jersey has a sizable medical waste regulated universe estimated to include over 14,000 generators, 30 transportation companies and over 100 disposal facilities. The USEPA grant will provide funding for approximately ten positions for 1-1/2 years to carry out compliance inspections of medical

waste program registrants including generators, transporters and disposal facilities. The department expects to carry out over 2,700 inspections during the term of the grant. The department and USEPA believes that compliance inspections must be a major component of the department's medical waste regulatory activity in order to ensure compliance with the regulations which were put in place in 1989.

c. The Solid Waste Demonstration/Training Project:

Source:	USEPA
Amount:	\$45,000
	<u>2,250</u> plus 5% state match
Total	\$47,250

In light of the solid waste dilemma facing our nation, efforts to inform and educate the general public need to be greatly increased. The solid waste dilemma can be solved only with the active participation and cooperation of individual citizens. To inform the public of the seriousness and the status of the medical and solid waste disposal situation in New Jersey, the USEPA is providing grant money to assist with outreach activities. Specifically, this grant is for the holding of medical waste training sessions. Members of the regulated community such as generators, transporters, facility operators and related professional associations will be invited to workshops to both hear and discuss the DEPE and USEPA's policy and regulations for medical waste management. Additionally, money is provided for development of a graphic poster depicting the approach to the solid waste dilemma that New Jersey is pursuing. Also, money is to be used for various educational materials in the form of interactional displays in order to educate and encourage the public to participate as part of the solid waste solution. Also funded is a media seminar. This is to be accomplished through newspapers, magazines, radio, television and talk shows to communicate information about solid waste issues of today.

d. Feasibility Study for the Implementation of Consumer Dry Cell Battery Recycling as an Alternative to Disposal (Recoverable Resources/Boro, Bronx 2000, Inc.):

Source:	NJDEPE/USEPA Recycling Fund
Amount:	\$145,000 total funding NJDEPE \$50,000

This report evaluates the total metal content of the various primary and secondary dry cell batteries. There are six types of primary (single use) batteries and three types of secondary (rechargeable) batteries. These battery types are defined by the chemistry of their electrodes or electrolytes. By quantifying the total metals content of the various battery types solid waste management options for disposal and recycling can be developed. The report also

estimates the per battery cost to develop a recycling program for the different types of batteries. A detailed composition analysis is performed for each battery type.

The final report is available from the DEPE.

e. Incineration 2000 Project:

Source: USEPA, NJDEPE/DEQ and NYDEC
Amount: \$100,000

The project is a two-phase study to evaluate the combined impacts of municipal solid waste incinerators, hazardous waste incinerators, and sewage sludge incinerators on the ambient air quality in the NJ/NY metropolitan area. Phase I of the report is complete. This report establishes locations of all facilities, their permit limits, their impact on attainment and nonattainment areas, the area of overlapping impacts and the incremental risk of each facility and in combination. The report attempts to respond to the issue of cumulative impact assessments and identifies significant information on air quality and focuses attention on future sensitivity in planning new facilities.

f. Federal Appropriations Awaiting USEPA Approval:

The following projects will be implemented by the DEPE upon approval of the work plan/grant application for the federally appropriated monies in P. L. 101-144:

(1) Tire Recycling Demonstration Project:

Source: USEPA
Amount: \$1,000,000

This recycling project is intended to demonstrate the economic feasibility of recycling scrap tires in tire "dumps" through the award of bids involving four separate uses of scrap tires including whole-tire products, stamped-tire products, chipped or shredded tire-products and crumb rubber modified tire-products. By evaluating the technical and economic barriers to marketing scrap tires from existing tire piles, the department hopes to develop a tire pile cleanup model for future use.

(2) Lead-Acid Battery Recycling:

Source: USEPA
Amount: \$500,000

The project is designed to determine the recycling rate in New Jersey for lead acid batteries, including wet and sealed lead-acid batteries. An analysis of used lead-acid battery collection, storage and transportation practices will

be used to develop a technical guidance document for small businesses for improved handling, storage and transportation of this waste stream. The major objective of this project is to develop and distribute information on the problems associated with lead acid batteries and proper management options. Given the focus on lead-acid batteries in legislation, proposed at the federal level, it is expected that the experience gained from the research will be used to structure model programs on a national level for this important component of the solid waste stream to ensure proper management and recycling.

