AMENDMENT
to the
OCEAN COUNTY
SOLID WASTE MANAGEMENT PLAN

FEBRUARY 1991

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SECTION 1
INTRODUCTION

1.1 BACKGROUND

This document is an Amendment to the Ocean County District Solid Waste Management Plan. The Solid Waste Management Act (P.L.1970,c.39 (C.13:1E-1 et seq.)) requires that the County adopt such a Plan and that it be amended as required by changing circumstances, not less than once every two years.

The original Plan was adopted by the Board of Chosen Freeholders on July 18, 1979. Certain technical amendments were proposed on July 1, 1980 and were approved by the Commissioner of the New Jersey Department of Environmental Protection (NJDEP) on July 31, 1980 with certain additional modifications made on his initiative.

A second amendment to the Plan was adopted by the Freeholders on November 28, 1984 and approved by the Commissioner on April 8, 1985. This revision included a proposal to construct a waste-to-energy facility at a site in Lacey Township. For the first time the Plan established as a goal the recycling of 25 percent of the residential and commercial solid waste generated within the County.

On October 7, 1986 an amendment was adopted by the Freeholders which changed the designation of the site for the waste-to-energy facility from Lacey Township to Ocean Township (Waretown). That change was approved by the Commissioner on February 23, 1987.

In the early months of 1987 the Board of Freeholders directed the development of a County Recycling Plan to meet the requirements of the Mandatory Recycling Act (P.L.1987, c.102). That Plan was proposed on October 28, 1987 as an amendment to the District Solid Waste Management Plan and was approved by the Commissioner on September 2, 1988.

In July, 1989, an amendment was adopted by the Freeholders and later approved by the NJDEP which established the financing plan for the development of the waste-to- energy facility and provided a schedule for the development, construction and operation of the resource recovery facility. In addition, the amendment included a list of private recycling operations, a list of compost operations and the areas served by them, and a list of permitted small incinerators.

Currently, the County Plan which has State approval contains the following three elements:

- An aggressive recycling effort to recover from the community solid waste stream all materials for which there are any reuse opportunities;

- A waste-to-energy facility which will selectively burn non-recyclable waste using the heat to generate electricity; and,

- A protectively designed landfill for the disposal of wastes which can neither be recycled nor burned, and for the disposal of the ash residue from the waste-to-energy process.

The major purpose of this Plan Amendment is to seek necessary State approval to revise the County's overall approach to solid waste management. Toward that end, this Amendment further expands the County's recycling effort; incorporates composting to process non-recyclable wastes; and eliminates incineration from the Plan.

1.2 EMERGENCY SOLID WASTE ASSESSMENT TASK FORCE

1.2.1 Goals

Concerned with the historical lack of progress in solid waste management planning in the State, and wishing to change the emphasis from "one county-one incinerator" to intensive source reduction, recycling, and regionalization efforts, Governor Florio signed Executive Order No. 8 on April 6, 1990. This order halted, for 120 days, the approval of permits, contracts, and financing arrangements for any waste-to-energy resource recovery facility by the NJDEP, the New Jersey Board of Public Utilities (NJBPU), the Department of Community Affairs (DCA), and other state agencies, commissions, and organizations. The Order also established the Emergency Solid Waste Assessment Task Force, which was given the mission to:

- estimate the quantity and composition of each County's waste stream;
- evaluate methods such as reuse, source reduction, recycling, and composting and determine "achieveable percentages" for each method in terms of quantity and timeframe;
- determine the existing landfill capacity and 20-year disposal need for each County;
- evaluate the environmental, health, safety and financial impacts of reduction, recycling, composting, landfilling, and waste-to-energy;
- determine the feasibility of regionalization; and,
- prepare a Preliminary Report and take public comment on the above.

In addition, by August 6, 1990, the Task Force was required to submit recommendations to the Governor for the following:

- A program specifying the percentages of solid waste reduction attainable through reuse, recycling, and composting (with a schedule for same);
- Alternatives for the disposal of the remaining solid waste;
- Benefits of and a process for regionalizing disposal facilities;
- the need for revising existing standards for resource recovery and other disposal facilities; and,
- legislative and regulatory changes which are necessary to achieve the Task Force's recommendations.

1.2.2 Task Force Conclusions and Recommendations

On August 6, 1990, the Emergency Task Force submitted its Final Report to the Governor. The report contained specific recommendations regarding future solid waste planning, source reduction, recycling, disposal, and regionalization.

The Final Report recommends that Solid Waste Management Plans in the State must be built around the attainment of a 60 percent reduction in solid wastes requiring disposal over the next five years. The policy of establishing incinerators in most of the Counties of the State should be abandoned. While maintaining the County as the primary planning and implementing agency, the State should have a stronger role. NJDEP responsibilities should be expanded to include source reduction and

alternative technology bureaus, expansion of public education, permitting expediency, and a mandatory integrated reporting system.

Source reduction should be Priority No. 1 for the State of New Jersey. Specific source reduction techniques are needed, such as labeling programs on recyclability and content, disincentives for single-use containers, elimination of double-packaging, and a phase-out of metals currently used in packaging materials. Also, source reduction strategies should include the removal of hazardous materials from the waste stream, involving permanent collection programs, product labelling and separate collection, and permanent funding of these programs.

The Task Force recommends the following strategies to reach the 60 percent recycling goal: the banning of yard waste from disposal facilities; the expansion of capacity for construction and demolition waste recycling; the establishment of new programs for plastics and low grade paper, and improvements in the recycling of food, tires, and furniture. Recycling markets must be increased by standardizing purchasing specifications for recycled materials, providing financial incentives for new recyclable material processing mills, and setting material-specific targets. Government is to set an example by providing financial incentives to private recyclers, taking Federal action on junk mail, setting national manufacturing standards on durability, conducting government waste audits within 1 year, and setting specific recycled material procurement goals. The Task Force further recommends the forging of government/private sector partnerships, the restructuring of financial assistance programs, and the institution of better data reporting.

The Counties should develop disposal facilities for the 40 percent residue which will remain after source reduction and recycling. This disposal capacity should be developed by utilizing existing landfill capacity, assessing the impact of volume reduction strategies, reopening

inactive landfills, and utilizing a planning process which will encourage innovation.

1.2.3 Implications for Ocean County

In a letter from Commissioner Judith A. Yaskin to the Monmouth County Board of Chosen Freeholders dated August 24, 1990, the NJDEP stated that the Governor's Task Force Final Report "...may provide a new blueprint for solid waste management in New Jersey while focusing upon the achievement of a 60% recycling rate within five years and the regionalization of long-term solid waste facilities." Additionally, the NJDEP will determine the need for all future solid waste disposal facilities "...in light of recommended recycling rates and increased emphasis on regionalization." And, all future solid waste plan amendments will be required to be "...consistent with the State's policies and plans resulting from the Task Force process and subsequent Department action." It is clear that there will be a new emphasis on source reduction, recycling, regionalization, and the volume reduction of residual materials destined for landfill.

Any plan amendments which are to receive serious consideration and certification by the NJDEP will need to demonstrate conformance with the Task Force's Final Report. Ocean County is well positioned to be the State's leader in the implementation of a Solid Waste Management Plan which will be in full conformance with the Task Force's recommendation. A Recycling Program infrastructure exists for the collection, processing, and marketing of recyclable materials, as well as the essential public education efforts which are required to assure the attainment of the recycling goals. A household hazardous waste reduction program is a permanent part of the plan, and adequate in-County disposal capacity is available to fulfill the County's needs well into the 21st century.

Following the presentation of amendments in Section 2 of this Plan Amendment, a discussion of their respective conformance with the Task Force's recommendations is contained in Section 4.

1.3 CURRENT SOLID WASTE MANAGEMENT PRACTICES

1.3.1 Recycling Activities

The County owns and operates **two regional recycling centers.** The Northern Ocean County Recycling Center is located in the Lakewood Industrial Park. The Southern Center is located in Stafford Township's Industrial Park. These centers accept shipments of recyclables at no charge from municipalities, private waste haulers and citizens. Newspaper, cardboard, PET and HDPE plastic and commingled tin, aluminum and glass containers are accepted. The current County Recycling Plan lists newspaper, aluminum beverage containers, bimetal cans and flint, amber and green glass containers as mandatory recyclables.

The regional centers also host the County's **household hazardous waste collection program** and are used for other specialized programs. For example, they serve as **drop off centers** for waste oil, automotive batteries and auto and truck tires. Reef units are constructed from the old tires and then barged to approved sites off shore to create habitat for fish and other marine life.

A cooperative **regional leaf composting program** has also been implemented by the County. Interlocal services agreements have been entered into with those municipalities which have state approved leaf composting sites. Under these agreements, the County provides manpower and specialized equipment for use at these sites in return for the municipality allowing neighboring towns to use their site.

In addition to the County's recycling operations, there are several private centers that recycle certain materials that formerly were disposed of in landfills. There are four centers in the County which handle bulky wastes (construction and demolition wastes, tree stumps, asphalt and concrete). It is estimated that these centers processed more than 19,000 tons of material during the past year. Efforts by the private sector also resulted in the recycling of additional quantities of non-bulky materials which would otherwise have been disposed in the landfill.

A new County Recyclable Materials Processing Facility (RMPF) is currently under construction in Lakewood Township at the Northern Ocean County Recycling Center. In June, 1990, Ocean County entered into an agreement with RRT Empire Returns, Inc. to design, construct, and operate the RMPF for a period of 5 years. The 35,000 square foot facility will have the capacity to process 300 tons per day of designated recyclable materials. Completion of construction and full-scale operation of the RMPF is anticipated to occur in 1991.

The RMPF will provide the infrastructure needed to prepare recyclable materials to market specifications, thereby enabling the County to arrange for long-term market commitments which are necessary to insure the continued success of recycling. The facility will include conveyor systems which will allow for hand sorting of certain materials and other processing equipment such as trommels, air classifiers, balers, and crushers.

1.3.2 Landfilling Activities

All non-recyclable solid waste generated in Ocean County is disposed at the Ocean County Landfill Corporation Landfill (OCLF) located in Manchester Township.

OCLF is currently the only facility which is in operation to dispose of solid waste generated within the County. During 1989, a total of 418,354 tons of waste were landfilled at the site. This represents all of the non-recycled type 10, type 13 and type 27 waste produced in the County. The permitted capacity at the landfill is 17 million cubic yards. It is estimated that a solid waste equivalency capacity of approximately three million tons remains available for Ocean County's use. At the current rate of use, the permitted capacity at OCLF will be sufficient to 1997.

1.4 PURPOSE OF PLAN AMENDMENT

The Plan Amendment set forth on the following pages has been drafted by staff and advisors at the direction of the Board of Freeholders and in consultation with the Solid Waste Advisory Council. The Amendment changes the solid waste management strategy currently represented in the County Plan. Most significantly, this Amendment provides for a major expansion of the County's recycling infrastructure. In addition, composting will be utilized to process suitable, non-recycled waste. Incineration is no longer a part of the Plan.

This Amendment makes the following changes in the County Plan:

- The designation of the Ocean Township (Waretown) site for the construction of the proposed waste-to-energy (resource recovery) facility is deleted from the Plan, and the designation of the waste-to-energy technology for the incineration of non-recyclable waste is deleted from the Plan;

- Composting is designated as the processing technology for compostable solid waste not recycled;

- Additional materials are identified as "designated recyclables" in the Plan, as follows: PET, HDPE, and PVC plastic containers are designated as a mandatory recyclable material; corrugated cardboard is designated as a mandatory recyclable material for commercial establishments; and, office paper is designated as a mandatory recyclable material in any office with more than 25 employees and in all institutions;

- The following block and lots in Jackson Township are designated for use by the Bil-Jim Construction Company as a Recycling and Materials Reclamation Center: Block 14.15, Lot 17; Block 14.18, Lots 1 through 19 inclusive, 41 & 42; Block 14.19, Lot 43.02; Block 14.23, Lot 1; Block 14.24, Lots 1 through 18 inclusive; Block 14.25, Lots 1 through 7 inclusive; Block 14.26, Lots 1 through 44 inclusive; Block 14.27, Lots 1 through 50 inclusive; Block 14.28, Lots 1 through 56 inclusive; Block 14.29, Lots 1 through 61 inclusive; Block 14.30, Lots 1 through 54 inclusive; Block 14.31, Lots 1 through 23 inclusive; Block 14.32, Lots 10 & 11; Block 54, Part of Lot 28;

- A development plan for facilities at OCLF is included, consisting of a materials recovery facility (MRF) and a composting facility together with continued use of OCLF to provide for disposal of waste and residues which are not recycled or composted. Properties in Manchester Township owned and/or controlled by Ocean County Landfill Corporation are: Block 2, Lots 1, 2, 5, 6, 8 through 24 inclusive, 30 through 37 inclusive, 59 through 62 inclusive, 64, 65, 768 through 772 inclusive, 777, and 778; Block 3.02, Lot 642; and Block 33, Lot 783.

- Lot 1, Block 34 of Eagleswood Township is designated for development of the John Kummings' Stump Reduction Center;

- Block 411, Lot 1.2 is included in the Plan for the Rosetto Commercial Materials Recovery Facility (MRF);

- Block 23 Lot 2 owned by Berkeley Township is designated as a vegetative waste composting facility;

- A County Farm Leaf Mulching Policy is adopted and Block 58, Lot 13 owned by Andrew Nemeth in Plumsted Township is included as a farm leaf composting site;

- The Ocean County Leaf and Vegetative Waste Composting Agreement is included in the Plan;

- The Ocean County Recycling Center Use Agreement for municipalities and private companies using the Ocean County Regional Recycling Centers is included in the Plan;

- Block 539 Lot 5 owned by Dover Township is designated as a leaf composting facility;

- Southern Ocean Landfill, Inc. is re-opened for an interim period for the purpose of effectuating the proper closure of that facility;

- Procedures for applicants to follow in requesting inclusion in the Plan are adopted; and,

- The previously planned waste flow distribution is modified. Waste flow projections and distribution of waste among a combination of recycling, processing and disposal facilities are updated.

SECTION 2
PLAN AMENDMENTS

2.1 INTRODUCTION

In view of statutory requirements and the County's longstanding goal to minimize the quantity of materials which are landfilled and maximize the recovery, recycling and reuse of materials in the waste stream, the Ocean County Board of Chosen Freeholders hereby designates expanded recycling and municipal solid waste composting as methods to be implemented for the management of solid waste in Ocean County. This designation is consistent with: 1) the recommendations of the Solid Waste Emergency Task Force to the Governor of New Jersey in their Final Report dated August 6, 1990; and, 2) the Ocean County Freeholder Board Resolution dated February 6, 1990. This Plan Amendment serves to implement this philosophy in Ocean County.

The existing County facilities and programs include an aggressive Recycling Plan; two regional recycling centers for designated and other recyclables; a regional leaf composting program; a household hazardous waste collection program; and a Recyclable Materials Processing Facility (under construction). This Amendment substantively increases the recycling infrastructure which serves the County by designating two new private regional recycling facilities (Rosetto and Bil-Jim) which will service both Ocean County as well as surrounding counties. This Amendment designates additional mandatory recyclable materials; designates three new leaf composting facilities; and adopts new policies for Farm Leaf Mulching and Recycling Center Use. Significantly, this Amendment provides for a materials recovery facility at OCLF in conjunction with a compost facility to attain the objective of maximum recycling and minimum landfilling.

2.2 WASTE-TO-ENERGY TECHNOLOGY AND SITE DE-DESIGNATION

In 1984, the NJDEP initiated legal action against the Board of Chosen Freeholders to compel the Board to move forward with the siting and construction of a resource recovery facility. After lengthy negotiations with the Commissioner and the Department staff, a settlement was reached. This settlement was embodied in an Administrative Consent Order which was signed in September 1984. The Order set forth a detailed schedule for implementing a mass burn, waste-to-energy resource recovery facility.

In October 1985, work began on the siting and environmental assessment of a waste-to-energy facility for Ocean County. After a formal site selection process specifically developed to identify an optimal waste to energy site, the Ocean Township (Waretown) site was formally designated as the location for the resource recovery facility in the Freeholder's October 7, 1986 Plan Amendment. Thereafter, a Preliminary Environmental and Health Impact Statement (PEHIS) was prepared for the site and ultimately approved by the NJDEP on November 20, 1987.

In July, 1989, a subsequent Plan Amendment was adopted to include, among other items, a financial plan and schedule for the procurement of the resource recovery facility. However, throughout the development of the plans for the waste-to-energy facility, citizens of Ocean County expressed their apprehension about the perceived harmful environmental and public health effects of incineration. The Board of Freeholders has also been concerned with the lack of regulatory guidance for the handling and disposal of incinerator ash. Further given the likelihood of major changes in State policy regarding incineration and solid waste management, on February 6, 1990, the Board adopted a Resolution which:

- terminated all actions pertaining to the procurement or construction of the resource recovery facility proposed to be built in Ocean Township;

- called for the establishment of a modular composting facility that could be readily expanded as required; and,

- instructed the Director of the Ocean County Department of Solid Waste Management to draft a Plan Amendment implementing the objectives as set forth in the Resolution.

In March, 1990, the Board of Chosen Freeholders submitted a proposal to the NJDEP to renegotiate the terms of the previously mentioned Consent Agreement. In the proposal, the Board sought relief from the requirement to build an incinerator and requested the NJDEP's approval to proceed with a solid waste plan involving expanded recycling and construction of a solid waste composting facility. The Board also sought assurance from the NJDEP that out-of-County waste would not be directed to the Ocean County Landfill as long as the County proceeds according to an agreed upon plan. The goal of the Freeholder's proposal was to develop a plan which would be publicly acceptable and in full compliance with the requirements of State law.

On April 6, 1990, Governor Florio signed Executive Order #8 which mandated a reassessment of solid waste management in New Jersey and placed a halt on all resource recovery project review and approval by the NJDEP. The Executive Order created the Emergency Solid Waste Assessment Task Force to study issues of recycling, source reduction, regionalization, and the role of incineration in the statewide solid waste management plan.

In May, 1990, representatives of the Governor's office and the NJDEP met with officials of Ocean County to discuss the Consent Agreement and the County's proposal. The NJDEP indicated that it would not enforce compliance with the Agreement by requiring the County to construct a resource recovery facility.

Additionally, the NJDEP representatives informed the County that no formal action would be taken by the Commissioner until the Task Force completed its Final Report and at that time, all Consent Agreements would be reviewed for possible extension and/or renegotiation.

On August 6, 1990, the Emergency Solid Waste Assessment Task Force submitted its Final Report to the Governor which concluded in part that previous state policies failed to fully recognize the environmental and economic benefits of source reduction and recycling, and recommended that the State abandon the policy of encouraging the development of incinerators in most counties. The Governor has subsequently expressed his endorsement of the Task Force recommendation.

Based upon the above, the waste-to-energy technology and the site designated therefore in Ocean Township-Waretown including all properties required for the GSP interchange, access road, and waste-to-energy site (Block 33, Lot 27; Block 34, Lots 12, 13 & 14; Block 39, Lots 1, 2, 3, 6, 7, 8 & 9; Block 40.01, Lot 1; Block 41, Lots 1, 2, 4, 5 & 9; Blocks 410 through 435 inclusive, all lots) are hereby deleted from the Ocean County Solid Waste Management Plan. A map of this site is presented on Figure A.

2.3 EXPANSION OF THE RECYCLING PROGRAM AND DESIGNATION OF ADDITIONAL RECYCLING FACILITIES

The Ocean County Board of Chosen Freeholders adopted the Ocean County Recycling Plan as an Amendment to the Ocean County District Solid Waste Management Plan on October 21, 1987. The Plan was prepared to conform

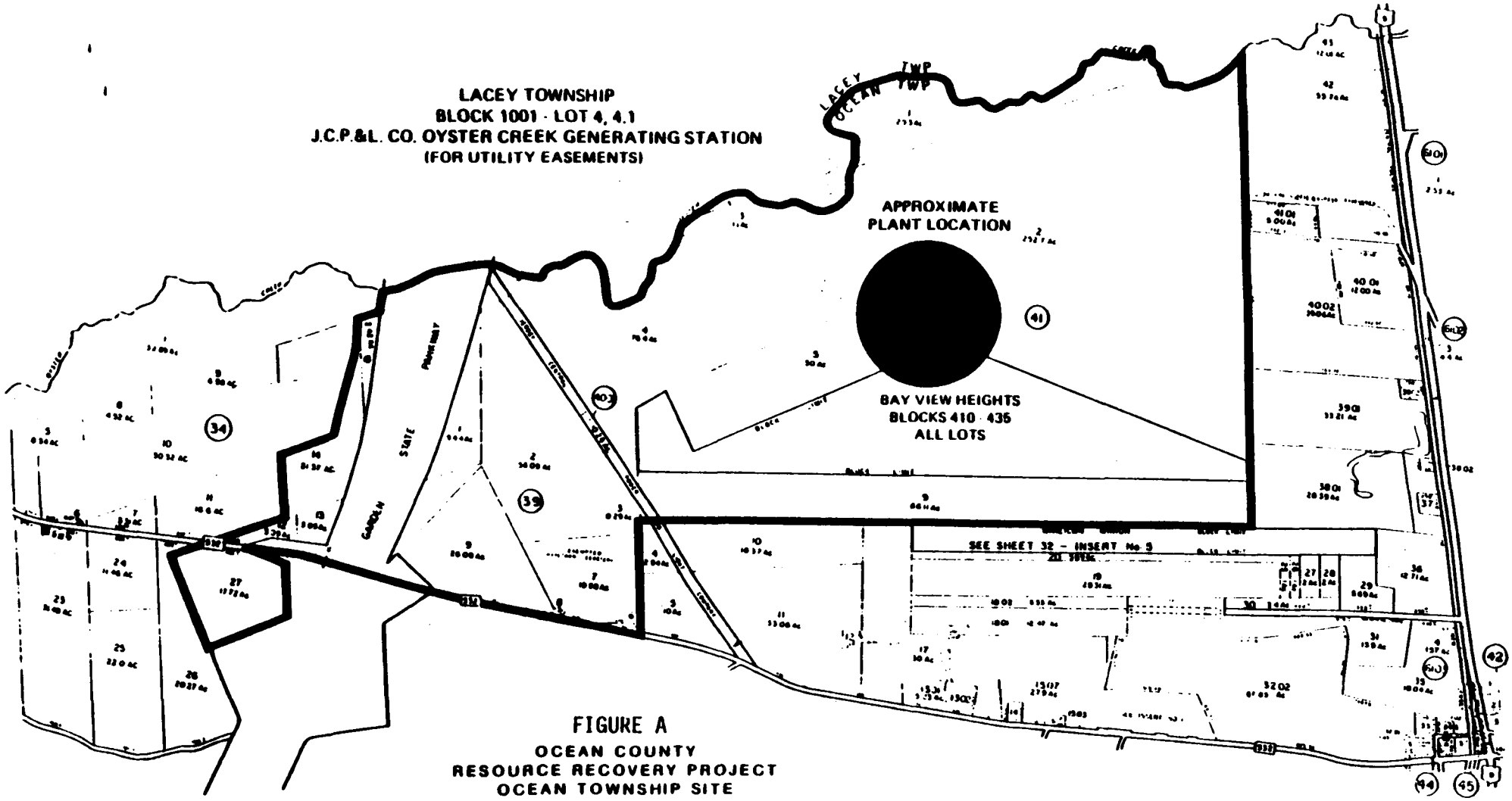

FIGURE A

OCEAN COUNTY
RESOURCE RECOVERY PROJECT
OCEAN TOWNSHIP SITE
(WARETOWN)

PROPERTIES POTENTIALLY AFFECTED BY DEVELOPMENT OF PROPOSED RESOURCE RECOVERY FACILITY, ASSOCIATED IMPROVEMENTS AND UTILITY EASEMENTS.

with the New Jersey Mandatory Source Separation and Recycling Act of 1987. On March 22, 1988 the Commissioner of the New Jersey Department of Environmental Protection issued a Certification that approved the Ocean County Plan, but also required certain minor modifications. On July 20, 1988 the Ocean County Board of Chosen Freeholders adopted an Amendment to the Ocean County Recycling Plan to address the required changes to the Plan. On September 6, 1988 the Commissioner approved the modifications proposed in the July 20, 1988 Amendment. On June 7, 1989 the Ocean County Board of Chosen Freeholders adopted an Amendment to the Ocean County District Solid Waste Management Plan and this Amendment provided a status report on the County Recycling Centers and Programs, revised the

Leaf and Vegetative Waste Service Area and incorporated four (4) private facilities for non-traditional recyclable materials into the County Plan. The amendments to the County Recycling Plan contained herein serve to expand the Recycling Plan and represent modifications to Sections 2, 4, and 5 of the Recycling Plan.

2.3.1 Designation of Additional Recyclable Materials

This Amendment modifies Section 2 ("Designation of Recyclable Materials to be Source Separated in the Residential, Commercial, and Institutional Sectors") of the Recycling Plan. The existing Ocean County Recycling Plan designates the following as mandatory recyclable materials:

1. Aluminum Cans
2. Glass Containers
3. Newspapers
4. Ferrous Metal (Tin) Cans

The Ocean County Recycling Plan states that as markets for other potentially recyclable materials develop or expand and as the County's ability to process and market additional materials improves, the County will consider adding to the original list of materials.

This Amendment expands the list of designated mandatory recyclable materials to include the following (to commence on July 1, 1991):

5. PET and HDPE (plastic containers)
6. PVC Containers
7. Corrugated Cardboard - Commercial Establishments
8. High Grade Office Paper - any office with more than 25 employees, and all institutional establishments.

Pursuant to N.J.S.A. 13:1E-99.16 of the New Jersey Statewide Mandatory Recycling and Source Separation Act each municipality of the County shall adopt an amendment to its Mandatory Recycling Ordinance adding the materials set forth above to the list of designated mandatory recyclable materials contained in this ordinance. A form of the amended Ordinance for use by the towns is included in Appendix C.

2.3.2 Bil-Jim Construction/ Recycling Activity Center

The Bil-Jim Construction Company proposes to establish a recycling and materials reclamation center in Jackson Township on the following tracts of land: Block 14.15, Lot 17; Block 14.18, Lots 1 through 19 inclusive, 41 & 42; Block 14.19, Lot 43.02; Block 14.23, Lot 1; Block 14.24, Lots 1 through 18 inclusive; Block 14.25, Lots 1 through 7 inclusive; Block 14.26, Lots 1 through 44 inclusive; Block 14.27, Lots 1 through 50 inclusive; Block 14.28, Lots 1 through 56 inclusive; Block 14.29, Lots 1 through 61 inclusive; Block 14.30, Lots 1 through 54 inclusive; Block 14.31, Lots 1 through 23 inclusive; Block 14.32, Lots 10 & 11; Block 54, Part of Lot 28.

The site is located on County Route 547 (See map in Appendix M) and the activities at the site will include crushing of up to 200 tons per hour of reclaimed asphalt and concrete products, stumps and wood product grinding, and an asphalt producing facility that will reclaim and recycle asphalt and soils.

The reclaimed concrete will be recycled into various sizes of clean stone that will be used for drainage systems and soil stabilization projects, or blended with "fines" to create road gravel. Reinforcing steel which has been magnetically separated from the concrete will be separately processed. The asphalt will be recycled into a mix which will be used as road gravel and a material called recycled asphalt product (RAP) which is then recovered into new asphalt products. Stumps, dead trees, old pallets, old lumber, and wood building demolition materials will be accepted at the site and processed into decorative lumber wood chips, mulch, erosion control materials, and bulking agents for sewage treatment facilities. Any unuseable residue from the facility will be disposed at the OCLF Landfill.

The Bil-Jim Recycling Center will be a regional facility serving Ocean County and surrounding counties consistent with the regionalization concepts recommended by the Governor's Task Force. It is estimated that the facility will process up to 30,000 tons per year of stumps, 30,000 tons per year of concrete, and 10,000 tons per year of asphalt. It is anticipated that the NJDEP will limit the total quantities of material (unprocessed and processed) which will be allowed to be stored on site. The Ocean County Solid Waste Management Plan (Appendix K) is hereby amended to include the Bil-Jim Construction Company Recycling Activity Center conditioned upon the facility obtaining all necessary approvals, including NJDEP and Pinelands Commission. Additionally, this Plan Amendment requires the facility's acceptance of mixed, crushed glass from Ocean County recycling centers for use in the asphalt production process, and the acceptance of waste oil to fuel the asphalt burner, subject to NJDEP approval and conditioned upon the receipt of all necessary permits.

2.3.3 John Kummings' Stump Reduction Center

A stump processing center is proposed to be established on Lot 1, Block 34 of Eagleswood Township by John S. Kummings (See map in Appendix M).

This facility, to be known as the John Kummings' Stump Reduction Center, will recycle up to 500 cubic yards per week of tree stumps. The facility will utilize a grinding machine to accomplish the size reduction of materials processed at the site. It is anticipated that the NJDEP will limit the total quantities of material (unprocessed and processed) which will be allowed to be stored on site.The Ocean County Solid Waste Management Plan is amended to include this facility.

2.3.4 Proposed Ocean County Landfill Corporation MRF

OCLF proposes to construct at the landfill a Materials Recovery Facility (MRF) to process solid waste entering the landfill. This facility will be located on Block 2, Lot 31, 32 and 33, within the OCLF site. Solid waste entering the landfill will be initially directed to the MRF. This will:

- Remove undesirable materials (auto batteries, paint cans, household hazardous waste, etc.) from the waste stream prior to landfilling;

- Remove recyclables that by-pass the curbside collection program;

- Produce a compostable feedstock for a composting facility; and,

- Reduce the waste stream requiring landfilling thereby enabling OCLF to provide for the projected needs of the County as recommended by the Task Force Report.

This separation will screen the waste flow and "improve" the quality of the material entering the compost module or the landfill, which will result in an overall improvement in the landfill environment.

The capacity of the MRF is preliminarily set at 1,800 TPD. At full capacity, the MRF will consist of three modules of 600 TPD capacity each. At this time, the balance between the public and private source separation programs and the OCLF MRF (the combined efforts of which, plus MSW composting, will result in attainment of the 60% recycling goal) is not certain. Therefore, all three modules will be constructed only if there is sufficient in-County post-source separation waste to support their economical operation.

The MRF is not sized to accept any out-of-County waste and this Amendment specifies that no out-of-County waste may be accepted at the MRF or landfill. The modular nature of the proposal will allow concurrent operation of facilities (described in Section 2.4) in the southern waste shed if these facilities are deemed feasible and are constructed. The MRF modules will be sized to accommodate the summer waste peak and can be taken off-line if not needed during the remainder of the year.

The start-up of the MRF is set for January 1, 1994. Initially, two modules will be constructed. A future (third) module will be constructed if needed. The concept is to size the facility to process all Type 10 waste delivered to OCLF.

This Amendment does not select a specific MRF technology. However, it is expected that a "drum separation system" will be used to process the incoming waste. The technology is expected to utilize a combination of mechanical equipment and hand picking/separation to accomplish the objectives of the MRF.

The waste flow directed to the MRF is specified in Section 3 of this Plan Amendment.

The Ocean County Solid Waste Management Plan is hereby amended to include the OCLF MRF as described above.

2.3.5 Rosetto Commercial MRF

The County currently owns and operates two recycling centers for the receipt, processing and marketing of source-separated commingled recyclable materials located in Stafford and Lakewood Townships, respectively known as the Southern and Northern Recycling Centers. Additionally, the County has recently awarded a contract to RRT Empire Returns Corporation for the design, construction, and operation of a Recyclable Materials Processing Facility (RMPF) at the Northern Center for the processing and marketing of up to 300 tpd of residentially-generated recyclable materials.

In 1989, an application was received from Rosetto Recycling Center, Inc., and Industrial Way Associates for the inclusion of a 250 tpd Materials Recovery Facility (MRF) to be designed, constructed, and operated by the applicants (hereinafter "Rosetto") at Tax Lot 1.2, Block 411, Dover Township, Ocean County, New Jersey in the County Plan (See map in Appendix M). After substantial planning and discussions with Rosetto, the County signed an Agreement setting forth the terms and conditions of facility design and operation.

This Amendment modifies Section 4 of the Ocean County Recycling Plan to include the Rosetto Commercial MRF. The Rosetto MRF will be capable of processing up to 250 tpd of solid waste ("Acceptable Waste", defined as non-hazardous industrial, commercial/institutional, and construction and demolition (C&D) waste) and designated recyclable materials as set forth in that Agreement.

The Agreement between Rosetto and Ocean County is contained in Appendix D of this Plan Amendment and is made a part of the Ocean County Solid Waste Management Plan. The Rosetto Commercial MRF will be a regional facility serving Ocean County and surrounding counties consistent with the regionalization concepts recommended by the Governor's Task Force. Based

upon the terms stipulated in the Agreement, it is hereby proposed that the Rosetto MRF be included within the Ocean County Solid Waste Management Plan contingent upon the terms and conditions contained in the Agreement.

2.3.6 Berkeley Township Vegetative Waste Composting Facility

Vegetative materials from Berkeley Township were being taken to the Whiting Compost Facility in Manchester Township. However, the Whiting facility is precluded from accepting waste from outside the Township due to regulation of the NJ Pinelands Commission. Therefore, the Township has submitted an application to the NJDEP for a Temporary Certificate to Operate a vegetative waste composting facility to handle leaves, brush, and grass clippings. This proposed amendment modifies Section 5 of the Ocean County Recycling Plan to include the Berkeley Township Facility.

This facility, to be located on Block 23 Lot 2, will be constructed and operated by Berkeley Township. The operating area will consist of 2.3 acres of a 144 acre tract of land which is also the site of the former municipal landfill (currently being closed pursuant to the NJDEP #1505A Closure Permit requirements), the Berkeley Township Public Works Building, and a parking area for the local Board of Education's school buses (See map in Appendix M).

The compost facility will be operated by using a low level type of technology process. It is proposed to handle 8,800 cubic yards (1,760 tons) of vegetative waste annually. Access will be provided by the existing driveway into the public works building site. The hours of operation will be 8:00 a.m. to 5:00 p.m. The finished compost product will be used by the municipality for erosion prevention and roadside maintenance, land reclamation and cover for the landfill areas, top dressing for parks in the municipality and around public buildings.