(3) Recycling Demonstration Projects for Multi-Family Communities, Small Businesses and Nontraditional Recyclables:

Source: USEPA
Amount: \$250,000

The project is designed to evaluate technical and economic efficiencies of community and small business recycling programs. The project will focus on the problem area by establishing community intervention groups to measure the pre and post performance of the effects of the various recycling educational programs implemented by the department. This program will be coordinated with the department's recycling education campaign.

E. PROGRAMMATIC BACKGROUND

The environmental regulation of solid waste disposal in New Jersey is based primarily upon the authority granted to the department under the Solid Waste Management Act (N.J.S.A. 13:1E-1 et seq.) and the federal Resource Conservation and Recovery Act (P.L. 94-580 [RCRA]). This section describes the legislative and regulatory framework for the regulation of solid waste in the state, the relationship of solid waste to other waste types, historical summary of district planning and a description of the project implementation process.

1. Institutional and Legal Framework

Prior to 1970, New Jersey's solid waste was managed by the private sector and municipal governments. At that time, virtually all solid waste was disposed of in landfills. Local boards of health regulated the sanitary conditions at the landfills. The State Department of Health had the ability to enforce sanitation requirements if the local boards failed to do so.

In 1969, a review of the solid waste industry by the New Jersey State Commission on Investigation revealed extensive corruption and monopolistic practices. As a result, in 1970 the Legislature passed the Solid Waste Management Act (N.J.S.A. 13:1E et seq.) and the Solid Waste Utility Control Act (N.J.S.A. 48:13A et seq.) to establish the basic legislative and regulatory framework for solid waste collection, hauling

and disposal practices. A review of these acts, as well as other subsequent major legislative and policy initiatives governing solid waste, are as follows.

a. **The Solid Waste Management Act** as passed in 1970 established primary state regulatory powers over disposal facilities in the newly created DEP. In addition, the 1970 act granted the state the right to approve the design and operation of solid waste disposal facilities. The substance of the present Solid Waste Management Act, however, was created in a 1975 amendment to the original act, referred to as Chapter 326. The significant provisions of the Solid Waste Management Act, as amended by Chapter 326, are as follows:

- Established 22 planning districts, one for each county and for the Hackensack Meadowlands;
- Required each district to develop and adopt a comprehensive solid waste management plan pursuant to a specifically mandated procedure that provides for public participation;
- Created an ongoing county/state planning process where counties have primary responsibility to adopt plans, select sites and management technologies subject to state level review and approval. While counties were given primacy in the planning process to allow consideration of unique local conditions, the state has final authority to ensure that county plans are consistent with state programs and to ensure that statewide goals and objectives are considered and met;
- Provide for the preparation of a state solid waste management plan;
- Established state enforcement power over design and operation of disposal facilities;
- Established "maximum use of resource recovery procedures" as the county solid waste strategy (resource recovery is defined as recycling as well as energy recovery).

The following legislative initiatives constitute the major amendments to the Solid Waste Management Act since the adoption of Chapter 326.

- **The Recycling Act** (N.J.S.A. 13:1E-92 et seq.), passed in 1981, established a framework for a comprehensive, voluntary recycling program to be established by the counties to provide for the recycling of 25% of the municipal waste stream. The act also established a tax of \$.40 per ton of waste disposed of in a state landfill. The tax revenues were used to fund programs and capital expenditures that would stimulate recycling.

- **The Mandatory Source Separation and Recycling Act (N.J.S.A. 13:1E-99.11 et seq.) (1987)** amended the earlier recycling provisions and established mandatory recycling programs as part of the district solid waste systems. Each district was required to recycle at least 25% of its waste stream within two years of the date of adoption of its recycling plan. In addition, the revised recycling act requires each county to recycle leaves and to designate at least three materials to be recycled in the county under mandatory collection programs. The act also increased the amount of the recycling tax (previously established pursuant to N.J.S.A. 13:1E-92 et seq.) to \$1.50 per ton of waste collected in state landfills. It should be noted that the recycling goals have increased dramatically as a result of the recommendations set forth in the Governor's Emergency Solid Waste Assessment Task Force Final Report, dated August 1990. These task force revisions are described more specifically in (e) below.

- **The Sanitary Landfill Facility Closure and Contingency Fund Act (N.J.S.A. 13:1E-100 et seq.) (1981)** establishes comprehensive technical and financial planning requirements for proper closure and post-closure maintenance for landfills. This act imposes a tax of \$.15 per cubic yard of waste disposed of in the state. The proceeds of this tax were intended to provide funds for reimbursement for damages sustained as a result of improper closure. In addition, owners/operators of landfills were taxed \$.30 per cubic yard disposed of at a facility in an escrow account to cover the costs of closure in accordance with environmental standards. The act also included the concept of strict liability for closed landfills.

- **The McEnroe Act of 1985 (N.J.S.A. 13:1E-136 et seq.)** was passed to address the financial and legal difficulties related to the development of resource recovery facilities (including "rate shock" associated with the transition to a more expensive solid waste system). The McEnroe Act:
 - Implements a system of solid waste taxes to be collected on every ton of waste disposed of at a landfill (except for ash residue) and redistributes tax revenues to the districts to provide financial assistance in the implementation of their district plans;
 - Provides for the payment of Host Municipality Benefits to be paid to municipalities where landfill and resource recovery (waste to energy) facilities are located;
 - Establishes an alternative procurement process for acquiring resource recovery facilities that permits competitive contract negotiations and selection of a vendor on the basis of factors other than price alone.

- **The Scales Act (N.J.S.A. 13:1E-117, 120) (1983)** mandates the weighing of solid waste at most disposal facilities and the reporting of this information to the department. This act recognizes the importance of accurate recordkeeping about solid waste disposal to the efficient planning of the solid waste system and the design and operations of disposal facilities. The reported data enables the state to accurately assess surcharges associated with the Sanitary Landfill Closure and Contingency Fund Act, the Mandatory Source Separation and Recycling Act and the McEnroe Act.
 - **The Clean Communities Act (N.J.S.A. 13:1E-99.1 et seq.),** passed in 1985, taxed manufacturers and large wholesalers of certain litter producing products and packaging. The proceeds of the tax were disbursed to municipalities to fund street cleaning activities and equipment. The litter tax expired on December 31, 1991. This act also prohibited the sale in New Jersey of beverage containers with detachable metal opening tabs and certain plastic holders used as part of the packaging of six packs. As of October 1992 the New Jersey Legislature was considering bills which would reinstitute the Clean Communities Act.
 - **A-901 Disclosure Act (N.J.S.A. 13:1E-126 et seq.),** passed in 1983, requires full disclosure of background data on all persons connected with a solid waste collection and/or disposal firm. The New Jersey Department of Law and Public Safety then reviews the data and makes additional background checks. Persons and firms with criminal records and other deficiencies in their backgrounds can be denied a license to perform solid waste activities.
- b. **The Solid Waste Utility Control Act (N.J.S.A. 48:13A-1 et seq.) (1970)** establishes economic regulatory powers over the solid waste collection, hauling and disposal industries. The major provisions of the utility act include:
- Regulation and approval of collection, hauling and disposal rates;
 - Regulation and approval of contracts between local governments and solid waste utilities;
 - Granting of franchise areas for collection and disposal;
 - Issuance of licenses (Certificates of Public Convenience and Necessity) to collectors/haulers to conduct solid waste activities;
 - A requirement of minimum qualifications and performance bonds for those involved in solid waste activities.

The economic regulatory functions established by the utility act were performed by the BPU until August 1991. At that time, Governor Florio issued Executive Order No. 38, which merged the economic regulation of solid waste under the utility act into the restructured DEPE under Reorganization Plan No. 002.

In January 1992, the New Jersey Legislature passed the Solid Waste Collection Regulatory Reform Act (P.L. 1991, C. 381). This reform act provides for the deregulation of the rates charged by the solid waste hauling and collection industry over a four year period commencing on April 15, 1992. Under the reform act, the department retains some residual authority to provide regulation of rates during the phase-out period and thereafter, if it determines that there is not effective competition in a particular district or area. In addition, the reform act allows the department to approve or disapprove potential acquisitions of hauling and collection companies to preserve effective competition in the state.