Inclusion of this project as part of the County Solid Waste Management Plan is conditioned on obtaining all other necessary approvals, including those from the NJDEP and the Pinelands Commission.

2.3.7 Whitesville Road Leaf Composting Facility

Dover Township operates a regional leaf composting facility which serves the municipalities of Dover, Lavallette, Seaside Park, and Seaside Heights, and leaves collected from Ocean County Buildings and Grounds. The existing facility is located at the Dover Township Public Works Garage.

Dover Township is proposing to establish a new supplemental leaf composting facility off of Whitesville Road near the Dover Township Ice Skating Rink at Block 539, Lot 5 (See Map in Appendix M). A portion of the 22 acre site will be set aside by the Township for the leaf composting facility for the municipal leaves being picked up curbside by Township forces, to supplement capacity at the Public Works Garage site. Unlike the Public Works Garage site, the Whitesville Road site will not be open to the public. The site will contain a 3 acre compost area, a 2 acre staging area, and a 3 acre final product storage area.

The Ocean County Solid Waste Management Plan is hereby amended to include the Whitesville Road Leaf Composting Facility in Dover Township.

2.3.8 Farm Leaf Mulching Policy and Nemeth Farm Leaf Mulching Site

This Amendment modifies Section 5 of the Ocean County Recycling Plan and proposes the establishment of a County policy of encouraging the mulching of leaves on farms. The purpose of this provision is to promote the utilization of leaves on farmland as an economical benefit to farmers and municipalities.

The County policy will require that a farm obtain conditional approval from the County Director of Solid Waste Management prior to accepting leaves for mulching. This conditional approval will require that the applicant submit a letter to the County specifying Lots and Blocks to be included in the Plan; agreeing to the State Land Application requirements of NJAC 7:26-1.12, and agreeing to make the farm available for inspection by the Ocean County Health Department or the Ocean County Department of Solid Waste Management to ensure the land application requirements are being complied with by the farmer.

Farms receiving conditional approval will be included in the next Plan Amendment (subject to compliance with the above requirements) whereupon approval will become final.

The County designates Block 58, Lot 13 (See map in Appendix M) owned by Andrew Nemeth in Plumsted Township as a farm leaf composting site for the mulching of leaves subject to the requirements contained in the Ocean County Recycling Plan and to all State and local requirements. Appendix E contains a list of the existing farm leaf mulching sites in Ocean County.

2.3.9 Ocean County Leaf and Vegetative Waste Composting Agreement

The County Leaf Composting Program consists of the regionalization of existing municipal sites and the operation of a composting program at the Ocean County Northern Regional Recycling Center. Under terms of interlocal Service Agreements between the County and participating towns, the County provides equipment and manpower to process the leaves at each regional site. The equipment package consists of a windrow turner, compost screen, front end loader and tub grinder. The equipment is used to accelerate the decomposition process. This program has been operational since October 1988.

This Amendment modifies Section 5 ("Leaf Composting Implementation") of the Recycling Plan to incorporate the Ocean County Leaf and Vegetative Waste Composting Agreement dated September 21, 1989 between Manchester Township and the Ocean County Board of Chosen Freeholders (Appendix F). The Manchester facility is located in Block 116, Lot 13. Since Pinelands regulations preclude the importation of leaves and vegetative wastes from areas outside the Pinelands, the service area for this facility is restricted to Manchester Township. The Service Area for the Ocean County Leaf and Vegetative Waste Composting Program as revised is shown in Appendix G.

2.3.10 Ocean County Recycling Center Use Agreement

Ocean County owns and operates two regional recycling centers. These centers accept shipments of recyclables at no charge from municipalities, private waste haulers and citizens. A wide range of recyclable materials, both source separated and commingled, are accepted at these recycling centers for processing and marketing.

The County's objective in operating these facilities is to encourage maximum recycling of solid waste in the County, pursuant to the Ocean County Recycling Plan and the Statewide Mandatory Source Separation and Recycling Act. The County further seeks to operate these recycling facilities in a safe, orderly and cost efficient manner. Therefore, this Plan Amendment includes the adoption of a "Recycling Center Use Agreement." This Plan requires the execution of this agreement with County municipalities as a condition of their continued use of the recycling facilities. All municipalities which desire to send recyclables to the centers, including existing participants, are required to execute this agreement. Since the capacity of the existing recycling centers is limited, early execution of this agreement will assure participating municipalities of long term capacity for their recyclables.

The agreement defines recyclable materials which will be accepted at the facilities. In general, the agreement includes specific terms and conditions relating to the safe, orderly and efficient use of the facilities by participating municipalities. A copy of the Use Agreement is included as Appendix H.

2.4 DESIGNATION OF COMPOST TECHNOLOGY

Composting is an aerobic, self-heating microbe-based process. Composting has been applied to certain wastes for many years as a means of reducing waste volume. Adding compost to soil improves the soil's agronomic characteristics and may improve nutrient content and availability. The benefits of composting as a means to manage solid waste are:

- composting re-uses valuable resources in the waste stream which would otherwise be disposed;
- composting reduces municipal solid waste volume and hence lengthens landfill life;
- composting capital and operating costs are potentially lower than costs of competing systems (especially when the avoided cost of landfilling is considered);
- The potential exists for widespread public acceptance of composting over other forms of processing and disposal; and,
- composting facilities can be located near centers of solid waste generation, and generally do not require special pollution control equipment.

To date, sewage sludge composting and municipal leaf composting facilities have been most successfully implemented. Leaves are currently composted in informal, low-level technology facilities. However, scientific knowledge of the composting process has now advanced to the point where a much wider application of the technology can be implemented. In addition, alternative solid waste management technologies have recently become dramatically more expensive, which will allow composting systems to compete successfully for the available solid waste supply.

In the past 20 years, considerable developmental work on the compost process has been accomplished stressing the scientific basis for composting, recognizing that this is a microbial process which responds to environmental parameters (temperature, oxygen, moisture) rather than unique mechanical designs. The conclusion of much of this work is that highly mechanized processes may or may not offer advantages over simpler less costly "pile" systems. In fact, some mechanical systems are sufficiently constrained by their design so as to preclude their operation within the process optimums which have now been identified.

Based upon consistency with past planning efforts, the need to minimize solid waste quantities which are landfilled, the current extent of scientific knowledge concerning the process of composting, and the perceived future direction of solid waste management in the State of New Jersey based on the Governor's Task Force Report dated August 6, 1990, the Ocean County Board of Chosen Freeholders hereby designates composting for the treatment of biologically degradable solid waste generated in Ocean County which is not recycled.

In moving forward to implement a solid waste composting system meeting Ocean County's needs, the Board of Freeholders will be concerned with the following issues:

- the system will need to comply with the established scientific principles of composting;

- the overall project design will need to be readily integrated into existing solid waste management activities in the County, minimizing the quantity of solid waste which is eventually landfilled;

- the system and all related equipment must be reliable and capable of handling and processing all materials to meet compost market specifications (i.e., product quality is paramount);

- the composting system must be operated and maintained in a safe, environmentally sound manner, and in accordance with all permit requirements;

- the system must have the ability to adjust to fluctuations in solid waste; and,

- the system must be cost-effective for the residents of Ocean County.

2.5 PROPOSED COMPOSTING SYSTEM

This Plan Amendment designates composting as the selected technology to process all compostable waste that is not recycled or returned to use. A portion of the waste stream that is currently entering the landfill will be composted, reducing the amount of waste landfilled and producing a useful end-product.

2.5.1 Proposed Regional Composting Facility

This Plan Amendment also designates OCLF as a site for a Regional Composting Facility. At this time, the Plan Amendment is structured assuming that all compostable waste (residential and commercial) is to be processed at one regional facility located at the OCLF site. This assumption is based on a substantive proposal by a credible sponsor for a project at this location. Furthermore, this project is consistent with the remainder of the County's Plan.

It is possible, however, that the County will designate an additional composting site in the Plan to serve the southern region if a project proposal consistent with the Plan is developed and offered by a credible sponsor. (See Section 2.5.2 below) Such a proposal would identify specific facilities and a site and, if all requirements are met, could be included in a subsequent amendment to the Plan. Unless and until such a proposal for a second compost facility is approved, OCLF will be the single designated compost facility within the County for the processing of municipal waste.

The Regional Composting Facility will accomplish the following:

1. Reduce dependence on landfilling by diverting a portion of the waste stream to a beneficial end-use;

2. Process compostable waste to produce a compost product of high enough quality to permit it to be marketed as a soil supplement; and,

3. Assist the County in achieving the goal of recycling 60 percent of the waste stream.

The Regional Compost Facility will be modular in design and phased in construction. The "phasing" of the Facility will allow the operator to adequately evaluate the quality of the product (and hence its marketability) and determine the efficient sizing of the equipment given the uncertain attainment of the County's aggressive recycling goals.

The proposed final capacity of the Facility is currently set at 1,200 TPD in three 400 TPD modules. One module is proposed in 1994 with two additional modules to follow in 1996. The sizing of the second and third modules can be adjusted depending on the quantities of compostable waste predicted to be available at the time of their construction. During the first year or so of operation, OCLF and the County will evaluate the process performance, product quality, product marketability, etc., before construction of additional capacity.

The specific composting technology is not designated at this time. OCLF will follow a RFQ/RFP process to solicit and contract with qualified compost vendors. All procurement will be conducted by the OCLF with review by County staff and consultants.

Appendix L contains a description of the scientific principles and system components which the County and its advisors believe will result in a superior composting system. It is the intention of this plan that the procurement process and selection of a vendor be done in a manner consistent with this appendix.

It is noted, however, that the OCLF should not limit proposals on the basis of this amendment. All proposals received should be judged considering the requirements of Appendix L. Proposals not conforming to these constraints shall be considered on their scientific and technical merit and relevant operational experience. Areas of nonconformity should be justified on the basis of specific, objective data.

This Amendment also designates OCLF as the potential location of a Rutgers University Agricultural Field Station Pilot Compost Facility. The Plan directs up to 3000 TPY of compostable waste from the OCLF MRF as feedstock to the Rutgers Pilot Facility. This Facility will be designed, constructed, and operated by Rutgers. It will provide for needed research in compost operations, and will help optimize the implementation of future composting operations in New Jersey.

Module 1 of the OCLF Regional Composting Facility will become operational on or around January 1, 1994. Modules 2 and 3 will become operational on or around January 1, 1996. The Rutgers Pilot Facility will become operational based on Rutgers' ability to complete the necessary design, financing and construction.

2.5.2 Southern Ocean Compost Facility

In response to the public opinions expressed at the Public Hearing held by the Board of Chosen Freeholders on January 14, 1991, the County is hereby authorizing the Township of Ocean to initiate planning for a second compost facility to be located within that municipality. This planning and development effort is intended to provide the County with information which is required by the NJDEP for inclusion in the Solid Waste Plan. The County will amend the Plan provided that such a proposal is viable and is consistent with the remainder of the Plan. In order for the County to make these determinations, a credible project sponsor must be identified by the Township of Ocean, and the project sponsor must provide the following information to the County for review:

1. A site must be designated, including a listing of lots and blocks. Ownership of the site and a mechanism for its acquisition must be identified. Data supporting an opinion that the site is permittable under current NJDEP regulations must also be provided.

2. A feasibility study describing the project, including technology, capital and operating cost projections, proposed markets, and wasteflow estimates. In order for this project to be consistent with the overall County Plan, municipalities contributing solid waste to the facility must be within the southern waste district. In addition, the facility must provide for the pre-processing of the incoming waste to produce a compostable feedstock, and the disposal of non-processible, non-recyclable waste at OCLF.

3. A financial proposal indicating the method by which the facility would be financed and demonstrating the capability of the vendor to undertake such financing and assume consequent risks. This proposal should include host community benefits and should be presented in sufficient detail to satisfy NJDEP requirements.

4. A projection of the anticipated tipping fee which would be charged to contributing municipalities for solid waste disposal. In order to be consistent with the County Plan, such tipping fee must be consistent with the projected tipping fee for municipalities which will dispose of solid waste at the proposed OCLF facilities.

5. Evidence of support from the governing bodies of all municipalities which would dispose of solid waste at the proposed facility.

The information specified above must be submitted to the County for review no later than July, 1992. This will avoid delays in implementing Module 3 at OCLF in the event that a credible proposal is not developed. In addition to the above, the project sponsor will be required to submit such additional information as is required by Appendix B of this Plan (Plan Amendment Application Procedures) and by the prevailing NJDEP solid waste regulations for facilities seeking solid waste permits.

2.6 OCEAN COUNTY LANDFILL CORPORATION LANDFILL

At the current rates of disposal, the OCLF will reach permitted capacity by 1997. As part of the overall improvement of OCLF facilities, a plan had been prepared which provides for continued acceptance of the residue and by-pass from the MRF and Compost operations, and nonrecycled bulky waste. The landfill will also be used for by-pass during unscheduled periods of equipment downtime.

This Plan Amendment designates future landfill capacity at OCLF in accordance with the waste flow provisions of Section 3. The County is cognizant of the limited availability of landfill space within its borders, and its reliance on landfilling for the ultimate disposal of process residue, and non-composted and non-recycled waste. The County therefore will require an agreement between the County and OCLF to be executed. This Agreement would require that OCLF plan for and provide waste processing and disposal capacity sufficient to accommodate the County's needs through the year 2015. OCLF would be precluded, via the terms of the Agreement, from acting in any manner which would jeopardize the County's capacity at the OCLF site.

The Ocean County Landfill Corporation landfill is permitted to accept Waste Types 10 (residential and commercial), 13 (bulky), and 27 (non-hazardous industrial). While this Plan Amendment specifically directs Type 10 Waste to the OCLF site for processing and disposal, it is not the intention of this Plan to limit or restrict the processing and disposal of the other waste types which the landfill is now permitted to accept. Furthermore, the County Plan relies on the capacity of this landfill for the processing and/or disposal of Type 13 and 27 waste which is generated within the County. Such processing and disposal must be conducted in accordance with all applicable solid waste regulations and laws.

This Plan Amendment includes the designation of three separate but related changes in the previous plan as it relates to OCLF. These changes include:

1. The construction and operation of a MRF (front-end processing facility). This facility will remove recyclable materials and non-compostables from the waste stream prior to composting.

2. The construction and operation of a Phase I compost facility which will process 400 tons per day of solid waste, to be followed by a Phase II facility which will handle an additional 800 tons per day.

3. The expansion of the landfill to accommodate residue and by-pass from the MRF and compost operation, and non- recycled waste.

Since these designations involve new facilities, an Environmental Health and Impact Statement (EHIS) will be required as part of the solid waste permitting process. The County's designation of these facilities at OCLF presumes that a full and comprehensive EHIS will be prepared on the entire OCLF site; that all proposed facilities are considered in aggregate (rather than incrementally); and that the baseline environmental inventory contain a characterization of the existing landfill site, including any existing contaminant discharges. The County feels strongly that any future facility impacts be evaluated in total, and in the context of existing environmental quality at the site.

The OCLF site which is designated in this plan for purposes of materials recovery, composting, and landfilling is the same site which was defined on the Certificate of Registration issued by the NJDEP on May 10, 1972, except that two additional lots are designated for the composting facility. The site, as previously designated and registered includes Block R11, Lots 1, 3, 6, 7, 8, 9, 15, 16, 17, 18, 22, 23, 24, 25, 29, 33,

769 and 770. The tax maps which defined the site are dated 1948 and have been superceded by new tax maps dated 1973. The two additional lots for the compost facility are Block 2, Lots 31 and 32 (1973 tax maps).

The OCLF site designated in this Plan Amendment is defined by the following lots and blocks (1973 tax maps): Block 2, Lots 1, 2, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 30, 31, 32, 33, 34, 35, 36, 37, 59, 60, 61, 62, 64, 65, 768, 769, 770, 771, 772, 777, 778; Block 3.02, Lot 642; Block 33, Lot 783. Within the site, it is expected that the following blocks and lots will not be used for the handling, processing and disposal of solid waste: Block 2, Lots 1, 2, 5, 8, 9, 11, 16, 17, 18, 30, 34, 35, 36, 37, 60, 768, 769, 770, 771, 772, 777, 778; Block 3.02, Lot 642; Block 33, Lot 783. Areas of the site to be used for landfilling will not exceed the limits defined by the original 1972 Certificate of Registration.

In accordance with the terms of the current NJDEP Solid Waste permit, vehicles transporting solid waste will enter and exit the OCLF site through the primary access road which enters and exits the site near Route 70. The more recently constructed access road, which is located near the site's southern limit and which connects to local streets in the Cedar Glen development, is only to be used for emergency purposes and for ingress/egress to the southern portion of the site by OCLF employees. The use of this secondary access road by vehicles transporting solid waste is expressly prohibited.

A map of the designated site is included as Figure B. Table A contains a proposed implementation schedule which contains key milestone dates for the proposed facilities at the site.

2.7 RE-OPENING OF SOUTHERN OCEAN LANDFILL CORPORATION LANDFILL

The Southern Ocean Landfill Corporation (SOLF) Landfill ceased operation on October 12, 1988, as a result of a ruling by the NJDEP. At the time

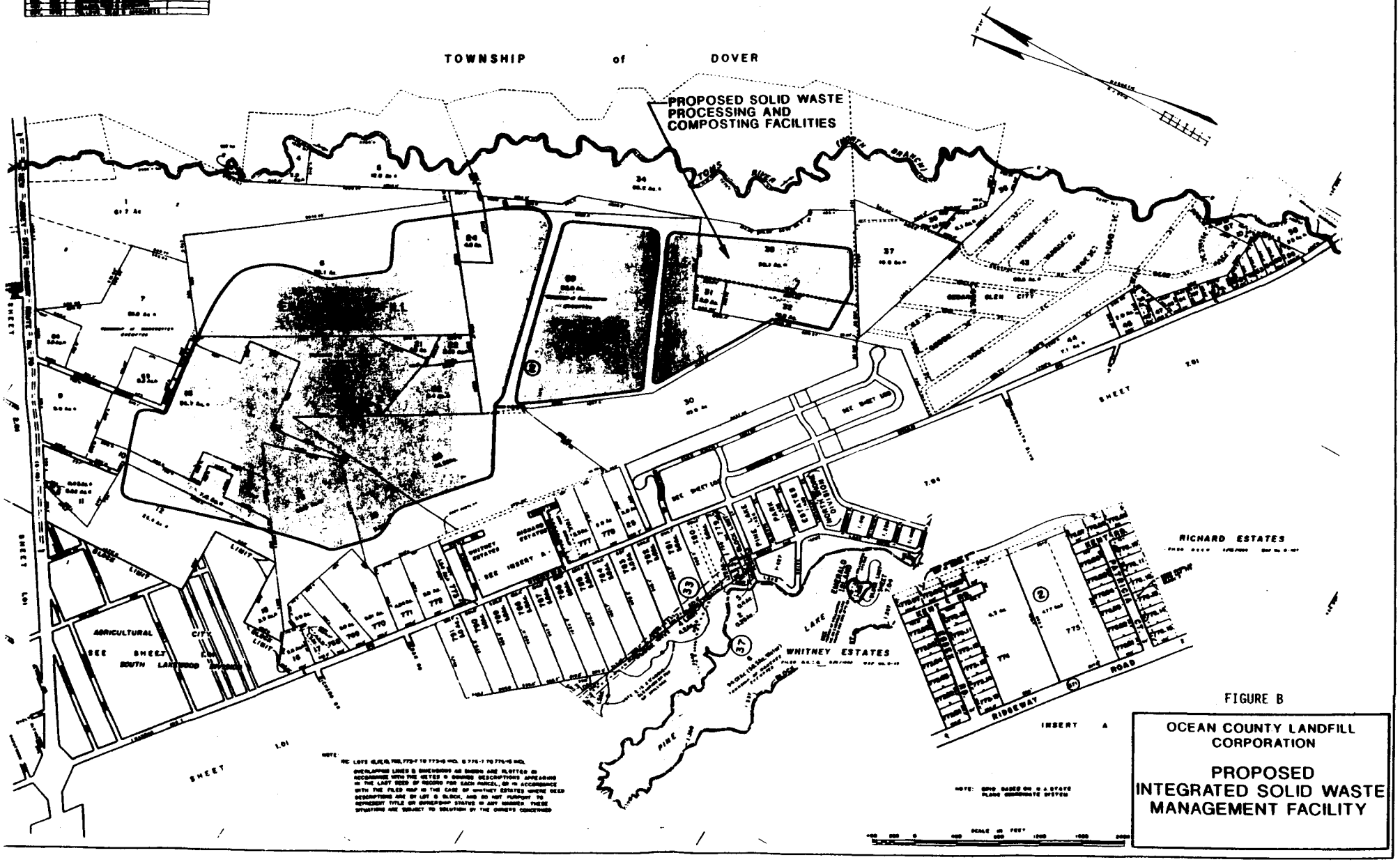

FIGURE B

OCEAN COUNTY LANDFILL CORPORATION

PROPOSED INTEGRATED SOLID WASTE MANAGEMENT FACILITY

TABLE A

PROPOSED OCLF CORPORATION MRF/COMPOSTING FACILITY
IMPLEMENTATION SCHEDULE

Project Activity	Completion Date
Commence Design of MRF Modules 1 & 2, Preliminary Design of MRF Module 3, and Residue Landfill Cell	April 1991
Issue RFQ/RFP for Compost Module 1	June 1991
Select Vendor for Compost Module 1	September 1991
Submit Permit Applications - MRF Modules 1 & 2, Residue Landfill Cell, and Compost Module 1	November 1991
Commence Construction of Compost Module 1	July 1992
Commence Construction of MRF Modules 1 & 2, and Commence Final Design of MRF Module 3	January 1993
Commence Construction of Residual Landfill Cell	April 1993
Start-up Operations of MRF Modules 1 & 2, Residue LF, and Compost Module 1	January 1994
Commence Design of Compost Modules 2 & 3	June 1994
Commence Construction MRF Module 3 and Compost Modules 2 & 3	January 1995
Start-up Operations of MRF Module 3 and Compost Modules 2 & 3	January 1996

operations were terminated, the landfill was not properly closed in accordance with the requirements of the Department. As such, the site poses an increased adverse environmental risk for the generation and migration of leachate and methane gas. Moreover, the existing grades present at the site are incompatible with a suitable final grading plan which would otherwise be implemented prior to closure.

The Board of Chosen Freeholders has considered these issues and passed a resolution on September 4, 1990 which expressed its support for the re-opening of the landfill to accomplish the objectives outlined above provided that tipping fee charges are compatible with existing rates within the County (see Appendix J).

This Amendment therefore includes the re-opening of the Southern Ocean Landfill in the Ocean County Solid Waste Management Plan subject to the following conditions:

1. Waste flow to the landfill will be restricted to the solid waste generated within the southern waste shed (comprised of those municipalities which were required to use SOLF at the time that it was in operation), less recycled materials which are removed from the waste stream in accordance with this Plan. An estimate of waste flow to SOLF is included in Table D in Section 3 of this Plan Amendment.

2. All waste flows to the SOLF will cease December 31, 1997, allowing for an extended operational life of up to five years.

3. Receipt of all required permits from the NJDEP and the NJ Pinelands Commission to provide for expansion of the facility and proper closure of the entire area which has been utilized for landfilling purposes.

2.8 PLAN AMENDMENT APPLICATION PROCEDURES

This Plan Amendment significantly changes the strategy of the Ocean County Solid Waste Management Plan to a major emphasis on recycling and composting of wastes which would otherwise have been directed to the formerly proposed resource recovery facility. Ocean County has adopted the recycling goal recommended to the Governor by the Solid Waste Emergency Assessment Task Force, namely, recycling of sixty percent of the total solid waste stream. This dramatic (three-fold) increase over current levels of recycling will be accomplished by:

- the establishment of MSW composting facilities;
- the addition of the designated recyclable materials identified in Section 2.3.1 of this Amendment and direction of these materials to the Ocean County Regional MRF in Lakewood (currently under construction);
- the continued operation of existing private bulky waste processing and leaf composting sites;
- the opening of private recycling facilities (Rosetto MRF, Bil-Jim, and OCLF MRF) all as described in this Amendment; and,
- the proposing of additional facilities by private entities as markets for solid waste constituents are created and developed.

Being economically driven, the extent of private sector activity in recycling is not readily predictable. However, it is certain that additional facilities will be proposed to be constructed and operated in Ocean County to recycle solid waste generated both in the County and outside the County. These facilities will require, at a minimum, review

and permitting by the NJDEP. Prior to the agency considering an application, the proposed facility must be included in the County Plan. Before acceptance for inclusion in the Plan, it is essential that these facilities be reviewed by the County in terms of the overall strategy and objectives of maximum recycling and minimum landfilling as outlined in this Amendment. This review will require the submission of organized, comprehensive information for each proposed facility. As such, the procedures for the receipt, acceptance, and review of the information have been delineated in this Plan Amendment.

The full text of the Plan Amendment Application Procedures is contained in Appendix B. Five types facilities are addressed in the Application Procedures: solid waste disposal facilities (transfer stations, resource recovery facilities, sanitary landfills, and other plants disposing of solid waste); tree stump/vegetative waste landfills; leaf/vegetative waste composting facilities; leaf mulching sites on farmland; and recycling centers.

For each type of facility, both "criteria for review" and "submission requirements" are stipulated. These criteria differ for the different types of facilities, and are most extensive for solid waste disposal facilities. Examples of review criteria include: demonstration of a need for the facility; the facility must complement existing facilities; and assurance that tipping fees at the proposed facility will not be unreasonable. The County must also ascertain that the proposed facility will not have a negative effect on existing agreements between the County and facility operators or the NJDEP, and that the County can provide an allocation of waste flow. Submission requirements are also most extensive for solid waste disposal facilities, and include such items as corporate data, maps, design parameters, and operating characteristics.

The Plan Amendment Application Procedures also describe the County approval procedures, and fees required to be submitted with the application.

SECTION 3
SOLID WASTE PROJECTIONS AND WASTE FLOW

Solid waste waste flows in Ocean County were estimated for the period 1990 to 2015 based upon the various management techniques set forth in this Plan Amendment. These estimates are shown in Table B. The waste flow estimates assume the achievement of a recycling goal of at least 60 percent of the total waste stream, commensurate with the recommendations of the Governor's Solid Waste Emergency Task Force Final Report.

Table B is based upon State population projections and provides the estimated quantities of municipal solid waste ("Type 10") and bulky wastes ("Type 13") anticipated to be generated in Ocean County for the period 1990 through 2015. In 1989, the County generated a total of 522,000 tons of solid waste. Waste generation in the County will increase with increasing population. Generally, the waste generation estimates are based upon the current "per capita" levels of solid waste generation in Ocean County, with an allowance for the variance in solid waste generated during the summer tourist months. A complete description of the derivation of waste generation estimates for the planning period is contained in Appendix I of this Plan Amendment.

Two additional tables were prepared as variations of Table B. Table C re-distributes the waste flow in accordance with the Task Force recommendation that 50 percent of the Type 10 waste is recycled via source separation programs. By including the subsequent composting of the remaining Type 10 waste at the OCLF facility, the overall recycling rate rises to approximately 74 percent.

Table D is similar to Table B, except that waste from the southern solid waste shed (which generates 26 percent of the total County solid waste) is directed to SOLF Corp. Landfill for a period of five years if the

re-opening of that facility is approved by the NJDEP and the NJ Pinelands Commission.

In summary, Table B represents the expected generation and planned distribution of waste in Ocean County over the planning period. Table C establishes the "range" of variation in recycling levels (compared to Table B), illustrating how this could affect the OCLF MRF, composting, and disposal facilities. Table D addresses the SOLF Inc. landfill issue.

Ash from out-of-county incinerators is specifically not included in these tables or in this Plan. Specific assumptions for each Table are explained below.

Table B - PROJECTED SOLID WASTE GENERATION AND PLANNED WASTEFLOW DISTRIBUTION

Table B shows estimated waste flows for the twenty year period based upon the OCLF MRF becoming operational in January, 1994, and processing all Type 10 solid waste remaining in the County after source-separation programs by public and private entities. The OCLF MRF will recover recyclable materials from the waste stream at a rate of approximately 14 percent of the total waste flow directed to the facility. The Phase I OCLF composting system will begin operations concurrently in 1994 with the OCLF MRF, and estimates are provided in the Table for the annual quantity of compost product produced at this facility. The table is based upon the bulky wastes generated in the County (waste Type 13) being recycled at the rate suggested by the Governor's Task Force (76 percent of the total generated by 1996). Also in 1996, the Phase II composting facilities at OCLF will commence operations, and this will result in the full "maturity" of the Ocean County solid waste management plan, resulting in a total of 60 percent recycling, consisting of public and private recycling facilities such as the RRT facility, Rosetto Commercial MRF, OCLF MRF, bulky waste processing facilities, and the OCLF compost facility.

The 1996 recycling rate of source-separated Type 10 is set at 20 percent under this scenario, with the remaining Type 10 recycling contributing to the overall goal of 60 percent being accomplished by the OCLF MRF and OCLF composting system. Thus, under this scenario, source-separated Type 10 waste recycling will increase proportionately with the expected increases in solid waste generation.

The waste flow projections in Table B are shown graphically for the planning period in Figure C.

TABLE C - HIGH PRE-COMPOST RECYCLING

Table C projects waste flows for the County using similar methods as those used for Table B, with the exception of the degree of source-separated Type 10 waste recycling, which is shown in Table C to be 50 percent of the total Type 10 waste generated by 1996. In this case, the remaining wastes diverted to the OCLF MRF and composting facility will be reduced over those levels identified in Table B. However, the increased source separation of waste, coupled with the additional materials recovered at the OCLF MRF and composting facility, will result in a higher overall recycling rate (74 percent) for 1996 and beyond.

TABLE D - DISPOSAL AT OCLF AND SOLF

This Table has been prepared to show a five year post-recycling waste diversion to SOLF Corp. Landfill for the period 1993 through 1997. Compared to Table B, diversions to the OCLF MRF are reduced for this period, and the recycling goal of 60 percent is projected to be attained in 1998, when post source separation waste is again directed to the OCLF MRF for further processing and composting. However, even if the SOLF facility does not re-open, Ocean County will be self-sufficient in its solid waste management needs, commensurate with the Table B waste flow projections.

TABLE B
PROJECTED SOLID WASTE GENERATION AND PLANNED WASTEFLOW DISTRIBUTION
DISPOSAL AT OCLF
(All figures in Tons unless noted)

YEAR	SOLID WASTE GENERATED			PUBLIC/PRIVATE RECYCLING			OCLF MRF/COMPOST					
	TYPE 10	TYPES 27/13	TOTAL	TYPE 10	TYPE 13	TOTAL	TOTAL IN	RECOV. MATLS	COMPOST	TOTAL RECYCLED	PERCENT RECYCLED	DISPOSED AT OCLF
1989	429,463	92,531	521,994	84,055	19,406	103,461	0	0	0	103,461	20%	418,533
1990	441,647	95,433	537,080	85,840	28,058	113,898	0	0	0	113,898	21%	423,182
1991	448,662	97,104	545,766	87,625	36,710	124,335	0	0	0	124,335	23%	421,431
1992	455,800	98,804	554,604	89,410	45,362	134,772	0	0	0	134,772	24%	419,832
1993	463,064	100,534	563,598	91,195	54,014	145,209	0	0	0	145,209	26%	418,389
1994	470,454	102,295	572,749	92,980	62,666	155,646	377,474	52,846	41,937	250,430	44%	304,704
1995	477,974	104,086	582,060	94,765	71,318	166,083	383,209	53,649	42,575	262,307	45%	301,870
1996	485,625	105,909	591,534	97,125	80,491	177,616	388,500	54,390	129,487	361,493	61%	176,933
1997	493,411	107,763	601,174	98,682	81,900	180,582	394,729	55,262	131,563	367,407	61%	179,807
1998	501,332	109,650	610,982	100,266	83,334	183,600	401,066	56,149	133,675	373,425	61%	182,732
1999	509,393	111,570	620,963	101,879	84,793	186,672	407,514	57,052	135,825	379,548	61%	185,707
2000	517,592	113,523	631,115	103,518	86,277	189,796	414,074	57,970	138,011	385,777	61%	188,734
2001	521,651	114,490	636,141	104,330	87,012	191,343	417,321	58,425	139,093	388,861	61%	190,233
2002	525,745	115,465	641,210	105,149	87,753	192,902	420,596	58,883	140,185	391,970	61%	191,744
2003	529,873	116,448	646,321	105,975	88,500	194,475	423,898	59,346	141,285	395,106	61%	193,268
2004	534,037	117,440	651,477	106,807	89,254	196,062	427,230	59,812	142,396	398,270	61%	194,805
2005	538,236	118,440	656,676	107,647	90,014	197,662	430,589	60,282	143,515	401,459	61%	196,355
2006	542,471	119,449	661,920	108,494	90,781	199,275	433,977	60,757	144,644	404,677	61%	197,919
2007	546,742	120,466	667,208	109,348	91,554	200,903	437,394	61,235	145,783	407,921	61%	199,495
2008	551,050	121,492	672,542	110,210	92,334	202,544	440,840	61,718	146,932	411,193	61%	201,086
2009	555,394	122,527	677,921	111,079	93,121	204,199	444,315	62,204	148,090	414,494	61%	202,689
2010	559,775	123,571	683,346	111,955	93,914	205,869	447,820	62,695	149,258	417,822	61%	204,307
2011	562,271	124,165	686,436	112,454	94,365	206,820	449,817	62,974	149,924	419,718	61%	205,228
2012	564,780	124,763	689,543	112,956	94,820	207,776	451,824	63,255	150,593	421,624	61%	206,154
2013	567,300	125,363	692,663	113,460	95,276	208,736	453,840	63,538	151,265	423,538	61%	207,085
2014	569,833	125,967	695,800	113,967	95,735	209,702	455,866	63,821	151,940	425,463	61%	208,020
2015	572,378	126,573	698,951	114,476	96,195	210,671	457,902	64,106	152,619	427,396	61%	208,959

Note: Waste flows in this table are estimates only and do not constitute a committment of waste flow expressed or implied, to any facility named herein.

FIGURE C

SW MANAGEMENT IN OCEAN COUNTY

1989–2015

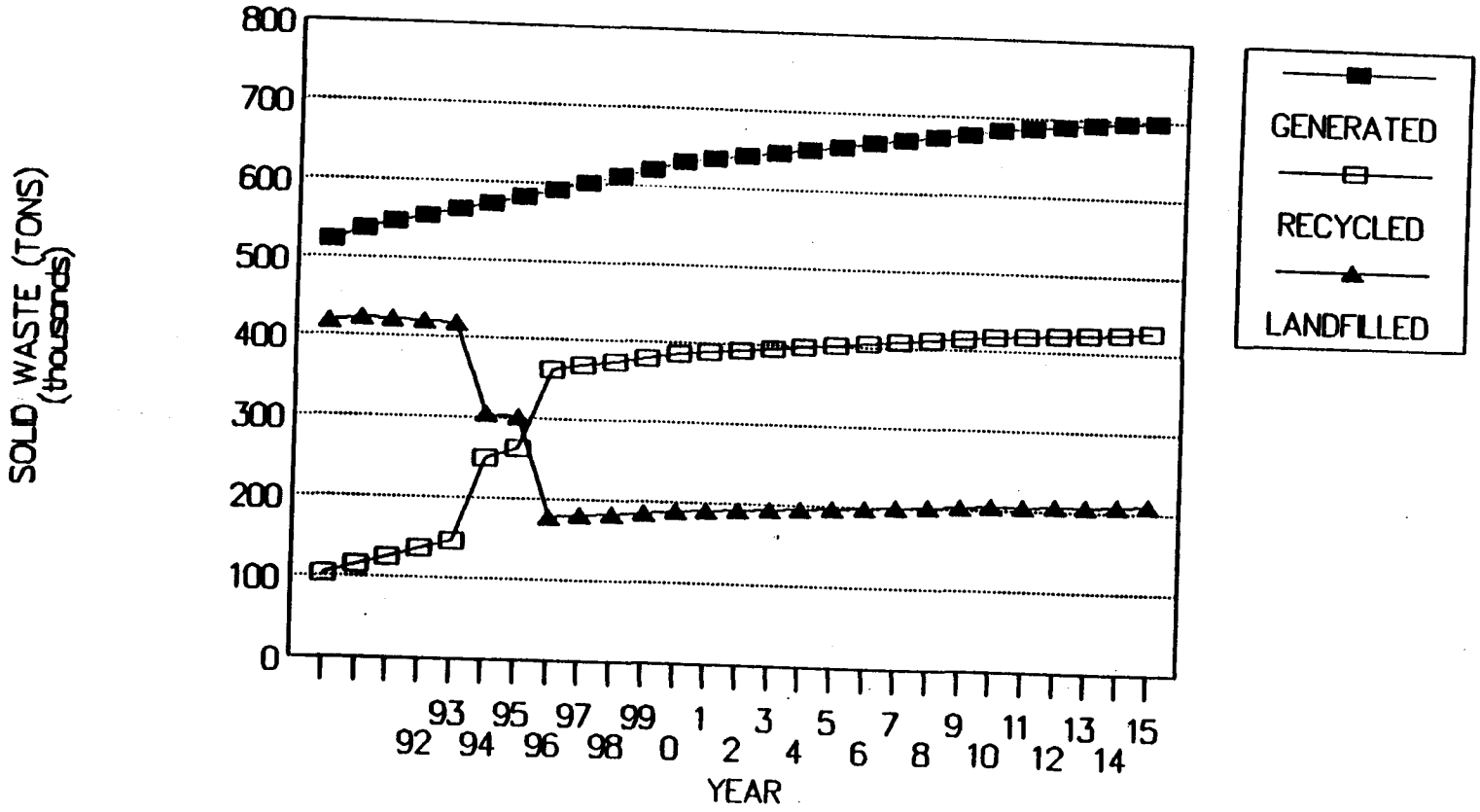

TABLE C
WASTE FLOW PROJECTIONS - HIGH PRE-COMPOST RECYCLING
DISPOSAL AT OCLF
(All figures in Tons Unless Noted)

YEAR	SOLID WASTE GENERATED			PUBLIC/PRIVATE RECYCLING			OCLF MRF/COMPOST			TOTAL	PERCENT	DISPOSED
	TYPE 10	TYPES 27/13	TOTAL	TYPE 10	TYPE 13	TOTAL	TOTAL IN	RECOV. MATLS	COMPOST	RECYCLED	RECYCLED	AT OCLF
1989	429,463	92,531	521,994	84,055	19,406	103,461	0	0	0	103,461	20%	418,533
1990	441,647	95,433	537,080	106,529	28,058	134,587	0	0	0	134,587	25%	402,493
1991	448,662	97,104	545,766	129,003	36,710	165,713	0	0	0	165,713	30%	380,053
1992	455,800	98,804	554,604	151,477	45,362	196,839	0	0	0	196,839	35%	357,765
1993	463,064	100,534	563,598	173,951	54,014	227,965	0	0	0	227,965	40%	335,633
1994	470,454	102,295	572,749	196,425	62,666	259,091	274,029	38,364	30,445	327,900	57%	232,061
1995	477,974	104,086	582,060	218,899	71,318	290,217	259,075	36,271	28,783	355,271	61%	214,699
1996	485,625	105,909	591,534	242,813	80,491	323,303	242,813	33,994	80,929	438,226	74%	120,115
1997	493,411	107,763	601,174	246,706	81,900	328,605	246,706	34,539	82,227	445,371	74%	122,078
1998	501,332	109,650	610,982	250,666	83,334	334,000	250,666	35,093	83,547	452,640	74%	124,076
1999	509,393	111,570	620,963	254,697	84,793	339,490	254,697	35,658	84,890	460,038	74%	126,108
2000	517,592	113,523	631,115	258,796	86,277	345,073	258,796	36,231	86,257	467,562	74%	128,176
2001	521,651	114,490	636,141	260,826	87,012	347,838	260,826	36,516	86,933	471,287	74%	129,200
2002	525,745	115,465	641,210	262,873	87,753	350,626	262,873	36,802	87,615	475,043	74%	130,232
2003	529,873	116,448	646,321	264,937	88,500	353,437	264,937	37,091	88,303	478,831	74%	131,273
2004	534,037	117,440	651,477	267,019	89,254	356,273	267,019	37,383	88,997	482,653	74%	132,323
2005	538,236	118,440	656,676	269,118	90,014	359,132	269,118	37,677	89,697	486,506	74%	133,382
2006	542,471	119,449	661,920	271,236	90,781	362,017	271,236	37,973	90,403	490,393	74%	134,450
2007	546,742	120,466	667,208	273,371	91,554	364,925	273,371	38,272	91,115	494,312	74%	135,527
2008	551,050	121,492	672,542	275,525	92,334	367,859	275,525	38,574	91,832	498,265	74%	136,613
2009	555,394	122,527	677,921	277,697	93,121	370,818	277,697	38,878	92,556	502,252	74%	137,708
2010	559,775	123,571	683,346	279,888	93,914	373,801	279,888	39,184	93,287	506,272	74%	138,813
2011	562,271	124,165	686,436	281,136	94,365	375,501	281,136	39,359	93,702	508,562	74%	139,442
2012	564,780	124,763	689,543	282,390	94,820	377,210	282,390	39,535	94,121	510,865	74%	140,075
2013	567,300	125,363	692,663	283,650	95,276	378,926	283,650	39,711	94,541	513,177	74%	140,711
2014	569,833	125,967	695,800	284,917	95,735	380,651	284,917	39,888	94,963	515,502	74%	141,350
2015	572,378	126,573	698,951	286,189	96,195	382,384	286,189	40,066	95,387	517,838	74%	141,991

Note: Waste flows in this table are estimates only and do not constitute a committment of waste flow expressed or implied, to any facility named herein.

TABLE D
WASTE FLOW PROJECTIONS
DISPOSAL AT OCLF AND SOLF
(All figures in Tons Unless Noted)

YEAR	SOLID WASTE GENERATED			PUBLIC/PRIVATE RECYCLING			DISPOSED	OCLF MRF/COMPOST				TOTAL	PERCENT	DISPOSED	TOTAL
	TYPE 10	TYPES 27/13	TOTAL	TYPE 10	TYPE 13	TOTAL	AT SOLF	TOTAL IN	RECOV. MATLS	COMPOST	RECYCLED	RECYCLED	AT OCLF	DISPOSED
1989	429,463	92,531	521,994	84,055	19,406	103,461	0	0	0	0	103,461	20%	418,533	418,533
1990	441,647	95,433	537,080	85,840	28,058	113,898	0	0	0	0	113,898	21%	423,182	423,182
1991	448,662	97,104	545,766	87,625	36,710	124,335	0	0	0	0	124,335	23%	421,431	421,431
1992	455,800	98,804	554,604	89,410	45,362	134,772	0	0	0	0	134,772	24%	419,832	419,832
1993	463,064	100,534	563,598	91,195	54,014	145,209	108,781	0	0	0	145,209	26%	309,608	418,389
1994	470,454	102,295	572,749	92,980	62,666	155,646	108,447	286,880	40,163	31,872	227,682	40%	236,621	345,067
1995	477,974	104,086	582,060	94,765	71,318	166,083	108,154	291,239	40,773	32,357	239,213	41%	234,693	342,847
1996	485,625	105,909	591,534	97,125	80,491	177,616	107,619	295,260	41,336	98,410	317,362	54%	166,553	274,172
1997	493,411	107,763	601,174	98,682	81,900	180,582	109,354	299,994	41,999	99,988	322,569	54%	169,251	278,605
1998	501,332	109,650	610,982	100,266	83,334	183,600	0	401,066	56,149	133,675	373,425	61%	182,732	182,732
1999	509,393	111,570	620,963	101,879	84,793	186,672	0	407,514	57,052	135,825	379,548	61%	185,707	185,707
2000	517,592	113,523	631,115	103,518	86,277	189,796	0	414,074	57,970	138,011	385,777	61%	188,734	188,734
2001	521,651	114,490	636,141	104,330	87,012	191,343	0	417,321	58,425	139,093	388,861	61%	190,233	190,233
2002	525,745	115,465	641,210	105,149	87,753	192,902	0	420,596	58,883	140,185	391,970	61%	191,744	191,744
2003	529,873	116,448	646,321	105,975	88,500	194,475	0	423,898	59,346	141,285	395,106	61%	193,268	193,268
2004	534,037	117,440	651,477	106,807	89,254	196,062	0	427,230	59,812	142,396	398,270	61%	194,805	194,805
2005	538,236	118,440	656,676	107,647	90,014	197,662	0	430,589	60,282	143,515	401,459	61%	196,355	196,355
2006	542,471	119,449	661,920	108,494	90,781	199,275	0	433,977	60,757	144,644	404,677	61%	197,919	197,919
2007	546,742	120,466	667,208	109,348	91,554	200,903	0	437,394	61,235	145,783	407,921	61%	199,495	199,495
2008	551,050	121,492	672,542	110,210	92,334	202,544	0	440,840	61,718	146,932	411,193	61%	201,086	201,086
2009	555,396	122,527	677,921	111,079	93,121	204,199	0	444,315	62,204	148,090	414,494	61%	202,689	202,689
2010	559,775	123,571	683,346	111,955	93,914	205,869	0	447,820	62,695	149,258	417,822	61%	204,307	204,307
2011	562,271	124,165	686,436	112,454	94,365	206,820	0	449,817	62,974	149,924	419,718	61%	205,228	205,228
2012	564,780	124,763	689,543	112,956	94,820	207,776	0	451,824	63,255	150,593	421,624	61%	206,154	206,154
2013	567,300	125,363	692,663	113,460	95,276	208,736	0	453,840	63,538	151,265	423,538	61%	207,085	207,085
2014	569,833	125,967	695,800	113,967	95,735	209,702	0	455,866	63,821	151,940	425,463	61%	208,020	208,020
2015	572,378	126,573	698,951	114,476	96,195	210,671	0	457,902	64,106	152,619	427,396	61%	208,959	208,959

Note: Waste flows in this table are estimates only and do not constitute a committment of waste flow expressed or implied, to any facility named herein.

SECTION 4
CONFORMANCE WITH TASK FORCE RECOMMENDATIONS

The elements of this Plan Amendment will serve to advance solid waste management in Ocean County in full conformance with the Emergency Solid Waste Assessment Task Force Final Report dated August 6, 1990. This conformance is stated in more specific terms below:

PLAN AMENDMENT ELEMENT	BASIS FOR CONFORMANCE
Designation of Additional Recyclable Materials	The Task Force Final Report recommends statewide mandatory recycling of the materials which are being added as designated recyclables to the Ocean County Plan (PET and HDPE plastic containers, Corrugated Cardboard, and Office Paper) (pp. 32-33 of the Final Report)
Bil-Jim Recycling and Materials Reclamation Center and John Kummings' Stump Reduction Center	The Task Force Final Report states, "Construction and Demolition waste is a large volume of the solid waste stream which should not be handled at disposal facilities since most of the material ... is recyclable." (p. 33) The Task Force specifically recommends "expanding capacity needed to recycle construction and demolition debris such as concrete, asphalt, masonry, tree stumps and scrap lumber." (p. 11)
Rosetto Commercial MRF	The Task Force believes "...that private recyclers are essential to supply unique expertise and capabilities in managing our waste commodities in a dynamic, free-market environment" and recognizes "...the vital future role to be played by the private

	sector if we are to attain our recycling rate." In this regard, the Task Force recommended to the Governor "...a strong partnership between all levels of government and the private sector to expand recycling in New Jersey..." (pp. 12-13)
Berkeley Township Compost Facility	The Task Force believes that the 60% goal can be realized by targeting specific materials in the waste stream, and they recommended to the Governor that yard waste be diverted from landfills, transfer stations, and incinerators. (p. 10)
Farm Leaf Mulching Policy/Nemeth Site/ County Leaf/Vegetative Waste Composting Agreement	Although banned from disposal at solid waste facilities, we note that the Task Force included leaves in the yard waste element of the waste stream analysis, taking credit for the 346,000 tons currently recycled. Leaves will comprise fully one-third of the annual waste element which is projected to be recycled at 90% by the year 1995. Therefore, leaf mulching sites, as all yard waste management facilities, must continue to be made available to divert these materials from waste stream.
Recycling Center Use Agreement	The Task Force supports "a strong market development program" for recyclables (p. 27). Implementing the Recycling Center Use Agreement will guarantee a steady flow of materials to the RRT County Regional Recycling Center, assuring the continued technical and financial viability of the Center.
Waste-to-Energy Technology and Site De-Designation	Probably the most well-known recommendation of the Task Force in

	their Final Report to the Governor is that "the previous policy of building an incinerator in each county must be abandoned in favor of a policy that first maximizes source reduction and recycling and then seeks economical regional solutions for solid waste disposal." The Task Force based this recommendation on the fact that "previous policies failed to fully recognize the environmental and economic benefits of source reduction and recycling." (p. 17)
Designation of Compost Technology	The Task Force "urges the creation of a planning process that encourages ... innovation and experimentation by county ... governments in selecting technologies ... to achieve greater volume reduction of our waste residues" (p. 17) and further believes that solid waste "...composting can be employed to provide economical, environmentally sound volume reduction capacity throughout the State." (p. 16)
Re-Opening of SOLF	The Task Force recommends "...that the planning process give strong consideration to each component of the waste management system. Each county should conduct a thorough assessment of its current landfill resources, including opportunities for expanding existing facilities and siting new operations." (p. 16)
Level Per Capita Waste Generation Rate	In projecting solid waste generation statewide, the Task Force assumed that "...emerging source reduction initiatives over the next five years will counter-blance any increases in per capita solid waste generation." For the analyses contained in the Final Report, the Task Force assumed that changes in solid waste generation rates are "...exclusively a function of population trends." (Pg. 35)

APPENDIX A

Ocean County Board of Chosen Freeholders
Resolution Dated February 6, 1990

RESOLUTION
February 6, 1990

WHEREAS, the Ocean County Board of Chosen Freeholders pursuant to NJSA 13:1E-1 et seq. is responsible for the development and periodic amendment of a Solid Waste Management Plan for the County; and

WHEREAS, the Board of Chosen Freeholders adopted a Solid Waste Management Plan on July 18, 1979 and has thereafter amended it from time to time as circumstances required; and

WHEREAS, the current plan seeks to reduce reliance on landfilling through aggressive recycling and a proposed waste-to-energy incinerator; and

WHEREAS, citizens of Ocean County have expresssed their apprehension about what they believe to be the harmful environmental and public health effects of incineration, particulary the contamination of the air and the risk created by the disposal of hazardous incinerator ash; and

WHEREAS, New Jersey's governor-elect James Florio has expressed his intention, once he assumes office, to withhold the issuance of any more state permits to construct solid waste incinerators until he, assisted by advisors, has evaluated their need, their benefits and their disadvantages; and

WHEREAS, the composting of the degradable fraction of community solid waste offers the promise of a natural disposal process without the risks of incineration;

NOW, THEREFORE, BE IT RESOLVED by the Ocean County Board of Chosen Freeholders that all actions to construct the resource recovery/incinerator facility now proposed under the Plan to be built in Ocean Township are hereby terminated.

BE IT FURTHER RESOLVED that the Board take the steps necessary to establish a prototype composting operation of 200-300 tons per day raw waste capacity of a modular construction that could allow ready expansion if the operation proves successful; and

That the Director of the Ocean County Department of Solid Waste Management be instructed to draft a proposed amendment to the Solid Waste Management Plan, reflecting this resolution, for presentation to the County Solid Waste Advisory Committee in accordance with the statute; and

That the Director be instructed to prepare a request for proposals to be sent to composting facility vendors seeking an expression of experience and qualifications as well as a proposal for the construction, financing and operation of a composting facility defined above; and

That the Director be instructed to take such other administrative steps as are reasonably required to achieve the objectives of this resolution.

That copies of this resolution be forwarded to the Commissioner of the New Jersey Department of Environmental Protection, Ocean County Legislators, the Ocean County Solid waste Advisory Council, the Director of the Department of Solid Waste Management and County Counsel.

I certify the foregoing to be a
true copy of a Resolution adopted
by the Board of Chosen Freeholders
of the County of Ocean on
[illegible] 90

Donald J. Hennessy
Clerk of the Board

APPENDIX B

Plan Amendment Application Procedures

PROCEDURES TO CONSIDER PROPOSED SOLID WASTE AND RECYCLING FACILITIES FOR INCLUSION IN THE OCEAN COUNTY DISTRICT SOLID WASTE MANAGEMENT PLAN

PROCEDURES TO CONSIDER PROPOSED SOLID WASTE AND RECYCLING FACILITIES FOR INCLUSION IN THE OCEAN COUNTY DISTRICT SOLID WASTE MANAGEMENT PLAN

INTRODUCTION

The Solid Waste Management Act, NJSA 13:1E-1 et seq. designates Ocean County as a solid waste management district and requires the Board of Chosen Freeholders to prepare, adopt and implement a plan for the proper management of solid waste generated in Ocean County. In accordance with the Act's requirements, the Board of Chosen Freeholders has adopted the Ocean County District Solid Waste Management Plan (District SWMP) which has been certified by the Commissioner of the Department of Environmental Protection. As required by statute, the District SWMP includes all solid waste facilities that currently or are planned to provide for the proper management of solid waste in Ocean County.

The Statewide Mandatory Source Separation and Recycling Act, NJSA 13:1E-99.11 et. seq. requires the Board of Chosen Freeholders to adopt a District Recycling Plan as an amendment to the District SWMP. In accordance with the Act's requirements, the Board of Chosen Freeholders has adopted the Ocean County Recycling Plan, which has been certified by the Commissioner of the Department of Environmental Protection. As required by statute, the Ocean County Recycling Plan includes all recycling facilities that currently or are planned to provide for the recycling of solid waste in Ocean County.

There are a number of State, municipal and County regulations and requirements that apply specifically to solid waste facilities,

recycling facilities, recycling operations and services, composting facilities, leaf mulching sites and similar facilities that either dispose, handle, process, store, collect or haul solid waste or recyclable materials. The Department of Environmental Protection has promulgated detailed and specific requirements for solid waste facilities such as resource recovery facilities, sanitary landfills and solid waste transfer stations. There are other State requirements for leaf and vegetative waste composting and leaf mulching sites.

State requirements for recycling operations and activities are less specific and generally take the form of guidelines. Since recycling operations relate directly to the implementation of the Ocean County District and State Solid Waste Management Plans, both the Department of Environmental Protection and the courts have determined that recycling facilities require an additional level of review beyond the traditional municipal and County review of land development applications. The Department of Environmental Protection now requires that certain recycling facilities and operations be included in the applicable District Solid Waste Management Plan.

Therefore, all solid waste facilities and certain recycling facilities require the approval of the Department of Environmental Protection. In general, the Department of Environmental Protection will not initiate its review of proposed facilities until the facility is included in the District SWMP. The principal goal of the Ocean County District SWMP is to manage solid waste generated in Ocean County in an environmentally sound manner. Accordingly, Ocean County seeks to recycle the maximum amount of solid waste

possible. In order to achieve this goal, the Board of Chosen Freeholders is aware that there may be a need for solid waste and recycling facilities and operations beyond that which currently exist or are presently provided for in the District SWMP. It is important to note that there is no statutory obligation for the Board of Chosen Freeholders to include any proposed facility in the District SWMP.

The following sections specify the information required to consider a proposed facility. A prospective applicant should be aware that the information required by Ocean County is consistent with the material also required by the Department of Environmental Protection.

100. PURPOSE

The purpose of this section is to establish procedures for considering inclusion of proposed solid waste and recycling facilities and operations into the District SWMP. The procedures established by the Department of Environmental Protection for the review, permitting and/or registration of solid waste and recycling facilities and operations require that such facilities first be included in the District SWMP.

200. SUBMISSION REQUIREMENTS

This section sets forth the information that any applicant, either public or private, must provide to be considered for inclusion in the District SWMP. These requirements are in addition

to, and do not supercede any State, municipal or County statutes or regulations that also pertain to the siting, design, construction and/or operation of a regulated facility.

201. Solid Waste Facilities

Solid waste facilities are defined in NJSA 13:1E-3(h). The statute includes the plants, structures and other real and personal property acquired, constructed or operated, including vehicles and equipment for the collection or disposal of solid waste in a sanitary manner. The statute includes transfer stations, incinerators, resource recovery facilities, sanitary landfill facilities or other plants collecting or disposing of solid waste. The Department of Environmental Protection must review and approve the location, design, construction and operation of any solid waste facility. The Department of Environmental Protection will not accept an application for review until the proposed facility is included in the Ocean County District SWMP.

202. Criteria for Review of Proposed Solid Waste Facilities

Ocean County will review applications for additional solid waste facilities for consistency with the adopted and certified District SWMP. As a general policy, the County will incorporate only those facilities that are determined to support the implementation of the District SWMP. This determination will consider the application's consistency with the following criteria:

A. There is a demonstrated need for the proposed facility to provide for the proper management of solid waste generated in Ocean County.

B. The proposed facility will complement existing solid waste facilities or planned facilities already provided for in the District SWMP.

C. The County can provide an allocation of waste flow to the proposed facility.

D. The proposed facility will not have a negative effect on existing agreements between the County of Ocean and the Department of Environmental Protection or any owner and/or operator of solid waste facilities or State regulated recycling facilities and operations.

E. The expected tipping fees, user charges or other financial charges to be imposed on any users of the proposed facility for the receipt, storage, processing or transfer of solid waste and/or residue from the proposed facility are not unreasonable.

203. Criteria for Review of Proposed Sanitary Landfills for the Disposal of Tree Stumps and Vegetative Waste.

For sanitary landfills for the disposal of tree stumps and demolition debris only, the following criteria will be considered:

A. The proposed facility is specifically associated with the reclamation of a previously operated and lawful resource extraction site.

B. Solid waste disposed of at the proposed facility is exclusively limited to tree stumps, ID type 13 and ID type 23 wastes as classified by the Department of Environmental Protection.

C. The solid waste proposed for disposal is generated only as a result of the business activities of the owner and/or operator and that the facility shall not accept wastes from any other hauler, business, corporation or entity.

D. The applicant can demonstrate by submission of a letter, from either the mayor or the administrator of the municipality in which the site is located, stating that the municipality has no objection to disposal operations at the specific site or including any conditions the municipality may have for such operations.

204. Submission Requirements For Transfer Stations, Resource Recovery Facilities, Sanitary Landfills and other Plants Collecting or Disposing of Solid Wastes

In order for a transfer station, resource recovery facility, sanitary landfill or other plant for collecting or disposing of solid waste to be considered for inclusion in the Ocean County

District Solid Waste Management Plan, the following must be submitted to the Ocean County Department of Solid Waste Management:

A. The name, mailing address and telephone number of the owner of record of the proposed site, and certification that the owner has authorized submission of an application for the proposed facility or operation.

B. The corporate name, address and telephone number of the owner of the proposed facility.

C. The corporate name, address and telephone number of the operator of the proposed facility, if different from the owner.

D. A listing of all other solid waste facilities and operations and/or recycling facilities and operations that are owned and/or operated by either the owner or operator of the proposed facility, (in whole or in part) including their specific location, a description of all materials received, stored, processed or transferred at each facility and operation, a description of the source or point of generation of all materials received, stored, processed and transferred at each facility and operation and the location of the disposal facility(s) that receive residue from each facility and operation.

E. The street address of the proposed facility and the block(s) and lot(s) number(s) and total acreage of all parcels comprising the proposed site.

F. A key map showing the boundary of the proposed site on a 7 1/2 minute USGS Quadrangle Map. This map shall delineate public access roads to the proposed site, any streams, lakes or other surface water bodies and sensitive receptors such as hospitals, schools, recreation areas, churches, homes, etc. within a one-half mile radius of the proposed site.

G. A tax map showing the block(s) and lot(s) number(s) of the proposed site, adjoining properties and properties within a one-half mile radius of the proposed site indicating the current land use and municipal zoning.

H. Three copies of a site plan, at a scale no larger than 1" = 100', which delineates the property boundary lines, location of all buildings and equipment, boundaries of areas proposed for the receipt, storage, processing and transfer of solid waste, boundaries of proposed buffer areas, access and internal roadways, traffic flow, identification of the direction of on-site and off-site drainage and the location of all proposed stormwater management facilities and controls.

I. An indication of the proposed source of potable water, process water or any other water required for the operation of the proposed facility and the estimated quantity of each expressed in terms of gallons per day.

J. An indication of how sanitary wastewater, process water or any other water requiring treatment will be handled at the proposed facility and the estimated quantity of each expressed in terms of gallons per day.

K. A listing and description of the types and quantity of the solid waste(s) to be handled at the proposed facility and the estimated maximum daily and annual capacity by weight and volume for each type.

L. A description of the source or point of generation of all solid waste types to be received, stored, processed or transferred at the proposed facility.

M. A list of all products, end products, by-products and residue, expressed in tons per day, resulting from the proposed activities.

N. Identification of the disposal facility(s) that will handle all residue from the proposed facility.

O. The proposed hours and days of operation.

P. An indication of the means proposed to control and/or limit access to the proposed facility, both during and after operating hours.

Q. An indication of the design capacity as to number and types of vehicles bringing material to the proposed facility for receipt, storage or processing, and the number and types of vehicles transferring materials and residue from the proposed site, on a daily basis.

R. A description of the provisions to handle unusual peak loadings which exceed the daily capacity.

S. A certified letter from the zoning officer of the municipality in which the proposed site is located, stating that the proposed facility is a permitted use, conditional use and/or any special conditions that would apply under current municipal zoning or a letter from an attorney licensed to practice law in the State of New Jersey that the proposed facility is exempt from zoning under State statute.

T. A listing of all municipal, County and State permits and/or other approvals required for the proposed facility and the status of each.

U. An indication of the tipping fee, user charge or other fees that will be imposed on any user of the proposed

facility for the receipt, storage, processing, disposal or transfer of solid waste materials at the proposed facility.

V. Certification that the owner and/or operator will submit one copy of the Environmental Impact Statement, registration statement, engineering design and any other application materials required by the New Jersey Department of Environmental Protection to the Ocean County Department of Solid Waste Management.

W. Certification that the owner and/or operator agrees to permit access to the Ocean County Health Department and other authorized representatives to inspect the proposed facility during reasonable hours, to ascertain compliance with applicable State statutes and the provisions of the Ocean County District SWMP.

X. Certification that the owner and/or operator agrees to provide users of the proposed facility and the Ocean County Department of Solid Waste Management monthly reports summarizing the types and quantities of solid waste received, stored, processed or transferred at the proposed facility from each hauler or municipality including weight receipts or other source documentation and identifying that source or point of generation of all solid waste types and quantities, in a form acceptable to the Ocean County Department of Solid Waste Management to

ensure compliance with the provisions of the Ocean County District SWMP and the provisions of NJSA 13:1E-1 et seq.

300. LEAF COMPOSTING FACILITIES, VEGETATIVE WASTE COMPOSTING FACILITIES AND LEAF MULCHING SITES

The New Jersey Statewide Mandatory Source Separation and Recycling Act, NJSA 13:1E-99.21, requires that all leaves collected by a municipality be transported to a leaf composting facility, vegetative waste composting facility or a recycling center approved by the Department of Environmental Protection. The Act further requires that each district recycling plan identify the facility to be utilized by each municipality.

Such facilities are regulated by the Department of Environmental Protection. The Department has promulgated detailed and specific requirements for the siting, design, construction and/or operation of leaf and vegetative waste composting facilities.

Composting permits may be obtained by municipal and County governmental bodies, agencies and authorities, residential complexes and multiple dwellings, nursery establishments, landscapers, farms, educational and other institutions and industries that have a need for disposing of leaves and other vegetative material. The Department of Environmental Protection issues several permits for leaf composting facilities and vegetative waste composting facilities dependent on the type and volume of wastes proposed for composting. The general permit requirements for leaf composting facilities and vegetative waste composting facilities are set forth in NJAC 7:26-2.4. Certain leaf composting facilities and vegetative

waste composting facilities are exempt from the general permit requirements set forth in NJAC 7:26-2.4 but nonetheless must be included in the Ocean County District Solid Waste Management Plan. See: NJAC 7:26-1.7(g), 1.11 and 1.12.

301. Criteria for Review of Proposed Leaf Composting and Vegetative Waste Composting Facilities

Any facility application submitted to the Department of Environmental Protection must include documentation from the Ocean County Department of Solid Waste that the facility is included in, or consistent with, the District Solid Waste Management Plan. As a general policy, the County encourages leaf composting and vegetative waste composting facilities as a means to further reduce the solid waste stream and ensure compliance with NJSA 13:1E-99.21. In order to be included in the District SWMP, applications will be required to demonstrate consistency with the following criteria:

A. The waste intended for composting consists either exclusively of leaves or leaves in combination with other permitted type ID23 wastes.

B. The proposed design and operation of the facility will ensure achieving the conditions necessary to permit efficient and effective composting activity.

C. There is a demonstrated need for the proposed facility.

D. The proposed facility will complement existing facilities or facilities already provided for in the District SWMP.

E. The proposed facility is consistent with the planning and land development programs of the municipality in which it is located.

302. Submission Requirements for Proposed Leaf Composting and Vegetative Waste Composting Facilities

A leaf composting facility is defined in NJSA 13:1E-99.12 as a solid waste facility which is designed and operated solely for the purpose of composting leaves. A vegetative waste composting facility is defined as a solid waste facility which is designed and operated for the purpose of composting leaves, either exclusively or in combination with other vegetative wastes authorized by the Department of Environmental Protection. Other vegetative wastes authorized by the Department are classified ID23 and are typically grass clippings, garden waste and chipped wood waste from tree branches and/or brush. It does not include dirty and/or mixed vegetative material, wood waste, lumber and construction or demolition waste.

In order to have a leaf composting or vegetative waste composting facility considered for inclusion in the Ocean County District Solid Waste Management Plan, the following must be submitted to the Ocean County Department of Solid Waste Management.

A. The corporate name, address and telephone number of the owner of the proposed facility.

B. The corporate name, address and telephone number of the operator of the proposed facility, if different from the owner.

C. The street address of the proposed facility, and the block(s) and lot(s) number(s) and total acreage of the proposed site.

D. A key map showing the boundary of the proposed site plotted on a 7 1/2 minute USGS Quadrangle Map. This map shall delineate public access roads to the proposed site, any streams, lakes or other surface water bodies and sensitive receptors such as hospitals, schools, recreation areas, churches, homes, etc. within a one-half mile radius of the proposed site.

E. A tax map showing the block(s) and lot(s) of the site, adjoining properties and properties within a one-half mile radius of the proposed site indicating the current land use and municipal zoning.

F. Three copies of a site plan, at a scale no larger than 1" = 100', which delineates the property boundary lines, location of all buildings, boundaries of the proposed composting area, boundaries of proposed buffer areas,

boundaries of proposed composting staging and storage areas, access and internal roadways, traffic flow, identification of the direction of on-site drainage and any proposed stormwater management controls.

G. A listing and description of the types and quantity of the vegetative waste(s) to be handled by the proposed facility and the estimated maximum annual capacity by weight and volume for each type.

H. A description of the source or point of generation of all leaves and vegetative wastes to be received, stored, processed and transferred at the proposed facility.

I. The proposed hours and days of operation.

J. A description of the staging steps relating to anticipated delivery rates defining the number of trucks daily, hourly and peak hourly in volume and weight of waste brought on-site and storage procedures prior to the formation of the windrows.

K. A description of how the finished compost product will be used.

L. A certified letter from the zoning officer of the municipality in which the proposed site is located stating that the proposed facility is a permitted use, conditional

use and/or any special conditions that would apply under current municipal zoning.

M. A listing of all municipal, County and State permits and/or other approvals required for the proposed facility and the status of each.