- c. **The County Environmental Health Act (N.J.S.A. 13:1D-9 [1977])** provides for the administration of environmental health services by county departments of health in a manner that is consistent with performance standards promulgated by the department. Environmental health services include monitoring and enforcement of environmental health standards, the operation of technical resource centers and the enactment and enforcement of environmental health ordinances on a county-wide basis to control air pollution, solid waste, noise and water pollution.
- d. **The Governor's Emergency Solid Waste Assessment Task Force Final Report**, dated August 1990, recommended a number of sweeping changes in solid waste policy and practices in the state which are largely being formally adopted within this state plan update. Most significantly, specific source reduction concepts were identified and recommended for implementation; recycling goals were increased from 25% of the municipal solid waste (MSW) stream to 60% of the total waste stream by December 31, 1995; the use of incinerators was determined to be a disfavored disposal option; and the counties were directed to regionalize their solid waste systems to the greatest extent possible. Governor Florio endorsed these recommendations in November 1990. This State Plan Update adopts the fundamental recommendations of the solid waste task force and identifies short and long-term implementation strategies to achieve the goals and objectives of the state.
- e. **Applicable Regulations:** The state has promulgated an extensive set of regulations to implement the legislative program for solid waste. The mainstay of the regulatory program are those regulations promulgated pursuant to Solid Waste Management Act (N.J.S.A. 13:1E-1 et seq.). However, other regulatory controls for solid waste facilities are addressed in the legislative and regulatory programs that address air and water quality. A summary of the major regulatory programs are as follows:
 - **Solid Waste Management Act regulations are set forth in N.J.A.C. 7:26-1 et seq.** The general regulatory guidelines for permitting and siting solid waste facilities are set forth in N.J.A.C. 7:26-1.1 et seq. Additional specific disposal regulations for landfills are set forth in N.J.A.C. 7:26-2A.1 et seq., while additional disposal regulations for incinerators, transfer stations, materials recovery facilities, co-composting and composting

facilities are set forth in N.J.A.C. 7:26-2B.1. These regulations also address collector/hauler and transportation of solid waste requirements (N.J.A.C. 7:26-3.1 et seq.), and the interdistrict and intradistrict waste flow rules for each county are set forth in N.J.A.C. 7:26-6.1. The regulations establish fees for solid waste activities, develop guidelines and penalties for enforcing the regulations, and establish a financial program of resource recovery and recycling grants or loans. The solid waste regulations implemented the A-901 disclosure requirements (see description of the A-901 Disclosure Act above) for persons engaged in solid waste activities, including licensing and revocation procedures and guidelines relating to the availability of confidential business information. A recent addition to the Administrative Code sets forth comprehensive regulations relating to recycling and recycling centers (see N.J.A.C. 7:26A et seq.).

Chapter 26 of the New Jersey Administrative Code also sets forth the regulations for Regulated Medical Waste (N.J.A.C. 7:26-3A et seq.) and for hazardous waste. In particular, the hazardous waste regulations include provisions related to fees (N.J.A.C. 7:26-4.1 et seq.); labeling, records and transportation requirements (N.J.A.C. 7:26-7.1 et seq.); hazardous waste criteria, identification and listing (N.J.A.C. 7:26-8.1 et seq.); requirements for hazardous waste facilities (N.J.A.C. 7:26-9.1 et seq.); and various other comprehensive guidelines relating to planning, developing and implementing hazardous waste facilities (See N.J.A.C. 7:26-10.1 through 13A.8).

- **Other Related Regulatory Programs:** The following is a list of other state regulatory programs that impact the solid waste planning and implementation process in the state:
 - (1) The floodway and flood fringe areas of the flood hazard areas as identified by the department pursuant to the state Flood Hazard Area Control Act, N.J.S.A. 58:16A-50 et seq., or areas identified under the flood insurance studies prepared by the Federal Emergency Management Agency (FEMA);
 - (2) Areas designated as wild, scenic, recreational or developed recreational rivers pursuant to the Natural Wild and Scenic Rivers Act, 16 USCA 1271 or the New Jersey Wild and Scenic River Act, N.J.S.A. 13:8-45;
 - (3) Critical habitat of endangered or threatened species of plants, fish or wildlife as defined by the Federal Endangered Species Act of 1973, P.L. 93-205, or the New Jersey Endangered and Non-Game Species Conservation Act, N.J.S.A. 23:2A-1 et seq.;