N. Certification that the owner and/or operator will submit one copy of the permit application and supporting material required by the New Jersey Department of Environmental Protection to the Ocean County Department of Solid Waste Management.

O. An indication of the tipping fee, user charge or other fees that will be imposed on any user of the proposed facility.

P. Certification that the owner and/or operator agrees to permit access by the Ocean County Health Department and other authorized representatives to inspect the proposed facility during reasonable hours, to ascertain compliance with applicable State statutes and the provisions of the Ocean County District SWMP.

Q. Certification that the owner and/or operator agrees to provide the Ocean County Department of Solid Waste Management, in a form acceptable to the Department, a

quarterly report summarizing the total volume of material accepted at the facility.

400. LEAF MULCHING SITES ON FARMLAND

Leaf mulching on agricultural lands is permitted by NJAC 7:26-1.12. Leaf mulching sites must be registered with the Ocean County Department of Solid Waste for inclusion in the District SWMP.

401. Criteria for Review of Proposed Leaf Mulching Sites on Farmland

As a general policy, the County encourages leaf mulching sites that are designed and operated in accordance with State regulations.

402. Submission Requirements for Proposed Leaf Mulching Sites on Farmland

In order for a farmer to have a farm site registered for inclusion in the District SWMP, the following is required:

A. Submission of a letter by the owner and/or operator of the farmland requesting inclusion of the site.

B. The mailing address of the owner of record of the property proposed as a leaf mulching site.

C. The street address of the farm, acreage and the block(s) and lot(s) number(s) of the proposed site.

D. A key map showing the location of the proposed site.

E. Submission of proof that the farmland is qualified for farmland assessment pursuant to NJSA 54:4-23.5

F. Submission of a letter from either the mayor or the administrator of the municipality in which the site is located stating that the municipality has no objection to leaf mulching operations at the specific site, or including any conditions the municipality may have for such operations.

G. A statement that the Ocean County Health Department is granted periodic and reasonable access to the site to inspect site conditions or operations.

H. A statement that the owner and/or operator agrees to operate the proposed leaf mulching site in accordance with the following State rules and operating procedures:

1. Leaves accepted shall not be stockpiled for more than seven (7) days and within that period shall be spread to a depth not to exceed six (6) inches, approximately 800 cubic yards per acre.

2. Leaves must be incorporated into the soil prior to the next tillage season (by the coming spring).

I. Certification that the owner and/or operator agrees to provide the Ocean County Department of Solid Waste Management, in a form acceptable to the Department, a quarterly report summarizing the total volume of material accepted at the facility.

500. RECYCLING CENTERS AND RECYCLING FACILITIES

Recycling centers are defined in NJSA 13:1E-99.12 as any facility designed and operated solely for receiving, storing, processing and transferring source separated, nonputrescible or source separated commingled nonputrescible metal, glass, paper, plastic containers and corrugated and other cardboard, or other recyclable materials approved by the Department of Environmental Protection. Recycling centers consistent with this definition are exempt from State requirements to obtain a registration statement, engineering design approval or approval of an environmental and health impact statement prior to the commencement of operations. NJSA 13:1E-99.34(a).

Any recycling center that receives, stores, processes or transfers any waste material other than those materials listed above must receive prior approval from the Department of Environmental Protection pursuant to NJSA 13:1E-99.34(b). These include recycling centers which accept source separated tires, wood waste or construction demolition debris.

The Department of Environmental Protection, Office of Recycling has established procedures and guidelines/criteria for the review of regulated recycling centers. These may be obtained from:

New Jersey Department of Environmental Protection
Office of Recycling
401 East State Street
CN 414
Trenton, NJ 08625

The Department's guidelines/criteria require submission of evidence of inclusion of all recycling facilities in the District SWMP or a description of the steps which the owner has taken to have the facility included in the District SWMP. It is not necessary to include in the District SWMP a "recycling center" that is used solely for recycling dropoff at residential complexes or shopping centers if that site is not open to other haulers or to the general public.

501. Criteria for the Review of Proposed Recycling Centers and Recycling Facilities

The County encourages recycling facilities and operations, both public and private, as a means of achieving the municipal recycling targets mandated by NJSA 13:1E-99.13(4) and the Statewide goal of recycling 60 percent of the total solid waste stream. As a general policy, the County will incorporate those recycling facilities and operations that are determined to support those objectives. This determination will be made based upon a review of the application's consistency with the following criteria:

A. The proposed facility will complement existing recycling facilities or operations, or planned recycling facilities or operations already provided for in the District SWMP.

B. The proposed facility will not have a negative effect on existing agreements between the County of Ocean and any other owner and/or operator of recycling facilities and operations.

C. The expected tipping fees, user charges or other financial charges to be imposed on any users of the proposed facility for the receipt, storage, processing or transfer of recyclable materials from the proposed facility are not unreasonable.

D. The proposed facility is consistent with the planning and land development programs of the municipality in which it is located.

E. The proposed design and operation of the facility will ensure the conditions necessary to permit the efficient recycling of the materials to be accepted at the facility.

502. Submission Requirements for Proposed Recycling Centers and Recycling Facilities

In order to have a recycling center considered for inclusion in the Ocean County District Solid Waste Management Plan, the

following must be submitted to the Ocean County Department of Solid Waste Management.

A. The corporate name, address and telephone number of the owner of the proposed facility.

B. The corporate name, address and telephone number of the operator of the proposed facility, if different than the owner.

C. A listing of all other solid waste facilities and operations and/or recycling facilities and operations that are owned and/or operated by either the owner or operator of the proposed facility, in whole or in part, including their specific location, a description of all materials received, stored, processed or transferred at each facility and operation, a description of the source or point of generation of all materials received, stored, processed and transferred at each facility and operation and the location of the disposal facility(s) that receive residue from each facility and operation.

D. The street address of the proposed facility and the block(s) and lot(s) number(s) of the proposed site.

E. A key map showing the boundary of the proposed site plotted on a 7 1/2 minute USGS Quadrangle map. This map shall delineate public access roads to the proposed site,

any streams, lakes or other surface water bodies and sensitive receptors such as hospitals, schools, recreation areas, churches, homes, etc. within a one-half mile radius of the proposed site.

F. A tax map showing the lot(s) and block(s) of the site and adjoining properties indicating the current land use and zoning.

G. A listing of the recyclable materials to be received, stored, processed or transferred at the proposed facility.

H. The amount of each recyclable material, expressed in tons per day, which is to be received, stored, processed or transferred at the proposed facility.

I. A description of the source or point of generation of all recyclable materials to be received, stored, processed or transferred at the proposed facility.

J. A listing of all proposed end uses for the recycled materials, including the name, address and telephone number of all markets for the recyclable materials received, stored, processed or transferred at the proposed facility.

K. A list of all products, end products, by-products and residue, expressed in tons per day, resulting from the proposed activities.

L. Identification of the disposal facility that will handle all residue from the proposed facility.

M. The proposed hours and days of operation.

N. Three copies of a site plan, at a scale no larger than 1" = 100', which plots the location of all equipment, buildings, activities and areas related to the receipt, storage, processing and transfer of all materials resulting from the proposed activities. The site plan shall also indicate the routing of vehicles between the proposed facility and all nearby roadways to the proposed site.

O. An indication of the design capacity as to number and types of vehicles bringing material to the proposed facility for receipt, storage or processing, and the number and types of vehicles transferring processed materials and residue from the proposed site, on a daily basis.

P. A description of the provisions to handle unusual peak loadings which exceed the planned daily capacity.

Q. A certified letter from the zoning officer of the municipality in which the proposed site is located stating that the proposed facility is a permitted use, conditional use and/or any special conditions that would apply under current municipal zoning.

R. A listing of all municipal, County and State permits and/or other approvals required for the proposed facility and the status of each.

S. An indication of the tipping fee, user charge or other fees that will be imposed on any user of the proposed facility for the receipt, storage, processing and transfer of recyclable materials at the proposed facility.

T. An indication of how sanitary wastewater, process water or any other water requiring treatment will be handled at the proposed facility.

U. Certification that the owner and/or operator agrees to permit access by the Ocean County Health Department and other authorized representatives to inspect the proposed facility during reasonable hours, to ascertain compliance with applicable State statutes and the provisions of the Ocean County District SWMP.

V. Certification that the owner and/or operator agrees to provide users of the proposed facility and the Ocean County Department of Solid Waste Management adequate recycling records, including monthly reports summarizing the types and quantities of recyclables received from a particular hauler or municipality, including weight receipts or other source documentation, in a form acceptable to the Ocean County Department of Solid Waste

Management to ensure compliance with the municipal recycling targets established by the Ocean County Recycling Plan and the provisions of NJSA 13:1E-9.11 et seq.

W. Certification that the owner and/or operator will submit one copy of the permit application and supporting material required by the New Jersey Department of Environmental Protection to the Ocean County Department of Solid Waste Management.

600. SUBMISSION AND APPROVAL PROCEDURES

All proposals to include solid waste and recycling facilities in the Ocean County District Solid Waste Management Plan shall be submitted to:

Ocean County Department of Solid Waste Management
CN 2191, 101 Hooper Avenue
Toms River, New Jersey 08754

The following procedures shall be utilized by the County of Ocean in the review of and approval of applications for inclusion of proposed solid waste and recycling facilities in the District SWMP.

601. Review by the Department of Solid Waste Management for Proposed Facilities

A. All applicants for proposed facilities must submit the information and other supporting material required by the

District SWMP for the type of facility proposed for inclusion in the District SWMP. No formal review of the proposed facility will commence until the application is determined to be complete. The County Department of Solid Waste Management shall make the determination of completeness and may waive any of the submission requirements that are determined to be unnecessary for the review of an application. The County Department of Solid Waste Management shall review each initial application for completeness and notify the applicant in writing of any additional material required to initiate formal review, or that the application is complete for review.

Upon a determination that the application is complete for review, the County Department of Solid Waste Management shall prepare a report to determine the consistency of the proposed facility with the policies of the adopted and certified Ocean County District SWMP. The report shall indicate if the proposed facility is consistent, inconsistent or any conditions or modifications required to make the proposed facility consistent with the District SWMP. Prior to formal submission of the report to the Board of Chosen Freeholders, the Department of Solid Waste Management shall consult with the Ocean County Solid Waste Advisory Council as required by NJSA 13:1E-23(a).

B. The County Department of Solid Waste Management shall review an application for a leaf mulching site on farmland

and upon determination that the applicant has met the submission requirements, notify the applicant, by certified letter, that the site is registered for inclusion in the District SWMP. The letter will also include any conditions required for operation. The owner and/or operator may begin accepting leaves immediately upon receipt of the letter from the County Department of Solid Waste Management. Failure to meet the conditions established or correct deficiencies identified by inspection of the site by the Ocean County Health Department shall result in revocation of registration of the site for leaf mulching operations. The County will include all registered leaf mulching sites in the next appropriate amendment to the District SWMP, providing the applicant has designed and operated the site in accordance with conditions established for the site.

602. Review and consideration by the Board of Chosen Freeholders

The Ocean County Board of Chosen Freeholders shall consider all proposals to amend the District SWMP consistent with the provisions of NJSA 13:1E-23. The Board of Chosen Freeholders shall not formally consider a proposal to include solid waste or recycling facilities in the District SWMP until it has consulted with the County Solid Waste Advisory Council.

Upon consideration of the report prepared by the County Department of Solid Waste Management, the application for the proposed facility and any recommendation of the Solid Waste

Advisory Council, the Board of Chosen Freeholders shall adopt a Resolution authorizing the Department of Solid Waste Management to prepare an Amendment to the District SWMP for the proposed facility(s), or stating its intent not to propose an Amendment for the proposed facility(s).

603. Formal Proposal to Amend the District SWMP to Include Proposed Facilities

A. If the Board of Chosen Freeholders determines to propose an Amendment to the District SWMP to include the proposed facility(s), the Department of Solid Waste Management shall prepare the appropriate map, plan and report containing the proposed Amendment which shall be sent by certified mail to the mayor of each municipality within the County.

B. The Board of Chosen Freeholders shall schedule a public hearing on the proposed Amendment to solicit public comment from persons interested in, or who would be affected by, the adoption of the proposed Amendment to the District SWMP. The public hearing shall be scheduled in accordance with the procedures set forth in NJSA 13:1E-23(d) and conducted in accordance with the procedures set forth in NJSA 13:1E-23(e).

C. At the conclusion of the public hearing and any period provided for written comments to the hearing record, the

Board of Chosen Freeholders shall, by Resolution, adopt or reject, in whole or in part, the proposed Amendment to the District SWMP. Notice of this action shall be in compliance with the requirements of NJSA 13:1E-23(e) and NJSA 13:1E-23(g) and (h).

700. REPEAL OF PREVIOUS AMENDMENT PROCEDURES AND REQUIREMENTS

All previous amendment procedures and requirements established by the Board of Chosen Freeholders in the District SWMP and/or the Ocean County Recycling Plan are hereby repealed and the procedures established hereof shall supercede any nonstatutory amendment procedures.

800. VALIDITY

If any section, subsection, paragraph, clause, phrase, requirement or provision of these amendment procedures shall be adjudged invalid or held unconstitutional, such adjudication shall not affect the validity of these amendment procedures as a whole or any part or procedure hereof, other than the part so adjudged to be invalid or unconstitutional.

900. APPLICATION FEES

Fees shall be charged for the review of all applications for solid waste and recycling facilities to be included in the Ocean County District SWMP. Said fees shall be used by the County to

defray all engineering, legal, environmental and other administrative review costs incurred by the County during the review of the application. Application fees shall be in accordance with the fee schedule established by Resolution of the Board of Chosen Freeholders. Said fee schedule shall establish a range of fees for different types of solid waste and recycling facilities and shall reflect reasonable costs incurred by the County of Ocean for the review of proposed facilities. Said monies shall be held in trust by the County. In the event the fees incurred by the County do not exceed the application fee paid by the applicant, the County shall return the unspent balance of the fee. The maximum fee charged for review shall not exceed $5000.00 unless such limit shall be revised by Resolution of the Board of Chosen Freeholders. Fees shall not be charged for applications submitted by State, County and municipal governments and churches, hospitals and secular nonprofit institutions. Application fees shall not be refunded if the application is disapproved or if the application is withdrawn by the applicant.

APPENDIX C

Mandatory Recycling Ordinance

ORDINANCE TO AMEND AND SUPPLEMENT AN ORDINANCE ENTITLED: "AN ORDINANCE TO ESTABLISH A PROGRAM FOR THE COLLECTION OF RECYCLABLE MATERIALS FROM RESIDENCES AND COMMERCIAL AND INSTITUTIONAL ESTABLISHMENTS IN THE (TOWNSHIP/BOROUGH) OF _____; TO PROHIBIT THE DISPOSAL OF RECYCLABLE MATERIALS INTO THE CONVENTIONAL MUNICIPAL SOLID WASTE DISPOSAL WASTE SYSTEM: TO EMPOWER THE (MUNICIPALITY, RECYCLING COORDINATOR, SUPERINTENDENT OF PUBLIC WORKS) TO PROMULGATE REASONABLE REGULATIONS THEREFORE; AND TO FIX PENALTIES FOR THE VIOLATION THEREOF", MORE PARTICULARLY SECTIONS 2, 3 and 5 THEREOF.

WHEREAS, on _____, 19__, the (Township/Borough) of _____ enacted the Recycling Ordinance of the (Township/Borough) of _____; and

WHEREAS, on _____, 19__, the Ocean County Board of Chosen Freeholders adopted a Resolution approving certain modifications to the Ocean County Recycling Plan expanding the number of materials required to be recycled in Ocean County.

NOW, THEREFORE, BE IT ORDAINED BY THE (TOWNSHIP COMMITTEE/COUNCIL) OF THE (TOWNSHIP/BOROUGH) OF _____, IN THE COUNTY OF OCEAN, STATE OF NEW JERSEY, as follows:

1. Section 2 of Ordinance No. _____ adopted on _____, 19__, the title of which is quoted in the title hereof, is hereby amended and supplemented to include the following definitions:

"HDPE Containers. Plastic containers made of high density polyethylene (e.g., milk and water bottles).

"Office Paper. High-grade office paper, fine paper, bond paper, offset paper, xerographic paper, mimeo paper, duplicator paper and related types of cellulosic materials containing not more than ten (10%) percent by weight or volume of non-cellulosic materials such as laminates, binders, coatings or saturants.

"PET Containers. Plastic containers made of polyethylene teraphthalate (e.g., plastic soda bottles).

"PVC Containers. Plastic containers made of polyvinyl chloride (e.g., salad dressing, mouthwash and pharmaceutical bottles, bottle liners and cap coatings)."

2. The definitions of "Commercial Establishments" and "Residence" set forth in Section 2 of Ordinance No. ____, adopted on _____, 19__, are hereby amended to read as follows:

"Commercial Establishments. Those businesses which constitute wholesale, retail or service establishments such as restaurants, stores, markets, theaters, hotels, warehouses and offices, excluding Residences.

"Residence. Any single family residential dwelling or multi-family residential unit. A multi-family residential unit shall mean any building or structure of one or more stories and any land appurtenant thereto, in which two or more units of dwelling space are occupied, or are intended to be occupied, by two or more persons who live independently of each other. This definition shall include apartments, townhouses, condominiums, cooperatives and retirement communities."

3. Section 3 of Ordinance No. ____, adopted on _____, 19__, is hereby amended to read as follows:

"Section 3. Establishment of Program. There is hereby established a program for the mandatory separation of the following recyclable materials from the municipal solid waste stream by all persons within the (Township/Borough) of _____, hereinafter referred to as the "Municipality", except as hereinafter provided:

1. Aluminum Cans
2. Ferrous Metal (Tin) Cans
3. Glass Containers
4. HDPE Containers
5. Newspapers
6. PET Containers and HDPE Containers
7. PVC Containers
8. Corrugated cardboard (applies to all commercial establishments)

9. Office paper (applies to any office with more than 25 employees and to all institutional establishments)."

4. Section 5 of Ordinance No. ____, adopted on _____, 19__, is hereby amended to read as follows:

"Section 5. Separation of Leaves and Placement for Disposal: All persons within the Municipality shall separate leaves from other solid waste generated at their premises and, unless the leaves are stored or recycled for composting or mulching on the premises, place the leaves at the curb or other designated area for collection at such times and dates and in the manner established by the Municipality's recycling regulations."

5. All other provisions of the Ordinance to which this Ordinance is amendatory and supplementary shall remain in full force and effect.

6. All Ordinances and provisions of Ordinances inconsistent or conflicting with the provisions hereof are hereby repealed to the extent of such conflict or inconsistency.

7. This Ordinance shall take effect on _____ after final adoption and publication as required by law.

NOTICE

(Applicable provision with respect to Notice of Introduction, Public Hearing and Adoption must be added by the Municipality.)

APPENDIX D

Agreement Between
Ocean County Board of Chosen Freeholders
and
Rosetto Recycling Center, Inc.

AGREEMENT BETWEEN

OCEAN COUNTY BOARD OF CHOSEN FREEHOLDERS

And

ROSETTO RECYCLING CENTER, INC.
and
INDUSTRIAL WAY ASSOCIATES

PROVIDING FOR INCLUSION OF PROPOSED MATERIALS RECOVERY FACILITY IN THE OCEAN COUNTY SOLID WASTE PLAN

Dated: 11/12/90

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AGREEMENT BETWEEN OCEAN COUNTY BOARD OF CHOSEN FREEHOLDERS AND ROSETTO RECYCLING CENTER, INC. AND INDUSTRIAL WAY ASSOCIATES PROVIDING FOR INCLUSION OF PROPOSED MATERIALS RECOVERY FACILITY IN OCEAN COUNTY SOLID WASTE PLAN

THIS AGREEMENT, made and entered into this 12th day of November 1990, by and between the OCEAN COUNTY BOARD OF CHOSEN FREEHOLDERS, hereinafter called "County", with offices at the Ocean County Administration Building, Hooper Avenue, Toms River, New Jersey 08753 and ROSETTO RECYCLING CENTER, INC. and INDUSTRIAL WAY ASSOCIATES, hereinafter called "Contractor", with offices at 1301 Route 37W, Toms River, New Jersey 08753.

WHEREAS, it is the aim of the County to reduce the amount of solid waste generated in Ocean County through waste reduction, recycling and resource recovery and decrease the County's dependence on landfills and provide a reliable, environmentally sound and economical form of waste management; and

WHEREAS, the County is charged with the obligation of preparing and adopting a Solid Waste Management Plan for the Ocean County Solid Waste District pursuant to the provisions of the New Jersey Solid Waste Management Act, N.J.S. 13:1E-1 et seq.; and

WHEREAS, the County is likewise charged with the obligation of preparing and adopting a Recycling Plan for the Ocean County Solid Waste District pursuant to the provisions of the Statewide

Mandatory Source Separation and Recycling Act, N.J.S. 13:1E-99.11 et seq.; and

WHEREAS, the County has adopted and the State Department of Environmental Protection has certified and approved the Ocean County District Solid Waste Management Plan and the Ocean County Recycling Plan; and

WHEREAS, the County currently owns and operates two Recycling Centers for the receipt, processing and marketing of source separated comingled Recyclable Materials located at Recovery Road, Stafford Township, New Jersey and New Hampshire Avenue, Lakewood Township, New Jersey, respectively known as the Southern and Northern Ocean County Recycling Centers; and

WHEREAS, the County has awarded a Contract to R.R.T. Empire Returns Corporation for the design, construction and operation of a Recyclable Materials Processing Facility at the Ocean County Northern Recycling Center, Lakewood, New Jersey for the Processing and Marketing of up to 300 tons per day of Recyclable Materials designated in the County Plan to be Source Separated from the Solid Waste stream by the residents of Ocean County; and

WHEREAS, Contractor has applied to the County for inclusion of a 250 ton per day Materials Recovery Facility to be designed, constructed and operated by Contractor at Tax Lot 1.2, Block 411, Dover Township, Ocean County, New Jersey, in the Ocean County Plan; and

WHEREAS, the Materials Recovery Facility proposed by Contractor will be capable of processing up to a total of 250 tons per day of Acceptable Waste and Designated Recyclable Materials and separating therefrom Recovered Materials for Market; and

WHEREAS, the Contractor recognizes and acknowledges the comprehensive approach contained in the County Plan and implemented by the County for the collection, processing and marketing of Source Separated Recyclable Materials; and

WHEREAS, the Contractor recognizes and acknowledges the substantial time and effort expended by the County in the development of the Northern and Southern Ocean County Recycling Centers and the planned Recyclable Materials Processing Facility; and

WHEREAS, the Contractor further recognizes and acknowledges the substantial capital cost and investment that the County has made in the Northern and Southern Ocean County Recycling Centers and the Recyclable Materials Processing Facility currently under construction and agrees to cooperate with the County to assure that all Source Separated Recyclable Materials from Residential Units located in Ocean County are delivered to the Northern and Southern Ocean County Recycling Centers in accordance with the County Plan; and

WHEREAS, Contractor agrees to cooperate with the County in the implementation of the County Plan by accepting for Processing

at its Facility only Acceptable Waste and Designated Recyclable Materials, excluding Source Separated Recyclable Materials from Residential Units located in Ocean County; and

WHEREAS, Contractor further agrees to reject any Source Separated Recyclable Materials from Residential Units located in Ocean County delivered to Contractor's Facility and to redirect the same to the Northern Ocean County Recycling Center; and

WHEREAS, the Facility proposed by Contractor, subject to Contractor's compliance with the terms and conditions of this Agreement, is consistent with the County Plan; and

WHEREAS, the County has agreed to propose an amendment to the County Plan including Contractor's Materials Recovery Facility therein upon Contractor's acceptance of the terms and conditions set forth in this Agreement; and

WHEREAS, the Contractor desires to enter into this Agreement with the County, acknowledging Contractor's acceptance of the terms and conditions set forth herein; and

WHEREAS, the inclusion of the Contractor's Facility within the County Plan is specifically conditioned and contingent upon Contractor's application for and receipt of a Solid Waste Facility Permit from the NJDEP and all Required Approvals necessary for the construction and operation of the proposed Facility and the incorporation of Contractor's compliance with this Agreement as a term and condition of Contractor's Solid Waste Facility Permit.

NOW, THEREFORE, in consideration of the mutual promises contained herein, the County and the Contractor agree as follows:

SECTION 1. Definitions. For the purposes of this Agreement, the following terms shall have the following meanings:

"Accept" or "Acceptance" means the receipt of and taking responsibility by the Contractor of Designated Recyclable Materials and/or Acceptable Waste at the Facility in accordance with the terms and conditions of this Agreement.

"Acceptable Waste" means the following types of Waste which are collected either directly or indirectly by Contractor or Contractor's Affiliates from its customers and transported to the Facility in Contractor's or Contractor's Affiliates' collection vehicles:

(a) non-hazardous Construction Waste and Demolition Waste;

(b) non-hazardous Commercial Waste and Institutional Waste; and

(c) non-hazardous Industrial Waste.

Solid Waste and Recyclable Materials collected from Residential Units are specifically excluded.

"Agreement" means this Agreement between the County and the Contractor, providing for the inclusion of the Contractor's Facility in the County Plan.

"Certificate of Public Necessity and Convenience" means a certification or approval issued by the NJBPU for the operation of a Solid Waste Facility pursuant to the Solid Waste Utility Control Act, N.J.S. 48:13A-1 et seq. and N.J.A.C. 14:3-10.1 et seq.

"Commercial Establishments" means those businesses which constitute wholesale, retail or service establishments such as restaurants, stores, markets, theatres, hotels, warehouses and offices, excluding Residential Units.

"Commercial Waste" shall mean non-hazardous, non-putrescible Waste Generated by Commercial Establishments. Solid Waste and Recyclable Materials collected from Residential Units and Medical Waste are specifically excluded.

"Construction Waste" means non-hazardous building material Waste resulting from construction, remodeling or repair operations on houses, commercial buildings and other structures.

"Contractor" means Rosetto Recycling Center, Inc. and Industrial Way Associates.

"Contractor's Affiliates" means any corporation, partnership or other legal entity in which Consolidated Waste Services of America, Inc., a Delaware corporation, has a Controlling Interest.

"Controlling Interest" means ownership of more than fifty (50%) percent of the issued and outstanding stock of a

corporation or more than fifty (50%) percent of the interest of a partnership, joint venture or other legal entity.

"County" means the Ocean County Board of Chosen Freeholders and/or the County of Ocean, as the context requires.

"County Plan" means:

1. The Ocean County District Solid Waste Management Plan adopted by the Ocean County Board of Chosen Freeholders on July 18, 1979 and approved by the NJDEP on July 31, 1980, and all subsequent amendments thereto; and

2. The Ocean County Recycling Plan adopted by the Ocean County Board of Chosen Freeholders as an element of the Ocean County District Solid Waste Management Plan on October 21, 1987, and approved by the NJDEP on March 22, 1988, and all subsequent amendments thereto.

"Demolition Waste" means non-hazardous Waste resulting from the razing of houses, commercial buildings and other structures.

"Designated Recyclable Materials" means that list of Source Separated Recyclable Materials set forth on Schedule B of this Agreement which are collected by Contractor or Contractor's Affiliates from its customers and transported to the Facility in Contractor's or Contractor's Affiliates' collection vehicles.

"Director" means the Director of the Ocean County Department of Solid Waste Management.

"Disposition" means the removal of Recovered Materials for all possible legal uses except for disposal as Solid Waste.

"Facility" means the Materials Recovery Facility to be located at Tax Block 411, Lot 1.2, Route 37, Dover Township, Ocean County, New Jersey, and constructed in accordance with Contractor's plans and design which are more specifically described on Schedule A hereto, and which are incorporated herein and made a part of this Agreement.

"Facility Site" means Tax Block 411, Lot 1.2, as shown on the current Tax Map of the Township of Dover, Ocean County, New Jersey.

"Franchise" means the exclusive right to control and provide for the disposal of Solid Waste within a solid waste district or districts awarded by the NJBPU pursuant to the Solid Waste Utility Control Act, N.J.S. 48:13A-1 et seq.

"Generate" means the act or process of producing Solid Waste.

"Generator" means any and all Persons that produce Solid Waste.

"Industrial Waste" means dry, non-hazardous, non-putrescible Waste resulting from manufacturing or industrial processes and operations. Oil spill cleanup Waste, dry non-hazardous pesticides, dry non-hazardous chemical Waste, asbestos

and asbestos-containing Waste and Medical Waste are specifically excluded.

"Institutional Waste" shall mean non-hazardous, non-putrescible Waste from schools and other public buildings. Solid Waste and Recyclable Materials collected from Residential Units and Medical Waste are specifically excluded.

"Law" means any federal, state, county, local, administrative or other governmental law, including any statute, ordinance, code or other legislation, regulation, rule or other promulgation or pronouncement, or any judicial, executive or administrative ruling, order or decision.

"Life-Care Facilities" means a parcel of land developed as a comprehensive and integrated system, combining independent living accommodation for the elderly with the provision of central dining, health care and support services and functions intended for the residents and other users of the facility.

"Market" means the Disposition of Recovered Materials at a Disposition cost of less than the cost of transporting the Recovered Materials to a Solid Waste Facility and disposing of them as Solid Waste in accordance with the County Plan.

"Materials Recovery Facility" means a Solid Waste Facility which is designed, operated and permitted to Process Acceptable Waste and Designated Recyclable Materials by utilizing manual and/or mechanical methods to separate therefrom categories

of Recovered Materials which are then Marketed in the form of raw materials or products for reuse.

"Medical Waste" means any Solid Waste which is generated in the diagnosis, treatment (for example, provision of medical services), or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals, including Regulated Medical Waste as defined in N.J.A.C. 7:26-3A.6.

"NJBPU" means the New Jersey Board of Public Utilities.

"NJDEP" means the New Jersey State Department of Environmental Protection.

"Ocean County Health Department" means the Ocean County Health Department established by the Ocean County Board of Health pursuant to N.J.S.A. 26:3A2-1 et seq.

"Person" means any individual, corporation, partnership, joint venture, association, joint stock company, trust, unincorporated organization or other non-governmental agency or entity or any governmental agency or political subdivision thereof, including any agency or entity created or existing under the laws of the United States, the State of New Jersey, or any other state, or any combination thereof.

"Process" and "Processing" means the preparation by the Contractor of Recovered Materials for sale to Market. This may

include separation, cleaning, size reduction and other beneficiation steps.

"Process Residue" means all materials remaining after the Recovered Materials are removed from the Acceptable Waste and Designated Recyclable Materials as a by-product of the Facility's Processing.

"Putrescible Waste" means any Waste, including, but not limited to food waste, likely to enter into a state of putrefaction, the typically anaerobic splitting of proteins by bacteria and fungi with the formation of foul smelling, incompletely oxidized products.

"Recovered Materials" means those materials which: (i) the Contractor extracts from the Acceptable Waste by Processing at the Facility and (ii) those Designated Recyclable Materials beneficiated by Processing at the Facility which are Marketed by the Contractor. Process Residue is specifically excluded.

"Recyclable Materials" means those materials which would otherwise become Solid Waste and which may be collected, separated, or Processed and returned to the economic mainstream in the form of raw materials or products.

"Required Approvals" means, with respect to the Facility and this Agreement, the County's adoption of an amendment to the County Plan and its approval by the Commissioner of the NJDEP as set forth in sections 8A and 10 of this

Agreement; Contractor's receipt of: (1) a Solid Waste Facility Permit from the NJDEP, (2) preliminary and final site plan approvals from the Dover Township Planning Board ("Site Plan"), (3) preliminary and final Site Plan approvals from the Ocean County Planning Board, (4) soil erosion and sedimentation control permit from the Ocean County Soil Conservation District, (5) any other permit or approval required to be issued for the Facility as a precondition to the construction and operation of the Facility by any federal, State, County or municipal agency having jurisdiction thereover, and (6) a building permit.

"Residential Unit" means any single family residential dwelling or multi-family residential unit. A multi-family residential unit shall mean any building or structure of one or more stories and any land appurtenant thereto, in which two or more units of dwelling space are occupied, or are intended to be occupied by two or more persons who live independently of each other. This definition shall include apartments, townhouses, condominiums, cooperatives and retirement communities but shall not include Life-Care Facilities.

"Solid Waste" or "Waste" means garbage, refuse and other discarded materials resulting from industrial, commercial and agricultural operations, and from domestic and community activities and shall include all other waste materials including liquids.

"Solid Waste Facility" means any system, site, equipment, building or structure which is utilized for the storage, collection, processing, transfer, transportation, separation, recycling, recovering or disposal of Solid Waste other than a "Recycling Center" as defined in N.J.A.C. 7:26-1.4.

"Solid Waste Facility Permit" means a certificate of approved registration and engineering design approval issued by the NJDEP for Contractor's Facility in accordance with N.J.A.C. 7:26-1.1 et seq.

"Source Separated" means the process of separating Recyclable Materials from the Solid Waste stream by the Generator at the point of Generation.

"Transfer Station" means a Solid Waste Facility at which Waste is transferred from a Solid Waste collection vehicle to to a Solid Waste haulage vehicle for transportation to a Solid Waste Facility or other destination.

"Unacceptable Waste" means any Solid Waste, Recyclable Materials or other materials or substances not specifically allowed to be Processed by Contractor at its Facility under this Agreement, or which would, if Processed in the Facility, constitute an endangerment to health or safety or give rise to violations of permit conditions for the Facility.

SECTION 2. Processing of Acceptable Waste and Recyclable Materials. The Contractor shall Accept for Processing at the

Facility only Acceptable Waste and Designated Recyclable Materials collected by Contractor or Contractor's Affiliates from its customers and transported to the Facility in Contractor's or Contractor's Affiliates' collection vehicles. In addition, the Contractor may accept Designated Recyclable Materials delivered to the Facility by other persons, provided that Contractor shall not offer any economic incentive to such persons for Designated Recyclable Materials. Contractor shall not Accept, Process or store Acceptable Waste, Designated Recyclable Materials or Process Residue at the Facility, except within the confines of a completely enclosed building. Processing of Acceptable Waste and Designated Recyclable Materials shall be accomplished by the process more specifically described in Schedule C of this Agreement.