- (4) Wetlands, tidelands and coastal zone areas as identified by the department pursuant to the Wetlands and Coastal Resource and Development Policies, N.J.A.C. 7:7E and as identified on the U.S. Fish and Wildlife Services National Wetlands Inventory Maps;
- (5) The Preservation and Protection Areas as established by N.J.S.A. 13:18A-11 of the Pinelands Protection Act, N.J.S.A. 13:18A-1 et seq.;
- (6) Nonattainment areas as defined in N.J.A.C. 7:27-18;
- (7) Areas subject to the prevention of significant deterioration criteria as defined in 40 CFR 52.21;
- (8) Areas which may impact the acoustical quality of residential and commercial properties pursuant to N.J.A.C. 7:29;
- (9) Areas which may significantly impact water quality pursuant to N.J.A.C. 7:15;
- (10) Lands that have been duly certified by the state Agriculture Development Committee as agricultural development areas pursuant to the Agricultural Retention and Development Act, N.J.S.A. 4:1C-11 et seq.;
- (11) Watershed areas for water classified by the department as FW-1 waters or FW-2 Trout Production Waters pursuant to the Surface Water Quality Standards, N.J.S.A. 7:9-4;
- (12) Areas over a sole source aquifer designated pursuant to Section 1424(e) of the Safe Drinking Water Act of 1974, P.L. 93-523;
- (13) Areas within the critical supply areas as defined by the Water Supply Management Act, N.J.S.A. 58:1A-1 et seq.;
- (14) Areas which will encroach upon, damage or destroy any area, site, structure or object included in the National or State Register of Historic Places established by N.J.S.A. 13:1B-15.128;
- (15) Areas within 10,000 feet of any airport runway which is equal to or greater than 3,000 feet in length, within 5,000 feet of any airport runway which is less than 3,000 feet in length;
- (16) Areas dedicated to recreational or open space use including, but not limited to, national parks, national recreation areas, national forests, national wildlife refuges,

state wildlife management areas, state parks, state forests, state designated natural areas and county or local parks, wildlife sanctuaries and recreational facilities;

- (17) Areas subject to cleanup pursuant to the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq.

2. Relationship to Other Waste Types

- a. **Introduction:** The term "solid waste" as used in this plan refers generally to garbage and refuse collected from residential, commercial and institutional establishments (municipal solid waste); bulky, vegetative, animal and food processing wastes; and dry industrial waste. However, under state and federal law, the term "solid waste" also includes sludge, septage, hazardous waste and medical waste. Since these types of wastes involve special management practices to accommodate their specific characteristics, separate planning programs have been implemented by the department to address those waste streams. The policy components of the Statewide Sludge Management Plan Update will be addressed in Section II. of the state plan update. The Statewide Regulated Medical Waste Management Plan, promulgated pursuant to the Comprehensive Regulated Medical Waste Management Act (N.J.S.A. 13:1E-48.1 et seq.) in 1989 will be published as Section III of the State Plan Update later in 1993 as well. The hazardous waste program is summarized below.
- b. **Hazardous Waste:** The state has assumed the primary responsibility for planning for the storage, treatment and disposal capacity for hazardous waste and for the remediation of hazardous sites.

Planning Responsibilities: The Major Hazardous Waste Facilities Siting Act (N.J.S.A. 13:1E-49 et seq.) provides a mechanism to site and construct major commercial (off-site) hazardous waste treatment, storage and disposal facilities in New Jersey. The Hazardous Waste Facilities Siting Commission created pursuant to this act promulgates the New Jersey Hazardous Waste Facilities Plan, which is incorporated by reference into this 1993 State Plan Update as if fully set forth herein. The plan provides a hazardous waste management strategy which includes source reduction, recycling, recovery, treatment and incineration of hazardous waste and the secure disposal of process residue. The plan anticipates the development of privately-owned and operated facilities using the best available control technology.

The department's Hazardous Waste Regulation Program and Hazardous Waste Enforcement Program are responsible for approving and monitoring the design, engineering and operations of hazardous waste facilities and tracking and manifesting the disposal of hazardous waste in the state. The department's Division of Water and Hazardous Waste Enforcement is responsible for enforcing hazardous waste regulations in the state.

Site Remediation: The department's Office of Site Remediation is staffed by multi-disciplinary management teams to handle the highly complex problems associated with the cleanup of hazardous waste sites.