SECTION 3. Design Capacity. The design and operating capacity of the Facility shall not exceed a total of 250 tons per day of Acceptable Waste and Designated Recyclable Materials, based upon a sixteen (16) hour per day operation consisting of two (2) shifts of eight (8) hours each. The Facility shall be designed, constructed and operated in accordance with Contractor's design plans and Processing flow diagram which are more specifically described in Schedules A and C of this Agreement respectively. The Contractor shall supply the Director with copies of all plans, documents and correspondence between

Contractor and the NJDEP pertaining to the registration, design and permitting of the Facility, so as to afford the County an opportunity to comment on the same during the permitting process.

SECTION 4. Residue Disposal. The Contractor shall be responsible for the disposal of all Process Residue at the Ocean County Landfill Corporation Sanitary Landfill Facility, Manchester Township, New Jersey, or at such other Solid Waste Facility as may otherwise be authorized by the County Plan. The Contractor's disposal of Process Residue, Solid Waste or Recovered Materials other than as specifically authorized by the County Plan is prohibited and shall constitute a material breach of this Agreement.

SECTION 5. Prohibited Wastes and Materials. The Contractor shall not Accept any of the following Solid Waste or other materials at the Facility:

A. Putrescible Waste other than deminimis quantities contained in beverage and food containers identified as Designated Recyclable Materials on Schedule B of this Agreement;

B. Medical Waste;

C. Solid Waste which is not specifically included within the definition of Acceptable Waste;

D. Acceptable Waste or Designated Recyclable Materials in excess of the Facility's design capacity of 250 tons per day as set forth in Section 3 of this Agreement.

E. Recyclable Materials which are not specifically included within the definition of Designated Recyclable Materials; and

F. Recyclable Materials collected either directly or indirectly by any Person from Residential Units located in Ocean County.

SECTION 6. Recovered Materials Goal. The Contractor shall produce a minimum quantity of Recovered Materials equivalent to eighty (80%) percent, by weight, of the incoming Acceptable Waste and Designated Recyclable Materials Accepted for Processing at the Facility. Said goal shall be achieved monthly and documented in the Monthly Report. In no event shall Contractor dispose of Designated Recyclable Materials or Recovered Materials as Solid Waste.

SECTION 7. Transfer Station. The operation of the Facility as a Solid Waste Transfer Station is strictly prohibited. The operation of the Facility as a Transfer Station is inconsistent with the County Plan and shall constitute a material breach of this Agreement.

SECTION 8. Construction, Operation and Maintenance of Facility.

A. In no event shall Contractor commence construction or operation of the Facility prior to the County's adoption and the NJDEP Commissioner's approval of an Amendment to the County

Plan providing for the inclusion of Contractor's Facility therein in accordance with N.J.S. 13:1E-23 and 24 and Contractor's receipt of all Required Approvals.

B. Contractor, upon receipt of all Required Approvals, shall construct, maintain and operate the Facility in accordance with applicable Law, the County Plan and all Required Approvals. Contractor shall be the exclusive owner and operator of the Facility and nothing herein shall be deemed to make Contractor an agent, employee, representative or independent contractor of the County.

SECTION 9. Commencement and Term. This Agreement shall be effective and shall commence upon full execution of the Agreement by the Contractor and the County. This Agreement shall remain in full force and effect for the term of Contractor's Solid Waste Facility Permit and any renewal thereof consistent with the terms of this Agreement unless sooner terminated by the County in accordance with Sections 10 or 28 of this Agreement.

SECTION 10. Inclusion of Facility in County Plan.

A. Upon the execution of this Agreement by the Contractor, the County will propose an amendment to the County Plan providing for the inclusion of Contractor's Facility therein in accordance N.J.S. 13:1E-1 et seq. Said amendment to the County Plan shall be subject to the public hearing, comment and approval process set forth in N.J.S. 13:1E-23. The County shall use its

best efforts to complete said Plan Amendment process on or before December 31, 1990. Upon the adoption of said amendment by the County and the approval thereof by the Commissioner of the NJDEP in accordance with N.J.S. 13:1E-23 and 24, Contractor's Facility shall be included in the County Plan.

B. The inclusion of Contractor's Facility in the County Plan shall be conditioned and contingent upon the following:

(i) The County's adoption of an amendment to the County Plan including Contractor's Facility therein and the approval of said amendment by the Commissioner of the NJDEP in accordance with the provisions of N.J.S. 13:1E-23 and 24;

(ii) Contractor's receipt of all Required Approvals; and

(iii) The NJDEP's incorporation of Contractor's compliance with this Agreement as a term and condition of Contractor's Solid Waste Facility Permit for the Facility.

C. In the event that each and every condition set forth in subparagraph B of this Section shall not be fully and completely satisfied within two (2) years after the effective date of this Agreement, then the County shall have the right, at its sole option and discretion, to terminate this Agreement by giving Contractor thirty (30) days advance written notice of the

termination date and the parties shall have no further liability or obligation to each other hereunder.

D. Upon the termination of this Agreement as set forth in subparagraph C of this Section, Contractor's Facility shall not be included in the County Plan and shall be deemed inconsistent with the County Plan.

SECTION 11. Discontinuation of Current Operations. Contractor and Contractor's Affiliates shall discontinue and terminate all Recycling and Materials Processing operations at Contractor's existing site, Block 411, Lot 1.2, Dover Township, commonly known as Rosetto Recycling Center, within one hundred twenty (120) days after Contractor's commencement of operation of the Facility provided for herein.

SECTION 12. Staffing and Training. The Contractor shall insure that a sufficient number of trained and qualified personnel are employed and assigned to operate and maintain the Facility at all times in accordance with all applicable Law, permit and license requirements.

SECTION 13. Hours of Delivery. The Contractor shall not Accept deliveries of Acceptable Waste or Designated Recyclable Materials at the Facility between the hours of 7:00 P.M. and 7:00 A.M. daily. The limitation of the hours of delivery of materials to those set forth above constitutes a substantial term and condition of this Agreement. Any deviation from the hours of

delivery set forth above without the advance written consent of the Director of the Ocean County Department of Solid Waste Management constitutes a material breach of this Agreement.

SECTION 14. Records. The Contractor shall prepare and maintain proper, accurate and complete records and accounts of all transactions related to the Facility. These records shall include, but not be limited to:

A. Weight slips for all Acceptable Waste, Designated Recyclable Materials, Recovered Materials and Process Residue entering and leaving the Facility;

B. Sales receipts, invoices, and other documentation showing to whom all Recovered Materials were sold or delivered, including the date of the sale or delivery, the types and quantities of Recovered Materials sold or delivered, and the prices paid therefor;

C. Types (by NJDEP identification number) and quantity of Acceptable Waste and Designated Recyclable Materials Accepted by the Facility, specifying the source of the material by municipality;

D. The license plate number and owner of delivery and material transport vehicles;

E. Types (by NJDEP identification number) and quantities (by weight) of Process Residue Generated by the Facility;

F. Types (by NJDEP identification number) and quantities (by weight) of Process Residue disposed of by the Facility and site of disposal, including receipts for same.

Copies of all weight records and all weight slips shall be maintained by the Contractor for a period of at least three (3) years. The Contractor shall retain a copy of all O&D forms provided to any Solid Waste Facility in connection with the disposal of all Process Residue or other materials.

SECTION 15. Monthly Report. The Contractor shall provide the Director with monthly reports within twenty (20) calendar days of the end of each month, including, but not limited to, the information set forth in Section 14 of this Agreement. The Contractor shall furnish to the County for each month such additional information as may be reasonably requested by the Director of Ocean County Department of Solid Waste Management with respect to the matters covered by this Agreement.

SECTION 16. Annual Report. The Contractor shall submit an annual report to the Director within sixty (60) days after the end of each calendar year that incorporates a summary of the monthly reports for the preceding twelve (12) month period and summarizes all required data and records.

SECTION 17. Inspection of Books and Records. The Contractor hereby grants to the County and its designated employees, agents and representatives, the right to inspect Contractor's

books and records to verify Contractor's compliance with all of the terms and conditions of this Agreement upon reasonable notice to the Contractor and during normal business hours. The County shall exercise reasonable efforts to hold any records designated by the Contractor as confidential in confidence and take all reasonable precautions to prevent disclosure to third persons except for disclosures that are required to obtain and maintain permits, licenses and other governmental and regulatory approvals, that may be required under applicable Law, or are otherwise permitted by this Agreement. In no event shall the County be liable for disclosures of such records made by any person other than an employee of the County. In no event shall the County's liability for the disclosure of such records exceed One Thousand Dollars ($1,000.00).

SECTION 18. Facility Performance Review and Inspection. The County, the Ocean County Health Department and their designated representatives, agents and employees may enter the Facility Site and the Facility at any time, review records of Facility performance and inspect the Facility to determine Contractor's compliance with the Facility's approved Solid Waste Facility Permit, registration statement and engineering design, and with the terms and conditions of this Agreement and all applicable Law, permits and licenses.

SECTION 19. Storage of Materials. There shall be no Processing or storage of Acceptable Waste or Process Residue outside of the Facility building. Designated Recyclable Materials and Recovered Materials shall be stored in either covered containers or trailers or in an enclosed area separate from the Facility building as shown on Contractor's design plans which are more specifically described in Schedule A of this Agreement.

SECTION 20. Compliance with the Law.

A. The Contractor shall comply with all applicable Law, license and permit requirements concerning the collection, storage, transfer, handling, disposal and Processing of Solid Waste and Recyclable Materials and the Disposition of Recovered Materials.

B. The Contractor shall comply with all applicable requirements of the County Plan.

C. The Contractor shall adhere to all applicable Law governing the safety and working conditions of its employees.

D. This Agreement is expressly subject to the Contractor obtaining all Required Approvals to construct and operate the Facility. Contractor warrants and represents that it shall operate the Facility in accordance with the terms and conditions of all Required Approvals and in accordance with all applicable Law and the County Plan. Any violation of the provisions of

Section 20 of this Agreement shall constitute a material breach of this Agreement.

SECTION 21. Weighing Records. Contractor shall install and operate weighing scales at the Facility, which scales shall satisfy all accuracy requirements set by the State and shall be maintained in good operating order and condition by the Contractor. The Contractor shall maintain daily records of total tons of all Acceptable Waste and Designated Recyclable Materials delivered to the Facility as well as all Recovered Materials and Process Residue leaving the Facility. Each vehicle shall be weighed (i) upon entering the Facility (before being emptied of Acceptable Waste and/or Designated Recyclable Materials or loaded with Recovered Materials, or Process Residue) and (ii) upon exiting the Facility (after being emptied of Acceptable Waste and/or Designated Recyclable Materials or loaded with Recovered Materials or Process Residue). In each instance the date, time, NJDEP vehicle identification number, license plate number, gross weight and tare weight of the vehicle shall be entered on a weight record unless the tare weight of the empty vehicle has been previously recorded and verified. The Director may require from time to time the revalidation of the tare weight of all vehicles or the reweighing of unloaded vehicles. The records shall also include copies of weight slips showing type and quantity of materials delivered, the driver's signature, and the

origin of the contents. The County shall have the right to observe these operations periodically and without prior notice to the Contractor.

If, at any time during the term of this Agreement, the weighing scales are incapacitated or are being tested, Contractor shall advise the County and shall repair or replace such scale(s) promptly. While such scales are incapacitated, the Contractor shall estimate the quantity of waste delivered on the basis of vehicle volumes and estimated data obtained through historical information, if available, pertinent to prior deliveries. These estimates shall be the basis for weight records during the time of incapacity of the weighing facilities and shall take the place of actual weighing records for this period. In no case shall the Facility continue in operation if the period of incapacitation exceeds twenty (20) days.

The Director shall have the right to require the Contractor to have the scales tested, to the County's reasonable satisfaction, at such times as may be acceptable to both parties to this Agreement and the costs of such testing shall be borne by the Contractor. If, upon testing, the scales do not meet accuracy requirements established by the State, the parties hereto shall agree upon an appropriate adjustment of completed weighing records.

SECTION 22. Continuous Monitoring.

A. The County, the Ocean County Health Department and their designated representatives, agents and employees shall have the right to continuously monitor the performance of the Facility and the performance of the Contractor and any and all of Contractor's Affiliates, representatives, agents and employees pursuant to this Agreement.

B. To facilitate such continuous monitoring, the County, the Ocean County Health Department and their designated representatives, agents and employees shall have continuous and unrestricted access to the Facility and all operating information generated in connection with the operations of the Facility and may take all reasonable steps necessary to verify the Contractor's performance in accordance with this Agreement. Neither the County, the Ocean County Health Department or their respective representatives, agents or employees shall unduly interfere with the operations of the Contractor.

C. In order to offset the Ocean County Health Department's annual cost of monitoring Contractor's Facility during the term of this Agreement, Contractor agrees to pay to Ocean County Health Department the sum of $1,200.00 on January 1, 1991 and $1,200.00 on January 1st every year thereafter for as long as this Agreement continues in full force and effect.

SECTION 23. Screening of Waste Stream and Recyclable Materials.

A. The Contractor shall prohibit the delivery and Acceptance of Unacceptable Waste and materials other than Acceptable Waste and Designated Recyclable Materials at the Facility. The County and the Ocean County Health Department shall each have the independent right to inspect at random the contents of incoming and outgoing vehicles, provided such inspections shall not unreasonably interfere with the operation of the Facility. The Contractor shall reject deliveries to the Facility of any Unacceptable Waste or materials other than Acceptable Waste and Designated Recyclable Materials. If the Contractor determines that it is impractical to separate Acceptable Waste and/or Designated Recyclable Materials from Unacceptable Waste or materials in any vehicle, then the Contractor shall reject the entire vehicle.

B. The Contractor shall perform Waste and Recyclable Material screening procedures to avoid Accepting and Processing Unacceptable Waste, including all materials other than Acceptable Waste and Designated Recyclable Materials at the Facility. The Contractor shall be solely responsible for the removal, transport and disposal of all Unacceptable Waste Accepted at the Facility in accordance with the County Plan and all applicable Law. Contractor shall not Accept or Process at its Facility any

Source Separated Recyclable Materials from Residential Units located in Ocean County without the prior written approval of the Director. Contractor shall redirect all such materials to the Northern Ocean County Recycling Center.

C. The Contractor shall weigh any Unacceptable Waste received at the Facility and maintain separate weight scale records thereof. In the event any Unacceptable Waste is delivered to the Facility, the Contractor shall (i) promptly notify the County of such occurrence, (ii) segregate the Unacceptable Waste and, if possible, (iii) identify the responsible Person to the County and (iv) require the responsible Person to remove such Unacceptable Waste from the Facility. The Contractor shall provide and shall continue thereafter to provide as needed, to the appropriate employees at the Facility, a course of instruction designed to familiarize such employees with the physical appearance and other attributes which characterize Unacceptable Waste.

SECTION 24. Facility Shutdowns. The Contractor shall immediately notify the Director as to the cause and extent of any Facility shutdown or reduction in capacity that will affect the Contractor's receipt of Acceptable Waste and Designated Recyclable Materials at the Facility. Contractor shall further advise the Director as to the estimated duration thereof and the anticipated reduction in capacity resulting therefrom. Contractor

shall use its best efforts to minimize the duration of any Facility shutdown.

In no event shall any Acceptable Waste, Designated Recyclable Materials or Process Residue be stored in the Facility or at the Facility Site during a Facility shutdown or reduction in capacity if odors therefrom are detectable outside the Facility Site. All costs for removing, transporting and disposing of Acceptable Waste, Designated Recyclable Materials and Process Residue in the event of a Facility shutdown or reduction in capacity necessitating removal of such materials shall be borne by the Contractor. All materials removed from the Facility during a Facility shutdown or reduction in capacity, shall be weighed prior to exiting the Facility. During any Facility shutdown or reduction in capacity, the Contractor shall receive Acceptable Waste and Designated Recyclable Materials only to the extent the Facility, consistent with sound engineering and operating practices, is able to Process the same. In no event shall the Facility be used as a Transfer Station during any Facility shutdown or reduction in capacity.

SECTION 25. Applicable Law. This Agreement shall be construed and interpreted in accordance with the laws of the State of New Jersey pertaining to contracts executed and to be performed in New Jersey.

SECTION 26. Modification or Amendment. No modification or

amendment to this Agreement and no waiver of any of the provisions or conditions of this Agreement shall be valid unless in writing and signed by an officer or other duly authorized representative of the County and the Contractor.

SECTION 27. Indemnification.

A. The Contractor shall defend, indemnify, and hold harmless the County, its officers, employees, representatives and agents, from any and all claims, liabilities, demands, damages or costs of any nature whatsoever arising out of or in any way pertaining to this Agreement, the inclusion of Contractor's Facility in the County Plan and/or the acts or omissions of the Contractor or other Persons ("Claims") pursuant to or connected with this Agreement, excluding only such Claims caused or resulting solely through the intentional and willful acts of the County, its employees and agents.

B. The indemnification of the County, its officers, employees, representatives and agents hereunder shall include all reasonable costs, including legal fees, disbursements and expert fees incurred in defending any lawsuit or administrative proceeding brought against the County, its officers, employees and agents.

C. Manner and Time of Making Claim. Contractor shall not be liable for indemnification hereunder with respect to any matter or claim of which written notice is not given by the

Director to Contractor within sixty (60) days after the Director's actual notice of such matter or claim for which indemnification is provided under this Section 27 ("Indemnified Claim").

D. Right to Employ Counsel. When any claim, action or suit shall be filed or asserted against County which is based upon an Indemnified Claim, the Director shall notify Contractor of the same in writing, as set forth in subsection C above, specifying in detail the basis of such claim and the facts pertaining thereto. Contractor shall thereupon assume the defense thereof and participate in the defense thereof and employ its own legal counsel in connection with such defense. Failure of the Director to notify Contractor of such claim, action or suit within sixty (60) days after the Director's receipt of service of such claim, suit or action shall constitute a waiver of County's rights under this Section 27. County shall have the right to employ counsel separate from counsel employed by Contractor in any such action and to participate in the defense thereof, and the fees and expenses of such counsel employed by County shall be at the sole expense of County. Prior to effectuating any settlement of any such action or proceeding, Contractor shall furnish County with written notice of any proposed settlement in sufficient time to allow County to act thereon. If County elects to participate in the defense thereof, Contractor

shall not be liable for any settlement of any such action or proceeding effected by County without the written consent of Contractor.

SECTION 28. Termination of Agreement.

A. Termination by the County. The County may terminate this Contract for an Event of Default by the Contractor in accordance with subsection B of this Section 28.

B. Events of Default by Contractor. Each of the following shall independently constitute an Event of Default by the Contractor:

(i) Contractor's knowing Acceptance or Processing of Unacceptable Waste at the Facility.

(ii) Contractor's knowing Acceptance or Processing of any Prohibited Wastes or Materials at the Facility in violation of Section 5 of this Agreement.

(iii) Contractor's operation of the Facility as a Solid Waste Transfer Station.

(iv) Contractor's disposal of Solid Waste or Process Residue at a Solid Waste Facility or other site not designated in the County Plan.

(v) Contractor's disposal of Designated Recyclable Materials or Recovered Materials as Solid Waste.

(vi) Contractor's submission of an application to the State Board of Public Utilities for a Franchise for the operation of its Facility;

(vii) Contractor's failure to achieve the minimum Recoverable Material goal set forth in Section 6 of this Agreement for two (2) consecutive months or four (4) months in any consecutive twelve (12) month period.

(viii) The failure of the Contractor to perform any of its other obligations in accordance with the terms of this Agreement, provided, however, that no such failure shall constitute an Event of Default by the Contractor unless and until the Director has given notice to the Contractor specifying that a particular fault or faults exist and the Contractor has not corrected the fault(s) within thirty (30) days from the date of the notice.

(ix) The commencement by the Contractor of a voluntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or the consent by Contractor to the entry of an order for relief in an involuntary case under any such law, or the consent by Contractor to the appointment of or taking possession by a receiver, liquidator, assignee, trustee, custodian, sequestrator (or similar official) for the Contractor or for any substantial part of its property, or the making by the Contractor of any general assignment for the benefit of creditors.

(x) The issuance by a court having jurisdiction over the Contractor of a decree or order for relief in respect to

the Contractor in an involuntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or the appointment by any trustee, sequestrator (or similar official) for the Contractor or for any substantial part of its property, or the ordering by any such court of the winding up or liquidation of the affairs of the Contractor.

(xi) The failure of the Contractor to comply with the requirements of Sections 45 and/or 46 of this Agreement, provided that no such failure shall constitute an Event of Default unless the Contractor shall fail to comply within thirty (30) days after receiving a written demand from the Director that unless the Contractor complies with Sections 45 and/or 46 such failure to do so shall constitute an Event of Default.

No event of default shall be deemed to have occurred under clauses (i), (ii), or (v) of this Subsection B so long as:

(a) Contractor shall continue to meet the minimum Recyclable Material goal set forth in Section 6 of this Agreement and

(b) the amount of Unacceptable Waste, Prohibited Wastes or Materials, Designated Recyclable Materials or Recovered Materials, excluding medical waste, does not exceed deminimis amounts of said materials not otherwise separable by normal collection practices from loads of Acceptable Waste, or Designated Recyclable Materials.

C. Termination for Events of Default.

(i) The County, upon electing to terminate this Contract for an Event of Default, shall direct the Director to give the Contractor notice of the termination date, which shall be not less than ten (10) days nor more than thirty (30) days from the date the notice is given. Termination for an Event of Default shall not affect any of Contractor's liabilities or obligations hereunder through the date of termination.

(ii) If the County terminates this Agreement for an Event of Default by the Contractor, Contractor shall cease and discontinue operation of its Facility on the termination date set forth in the notice of termination and shall not thereafter operate its Facility without the express written consent of the County, which consent of the County may grant or withhold on such terms and conditions as the County, in its sole discretion, deems appropriate and just. In the event that Contractor operates its Facility in violation of the provisions of this subsection, Contractor shall pay stipulated penalties to the County in the amount of Five Thousand Dollars ($5,000.00) per day, or such other greater amount as is provided by statute, for each day or part thereof during which a violation continues. Stipulated penalties under this subsection shall begin to accrue from the date of violation and continue to accrue each day or part thereof until the violation is corrected. Stipulated penalties under

this subsection shall be paid by certified or cashier's check made payable to the Treasurer, County of Ocean, and shall be paid by the 15th day of the month following the month in which a violation occurs. Any stipulated penalties imposed under this Section may be collected in a civil action commenced by the County or the Ocean County Health Department, on behalf of the County, in a summary proceeding pursuant to the "Penalty Enforcement Law", N.J.S.A. 2A:58-1 et seq.

(iii) In addition to the stipulated penalties set forth above, the County specifically reserves the right to seek other remedies or sanctions available to the County by reason of the Contractor's violation of subsection (ii) of this Section.

SECTION 29. Remedies Upon Contractor Default.

A. If the Contractor commits an Event of Default as specified in Section 28 of this Agreement or threatens to commit an Event of Default, the County in addition to any and all other rights and remedies it may have, shall have the right and remedy, without posting bond or other security, to have each and every provision of this Agreement specifically enforced by the Ocean County Superior Court, Chancery Division, it being acknowledged and agreed that any such Event of Default or threatened Event of Default will cause irreparable injury to the County, and the residents thereof, and that money damages will not provide an adequate remedy at law.

B. Each of the County's rights and remedies enumerated in this Agreement shall survive the termination of this Agreement, shall be independent of the other, and shall be severally enforceable, and all of such rights and remedies shall be in addition to, and not in lieu of, any other rights and remedies available to County at law or in equity.

SECTION 30. Expense of Enforcement of Covenants. In the event that any administrative proceeding or suit at law or in equity is brought by the County to enforce the terms and conditions of this Agreement or to obtain money damages for an Event of Default by Contractor, the County, upon prevailing in any such action, suit or administrative proceeding shall be entitled to reimbursement from the Contractor for all expenses (including, without limitation, reasonable attorneys' fees and disbursements) incurred in connection therewith. The provisions of this Section 30 shall survive the termination of this Agreement.

SECTION 31. Unenforceable Terms and Conditions. If any of the terms and conditions of this Agreement are hereafter construed to be invalid or unenforceable, the same shall not affect the remainder of the terms and conditions of this Agreement which shall be given full effect, without regard to the invalid portions.

SECTION 32. Contractor's Ability to Contract. Contractor warrants and represents that it may legally enter into this

Agreement; that it intends all terms and conditions contained in this Agreement to be legally binding on Contractor; and that all terms and conditions contained in this Agreement are valid and legally enforceable against Contractor.

SECTION 33. Environmental Compliance. The Contractor shall comply with all applicable environmental Law, license and permit requirements, including, but not limited to all applicable standards, orders, requirements and regulations adopted under the following:

A. The Clean Air Act, 42 U.S.C. §7401 et seq.;

B. The Clean Water Act, 33 U.S.C. §1251 et seq.;

C. The Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §6901 et seq.;

D. The Air Pollution Control Act, N.J.S. 26:2C-1 et seq.;

E. The Noise Control Act of 1971, N.J.S. 13:1G-1 et seq.;

F. The Soil Erosion & Sediment Control Act, N.J.S. 4:24-39 et seq.;

G. The New Jersey Solid Waste Management Act, N.J.S. 13:1E-1 et seq.;

H. The Statewide Mandatory Source Separation and Recycling Act, N.J.S. 13:1E-99.11 et seq.; and

I. The Water Pollution Control Act, N.J.S. 58:10A-1 et seq.

If Contractor fails to comply with the provisions of this Section, Contractor shall pay all fines, deficiencies,

penalties, levies or other sanctions which may be levied against the Contractor for any such failure and the Contractor shall immediately make, at the Contractor's sole cost and expense, any changes, modifications, or additions to the Facility as may be necessary to bring the Facility into compliance with all applicable environmental Law, license and permit requirements.

SECTION 34. Notice of Violations.

A. Contractor shall immediately notify the Director in writing of any change in the status of any license, permit, authorization or approval required by Contractor for the performance of his obligations and duties hereunder. Any unjustified delay by Contractor in notifying the Director of the same shall constitute a material breach of this Agreement.

B. Contractor shall immediately notify the Director in writing in the event that the Contractor receives any communication from the USEPA, NJDEP or any other governmental body or agency indicating that Contractor's Facility is alleged or considered to be in violation of any Law, permit condition or approval, or is being considered for or subject to an enforcement action by any federal, state or local government body or agency. Any unjustified delay by Contractor in so notifying the Director shall constitute a material breach of this Agreement.

SECTION 35. Franchise and Future Facilities.

A. Neither the execution of this Agreement nor the

designation of the Contractor's Facility in the County Plan shall entitle the Contractor to apply for or obtain a Franchise under the provisions of the Solid Waste Utility Control Act, N.J.S. 48:13A-1 et seq., or other applicable Law. It is specifically acknowledged by County and Contractor that the award of a Franchise to Contractor in connection with the operation of its Facility is inconsistent with the purposes and intent of the County Plan. The Contractor shall not seek a Franchise from the State Board of Public Utilities for the operation of its Facility. The submission of such an application for a Franchise by the Contractor shall constitute a material breach of this Agreement.

B. The County shall notify Contractor of its receipt of any proposal for the creation or designation of another Materials Recovery Facility within the County. Contractor shall be free to submit a proposal to meet the needs of the proposed Materials Recovery Facility. However, the County shall be under no obligation to approve Contractor's proposal.

C. After the Facility has been in operation for one (1) year, the Director will consider a request by Contractor to include within the definition of Acceptable Waste in this Agreement solid waste Generated by those multi-family Residential Units in Ocean County which are provided Waste collection service by Contractor's Affiliates.

SECTION 36. Notice. Any notice or other communications required or permitted hereunder shall be in writing and will be deemed sufficiently given only if delivered in person or sent by telegram or by first-class mail, postage prepaid, and addressed as follows:

(a) The County at: Ocean County Board of Chosen Freeholders
Administration Building
CN 2191
Toms River, NJ 08754
Attn: Director, Department of Solid Waste Management

with copy to: Berry, Kagan, & Sahradnik
212 Hooper Avenue
P.O. Box 757
Toms River, NJ 08754
Attn: John C. Sahradnik, Esq.

(b) The Contractor at: Rosetto Recycling, Inc.
1301 Rt. 37E
Toms River, NJ 08753
Attn: Bruce Rosetto

with copy to: John R. Halleran, Esq.
Giordano, Halleran & Ciesla, P.C.
270 N.J. State Highway #35
P.O. Box 190
Middletown, NJ 07748

Changes in the respective addresses to which such notices may be directed may be made from time to time by either party by written notice to the other party.

SECTION 37. Waiver. The waiver by the County of any default, breach or violation of the provisions of this Agreement

shall not operate or be construed as a waiver of any other default, breach or violation of the provisions of this Agreement.

SECTION 38. Severability. If any provision of this Agreement is found to be invalid by any court, administrative agency or tribunal of competent jurisdiction, the invalidity of any such provision shall not effect the validity of the remaining provisions hereof.

SECTION 39. Entire and Complete Agreement. This Agreement constitutes the entire and complete agreement of the parties pertaining to the inclusion of Contractor's Facility in the County Plan. This Agreement supersedes all prior or contemporaneous representations, understandings, arrangements and commitments, all of such, whether oral or written, having been merged herein.

SECTION 40. Binding Effect. This Agreement has been duly entered into and constitutes a legal, valid and binding obligation of the Contractor enforceable in accordance with its terms and it shall inure to the benefit of the parties hereto and any successor or assignee acquiring an interest hereunder.

SECTION 41. Other Documents. The Contractor agrees to execute and deliver any instruments and to perform any acts that may be necessary or reasonably requested in order to give full effect to this Agreement.

SECTION 42. Relationship of the Parties. No party to this Agreement shall have any responsibility whatsoever to perform services or to assume contractual obligations that are the obligations of the other party. Nothing herein shall constitute either party a partner, employee, agent or representative of the other party, or create any fiduciary relationship between the parties.

SECTION 43. Headings. Captions and headings in this Agreement are for reference only and do not constitute a part of this Agreement.

SECTION 44. Nondiscrimination. In the hiring of employees for the performance of this Agreement, neither Contractor, nor any persons acting on behalf of the Contractor, shall by reason of race, creed, color, sex or national origin, discriminate against any person who is qualified and available to perform the work to which the employment relates. Neither Contractor, nor any person acting on behalf of Contractor, shall, in any manner, discriminate against any employee who is employed in the work covered by this Agreement on account of race, creed, color, sex or national origin. This provision includes, but is not limited to, the following: employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. The Contractor shall comply with all applicable

provisions of N.J.S. 10:2-1, 10:2-4 and 10:5-31 through 10:5-38 and all rules and regulations issued thereunder.

SECTION 45. Assignment. This Agreement shall not be assigned by the Contractor without the prior written consent of the County. In any event, and notwithstanding any consent given by the County, no purported assignment by the Contractor shall be valid or effective, and no assignment by the Contractor shall relieve the Contractor of any of its obligations under this Agreement, unless and until the Contractor guarantees the performance of the assignee. Any prohibited assignment of this Agreement shall be null and void.

SECTION 46. Maintenance of Corporate Existence. During the term of this Agreement, the Contractor shall maintain its corporate existence and shall not (1) dissolve or otherwise dispose of all or substantially all of its assets, (2) consolidate with or merge into any corporation or business entity, or (3) permit the transfer, sale or acquisition of a controlling share of any of its voting securities, unless (a) the successor(s) in interest expressly assume in writing all of the Contractor's obligations under or pursuant to this Agreement (in which event any surviving predecessor in interest shall not be released from any such obligations), and (b) the Contractor gives its prior written consent thereto confirming without qualification that its

obligations under or pursuant to this Agreement shall continue with full force and effect for the benefit of the County.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written.

ATTEST:

DANIEL J. HENNESSY, Clerk

BOARD OF CHOSEN FREEHOLDERS, OCEAN COUNTY

By: JOSEPH H. VICARI, Director

ATTEST:

ROSETTO RECYCLING CENTER, INC.