Through this program, the department addresses high priority hazardous waste sites in a timely fashion while maintaining the stringent fiscal and managerial controls necessary for the proper expenditures of public money. The goal of the program is to eliminate or lessen potential public health and environmental impacts from these sites in the most effective and efficient manner possible.

The Office of Site Remediation issues the Management Plan for Hazardous Waste Site Cleanups in New Jersey, as well as annual updates to the plan. Sites listed on the National Priorities List (NPL) issued by the USEPA are eligible to receive Superfund monies. Cleanup of sites that are not on the NPL is funded through New Jersey's Spill Compensation Fund, the Hazardous Discharge Fund or private sources. Proper and necessary cleanup efforts often take seven to eight years to complete, with some sites requiring post-cleanup care and maintenance for many years thereafter.

The three major stages of a site cleanup program are: (1) The development of a feasibility study to determine the extent of the problem and to recommend remedial alternatives; (2) preparation of an engineering design for the selected remedial action; and (3) actual remediation and physical cleanup of the site, including treatment and/or removal of the hazardous materials. For NPL sites, Superfund monies can be used to fund up to 100% of the feasibility and engineering design costs and up to 90% of the remedial actions. Monies from the Spill Compensation Fund and the Hazardous Discharge Fund are used to pay for the balance of the cost of cleanup of NPL sites and to pay all of the costs of non-NPL sites to the extent not covered by private, responsible party funding.

In addition, the Environmental Cleanup and Responsibility Act (N.J.S.A. 13:1k-6 et seq.) (ECRA), effective on December 31, 1983, has become a powerful tool in holding private parties accountable and financially responsible for the cleanup of sites with environmental problems. ECRA requires the owners and/or operators of industrial establishments to clean their sites and facilities of any hazardous or harmful substances or discharges as a precondition to the sale of the property or the business. Failure to comply with the provisions of ECRA can void the transfer of title and subject the seller to civil and criminal liabilities.

3. Historical Summary of District Planning and Project Implementation Process

- a. **Background:** As discussed above, the Solid Waste Management Act designated the 21 New Jersey counties and the Hackensack Meadowlands District as solid waste districts. The act required that each district develop and implement a ten-year district solid waste management plan (district plan or plans) that includes the following:
- An inventory of sources, composition and quantity of waste generated within the district, plus ten-year projections;
 - An inventory and appraisal of all solid waste disposal facilities operating within the district;

- An analysis of solid waste collection systems and transportation routes in the district;
- The designation of the department or agency of the county authorized to implement the district plan;
- A statement of solid waste disposal strategy for the district consistent with the state solid waste master plan;
- A site plan identifying all existing solid waste facilities and sites for planned facilities that will be available to handle projected waste flows;
- A plan for financing the resource recovery systems and facilities.

All of the districts had completed their initial district plans in the early 1980s. However, the districts are required to amend their plans to include new facilities and programs proposed to be included in or deleted from their solid waste system. The amendment process is the same process for initial approval of the district plans; thus the department reviews the entire scope of each district plan whenever an amendment is proposed. In this way, each district plan is evaluated and deficiencies noted on a regular basis within the ten-year planning horizon.

All of the district plans currently are undergoing scrutiny by the department to evaluate district compliance with the task force recommendations to establish aggressive source reduction programs, recycle 50% of the MSW and 60% of the total waste stream, and regionalize the solid waste systems (see F.1.e. above). Of the 22 planning districts, the department has approved task force amendments for three counties and has approved portions of task force amendments for eight other counties. The balance of the counties are expected to submit task force amendments or revised submissions during 1993.

Counties that are planning regional facilities or programs are authorized by the act to enter into interdistrict agreements. Once an interdistrict agreement is approved by the freeholder board of each participating county, each county then must submit an amendment to their respective district plan incorporating the terms of such agreement.

- b. The Project Implementation Process:** The development and implementation of solid waste facilities in New Jersey is a complex process that is closely monitored by the department, county government and the public. Many of the steps in the project development sequence are required by law, others are necessary or logical to obtain the financial and contractual commitments necessary to successfully implement the project, and others are simply the product of sound planning and management practices. Below is a summary of those steps:

- (1) **Scheduling:** A detailed schedule is developed for each major project that sets forth milestones for the critical decision steps involved in the project. An effective schedule is necessary to

identify the lead times necessary to obtain all permits, approvals and financial and contractual commitments and to identify the interdependence of projects for county planning purposes. For example, if the construction period for a resource recovery facility is three years, short-term arrangements for the disposal of the county's waste are necessary.

- (2) **Feasibility Studies:** A feasibility study is prepared by or on behalf of the county to assess the environmental and economic viability of a particular project and to determine the overall sizing, location, environmental impact, economic factors and other critical aspects. The feasibility study will include an evaluation and preliminary choice of a particular technology; a determination of the facility sizing and design capacity; a study of the energy or materials markets and potential prices; field data collection of the physical characteristics of the site; the development of a preliminary engineering report establishing the basic design parameters of the facility; capital, operating and financial cost estimates; development of a preliminary financing plan; institutional arrangements to determine the agencies best suited to own, construct, finance and/or manage the project; and an analysis of the facility's relationship to the overall solid waste management plan. Depending on the status of the county's solid waste plan and the project, the feasibility study may provide all of this information on alternative projects, technologies and/or locations. (See N.J.S.A. 13:1E-21b(1), (2), (6) and 13:1E-26).
- (3) **Site Selection:** Site selection is closely related to the preparation of the feasibility study described above. First, the county must develop siting criteria that suit the needs of the county and are defensible on regulatory and scientific grounds. Alternative sites within the district should be identified that meet the criteria to allow for a fair comparison. Data must be gathered on the physical characteristics of the site, including geologic and soil information. All of the identified sites are assessed and a final site selection is made. Final selection should be subject to public involvement to permit adequate opportunity for public input. The board of chosen freeholders will approve the site through the adoption of a plan amendment to include the site in the district plan. (See N.J.S.A. 13:1E-21(b)2). However, a site is not considered to be incorporated within the plan until a formally submitted plan amendment is approved by the commissioner of the department as further discussed below.
- (4) **Plan Amendment:** The district solid waste plan must be amended by the freeholder board of the district to include the individual project and site selection. The plan amendment submission must fully describe the type of project and site and provide the basis for selection. Tax maps showing lot and block numbers for the proposed site, a general location map, a detailed project schedule and an analysis of the relationship of the project to the overall solid waste management needs also must be included in the amendment submission, along with proof of newspaper public

hearing notice pursuant to N.J.S.A. 13:1E-23, a full transcript of the public hearing and the freeholder resolution. Where possible, detailed site survey information should also be submitted which delineates freshwater wetlands or mapped coastal wetlands and proposed traffic patterns. Note that no department approvals or permits may be issued unless the proposed site or facility is included in the district plan. The plan amendment process is set forth in N.J.S.A. 13:1E-20, 21, 23 and 24.

- (5) **Environmental and Health Impact Statement (EHIS):** The project sponsor, owner or operator must prepare an EHIS as part of its permit application that will assess the technical, economic, environmental and social parameters potentially affected by the proposed facility. The EHIS describes the proposed project; any significant environmental impacts (negative and positive); any mitigative measures that will be used to minimize or eliminate any negative impacts; an environmental inventory of conditions for a minimum area of one mile from the perimeter of the proposed facility; a description of the operations of the proposed facility; a discussion of the relationship of the proposed action to federal, state, county and local land-use plans, policies and controls and environmental regulations; an environmental assessment; a health impact assessment; a comparison of reasonable design alternatives; and certain other information designed to foster a thorough assessment of the proposed project. A project sponsor may not issue bonds or acquire property until the EHIS (or the preliminary EHIS as set forth in N.J.A.C. 7:26-2.9(f) & (g)) has been approved. Preparation and submission of the EHIS is governed by N.J.S.A. 13:1E-6 & 26 and N.J.A.C. 7:26-2.9.
- (6) **Site Acquisition:** Actual site acquisition cannot occur until the department has approved the preliminary EHIS. Prior to site acquisition, the project sponsor must identify the owner of the site and commence negotiations. Title surveys must be obtained to determine the existence of any liens, encumbrances, easements or restrictions on the property. If negotiations for the purchase or long-term lease of the site are not yielding the appropriate terms and conditions with respect to price or otherwise, then the county, its implementing agency or some other appropriate public body may undertake condemnation proceedings.
- (7) **Facility Permitting:** The facility owner or operator will be required to apply for and obtain all of the various permits and approvals necessary to commence construction of and operate the facility. The major permit required for a solid waste facility is a solid waste permit issued by the department pursuant to N.J.S.A. 13:1E-4 & 5. In order to obtain a solid waste permit, the department must approve the design, engineering, construction and operations plan for the facility. The permit applicant is required to submit field data, design drawings, construction specifications, engineering reports and all other appropriate information to the department to allow it to make a determination. Applicants must also submit applicable fees for review services as