By: BRUCE ROSETTO, President

WITNESS:

INDUSTRIAL WAY ASSOCIATES

By:

By:

By:

SCHEDULE A

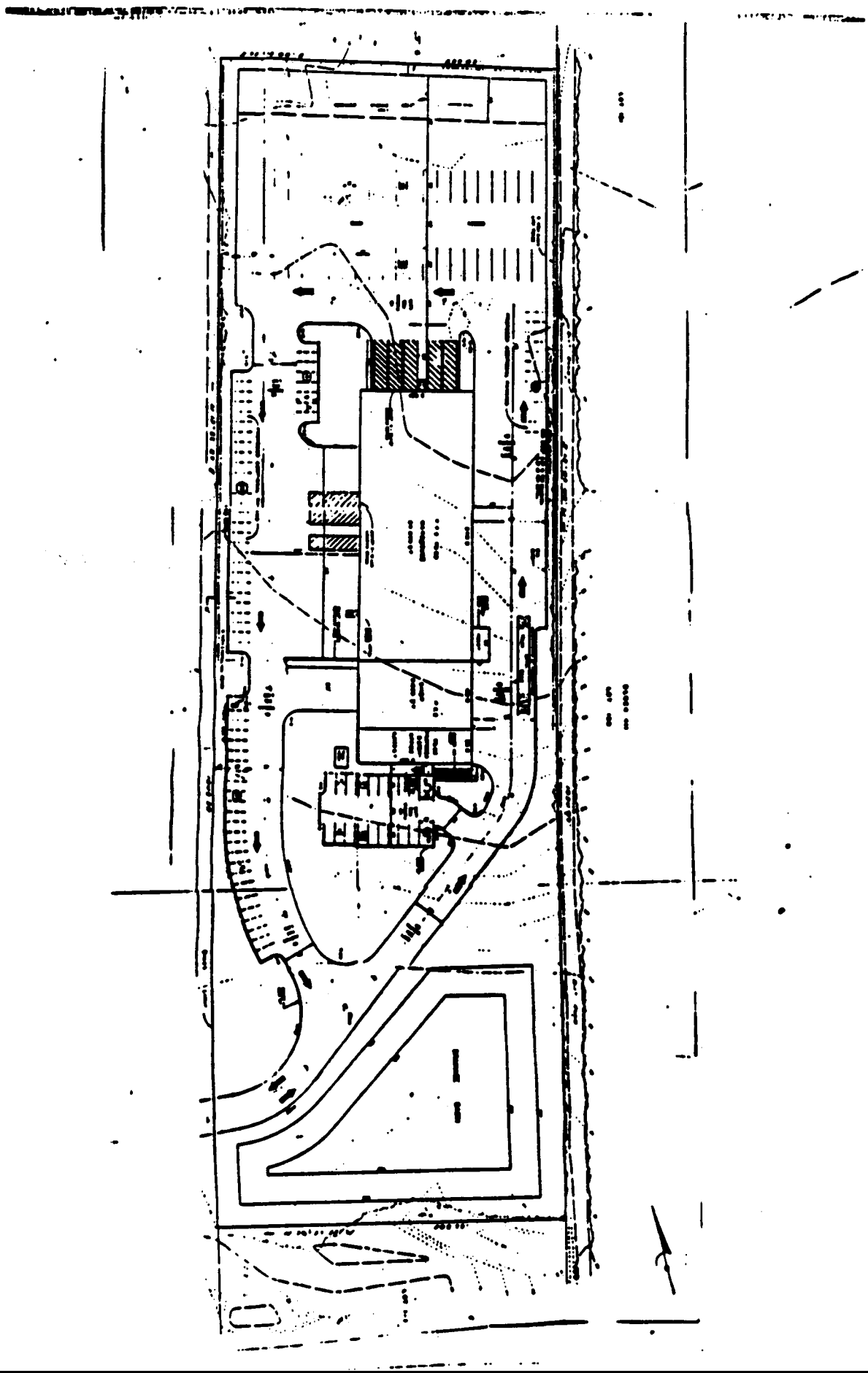
FACILITY PLANS & DESIGN

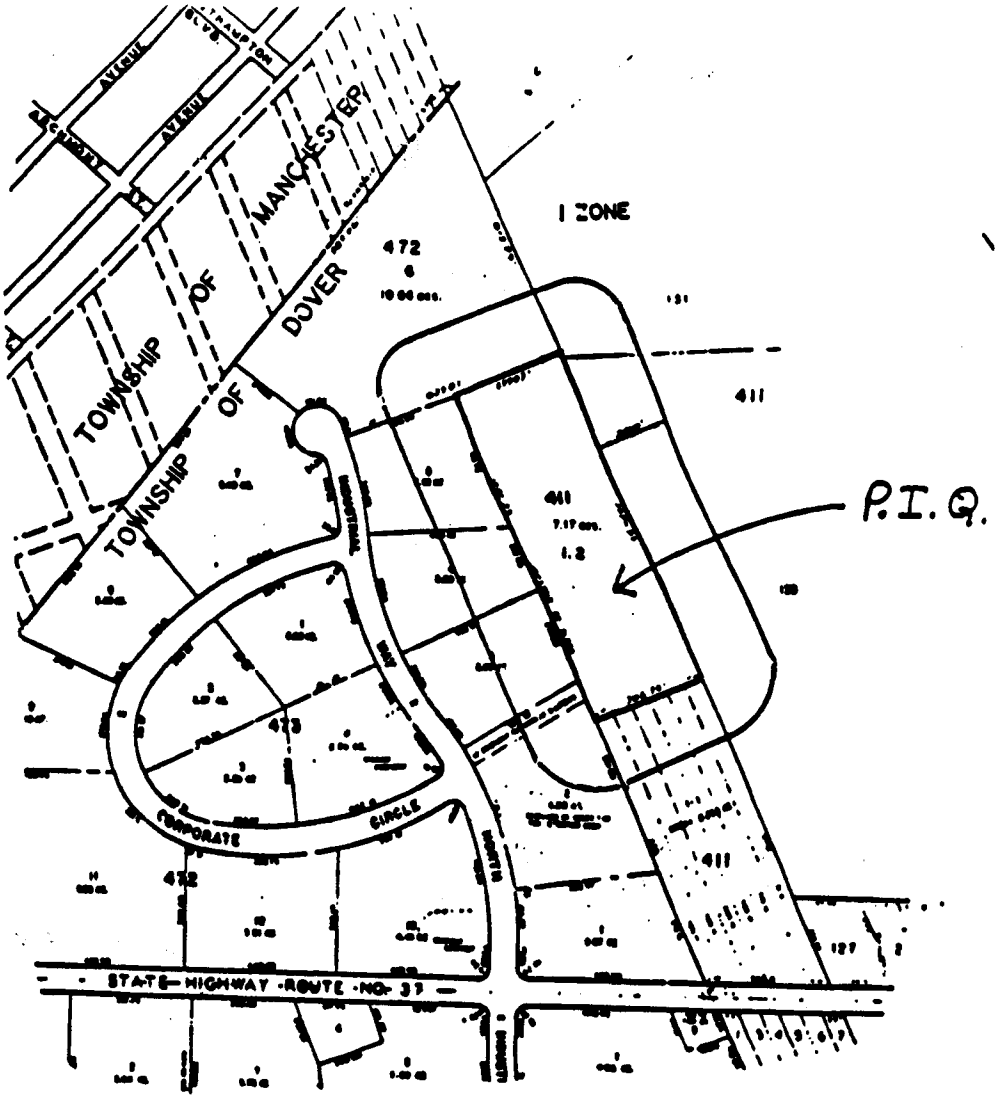
The term "Facility" as used in the foregoing Agreement means the Materials Recovery Facility which is shown on the following plans:

(a) "Preliminary Plat - Major Site Plan - Site - Layout Plan - For Rosetto Recycling - Block 411, Lot 1.2 - Township of Dover - Ocean County, New Jersey" prepared by Birdsall Engineering, Inc. dated June 21, 1988 and comprised of 10 sheets.

(b) Construction plans entitled "Rosetto Recycling, Inc. - North Industrial Way - - Dover Industrial Park - Dover Township, N.J. - Project #88110" prepared by Bennett/HDG, Inc., Planning Architecture Design dated September 29, 1989 and comprised of 16 sheets as follows:

1. Title Sheet
2. Plans & Sections
3. Elevations
4. Office & Dispatch Plans
5. Reflected Ceiling Plans
6. Masonry Wall Sections
7. Metal Wall Sections
8. Dispatch Wall Sections
9. Stair Plans & Sections
10. Interior Details
11. Foundation Plan & Notes
12. Foundation Details, F1 - F6
13. Foundation Details, F7 - F1
14. Foundation Details, F10 - F13
15. Foundation Details, F14 - F18
16. Foundation Details, F19 - F23

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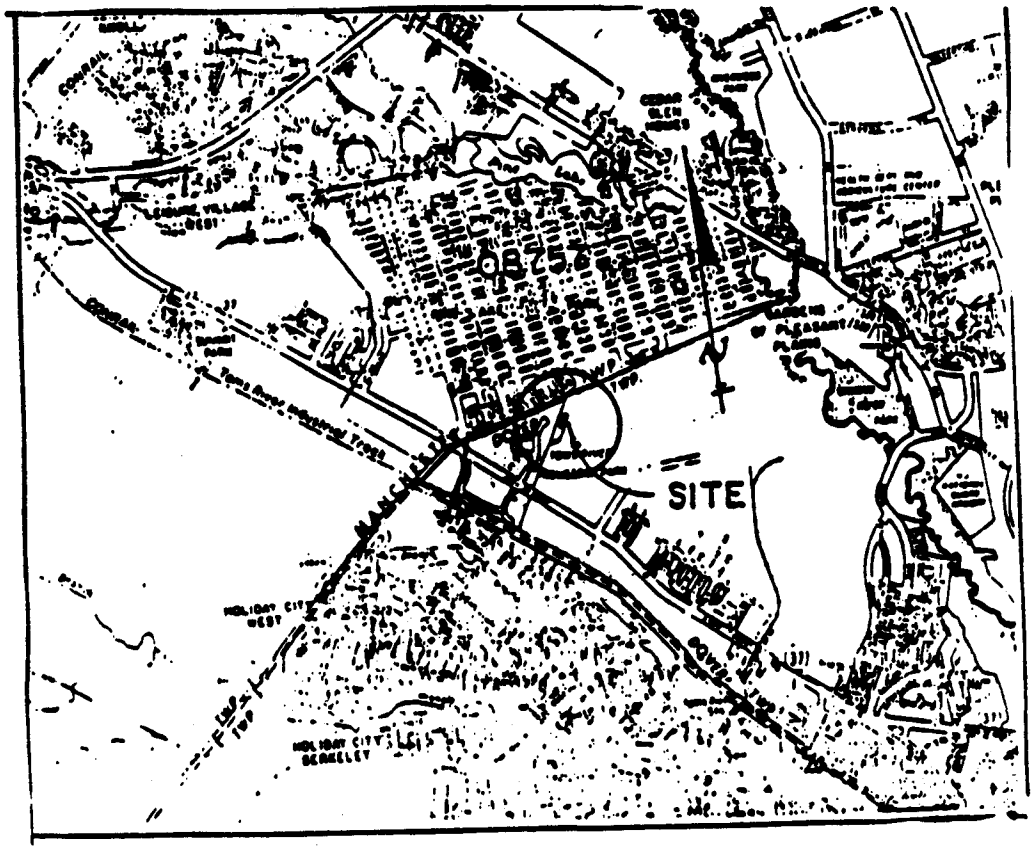
TOWNSHIP OF DOVER
TOWNSHIP OF MANCHESTER
P.I.Q.
CORPORATE CIRCLE
STATE HIGHWAY ROUTE NO. 37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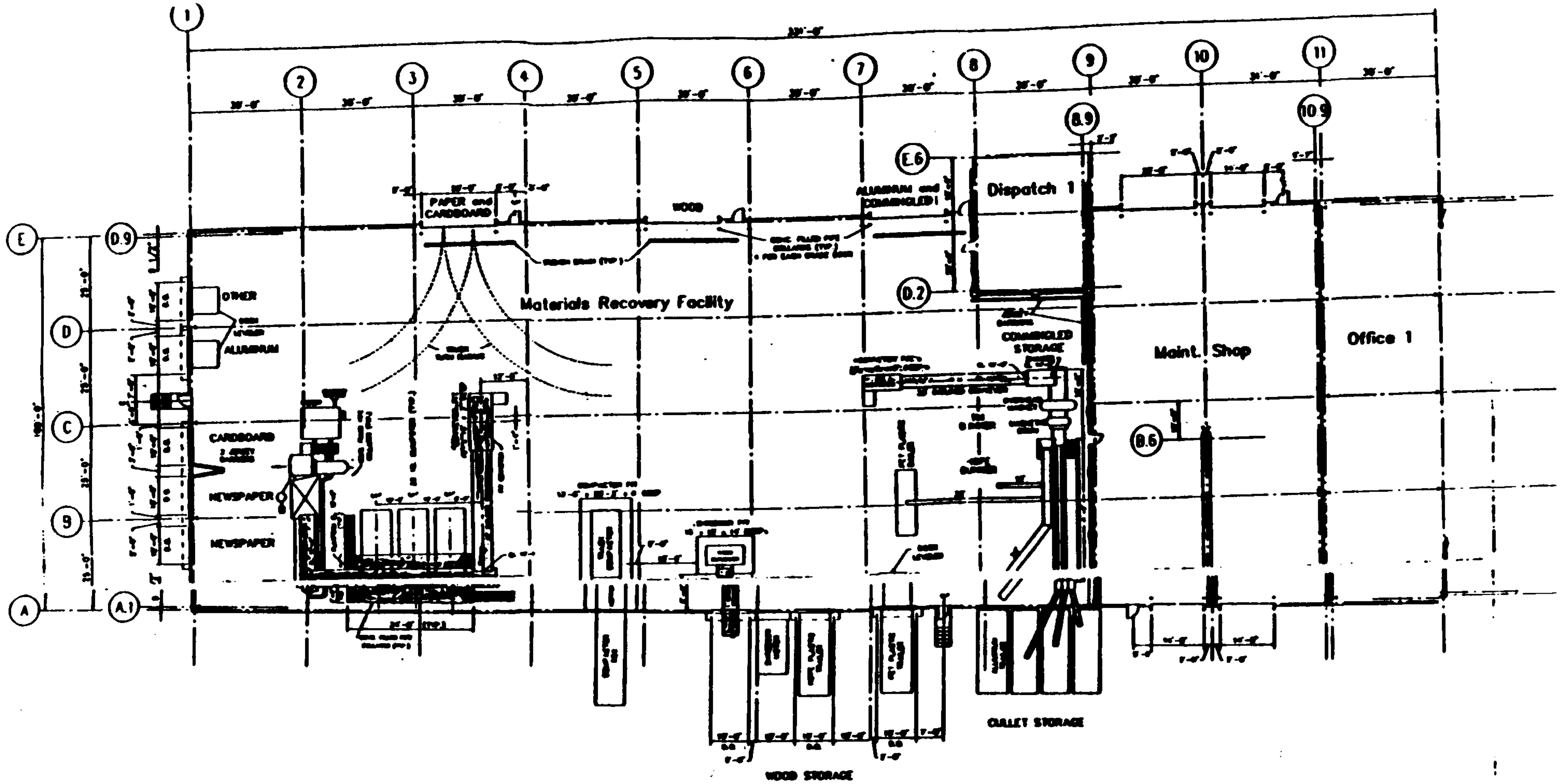

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SCHEDULE B

DESIGNATED RECYCLABLE MATERIALS

Contractor shall Accept and Process at its Facility the following Source Separated Recyclable Materials collected by Contractor or Contractor's Affiliates from Persons other than Residential Units located in Ocean County and delivered to the Facility in Contractor's or Contractor's Affiliates' collection vehicles:

1. Aluminum Cans: Empty all-aluminum beverage and food containers.

2. Ferrous Containers: Empty steel or tin food or beverage containers.

3. Glass Containers: Bottles and jars made of clear, green or brown glass. Expressly excluded are non-container glass, plate glass, blue glass and porcelain and ceramic products.

4. HDPE Containers: Plastic beverage containers made of high density polyethylene (i.e., clear milk and water bottles).

5. PET Containers: Plastic beverage containers made of polyethylene teraphthalate (i.e., plastic soda bottles).

6. PVC Plastic.

7. Mixed Paper: Newspaper, junk mail, magazines, used office paper, corrugated cardboard and "Kraft" bags, free of food contamination.

8. Scrap Aluminum.

9. Scrap Steel.

10. Scrap Copper.

11. Wood.

12. Asphalt and Concrete: Provided there shall be no Processing of the same at the Facility.

13. Carpeting.

SCHEDULE C

GENERAL DESCRIPTION OF FACILITY PROCESSING OPERATIONS

Four Separate Operations:

A. PAPER

- Paper is brought into the Facility in a source separated manner and in mixed commercial loads. Within minutes from arriving in the Facility, the paper is tipped onto a subfloor level conveyor belt and is baled and loaded into a container truck for shipment to the world market place. The office paper consists of several different grades of paper and is manually separated into various holding bins.

- Estimated capacity - 100 tons per day.

B. COMMINGLED SEPARATION LINE

- Material is loaded into a hopper. Then it rides over a screening device to remove dirt and much of the broken glass from the line. The material then passes under two magnets which remove all the tin cans. The aluminum cans and plastic are removed by an air blower device and a finer flotation device. The plastic is then hand-picked off the belt and put into bins to await baling. The aluminum continues down the line - goes over one last magnet - and is then flattened and blow into a trailer for delivery to the marketplace. The glass is separated by hand by color and proceeds through one of the three glass crushers and falls into holding bins to await delivery to the marketplace.

- Estimated capacity - 80 tons per day.

C. CONSTRUCTION RECYCLING

- Material is received in a source separated manner and as mixed construction debris. Wood is shredded into chip sizes and is transported in large 100 cu. yd. open top trailers to the marketplace. Depending on the grade of wood it will be utilized either as mulch or as an energy source for large plants. The scrap metal, scrap aluminum, cardboard, copper, asphalt, and concrete are placed in separate holding bins for delivery to the marketplace.

- Current capacity limitation - 70 tons per day

D. RESIDUE COMPACTOR

- Any residue from the operation of the recylcing center will be placed into a sealed compaction container for delivery to the landfill.

APPENDIX E

Ocean County Farm Leaf Mulching Sites

Appendix E

Ocean County
Farm - Leaf Mulching Sites

1. Andrew Nemeth	Block 58, Lot 13	Plumsted Township

APPENDIX F

Ocean County Leaf and Vegetative Waste Composting Agreement

OCEAN COUNTY LEAF AND VEGETATIVE
WASTE COMPOSTING PROGRAM

INTERLOCAL SERVICES AGREEMENT

THIS AGREEMENT entered into this 1st day of April, 1988, between the TOWNSHIP OF MANCHESTER, a municipal corporation of the State of New Jersey, hereinafter referred to as the "Municipality", and the COUNTY OF OCEAN, a body politic of the State of New Jersey, hereinafter referred to as the "County".

W I T N E S S E T H:

WHEREAS, the New Jersey Mandatory Recycling Act, PL 1986, c. 102 provides that on or before April 20, 1988, each Municipality in the State must provide, by ordinance, a system for the collection of leaves generated from residential premises and further provide that all persons occupying residential premises must, for the period from September 1 to December 31 of each year, source separate leaves from solid waste generated at those premises in the manner specified by local ordinance; and

WHEREAS, the Mandatory Recycling Act further provides that each County, in its recycling plan, must identify the leaf composting facilities to be utilized by each municipality within the County; and

WHEREAS, there exist in Ocean County a sufficient number of municipally owned composting facilities permitted by the New Jersey Department of Environmental Protection to compost all leaves and vegetative waste generated throughout the County on a yearly basis; and

WHEREAS, the Ocean County Recycling Plan proposes to regionalize the permitted municipal composting facilities so as to assure disposal sites for leaves and vegetative waste generated by all municipalities in Ocean County; and

WHEREAS, the Municipality has previously obtained all necessary permits and approvals to operate a composting facility (hereinafter referred to as the "Facility") at Block 116, Lot 13, as shown on the current tax map of the Municipality; and

WHEREAS, the Municipality has agreed to participate in the Ocean County Composting Program in accordance with the terms and conditions set forth herein; and

WHEREAS, the Interlocal Services Act, N.J.S.A. 40:8A-1 et seq. authorizes local units as defined in said Act to enter into

joint agreements for the provision of governmental services.

NOW, THEREFORE, in consideration of the mutual covenants and promises contained herein and pursuant to the authority provided by law, the County and the Municipality agree as follows:

1. Permits & Approvals. The Municipality warrants and represents that it has obtained all necessary governmental permits and approvals to operate the Facility at Block 116, Lot 13 as shown on the current tax map of the Municipality. The Municipality further warrants and represents that it shall operate the Facility in accordance with the terms and conditions of all said permits and approvals and in accordance with the regulations of the New Jersey Department of Environmental Protection for the term of this agreement.

2. Waste Separation. All leaves delivered to the Facility shall be separated from other vegetative waste and shall not include plastic bags or other debris. For the purposes of this agreement, "vegetative waste" shall mean tree limbs and branches under six (6) inches in diameter, prunings and brush from flowers and plants. The term shall not include grass clippings except upon mutual agreement between the County and the Municipality.

3. Service Area. The Municipality agrees to accept source separated leaves and vegetative waste generated within the boundaries of the Municipalities of Manchester Township, Berkeley Township, the Borough of South Toms River, Dover Township, Borough of Lakehurst and the Borough of Island Heights (hereinafter referred to as the "Service Area") commencing on September 1, 1988 and continuing for the term of this Agreement.

4. County Responsibilities. In consideration of the Municipality's agreement to participate in the Ocean County Composting Program as set forth herein, the County shall make available to the Municipality for use at its Facility, the following equipment and services which shall be provided at no cost or expense to the Municipality:

A. The County shall provide the necessary equipment and labor, including a windrow turner, shredder and screen system, front-end loader and grinder/shredder, to perform the following tasks:

(1) Form the leaves into windrows to facilitate composting;

(2) Process (turn, aerate, shred, etc.) the windrows on a periodic basis, which shall be at least once every six weeks, to facilitate composting;

(3) Screen and process the windrowed composting

into final product piles for curing.

B. Communicate with and assist the Municipality in the scheduling of County equipment and services hereunder and in resolving any operational problems at the site.

C. Remove or cause to be removed any final compost product not utilitized by the Municipality or the residents of the Service Area prior to September 1 of the year following the completion of the curing process.

D. Process the vegatative waste received by the Facility into chips suitable to be used as mulch.

E. Remove or cause to be removed any chips/mulch not utilized by the Municipality or the residents of the Service Area within twelve (12) months after the chipping and processing of the same.

F. The County shall use its best efforts to expand the composting program to incorporate grass clippings during the course of calendar year 1989. The County shall cooperate with the Municipality to develop a mutually acceptable timetable for the phase-in of grass clippings into the composting process at the Facility. No grass clippings shall be accepted by the Facility for composting without the mutual consent of the County and the Municipality.

5. Hours of Operation. The Municipality shall accept source separated leaves and vegetative waste generated within the Service Area for composting at the Facility in accordance with the schedule attached hereto as Schedule A.

6. Purpose of Program. The purpose and intent of the Ocean County Composting Program is to recycle and compost source separated leaves and other vegetative waste generated in Ocean County in a manner which conserves necessary landfill capacity, promotes efficient solid waste management, and aids in the conservation and recovery of valuable resources for reuse in the form of marketable compost products.

7. Facility Guidelines. In order to monitor the flow of source separated leaves and vegetative waste at the Facility and to assure that the Facility is operated in accordance with the terms and conditions of this Agreement, the Municipality shall develop such Facility guidelines as are necessary to carry out and effectuate the purposes and intent of the Ocean County Composting Program as set forth above and to assure compliance with all existing Federal, State and local laws, ordinances, rules and regulations governing the operation of the Facility.

8. Municipal Responsibilities. In consideration of the

County providing the equipment and services more specifically set forth herein, the Municipality agrees as follows:

A. The Muncipiality shall not charge any fee, tax or tariff for the delivery or disposal of source separated leaves or other vegetative waste generated within the Service Area at the Facility;

B. The Municipality shall not accept any materials, waste or debris for composting or disposal at its Facility other than leaves and vegetative waste generated within the Service Area set forth above.

C. The Municipality shall accept leaves for composting at its Facility from the Municipalities comprising the Service Area and place the same in an intake area at the Facility free from plastic and paper bags, debris and other vegatative waste;

D. The Municipality shall accept vegatative waste from the Muncipalities comprising the Service Area at its Facility and place the same in a separate intake area free from leaves, plastic and paper bags and other material and debris;

E. The Municipality shall periodically remove from the site such finished compost and wood chip mulch which the Municipality wishes to utilize for its own needs;

F. The Municipality shall allow residents of the Service Area to have access to the Facility to remove any finished compost and wood chip mulch remaining after the Municipality has used the same for its own needs;

G. The Municipality shall provide all overhead and supervisory functions associated with the operation of the Facility including, but not limited to:

(1) Controlling access to the site;

(2) Receiving materials at the site;

(3) Enforcing the provisions of this Agreement and such Facility guidelines as are adopted by the Municipality as provided for herein;

(4) Facility maintenance;

(5) Record keeping.

9. Right to Restrict Access. The Municipality shall have the right to restrict access to its composting Facility to any

person, firm or entity violating the provisions of this Agreement or the Facility guidelines established by the Municipality.

10. Finished Compost. The Municipality shall have the first opportunity to use or distribute to its residents the finished compost produced at the Facility. In the event that the amount of compost produced is above and beyond the needs of the Municipality, the remaining compost shall be made available to the residents of the Municipalities comprising the Service Area for their use. The Municipality shall make the compost available to its residents and to the residents of the Service Area, as set forth above, free of any charge, tax or tariff. The Municipality shall not market, sell or otherwise distribute the compost for compensation or profit without the written consent of the County.

11. Term of Agreement. This Agreement shall take effect on the day and year first set forth above. However, the Municipality shall be under no obligation to accept source separated leaves or other vegetative waste from the municipalities comprising the Service Area until such time as the County has acquired the equipment necessary to perform the services set forth in paragraph 4 of this Agreement. This Agreement shall continue in full force and effect until midnight, March 31, 1992, at which time it will expire by its terms.

12. Marketing of Compost. During the course of this Agreement, the County shall actively pursue additional uses and markets for compost materials above and beyond that needed by the Municipality and distributed to the residents of its Service Area. To this extent, the Municipality shall cooperate with the County in adopting such Facility guidelines as are necessary to assure the quality and marketability of the finished compost. Any revenues obtained by the County from the distribution and marketing of the compost shall belong to the County.

13. Facility Staffing. The Municipality shall provide sufficient personnel to staff the Facility on a day-to-day basis and to assure compliance with all conditions of the Facility's permits and approvals and all applicable Federal, State and local laws, ordinances, rules and regulations. The Municipality shall continue to be the owner and operator of the Facility and be responsible for the day-to-day supervision and operation of the Facility.

14. Assignment. This Agreement shall not be assigned or transferred by either party herein without first obtaining the written consent of the other party.

15. Modification. No modification or amendment to this Agreement and no waiver of any of the provisions or conditions of this Agreement shall be valid unless in writing and signed by an officer or other duly authorized representative of the County and

the Municipality.

16. Compliance with Law. The Municipality warrants that it shall comply with all applicable State, Federal and local statutes, rules, regulations and ordinances pertaining to the establishment and operation of the Facility. The Municipality agrees to indemnify and save harmless the County and all of its officers, agents, servants and employees against any claim or liability arising from or based upon the violation of any such laws, rules, regulations and/or ordinances, whether by the Municipality or the Municipality's employees.

COUNTY OF OCEAN

ATTEST:

By: _____
JOHN C. BARTLETT, Director

_____
Clerk

TOWNSHIP OF MANCHESTER

ATTEST:

By: _____

_____
Clerk

SCHEDULE A

The Municipality shall accept source separated leaves and vegetative waste generated in the Service Area for composting at the Facility in accordance with the following hours of operation:

(Please insert daily hours of operation for your facility.)

APPENDIX G

Ocean County Regional Compost Sites and Areas Served

Appendix G

Ocean County
Regional Compost Sites and Areas Serviced

==========

Beachwood Facility

Beachwood
Pine Beach
Ocean Gate
South Toms River

Dover Facility

Dover
Ocean County Buildings & Grounds
Lavallette
Seaside Park
Seaside Heights

Stafford Facility

Stafford
Barnegat Light
Harvey Cedars
Long Beach Township
Ship Bottom
Surf City
Beach Haven
Eagleswood
Little Egg Harbor
Barnegat
Tuckerton
Ocean

Northern Regional Recycling Center, Lakewood
(owned and operated by Ocean County)

Lakewood
Dover (part)
Ocean County Parks
* Point Pleasant
* Point Pleasant Beach
* Bay Head
* Mantoloking
Island Heights
* Brick
Plumsted
Lakehurst

Manchester Facility

Manchester

*When Brick receives its compost permit, these municipalities will be redirected to Brick.

Jackson, Berkeley and Lacey have elected not to use the County's regional system, opting to use their own municipal sites.

APPENDIX H

Ocean County Recycling Center Use Agreement

OCEAN COUNTY

RECYCLING CENTER USE AGREEMENT

THIS AGREEMENT made and entered into this day of 1991, by and between _____ with offices at _____ _____(hereinafter "Municipality" or "Hauler") and THE OCEAN COUNTY BOARD OF CHOSEN FREEHOLDERS, with offices at the Ocean County Administration Building, Hooper Avenue, Toms River, New Jersey 08754 (hereinafter "County").

WHEREAS, it is the aim of the County to reduce the amount of solid waste generated in Ocean County through recycling programs and municipal solid waste composting in order to decrease dependence on landfills while providing reliable, environmentally sound and economical form of waste management; and

WHEREAS, the Board of Chosen Freeholders has adopted a Recycling Plan for the Ocean County Solid Waste District pursuant to the provisions of the Statewide Mandatory Source Separation and Recycling Act, N.J.S.A. 13:1E-99.11 et seq., and the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq.; and said Plan has received the approval of the Commissioner of the New Jersey Department of Environmental Protection as required by law; and

WHEREAS, the County currently owns and operates two (2) Regional County Recycling Centers for the receipt, processing and marketing of source separated commingled Recyclable Materials

located at Hay Road, Stafford Township, New Jersey and New Hampshire Avenue, Lakewood Township, New Jersey, respectively known as the Southern and Northern Ocean County Regional Recycling Centers; and

WHEREAS, the County desires to provide assistance to all Municipalities located within the County in meeting their recycling goals established pursuant to the Mandatory Source Separation and Recycling Act and the Ocean County Recycling Plan; and

WHEREAS, the County, through the means of this User Agreement, wishes to afford all municipalities and haulers with an opportunity to utilize said Recycling Centers subject to the availability of capacity.

NOW, THEREFORE, in consideration of the mutual covenants contained herein and other valuable consideration, it is agreed by and between the parties as follows:

SECTION 1. FACILITY LOCATIONS AND OTHER PERTINENT INFORMATION

The County, through the operation of the Northern and Southern Regional Recycling Centers, has facilities capable of receiving up to 300 TPD on an average daily basis of recyclable materials subject to the rules and requirements set forth in Attachment #1. The location of the Regional Centers and other pertinent information is as follows:

A. Northern Regional Recycling Center

Location - 601 New Hampshire Avenue
Lakewood, New Jersey

Phone: (908) 367-0802

Contact - Joseph Hummel

Hours of Operation - 7:30 A.M. to 3:00 P.M.
Monday through Friday

B. Southern Regional Recycling Center

Location - Hay Road
Manahawkin, New Jersey

Phone: (609) 978-0913

Contact - Joseph Carter

Hours of Operation - 7:30 A.M. to 3:00 P.M.
Monday through Friday

SECTION 2. ASSURANCE OF USE

The execution of this Agreement shall assure the (Municipality/Hauler) of the regular, uninterrupted use of the County's Recycling Centers for all materials listed in Attachment #1 subject to the requirements outlined therein.

Municipalities and haulers that have not executed this Agreement will be able to utilize the Regional Centers only in the event that excess capacity is available and the County may discontinue service to such users on 24 hour notice.

In addition, the County provides specialized recycling services including the mobile drop-off (IGLOO) program, recycling of automobile and truck batteries, recycling and disposal of household batteries , recycling of waste oil, the artificial reef program for old tires and the leaf composting program at the Lakewood Regional Center. Any municipality executing this Agreement will be given priority for services under these programs.

SECTION 3. REQUIREMENTS FOR USE

The (Municipality/Hauler) guarantees regular uninterrupted deliveries, except for unavoidable circumstances, of commingled recyclables and/or mixed paper as outlined in Attachment #1. If extraordinary circumstances prevent regular deliveries the District Recycling Coordinator shall be notified immediately. The (Municipality/Hauler) agrees to provide such deliveries of commingled recyclables, mixed paper or both materials.

Additionally, the (Municipality/Hauler) agrees to adhere to the Rules and Requirements of the Ocean County Regional Recycling Centers annexed hereto as Attachment #1.

Any Municipality executing this Agreement will receive regular quarterly reports on the amount of materials recycled at the County facility by the municipality or private haulers.

SECTION 4. COMMENCEMENT AND TERM

This Agreement shall be effective and binding upon both parties for a period of five (5) years from the date of execution hereof. The County will provide notice sixty (60) days prior to expiration of this Agreement for renewal consideration

SECTION 5. TERMINATION

Either party to this Agreement may terminate same at any time without cause after providing the other party with thirty (30) days written notification of said termination.

SECTION 6. COMPLIANCE WITH THE LAW

The (Municipality/Hauler) shall comply with all applicable State, Federal and local laws, license and permit requirements concerning the collection, transfer, handling and delivery of

Recyclable Materials.

SECTION 7. SAFETY PRECAUTIONS

The (Municipality/Hauler) shall adhere to all applicable laws governing the safety and working conditions of its employees.

SECTION 8. NOTICE

Any written notice or any other written communications required or permitted hereunder will be deemed sufficiently given only if delivered in person or sent by telegram or by first-class mail, postage prepaid and addressed as follows:

A. The County at:

Ocean County Board of Chosen Freeholders
Administration Building
CN 2191
Toms River, NJ 08754
Att: District Recycling Coordinator

with copy to:

Berry, Kagan & Sahradnik
212 Hooper Avenue
P.O. Box 757
Toms River, NJ 08754
Att: John C. Sahradnik, Esq.

B. Municipality/Hauler at:

Att:

with copy to:

Changes in the respective addresses to which such notices may be directed may be made from time to time by either party by written notice to the other party.

SECTION 9. INSURANCE COVERAGE

The (Municipality/Hauler) shall procure and maintain the following insurance coverage:

1. Comprehensive general liability coverage of at least $1 million per occurrence and in the aggregate.

2. Worker's Compensation and Employer's Liability Insurance as required by the laws of the State of New Jersey.

SECTION 10. ASSIGNMENT

This Agreement shall not be assigned or transferred by either party herein without first obtaining the written consent of the other party. However, this Agreement may be assigned by a Municipality to any collector/hauler serving the municipality under contract for the collection of recyclables provided the District Recycling Coordinator is notified of this change. The Hauler will also be required to execute a separate Agreement.

SECTION 11. MODIFICATIONS

No modifications or amendments to this Agreement and no waiver of the provisions or conditions of this Agreement shall be valid unless in writing and signed by an officer or other duly authorized representative of the County and the (Municipality/Hauler).

Any requests to deliver additional types of materials to the County Centers may require an amendment to the Ocean County District Recycling Plan, therefore the County will require notification 120 days prior to the anticipated commencement

of delivery of the additional materials.

SECTION 12. BINDING EFFECT

This Agreement has been duly entered into and constitutes a legal, valid and binding obligation of the (Municipality/ Hauler) enforceable in accordance with its terms and it shall inure to the benefit of the parties hereto and any successor or assignee acquiring an interest hereunder.