specified in the department's regulations. In addition to the solid waste permit, a facility may need an air pollution control permit, building permits, zoning approvals and any other number of federal, state and local permits and approvals.

- (8) **Procurement:** The county must identify the procurement method to be utilized to obtain the facility and prepare the necessary procurement documents and draft contracts. Prior to the passage of the McEnroe Act (see Section E.1.a. above), public bodies were required to procure goods and services through the Local Public Contracts Law (N.J.S.A. 13:40A-11-1 et seq.), which required a straight, competitive bid and selection on the basis of lowest price alone. This method was not suitable to the selection of a vendor for a highly complex, privately-owned project where the assumption of risk varied from vendor to vendor. The only exception to this rule applicable to the procurement of solid waste facilities was where a facility had applied for rate-based rate of return regulation by the (then) Board of Public Utilities, and many vendors were not willing to subject their pricing to rate regulation.

The McEnroe Act, passed in 1985, provided an alternative procurement process for resource recovery facilities that allowed for competitive negotiation, selection on a basis other than price alone, and a one-time review of the services agreement by the Board of Public Utilities, the department and the Department of Community Affairs. It has been the practice in New Jersey to issue this "McEnroe" approval when all other components of the project, such as issuance of the major permits, acquisition of the site and financing of the project, are complete or near completion.

- (9) **Financing:** The preparation of the final financing plan and the actual financing of the facility must occur after the major components of the project are complete but before the commencement of construction. Key ingredients to a successful project financing plan include:
- Put or pay (or similarly secured) waste supply contracts and take or pay energy or materials sales contracts for a term at least equal to the term of the bonds issued to finance the facility to be executed on or before the time of financing.
 - Development of financing pro formas that analyze the various financing mechanisms available, as well as project capital and operating costs and ultimate tipping fee charges. The pro formas will identify sources of funding (e.g.: private equity contributions, public or private debt, letters of credit or other security instruments, general obligation or revenue bonds, and any loans or grants available to finance the project). The pro formas also should address the allocation of costs, revenues and risks among the various participants of the project.

- An analysis of ownership and management options, ranging from full service own, design, construct, operate, maintain and guarantee options, to a purely publicly-owned project where the vendor does all of the above but own. If the facility is to be publicly-owned, then the county must decide whether it will own the facility or a public authority will own the facility. Typically, authorities are chosen to own major projects because such authorities have greater abilities to enter into long term contracts and authority debt is not credited against the county debt ceiling.
- (10) **Construction:** Construction of the facility may range from one to four years depending on the technology. The construction must be carefully monitored to ensure strict compliance with the design and engineering specifications for the facility, cost control and adherence to the schedule. Generally, the project sponsor employs a professional engineer to monitor the project construction and sign-off when the facility is complete. During the period of construction, the district is obligated to make short-term arrangements for waste disposal.
- (11) **Start-Up:** Once the facility has completed construction and is deemed "mechanically complete," the facility undergoes a period of shake-down and testing to determine whether the facility will meet the guaranteed design specifications. Depending on the complexity of the process, this testing phase may run anywhere from 90 days to as long as a year. For example, testing of a solid waste composting facility may occur in two phases at different times of the year to test odor control systems during the summer months. The county is required to supply waste for the start-up and testing phase, although the amount of waste is supplied on a "best efforts" basis with no penalties attached for failure to provide the requested amounts. The price paid by the county to dispose of the waste is agreed upon by the parties during negotiations, but frequently is below the price paid once the facility has been accepted by the county.

As illustrated by the above discussion, the development and implementation of a solid waste project is complicated and lengthy, involving a wide range of disciplines. Most counties do not have in-house staff experienced to perform these functions. Therefore, it is critical that the county select qualified technical, financial and legal consultants to assist it in all phases of the development and implementation process.

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