IN WITNESS WHEREOF, the parties hereto by their respective officers of said corporations set their hands and seals on the day and year set forth above.

(Municipality/Hauler)

ATTEST:

_____ By: _____

BOARD OF CHOSEN FREEHOLDERS,
OCEAN COUNTY

ATTEST:

_____ By: _____

DANIEL J. HENNESSY
Clerk

JOSEPH H. VICARI
Freeholder Director

J/rcycntagr

ATTACHMENT #1

RULES AND REQUIREMENTS

OF THE

OCEAN COUNTY REGIONAL RECYCLING CENTERS

Ocean County
Department of Solid
Waste Management
November 30, 1990

RULES AND REQUIREMENTS
OF THE
OCEAN COUNTY REGIONAL RECYCLING CENTERS

This document outlines the requirements for use of the County regional recycling facilities which must be met by all municipalities, private haulers and individuals intending to deliver materials for recycling. These regulations are necessary to insure that State permit requirements are met and to insure that materials will meet recycling market specifications.

Pertinent information is provided regarding the location of recycling and leaf and yard waste composting facilities, hours of operation, available services and acceptance standards for all materials. Failure to comply with these rules and regulations may result in rejection of loads and if repeated violations occur, those responsible may be prohibited from using these facilities.

I. Locations

A. Northern Regional Recycling Center
601 New Hampshire Avenue
Lakewood, New Jersey 08701
Contact: Joseph Hummel
(908) 367-0802

B. Southern Regional Recycling Center
Hay Road
Manahawkin, New Jersey 08050
Contact: Joseph Carter
(609) 978-0913

C. Regional Composting Program - Headquarters
601 New Hampshire Avenue
Lakewood, New Jersey 08701
Contact: Dick Osborn
(908) 367-0802

II. Hours of Operation

The County Regional Recycling Centers are open for business from 7:30 a.m. to 3:00 p.m. Monday through Friday.

III. Available Services

The County Regional Recycling Centers accept the following recyclable materials:

A. Commingled Recyclables consisting of green, brown and clear glass, aluminum cans, tin cans, bi-metal cans (aluminum top with steel sides and bottom), PET containers (plastic soda bottles), HDPE containers (plastic milk jugs) and PVC containers. Other materials may be designated in the future to be included in the commingled stream. All users will be notified in writing of any additional materials included therein.

B. Mixed Paper composed of newspapers, corrugated cardboard, office paper, brown bags, magazines, junk mail and telephone books. Other materials may be designated in the future to be included in the mixed paper stream. All users will be notified in writing of any additional materials included therein.

C. Separated Recyclables

1. Color Sorted Glass Containers
2. Aluminum Cans
3. Tin Cans
4. Bi-Metal Cans
5. Newspapers
6. Corrugated Cardboard
7. PET Containers
8. HDPE Containers
9. PVC Containers
10. Office Paper
11. Waste Oil
12. Lead-acid Batteries
13. Household Batteries (Dry-Cell)
14. Tires ($1 charge per tire)
15. Other materials as markets become available

The regional leaf composting facilities accept leaves and brush and may, depending on State requirements, accept limited quantities of grass clippings. The requirements for acceptance of leaves and brush are defined on page 3. It is recommended that anyone wishing to deliver grass clippings contact Mr. Osborn at (908) 367-0802.

IV. Acceptance Standards

The County will accept those items listed under Section III of these Rules and Requirements subject to the following conditions:

A. General

1. All materials delivered shall be source separated recyclables free of any waste or other materials; ie. putrescible waste, medical waste, dirt, etc.

2. All materials shall be delivered between the hours of 7:30 a.m. - 3:00 p.m. Monday through Friday with the exception of holidays.

3. Any questions regarding the scheduling of deliveries may be addressed to the appropriate contact person listed in Section I.

B. Required Specifications

1. Commingled Containers

- Must only include containers (bottles or cans). Ceramics, mirrors, light bulbs, stones, plastic wrappers, etc. are not acceptable.
- Cannot be compacted or crushed in any way.
- Must only include containers utilized for the packaging of food, beverage or other household products.
- Must be clean and dirt free
- Stripping of individual components from the commingled mix, such as aluminum is prohibited.

2. Mixed Paper

- Newspapers must be bundled and tied with string only. Glossy advertisements and other inserts which are included in the Sunday paper may be included in the bundles.
- Corrugated cardboard must be bundled and tied with string only.
- Brown bags, magazines, junk mail, office paper and telephone books may be included but they cannot be included in the newsprint or corrugated cardboard bundles.
- Must be delivered dry, clean and dirt free.

3. Glass, Plastic and Metal Containers Delivered Separated

- Glass must be color separated.
- Must only include containers utilized for the packaging of food or beverage products.
- Must be clean and dirt free.
- Metal containers must be separated by type (ie; bi-metal aluminum).

4. Sorted Paper and Cardboard

- Newspapers must be bundled and tied with string only. Glossy advertisements and other inserts which are included in the Sunday paper may be included in the bundles.
- Must be delivered dry, clean and dirt free.

5. Waste Oil

- Residential Drop-off only
- Quantities limited to five (5) gallons per delivery.
- Limited to used lubricating oils only; ie. crankcase, transmission, hydraulic, etc.

6. Tires

- Payment of $1.00 per tire made at County Regional Recycling Centers.
- Limited to car and pickup truck tires only. Tires larger than 10/20's (width in inches/height in inches) are prohibited.

7. Brush

- Limited to limbs with a diameter of 3" or less.

8. Leaves

- Must be free of other debris; ie. concrete, hoses, limbs, metal, etc.
- Must be unbagged. If they are delivered bagged, the bags must be removed before unloading.

VI. Regional Leaf Compost Program

Appendix I lists the regional leaf compost facilities and designated contacts. Use of these facilities is on a capacity available basis. The County owns and operates the Lakewood facility. All others are municipally owned and operated.

Each site's operations may be restricted due to permit requirements or municipal schedules. As a result, acceptance standards, hours of operation, maximum accepted quantities and other items can vary from site to site. Any questions regarding site restrictions or requirements should be addressed to either the site contact listed in Appendix I or to the Regional Composting Program contact listed in Section I of this document.

VI. User Agreement

All municipal and commercial users of the County Regional Recycling Centers must execute an Ocean County Recycling Center Use Agreement with the County in order to be assured of access to the Center. Private citizens shall be exempt from this requirement.

VII. User Check-In and Records

Upon entering the County Regional Recycling Centers, all users shall check in at the office to complete paperwork and to be directed to the appropriate tipping area. Users may also be required to weigh in and out at the scalehouse.

The County will prepare and maintain proper, accurate and complete records and accounts of all transactions related to the Centers. These records shall include but not be limited to:

- Weight slips for materials entering and leaving Centers;
- Types and quantities of materials accepted by the County at the Centers, specifying the source of the materials by municipality; and
- The license plate number, owner of the delivery vehicles and the driver's signature.

Copies of all weight records and all weight slips will be maintained by the County. County records will be made available to municipality/hauler upon request therefor.

VIII. On-Site Traffic

Users of the Ocean County Regional Recycling Centers shall obey and adhere to any posted traffic control signs or directions provided by on-site personnel. The speed limit within the Ocean County Regional Recycling Centers shall be ten (10) miles per hour.

IX. No Smoking Areas

Smoking shall be prohibited at the Cardboard Baler Building, Vehicle Storage Building, Fuel Pumps, Commingled and Paper Drop-off Area, and the Citizens Drop-off Area.

X. Availability of Compost and Mulch

Finished compost and mulch are available at the Northern Regional Recycling Center on a first come first serve basis, during normal working hours. In the event there is a shortage of finished product, private citizens and municipalities with a signed Use Agreement will have priority.

Appendix I

Ocean County
Regional Compost and Areas Serviced

==========

Beachwood Facility - John Weigand, Asst. Superintendent, Public Works (908) 286- 6010

Beachwood
Pine Beach
Ocean Gate
South Toms River

Dover Facility - George Clayton, Director, Public Works (908) 341-1000

Dover
Ocean County Buildings & Grounds
Lavallette
Seaside Park
Seaside Heights

Stafford Facility - Ron Cop, Director, Public Works (609) 597-7654

Stafford
Barnegat Light
Harvey Cedars
Long Beach Township
Ship Bottom
Surf City
Beach Haven
Eagleswood
Little Egg Harbor
Barnegat
Tuckerton

Northern Regional Recycling Center, Lakewood
Dick Osborn, Compost Supervisor
(908)-367-0802

Lakewood
Dover (part)
Point Pleasant
Point Pleasant Beach
Bay Head
Mantoloking
Island Heights
Brick
Plumsted
Lakehurst

Appendix I
(Continued)

Manchester Facility - Jim Jados, Recycling Coordinator
(908) 849-0392

Manchester

APPENDIX I

Current and Projected Solid Waste Generation

APPENDIX I
CURRENT AND PROJECTED SOLID WASTE GENERATION

INTRODUCTION

Accurate estimation of the quantities of solid waste which are currently being generated and which will be generated in the future is essential to a sound planning process. Waste flows, facility capacities, and the economics of the solid waste management system are based upon the amounts of waste which will be generated, recycled, and disposed. Past solid waste generation projections were based upon truck counts, representative weighings, assumed densities, and recycling rates. As the solid waste management program in Ocean County matured over the past year and a half, more reliable data on such parameters as truck weights (as a result of the installation of permanent scales at the disposal facility) and recycling rates (as a result of a successful operating history of the County program) became available. The solid waste projections presented herein are based upon the latest available data.

The projections contained herein are based upon the premise that the amount of solid waste generated (i.e., available for "management") consists of the amount of waste recycled plus the amount of waste disposed. Solid waste generation projections are based upon the current amounts of materials generated on a "per capita" basis (quantity of solid waste divided by the County population, and expressed in terms of "pounds per person per day" generated) and the estimated future population of the County. Given the influx of tourists to Ocean County during the summer months, special provision is made to account for the resultant waste stream which cannot be projected annually proportionate to the permanent population.

CURRENT SOLID WASTE GENERATION

During calendar year 1989, a total of 418,358 tons of solid waste was disposed at Ocean County Landfill Corporation (OCLF) in Manchester Township, as shown in Table I-1 and Figure I-1. Of the three waste types disposed, Waste Type 10

(municipal solid waste generated by residential, commercial, and institutional sources) comprised the majority, while 17 percent of the total was Waste Type 13 (bulky wastes, consisting largely of construction and demolition wastes), and an insignificant portion was Waste Type 27 (nonhazardous industrial wastes resulting from manufacturing processes). The data indicate that a very pronounced seasonal fluctuation in waste flow is evident in the Type 10 waste stream as a result of the nonpermanent tourist population with the months of May, June, July, August, and September showing a Type 10 disposal rate in excess of 30,000 tons per month. In fact, an average of 1151 tons per day (tpd) was produced during those months, compared to the seasonal low disposal rate in February of 711 tpd.

Calendar year 1989 is used as the baseline for the development of solid waste generation in order to evaluate one complete year of data which include seasonal highs and lows. It is interesting to note that during the first six months of 1990, a total of 201,192 tons of solid waste was disposed at OCLF compared to 206,454 tons during the first six months of 1989 (a reduction of 2.5 percent). This reduction is attributed to the success of the Ocean County recycling program to date.

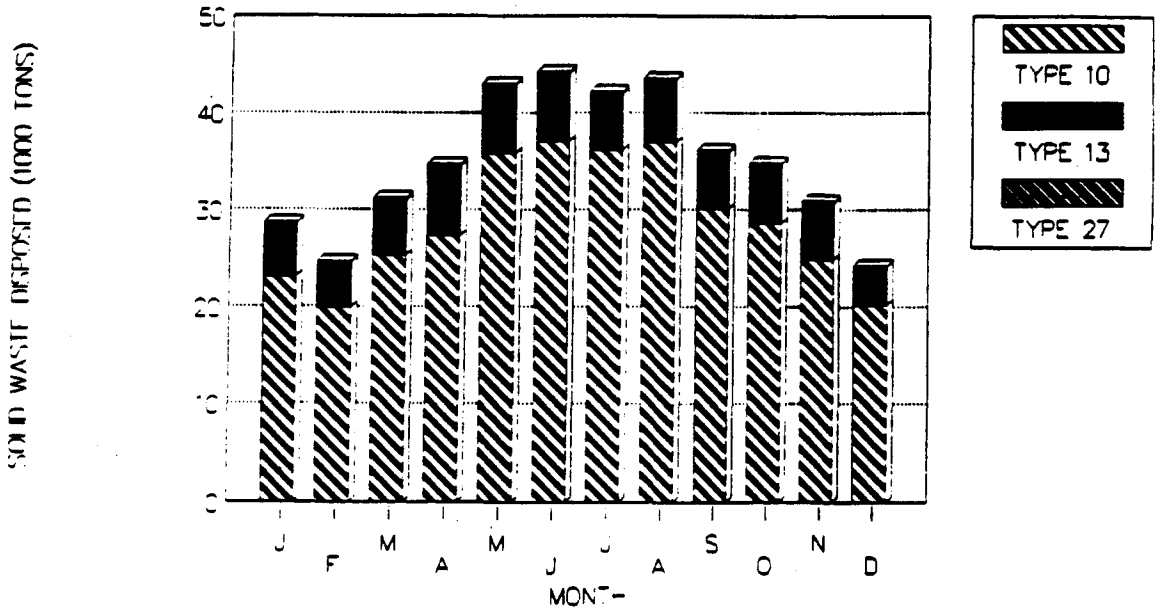
TABLE I-1
1989 SOLID WASTE FLOWS TO OCLF
(IN TONS)

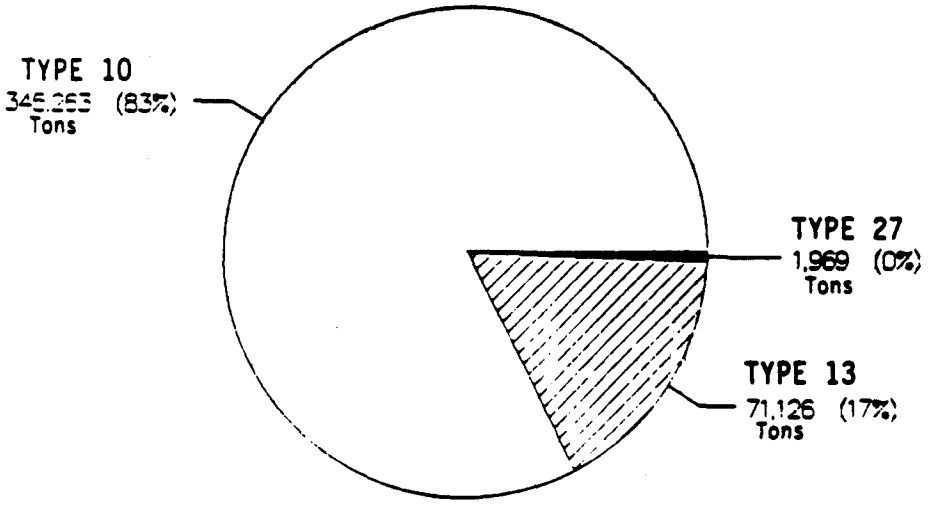
WASTE TYPE	10	13	27	TOTAL
MONTH				
J	23,022	5,536	126	28,684
F	19,913	4,607	92	24,612
M	25,266	5,772	128	31,166
A	27,299	7,267	157	34,723
M	35,829	7,054	194	43,077
J	37,084	6,916	192	44,192
J	36,106	5,896	199	42,201
A	36,958	6,435	174	43,567
S	30,120	5,819	198	36,137
O	28,576	6,136	153	34,865
N	24,862	5,817	194	30,873
D	20,228	3,871	162	24,261
TOTAL	345,263	71,126	1,969	418,358

FIGURE I-1

SOLID WASTE DISPOSED 1989

OCLF





Data on recycling activities throughout the County in 1989 were evaluated and reveal that a total of 103,461 tons of materials were recycled (not including a reported 9,909 tons of leaves). For the purposes of the solid waste projection calculations herein, the recycled materials were categorized into those which would otherwise have become part of the Type 10 waste stream, and all others. The Type 10 recyclables (84,055 tons) included commercial (central business district) waste, newspaper, aluminum cans, glass containers, tin cans, bi-metal cans, cardboard, plastic, mixed paper, food, and other paper. The remaining recyclables (19,406 tons) include grass clippings, motor oil, ferrous and non-ferrous scrap, white goods, tires, and other materials.

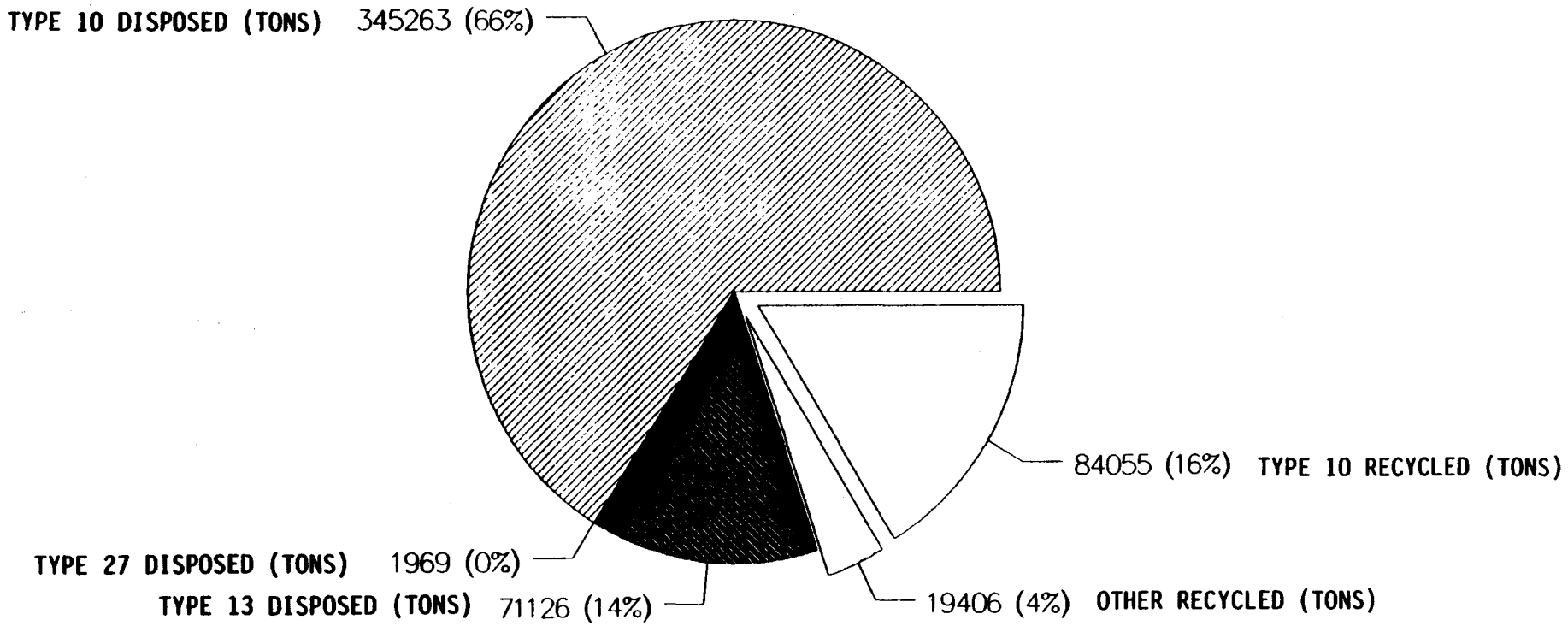
The total solid waste generated in Ocean County in 1989 is therefore calculated as follows:

WASTE TYPE	DISPOSED + (tons)	RECYCLED = (tons)	GENERATED (tons)
Type 10	345,263	84,055	429,318
Other	73,095	19,406	92,501
TOTAL	418,358	103,461	521,814 tons

These quantities are presented graphically in Figure I-2. This total waste stream, as stated above, includes the influence of the seasonal tourist influx. The extent of seasonal tourist influence is evident when one examines the per capita solid waste disposal rates by municipality: per capita rates range from 1.93 lbs/person/day to 13.49 lbs/person/day, based upon the permanent population of the municipalities. To project solid waste generation into the future based upon permanent population growth in the County, it is necessary to estimate the extent of the nonpermanent tourist waste. Experience in other New Jersey counties not subject to heavy tourist activity in the Summer indicates that the typical Summer season (May-September) increase in solid waste disposal amounts to approximately 5 percent of the total annual wastes disposed. Therefore, the solid waste disposal rate for Ocean County in the absence of nonpermanent population influences can be calculated based upon

FIGURE I-2

SOLID WASTE GENERATED 1989
OCEAN COUNTY, N.J.



the average solid waste generated in the non-peak months of October through April (24,167 tons per month), and a five percent "baseline" seasonal load:

(24,167 tons) X (12 months) X (1.05) = 304,504 tons

Therefore, the seasonal Type 10 solid waste disposal rate is calculated as follows:

345,263 tons - 304,504 tons = 40,758 tons (say 41,000 tons)

The per capita rate of solid waste generation is based upon the estimated 1989 population of the County of 456,773 persons, as follows:

Type 10: (429,318) - (41,000) X 2,000/365/456,773 = 4.66 lbs/cap/day

Other: (92,496) X 2,000/365/456,773 = 1.11

TOTAL: 5.77 lbs/cap/day

SOLID WASTE GENERATION PROJECTIONS

Solid waste generation projections are based upon Ocean County Planning Board population estimates, permanent population per capita generation rates, and the seasonal Type 10 disposal rate calculated above. The Planning Board has prepared population projections only to the year 2000. Therefore, NJ Department of Labor (DOL) projections were consulted to provide the needed data to the year 2015. These long-term estimates are based upon projections of 1988 estimates. However, the 1988 estimates prepared by the two agencies do not agree (the OCPB estimate is 30,000 persons greater than the DOL estimate). Historically, the County estimates have been more accurate than the DOL estimates. The 1980 Census and several special census counts for individual municipalities have demonstrated that the State consistently underestimates the actual population growth of the County. Therefore, the accuracy of the

population estimates cannot be verified until the Bureau of the Census releases the 1990 figures, probably late in the year. For the purposes of this Plan Amendment, the OCPB estimates were graphically projected to the year 2030 population estimated by the DOL, and populations for the years 2010 and 2020 were taken from this projection to be 610,000 and 640,000, respectively.

In a report entitled "Characterization of Municipal Solid Waste in the United States, 1960 to 2000 (Update 1988)" prepared by Franklin Associates for the U.S. Environmental Protection Agency, it was estimated that the per capita generation rate for solid waste will increase by the following amounts for the indicated time periods:

1980 - 1990	6.8 percent per year
1990 - 2000	7.1 percent per year

Average national data are imperfect and subject to interpretation. A major problem with such data is that "there is no standard definition of what constitutes municipal solid waste, as well as no standardized methodology for collecting data on its generation." (Congress of the United States Office of Technology Assessment, "Facing America's Trash: What Next for Municipal Solid Waste?", October, 1989). Ocean County believes that two factors will contribute to the stabilization, if not the decline, of the per capita generation rate in the County over the next few decades: the environmental awareness of the residents of the County (manifested in a successful source separation and recycling program), expanded public education efforts, and the implementation of future source reduction programs on the County, State, and Federal levels, such as shopper campaigns, per-container rate systems and other economic incentives/disincentives, on-site composting of residential yard waste, packaging/product changes, re-use strategies, and continued and expanded reductions in household hazardous waste production.

To determine the difference in solid waste generation projections under both the "constant per-capita" and "increasing per-capita" scenarios, two sets of generation projections were prepared. These projections are shown in Tables I-2 and I-3. Table I-4 compares the resulting annual projections and shows that by the year 2000, the difference between a constant per capita rate and the EPA projections amount to over 37,000 tons per year. Ocean County believes that this 6 percent "reduction" can be attained by the aggressive implementation of source reduction measures on the County, State, and Federal levels. Therefore, the adopted estimates of solid waste generation used in this Plan Amendment are shown in Table I-3 ("Waste Generation Projections Based on Constant Per Capita Generation Rate") and displayed graphically in Figure I-3.

TABLE I-2
WASTE GENERATION PROJECTIONS
BASED ON INCREASING PER CAPITA GENERATION RATES

			PER CAPITA GENERATION			SOLID WASTE GENERATED				
		PERMANENT	PERMANENT POP.			PERMANENT POP.			SEASONAL	GRAND
	YEAR	POPULATION	TYPE 10	OTHER	TOTAL	TYPE 10	OTHER	TOTAL	LOAD	TOTAL
ESTIMATED	1988	442,881								
INTERPOL	1989	456,773	4.66	1.11	5.77	388,463	92,531	480,993	41,000	521,993
PROJECTED	1990	471,100	4.69	1.11	5.80	403,452	95,433	498,885	41,000	539,885
INTERPOL	1991	479,349	4.73	1.11	5.84	413,390	97,104	510,494	41,000	551,494
INTERPOL	1992	487,742	4.76	1.11	5.87	423,572	98,804	522,377	41,000	563,377
INTERPOL	1993	496,283	4.79	1.11	5.90	434,006	100,534	534,541	41,000	575,541
INTERPOL	1994	504,973	4.83	1.11	5.94	444,697	102,295	546,992	41,000	587,992
INTERPOL	1995	513,815	4.86	1.11	5.97	455,651	104,086	559,737	41,000	600,737
INTERPOL	1996	522,812	4.89	1.11	6.00	466,875	105,909	572,783	41,000	613,783
INTERPOL	1997	531,966	4.93	1.11	6.04	478,375	107,763	586,138	41,000	627,138
INTERPOL	1998	541,281	4.96	1.11	6.07	490,159	109,650	599,809	41,000	640,809
INTERPOL	1999	550,759	5.00	1.11	6.11	502,232	111,570	613,802	41,000	654,802
PROJECTED	2000	560,400	5.03	1.11	6.14	514,602	113,523	628,125	41,000	669,125
INTERPOL	2001	565,173	5.07	1.11	6.18	522,617	114,490	637,107	41,000	678,107
INTERPOL	2002	569,986	5.10	1.11	6.21	530,758	115,465	646,223	41,000	687,223
INTERPOL	2003	574,841	5.14	1.11	6.25	539,025	116,448	655,474	41,000	696,474
INTERPOL	2004	579,737	5.17	1.11	6.28	547,421	117,440	664,861	41,000	705,861
INTERPOL	2005	584,674	5.21	1.11	6.32	555,948	118,440	674,389	41,000	715,389
INTERPOL	2006	589,654	5.25	1.11	6.36	564,608	119,449	684,057	41,000	725,057
INTERPOL	2007	594,676	5.28	1.11	6.39	573,403	120,466	693,869	41,000	734,869
INTERPOL	2008	599,741	5.32	1.11	6.43	582,334	121,492	703,827	41,000	744,827
INTERPOL	2009	604,849	5.36	1.11	6.47	591,405	122,527	713,932	41,000	754,932
APPROX	2010	610,000	5.40	1.11	6.51	600,617	123,571	724,188	41,000	765,188
INTERPOL	2011	612,936	5.43	1.11	6.54	607,732	124,165	731,897	41,000	772,897
INTERPOL	2012	615,885	5.47	1.11	6.58	614,931	124,763	739,694	41,000	780,694
INTERPOL	2013	618,849	5.51	1.11	6.62	622,216	125,363	747,579	41,000	788,579
INTERPOL	2014	621,828	5.55	1.11	6.66	629,587	125,967	755,553	41,000	796,553
INTERPOL	2015	624,820	5.59	1.11	6.70	637,045	126,573	763,618	41,000	804,618

TABLE I-3
WASTE GENERATION PROJECTIONS
BASED ON CONSTANT PER CAPITA GENERATION RATES

			PER CAPITA GENERATION			SOLID WASTE GENERATED				
		PERMANENT	PERMANENT POP.			PERMANENT POP.			SEASONAL	GRAND
	YEAR	POPULATION	TYPE 10	OTHER	TOTAL	TYPE 10	OTHER	TOTAL	LOAD	TOTAL
ESTIMATED	1988	442,881								
INTERPOL	1989	456,773	4.66	1.11	5.77	388,463	92,531	480,993	41,000	521,993
PROJECTED	1990	471,100	4.66	1.11	5.77	400,647	95,433	496,080	41,000	537,080
INTERPOL	1991	479,349	4.66	1.11	5.77	407,662	97,104	504,766	41,000	545,766
INTERPOL	1992	487,742	4.66	1.11	5.77	414,800	98,804	513,605	41,000	554,605
INTERPOL	1993	496,283	4.66	1.11	5.77	422,064	100,534	522,598	41,000	563,598
INTERPOL	1994	504,973	4.66	1.11	5.77	429,454	102,295	531,749	41,000	572,749
INTERPOL	1995	513,815	4.66	1.11	5.77	436,974	104,086	541,060	41,000	582,060
INTERPOL	1996	522,812	4.66	1.11	5.77	444,625	105,909	550,534	41,000	591,534
INTERPOL	1997	531,966	4.66	1.11	5.77	452,411	107,763	560,174	41,000	601,174
INTERPOL	1998	541,281	4.66	1.11	5.77	460,332	109,650	569,982	41,000	610,982
INTERPOL	1999	550,759	4.66	1.11	5.77	468,393	111,570	579,963	41,000	620,963
PROJECTED	2000	560,400	4.66	1.11	5.77	476,592	113,523	590,115	41,000	631,115
INTERPOL	2001	565,173	4.66	1.11	5.77	480,651	114,490	595,141	41,000	636,141
INTERPOL	2002	569,986	4.66	1.11	5.77	484,745	115,465	600,210	41,000	641,210
INTERPOL	2003	574,841	4.66	1.11	5.77	488,873	116,448	605,322	41,000	646,322
INTERPOL	2004	579,737	4.66	1.11	5.77	493,037	117,440	610,477	41,000	651,477
INTERPOL	2005	584,674	4.66	1.11	5.77	497,236	118,440	615,677	41,000	656,677
INTERPOL	2006	589,654	4.66	1.11	5.77	501,471	119,449	620,920	41,000	661,920
INTERPOL	2007	594,676	4.66	1.11	5.77	505,742	120,466	626,209	41,000	667,209
INTERPOL	2008	599,741	4.66	1.11	5.77	510,050	121,492	631,542	41,000	672,542
INTERPOL	2009	604,849	4.66	1.11	5.77	514,394	122,527	636,921	41,000	677,921
APPROX	2010	610,000	4.66	1.11	5.77	518,775	123,571	642,345	41,000	683,345
INTERPOL	2011	612,936	4.66	1.11	5.77	521,271	124,165	645,437	41,000	686,437
INTERPOL	2012	615,885	4.66	1.11	5.77	523,780	124,763	648,543	41,000	689,543
INTERPOL	2013	618,849	4.66	1.11	5.77	526,300	125,363	651,664	41,000	692,664
INTERPOL	2014	621,828	4.66	1.11	5.77	528,833	125,967	654,800	41,000	695,800
INTERPOL	2015	624,820	4.66	1.11	5.77	531,378	126,573	657,951	41,000	698,951

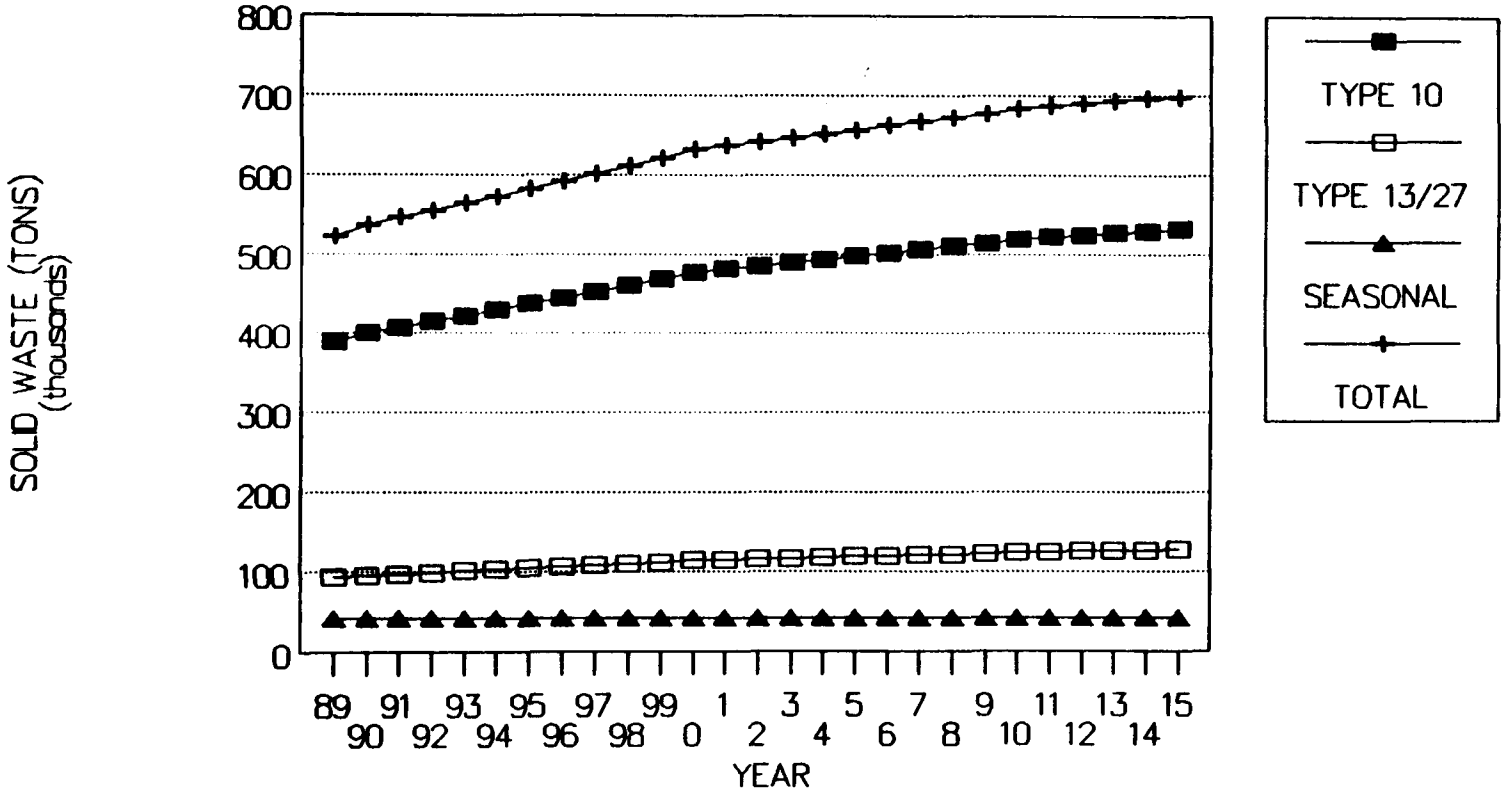
TABLE I-4
EFFECT OF SOURCE REDUCTION MEASURES

YEAR	TABLE I-2 GENERATION	TABLE I-3 GENERATION	TOTAL REDUCTION
1992	563,377	554,605	8,772
1993	575,541	563,598	11,943
1994	587,992	572,749	15,243
1995	600,737	582,060	18,677
1996	613,783	591,534	22,249
1997	627,138	601,174	25,964
1998	640,809	610,982	29,827
1999	654,802	620,963	33,839
2000	669,125	631,115	38,010
2001	678,107	636,141	41,966
2002	687,223	641,210	46,013
2003	696,474	646,322	50,152
2004	705,861	651,477	54,384
2005	715,389	656,677	58,712
2006	725,057	661,920	63,137
2007	734,869	667,209	67,660
2008	744,827	672,542	72,285
2009	754,932	677,921	77,011
2010	765,188	683,345	81,843
2011	772,897	686,437	86,460
2012	780,694	689,543	91,151
2013	788,579	692,664	95,915
2014	796,553	695,800	100,753
2015	804,618	698,951	105,667

FIGURE I-3

SW GENERATION PROJECTIONS

OCEAN COUNTY, N.J. (TPY)



APPENDIX J

Resolution Dated 9/4/90

R E S O L U T I O N

September 4, 1990

WHEREAS, the Southern Ocean Landfill is ideally located to serve the solid waste disposal needs of those municipalities within the southern waste district as defined in the Ocean County Solid Waste Management Plan, and

WHEREAS, the Southern Ocean Landfill ceased operation on October 12, 1988 as a result of a ruling by the New Jersey Department of Environmental Protection, and

WHEREAS, the Southern Ocean Landfill, due to its premature closing, has not prepared detailed engineering plans and does not have the financial resources to properly close the site and address environmental conditions, and

WHEREAS, the Board of Chosen Freeholders wishes to provide for reopening of the Southern Ocean Landfill so that proper closure plans can be developed and implemented, and

WHEREAS, the Southern Ocean Landfill owner has requested a formal indication of support for the landfill reopening from the Board of Chosen Freeholders.

NOW, THEREFORE BE IT RESOLVED that the Ocean County Board of Chosen Freeholders hereby directs the Ocean County Solid Waste Advisory Council and the Director of the Department of Solid Waste Management to prepare an amendment to the Ocean County Solid Waste Management Plan which will permit the reopening of the Southern Ocean Landfill subject to necessary and proper terms and conditions to insure that the operations of the facility and tipping fee charges will be compatible with existing rates within the County.

BE IT FURTHER RESOLVED that copies of this Resolution be provided to the Commissioner of the New Jersey Department of Environmental Protection, Ocean County legislators, Ocean County Mayors, Ocean County Solid Waste Advisory Council, and the Director of Solid Waste Management.

I certify the foregoing to be a true copy of a Resolution Adopted by the Board of Chosen Freeholders of the County of Ocean on the 7th day of January 1990

Donald J. Hennessey
Clerk of the Board

APPENDIX K

Bulky Material Recycling Facilities

APPENDIX K

BULKY MATERIAL RECYCLING FACILITIES

NAME OF FACILITY MAILING ADDRESS/PHONE	CONTACT PERSON	LOT/BLOCK	MATERIAL PROCESSED	ESTIMATED AMOUNT PROCESSED (yearly basis)
Ralph Clayton & Sons 515 Lakewood-New Egypt Rd. Lakewood, New Jersey 363-1995	John Barr	Lot 70 Block 11.05	concrete, asphalt, brick and block	30,000 tons
Rosetto Recycling Center 1301 Route 37 W Toms River, New Jersey 341-3333	Bob Dixon	Lot 1 thru 7 Block 506-1	wood (2x4's, plywood)	9,125 tons
Ocean County Recycling Center, Inc. 1306 River Avenue Lakewood, New Jersey (Office) 244-1716	Harvey Onore	Lot 26 Block 410	concrete, asphalt, masonry products, cement blocks, bricks, tree stumps	Stumps - 10,000 cu. yds (1988) Concrete/asphalt - 35,000 cu. yds. (1988)
South Brunswick Asphalt Mizzen & R.R. Avenue Box 352 Beachwood, New Jersey 349-0481	Eugene Johnson Jim Lowery	Lot 1 Block 824	stumps, trees, concrete and asphalt	Stumps - 70,799 cu. yds (1988) Asphalt - 414 cu. yds (1988) Concrete - 545 cu. yds (1988)

APPENDIX K

BULKY MATERIAL RECYCLING FACILITIES
(Continued)

NAME OF FACILITY MAILING ADDRESS/PHONE	CONTACT PERSON	LOT/BLOCK	MATERIAL PROCESSED	ESTIMATED AMOUNT PROCESSED (yearly basis)
Bil-Jim Construction/ Recycling Activity Center RD 4, Box 88 Jackson, New Jersey 08527	James R. Johnson Paul Novello	Block 14.15, Lot 17; Block 14.18, Lots 1 through 19 inclusive, 41&42; Block 14.19, Lot 43.02; Block 14.23, Lot 1; Block 14.24, Lots 1 through 18 inclusive; Block 14.25, Lots 1 through 7 inclusive; Block 14.26, Lots 1 through 44 inclusive; Block 14.27, Lots 1 through 50 inclusive; Block 14.28, Lots 1 through 56 inclusive; Block 14.29, Lots 1 through 61 inclusive; Block 14.30, Lots 1 through 54 inclusive; Block 14.31, Lots 1 through 23 inclusive; Block 14.32, Lots 10 & 11; Block 54, Part of Lot 28.	concrete, asphalt, stumps, wood	_____ Tons
John Kummings' Stump Reduction Center 155 Cox Avenue West Creek, NJ 08092	John S. Kummings	Block 34, Lot 1	stumps	500 cy per week

APPENDIX L

Technical Guidance for Compost System Selection

Elements of a Request for Proposal (RFP) for Sludge and Municipal Solid Waste Composting Facilities: Scientific and Technical Aspects

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New Brunswick, New Jersey

January 1990

RUTGERS

PREFACE

Protecting the environment has become a matter of widespread, popular concern. A singularly important element of this concern, especially in a highly industrial and densely populated state like New Jersey, is the environmentally sound management of wastes. This publication concerns the biological treatment process commonly known as composting, which can be used to help manage two types of waste that pose large and immediate problems — sewage sludge and municipal solid waste.

Much of the sewage sludge generated in New Jersey is currently ocean-dumped. This method of disposition, however, is banned by state law as of March 1991, and federal law by January 1992. Composting offers various land-based management options, for example, using the composted process residue as a landfill cover material or as a compost (organic soil amendment) in ornamental horticulture.

Most of the municipal solid waste generated in the state is landfilled, in-state or elsewhere, at costs that are disturbingly high by the standards of only a few years ago. A state recycling law has somewhat reduced the amount that is landfilled. A portion of this reduction is attributable to the composting of leaves collected in the fall. Composting could play a major role in the further, substantial, reduction of our dependence on landfills, because it can be extended to various other biodegradable components that constitute a large part of the waste stream. This includes yard waste in general, food waste, and non-recyclable paper.

The purpose of this publication is to encourage the effective and timely use, where appropriate, of this biological technology for managing solid waste. This publication is unique in that it offers the scientific and technical elements of a cost-effective, and publicly acceptable, waste composting facility in the format of a Request for Proposal (RFP). An RFP is a highly influential document that determines the direction for the design and ultimately day-to-day operation of a facility. Thus this publication is intended to provide communities and waste management authorities desiring to build waste composting facilities with the guidance necessary to ensure proper design.

As waste management cuts across diverse areas of professional and societal interests, this publication seeks to communicate with a broad audience of both specialists and generalists. This includes persons with formal decision-making responsibilities in the public and private domains, private citizens concerned about environmental quality and the rationalization of waste management, consulting engineers responsible for the design and operation of solid waste facilities, and regulatory authorities. The report represents practical, implementable science and technology in a form that can help address a problem that has reached crisis proportions in New Jersey and approaches such proportions elsewhere.

Daryl B. Lund
Interim Executive Dean of
Agriculture and Natural Resources
Interim Dean of Cook College
Rutgers University

ACKNOWLEDGMENT

The authors thank Mr. John J. Kupcho, chairperson, Department of Agricultural and Resource Management Agents, Rutgers Cooperative Extension, and Mr. Jonathan Forsell, extension agent for Essex County, New Jersey, for encouraging the writing of this publication and expediting its production. We thank Dr. Peter R. Day, director of the Center for Agricultural Molecular Biology, for his helpful scientific review of the manuscript. Mr. John Hannon kindly served as technical editor.

AFFILIATION

During the preparation of this publication, one of the authors, F. C. Miller, was affiliated with the Department of Microbiology, LaTrobe University, Bundoora, Victoria, Australia. He is currently a Visiting Professor in the Department of Environmental Sciences, Cook College, Rutgers University.

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Introduction

Solid Waste Management in Crisis

New Jersey faces severe waste management problems. Among the types of wastes demanding immediate action are sewage sludge and municipal solid waste (MSW). Sludge is a semisolid by-product of the purification of sewage (wastewater). A large proportion of the sludge generated in the state is currently ocean-dumped, but according to New Jersey law this must cease by 17 March 1991. Federal law requires cessation by 1 January 1992. Yet alternative land-based sludge management plans are not final, and proposed approaches are highly controversial.

Municipal solid waste is defined by The United States Office of Technology Assessment, the analytical arm of the U.S. Congress, as follows. "MSW is solid waste generated at residences, commercial establishments (e.g., offices, retail shops, restaurants) and institutions (e.g., hospitals and schools)." MSW is generated in much larger amounts than sewage sludge, is extremely heterogeneous, and represents a more complex problem. An almost exclusive reliance on mass burning incineration, once thought by some to represent a solution to the problem, has come into serious question. In fact *mass* incineration, in its original meaning of accommodating all of the MSW stream save such bulky items as kitchen appliances, became a dead letter with the passage in April 1987 of a statewide recycling law. This mandated the recycling of 25% of the material in the MSW stream, obviating any *mass* approach. The current level of recycling compliance is estimated at 18%.[1] Despite this measure, landfill space is dwindling rapidly. With respect to both sludge and MSW, in the Northeast in general and New Jersey in particular, waste management is in crisis.

Present Role of Composting

The biological waste treatment technology commonly known as composting already makes a significant contribution to waste management in New Jersey.[2] Two hundred and thirty municipal leaf composting facilities are currently listed as operational, receiving an estimated 230,000 tons of leaves in 1988.[3] These are leaves collected separately in the autumn. This portion of the MSW stream would otherwise further burden landfills Because of their benign nature and seasonal appearance as a waste, leaves can be composted in informal, low-level technology facilities. In such facilities, biological activity is at low rates. Although adequate for leaves, low rates would not be adequate for other, noxious, wastes such as sewage sludge and food waste.

Larger Role for Composting

Although waste management is too complex and pervasive a problem to be "solved" through any single approach, composting is capable of playing a much larger role than its current one. The process could be used to treat wastewater sludges in their entirety.[4] In addition to specially collected leaves, it could be used to treat other materials in the MSW stream that are biodegradable. These include: all yard waste (leaves, grass and hedge trimmings, other vegetative wastes); food waste; paper that is intrinsically nonrecyclable (food-tainted, high gloss, glue-bound items); paper that is recyclable but lacks markets; disposable diapers and sanitary napkins (regardless of the biodegradability of plastic components); and pet litter. Thus, depending on market conditions for secondary paper feedstocks, composting would serve to treat from one-third to two-thirds of the municipal solid waste stream.

With respect to the legal deadlines to stop dumping sludge at sea, composting facilities can be constructed relatively quickly. With respect to the legally mandated recycling of municipal waste fractions, composting complements evolving approaches for the separation of materials in the household and at special facilities. The process is thus responsive to current needs.

Because of the magnitude, variety, and daily generation of sludges and MSW, for this larger role high, near maximal, rates of biological activity are essential. This is both for economical construction and routine operation of facilities, and to ensure reliable process performance. A higher-level technology, with more formal facility design and control is, thus, required. It must be based on a scientific understanding of the composting system. Knowledge of the system has now advanced to the point necessary for a wider application of this technology. Moreover, this information should be incorporated into Requests for Proposals [see Importance of the Request for Proposal (RFP)], hence this publication.

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[1] Information supplied by the N.J. Department of Environmental Protection.

[2] As a guidance document, the NJDEP adopted "Leaf Composting Manual for New Jersey Municipalities" by P.F. Strom and M.S. Finstein (see Suggested Reading).

[3] Because of the categorization system used by the DEP, this material is not included in the 18% figure noted earlier. Also, the proportion of the MSW stream represented by leaves is not easily estimated.

[4] A few small sludge composting facilities are operational in the state. These vary widely in scientific and technical soundness and process performance.

Waste Management Goals Advanced Through Composting

Composting advances key goals leading to the objective of sound waste management. The goals are those of reducing weight, volume, and water content; stabilizing the material; and killing pathogenic organisms. Thus, a moist, noxious, unsanitary waste is transformed into a reduced amount of dry, earthy, sanitized process residue. [5] Overall, a nonmanageable waste is changed, qualitatively and quantitatively, into a residue that can be stored, transported, and disposed of, hence managed.

Thus, like other technologies, composting can serve as a treatment component of an overall waste management plan. The purpose of treatment is to ready a waste for environmentally sound disposition. Preferably, this is through some form of resource recovery in the form of the reuse of materials. [6]

Disposition/Utilization of Composted Process Residue

The possibilities for the utilization of the residue and/or its ultimate disposition are situation specific. The determining factors are the nature of the waste, especially with respect to the concentrations of heavy metals and other potentially harmful nonbiodegradable substances, and the environmental sensitivity of the proposed use of the residue. Such substances rarely affect the processing (composting), but may significantly degrade the quality of the product (e.g., compost).

At one extreme, a composted residue might be suitable only for landfilling (least desirable). At the opposite extreme, a residue might be suitable for use as a general purpose compost (most desirable). An intermediate situation would be suitability for restricted, non-food chain use as a compost in ornamental horticulture.

Disposition of wastewater sludge in ordinary, nondedicated, sanitary landfills is prohibited in New Jersey. This precludes landfilling as a practical alternative to ocean dumping, as dedicated landfilling would be too costly. In contrast, sludge-derived, composted process residues may be disposed of in ordinary landfills. The basis of this distinction is presumably that composted residues consume less landfill space and generate less leachate and gas. More beneficially, such residues may be used as a landfill cover material. A continuing need for some landfilling is unavoidable, and large areas of inactive landfills are yet to be formally closed. Closure requires large amounts of organic amendment for revegetation. Thus, waste-derived composts could represent a considerable resource.

The sludges now ocean-dumped originate in heavily industrialized areas and tend to have levels of heavy metals that preclude the use of their derivative process residues as general purpose composts. Pollution-prevention measures are leading to progressively "cleaner" sludges, with resultant broader end-use possibilities. Meanwhile, composting these sludges would convert them to residues acceptable for landfilling, use as landfill cover material, or other relatively non-sensitive applications.

With respect to municipal solid waste, unpublished data from currently operating facilities, in which the separation of biodegradables from other components is *not* optimal indicate low levels of troublesome substances. [7] Such composts would usually be suitable for a range of uses, as for example in ornamental horticulture. Moreover, the possibility of marketing high quality composts would be a motive for effective precomposting materials separation.

Because of the complexities of environmental protection in a crowded state, it would be misleading to suggest a pat, generalized formula for the ultimate disposition of any type of residue from any waste treatment technology. Consider for example the disposition of two very different process residues, those of composted material and incinerator ash. The disposition of each must be considered in the light of its particular characteristics and environmental impacts.

Integrated Waste Management

With respect to MSW, composting would serve as a treatment component in the context of integrated waste management based on the idea of materials management. A version of such management is described as follows.

Household waste is segregated into recyclable, biodegradable, and trash fractions. Recyclable refers to

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[5] The term process residue is used without prejudice as to its ultimate disposition. A residue might, or might not, be safe to use as an organic soil amendment (compost). This depends on the quality of the waste, the thoroughness of composting, and the particular use intended for the composted residue.

[6] The term resource recovery is used here in its generic sense, not as a euphemism for mass incineration. Incineration can lead to energy recovery. Composting can lead to materials recovery, and as such is considered a form of recycling. See the report of the Office of Technology Assessment for its philosophy of materials management as a key factor in rational MSW management.

[7] Based on operational experience at MSW composting facilities in St. Cloud, Minnesota and Pigeon Point, Delaware.

wastes that are prepared for reuse as secondary raw materials. In this context, biodegradable is equivalent to compostable. Trash refers to the fraction that is not amenable to materials recovery or biodegradation.

The recyclable materials are principally newspaper and corrugated paperboard and containers made of glass, metal (steel-tin, aluminum), and certain plastics. These are further separated at a facility and prepared for marketing. [8]

The biodegradable fraction was described above. Non-biodegradable remnants, such as plastic sheets from disposable diapers, might be removed in a postcomposting preparation of the compost for marketing.

Trash comprises all materials that are neither recyclable nor biodegradable in a reasonble length of time, such as wood, leather, rubber, some plastics composite products, and mineral matter (e.g., ceramics). This fraction is biologically inactive, dry, and rich in burnable materials. It can be landfilled directly or first incinerated for weight and volume reduction accompanied by energy recovery. Note that this represents a highly selective use of combustion technology, as contrasted to mass incineration.

Use of this Publication

This publication is designed for use in public decision-making, through the following process. First, a community or waste management authority would use the report to prepare the scientific and technical aspects of a Request for Proposal (RFP) for its composting facility. Second, the RFP would provide engineering firms preparing competitive proposals with an introduction to the design of an economical and effective composting facility. This would direct their attention to the biological basis of the process and the need to design for high rates of decomposition.[9] Equally, the RFP would provide an incentive, typically lacking, to design an economical and effective facility. Third, the RFP would provide technical reviewers representing the public interest with a basis for judging the quality of proposals.

In this manner, the decision-making process can be structured, from the outset, to result in a scientifically, technically, and fiscally sound facility.

[8] Depending on the exact combination of household-level segregation and facility-level separation, this could be a material recovery facility ("murf") or a more elaborate one. A murf basically consists of moving tables to assist hand-picking. A more elaborate facility precedes picking with screen separation and follows it with a vacuum table and/or other separation equipment.

[9] Large-scale composting of leaves specially collected in isolation from noxious wastes is a special case. In that relatively slow composting might suffice. This special case is addressed in "Leaf Composting Manual for New Jersey

Scientific and Technical Background

Definition of Composting

Composting is a microbe-based, aerobic, solid phase matrix, self-heating process. The matrix consists of organic material (the solid waste), which serves as a source of nutrients for microbial growth, a sink for metabolic products, a site for gas exchange, and thermal insulation. Owing to the insulating property of the material, heat generated metabolically is conserved within the system. This elevates the matrix temperature from an ambient mesophilic starting point into the thermophilic range. As readily metabolized substances become depleted, temperatures decline and eventually return to ambient levels. The material is thus biologically oxidized to carbon dioxide and a stabilized, organic process residue.

The microbes responsible for composting are various beneficial bacteria and fungi that are widespread in the environment. These are indigenous to such materials as soil, dust, vegetable matter, and wastes of all sorts. Special organisms are not required.

Scale of Processing: Backyard vs. Municipal

Many people know composting as an aspect of backyard gardening. In this setting it is used to transform grass and hedge trimmings, leaves, and end-of-season garden vegetative waste to a well-stabilized, humified, organic residue usable as compost or mulch. The transformation of leaves to compost, for example, is preferably completed in time for the next gardening season.

A finished compost can be produced within this time frame with surprisingly little attention. This is true even though the rates (or intensity) of microbial activity in the backyard are typically much lower than those potentially realizable. Rate-determining factors include temperature, moisture, and oxygen content. Since slow composting is fast enough to produce compost in time for use by the next season, decomposition rate is of little concern in backyard composting. In this setting, there is little need for deliberate process design and control to accelerate processing. The absence of such need, combined with spontaneity of the process, accounts for its popularity.

Backyard and formalized composting in a municipal (industrial) setting have in common an underlying

microbial ecosystem, but little else. Conspicuous differences are those of size (miniature vs. large-scale), material (benign vs. noxious), and input regimen (seasonal/casual vs. daily/tightly scheduled). Less conspicuous but crucial differences concern the purpose of composting and the effect of rate in the accomplishment of that purpose.

In the context of environmental protection, an overriding goal is to *manage waste* in an environmentally sound, economical, and publicly acceptable manner. This requires deliberate process design and control to promote maximal rates of microbial decomposition.

Overcoming Composting's Self-Limiting Tendency

The composting system has a strong tendency to become self-limiting. This results in low, sometimes near-minimal, rates of decomposition. Self-limitation usually results from either oxygen depletion, excessive heat retention, or some combination thereof. Oxygen depletion leads to slow, putrefactive decomposition. Excessive heat retention leads to inhibitively high temperatures, thereby slowing decomposition. The threshold to inhibition is 55-60°C (131-140°F), but unless controlled otherwise the system typically peaks at the severely self-limiting level of 75-80°C (167-176°F). This may be viewed as "microbial suicide." Both forms of self-limitation cause nuisance odors. At most existing composting facilities, self-limiting conditions prevail to a greater or lesser extent.

A self-limiting condition is preventable, and a condition of high, near-maximal, rates of aerobic decomposition attainable, through adequate ventilation of the composting mass. The important design elements of a composting ventilation system are: blower capacity; blower control; direction of airflow; and conveyance and distribution of the air. Because ventilation is a key determinant of decomposition rate, and hence process performance, it is emphasized in both the section on *Scientific and Technical Constraints and Options* and subsequent explanatory material.

Reductions Effected

Limited mass balance field data are available with respect to materials reduction effected through well-controlled composting of wastewater sludge (see Suggested Reading: Shell and Boyd, 1969; Miller and Finstein, 1985; also note van Oostrom and Cooper, 1989). These studies involved the following: either primary sludge or a combination of primary and secondary sludges; process control based on heat removal by ventilation in reference to temperature; and the use of recycled product ("compost") as the bulking agent. Over a composting period of approximately 10 days, the following reductions were observed (proportion of starting sludge material that disappeared): total dry solids, 25%; dry volatile solids, 40%; wet weight, 70%; volume, 70%; water, 85%. Starting moisture contents of approximately 75% (sludge cake) were reduced to 30% (compost). The processing did not generate malodors, and the residue was thoroughly sanitized (direct microbiological examination, only in Shell and Boyd, 1969).

Quantitative data of this sort are not available for municipal solid waste. This material is less prone to generate malodors.

Importance of the Request for Proposal (RFP)

The RFP as a Point of Reference

The RFP should establish the basic design and the general pattern of day-to-day performance and operation of a composting facility. It is a point of reference for both the consulting engineer preparing a bid and the decision-maker responsible for selecting the winner.

It is the responsibility of the decision-maker to ensure that the contract is awarded to a competent bidder who has taken into account the scientific and technical groundwork essential for a cost-effective and publicly acceptable facility. The proper discharge of that responsibility is difficult or impossible if the RFP lacks meaningful scientific guidance. Such a lack has contributed to the generally poor performance of many wastewater sludge composting facilities nationwide, and the outright failure of some. Considerable public displeasure and associated lawsuits have resulted. These might have been avoided through RFPs that required the use of not only relevant operational experience, but also the best scientific and technical information available.

The RFP as a Spur for Practical Creativity

An effective RFP does not stifle creativity by prescribing overly specific design solutions. Rather, it provides ground rules to stimulate disciplined creativity within the confines of well-established, settled scientific understanding and sound practice. The idea is to challenge the consulting engineer to devise solutions based on the best information available and to suit that information to local circumstances. An RFP so crafted provides an economic incentive to construct cost-effective, operationally reliable, and publicly acceptable waste composting facilities.

Such ground rules are embodied in the section on *Scientific and Technical Constraints and Options*. This, in turn, is based on detailed information available in the open published scientific and technical literature (see Suggested Reading), as summarized in the subsequent explanatory material. The information and technology needed to respond to an RFP so crafted are non-proprietary.

Organization of this Publication

It is convenient to develop the scientific and technical elements in terms of wastewater sludge. This stems from the homogeneity of any given sludge and the absence of extensive precomposting considerations. The situation is more complicated with respect to municipal solid waste, as already discussed. Owing to its heterogeneity, various aspects of materials separation must be resolved prior to the composting of a fraction of this waste stream. Moreover, the basic cause-and-effect relationships governing composting system behavior were for the most part drawn from observations involving sludge, although the principles are no less valid for other materials. Technical aspects special to MSW are developed in the latter part of the publication.

Administrative matters are discussed as needed to provide context for scientific and technical matters. Legal matters and project financing are not discussed.

Note that the essence of this report is the section entitled *Scientific and Technical Constraints and Options* (pp. 6 to 7). It might be said that "...all else is commentary." Therefore, that section is italicized.

Elements of an RFP for a Wastewater Sludge Composting Facility

General Announcement

The City of ..... issues herein a Request for Proposal (RFP) for the design and construction of a wastewater sludge composting facility. All inquiries and correspondence relating to this RFP shall be submitted to Mr./Ms. ....., chairperson RFP Scientific/Technologic Evaluation Subcommittee, City Hall. Proposals must be received no later than 4:30 PM on (date). Pricing information shall be included in the submittal.

General Information

Purpose of this RFP. This RFP provides interested parties with sufficient information to enable them to prepare and submit proposals for consideration and to competitively bid for work on a wastewater sludge composting facility. Such a facility is needed to convert the sludge generated at the city's existing wastewater treatment facility to a process residue that is amenable to storage, transport, and ultimate utilization/disposition in an economical and environmentally sound manner.

Material to be composted. The city's wastewater treatment facility currently generates a belt-filter press sludge cake with a nominal oven-dry solids content of 22% (moisture content, 78%). This cake consists of an approximately equiweight mixture of primary and waste activated sludge (dry weight basis). The nominal volatile solids content of the mixture is 72% (ash, 28%). The sludge is not known to contain levels of substances that inhibit the composting process.

Rejection of proposals. The city reserves the right to reject any and all proposals received as a result of this RFP or to negotiate separately with any source whatsoever in any manner necessary to serve the best interests of the city. The city does not intend to award a contract solely on the basis of any response made to this RFP or to otherwise pay for the information solicited or obtained.

Major critera for proposal evaluation. Submitted proposals will be examined for, among other things, thorough understanding of the scientific and technical principles relevant to the rational design and operation of a composting facility. Such understanding should be

embodied in all aspects of the proposed design. In composting its wastewater sludge, the city's goals include the following.

- Rapid and thorough microbial decomposition of metabolizable substances in the sludge, predominantly through aerobic, thermophilic activity. Such decomposition is manifested by substantial decreases in weight, volume, and contents of readily decomposed material and water, reflecting conversion of the sludge to well-stabilized process residue and associated vaporization of water.

- Minimization of the inventory of material being composted at any one time, and in general the minimization of materials- handling requirements. Such minimizations are achieved by effectively exploiting microbial activity, as integrated with materials handling and other operational aspects.

- Having an operationally flexible facility that can respond to qualitative and quantitative changes in the waste stream and regulatory requirements. Given the dynamic nature of the field, such changes are not easily predicted. An example of facility flexibility is given below with respect to recycle ratio.

- Accomplishment of the above in an economical and publicly acceptable manner.

Oral presentation. A party submitting a proposal may be asked to make an oral presentation to the city's RFP Scientific/Technical Evaluation Subcommittee. This is to provide an opportunity to clarify the proposal to ensure thorough mutual understanding.

Nondisclosure. Proposals and related oral presentations are confidential and will not be open to public review.

Scientific and Technical Constraints and Options

Microorganisms. *The microorganisms responsible for the composting shall be indigenous to the sludge, recycled composted process residue, and incidental materials (dust, soil, "dirt"). They shall be self-replicating at the expense of the sludge.*

Facility stages. *The composting operation shall consist of a primary stage (sometimes termed "active stage") and, if indicated by the overall design, a secondary ("curing") stage. Except where noted, these constraints refer to the primary stage.*

Bulking agent. *The main function of a bulking agent is to improve porosity. With the possible exception of a one-time facility start-up operation, only recycled process residue (material exiting the primary stage) shall be used as a bulking agent.*

Mixing. *To start a composting cycle, sludge cake and "recycle" shall be mixed together. The equipment used to mix the sludge and recycle shall tend to preserve porosity.*

Recycle ratio. *As a first approximation, a nominal dry weight recycle ratio (recycle/sludge) of 1/1 may be assumed (approximately equal dry weighs of recycle and sludge). Refinement of the recycle ratio parameter necessarily awaits operational experience. For this reason, and also because of the changeable nature of waste streams and requirements for environmentally beneficial or acceptable process residue disposition, the city seeks operational flexibility in its facility. One aspect of such flexibility would be the capacity to vary widely the recycle ratio. A desirable range of available ratios might be 0.3/1 to 3/1.*

Introduction of air. *Air shall be introduced into the sludge-recycle and/or composting mixture using radial-blade blowers operated solely in the forced-pressure mode. In conveying air to the mixture, head loss (backpressure) shall be minimized. Minimization shall be in a manner consistent with the need to introduce air in a uniform fashion and to avoid short-circuiting and channeling in the composting mixture. The head loss incurred as a result of passage through the mixture shall not exceed seven inches (7") of water.*

Blower control and delivery capacity. *Control of blower operation shall include temperature feedback control. The capacity of the blowers to deliver air shall be adequate to meet peak demand for ventilative heat removal, as exerted via temperature feedback control, in reference to a biologically favorable temperature ceiling.*

Blower control should satisfy the following operational objectives.

1) During a come-up phase of a composting cycle, air should be delivered to the mixture such as to induce a rapid temperature come-up by maintaining the level of interstitial O_2 at not less than 14% (v/v), while avoiding unnecessary removal of heat.

2) In a subsequent quasi-steady-state phase, air should be delivered such as to maintain a temperature not exceeding 55-60°C near the point of exhaust air exit (temperature ceiling), while maintaining O_2 at no less than 14%.

3) Toward the end of a cycle when the temperature

tends to decline owing to substrate depletion, air should be delivered such as to maintain a temperature maximum as close as possible to 55-60°C, while maintaining O_2 at no less than 14%.

Mechanical agitation and translocation. *The advantages and disadvantages of mechanically agitating and translocating the material during a composting cycle should be evaluated in the context of the city's needs. Advantages include the redistribution of material, moisture, and microbes and improvement of porosity (decrease in head loss) and exposure of fresh surface to microbial colonization. Disadvantages include added construction (machinery and possibly supporting structure) and operating costs, and a built-in dependence on a particular machine to translocate the material. The inclusion or exclusion of mechanical agitation/translocation during a cycle should be justified.*

Secondary stage (curing). *The advantages and disadvantages of a curing stage should be similarly evaluated. Without curing, the process residue not used as recycle must be immediately removed to its site of ultimate disposition. If a curing stage is employed, it shall not involve extensive use of blowers or mechanical agitation.*

Disposition of process residue. *Proposals should include flexible preliminary plans for the storage and disposition/marketing of the process residue.*

Exemption from these Constraints

Proposals not conforming to these constraints shall be considered on their scientific and technical merit and relevant operational experience. Areas of nonconformity should be justified on the basis of specific, objective data as rigorously interpreted in terms of cause-and-effect relationships.

Summary Explanations of the Scientific and Technical Constraints and Options

As noted earlier, these constraints and options are based on extensive information available in the open literature (see Suggested Reading). The summary explanation provided below and the introductory comments preceeding the model RFP are primarily for the benefit of the city's Scientific/Technical Advisory Committee and would not be incorporated into an actual RFP.

The explanation might seem rather esoteric, involved, and lengthy in places, especially as regards ventilation. This is not entirely avoidable, because the behavior of the composting microbial ecosystem is governed by a complex of highly interactive physical, chemical, and biological factors. Yet, notwithstanding any underlying complexity, composting design and operational needs are well understood and straightforward. That is why the scientific and technical section of the model RFP could be so brief.

Start of a Composting Cycle

Microorganisms. Commercial starter cultures, proprietary inocula, biocatalysts, genetically engineered organisms, or related preparations have not been demonstrated to improve composting process performance. In the absence of scientific justification, the use of such preparations should be excluded.

Facility stages. Any boundary between the primary and curing stages is somewhat arbitrary. In general, material is ready for curing when the composting can be continued with relaxed process control, without danger of generating nuisance odors. Recognizing that a boundary can be defined only in general terms reveals a large scope for flexibility in design and operation. This includes whether a curing stage is necessary for a particular circumstance.

Bulking agent. The constraint that only recycle may be used as a bulking agent departs from the conventional use of wood chips. Exclusive use of recycle has many advantages with respect to minimizing the following: materials handling, inventory, generation of odors and mold spore aerosols. Use of recycle also results in better product quality. Exclusive reliance on recycle is feasible because the RFP imposes scientific and technical constraints that can be satisfied only with designs that ensure high, near maximal rates of microbial activity.

Mixing. Recycle does not have robust physical structure and porosity; hence these properties must be carefully preserved in the initial mixing step. Therefore, especially careful consideration is needed in the selection of the mixing equipment. Certain pug mill mixers are suitable, though not those that employ augers and/or have inadequate space between mixing blades and housing. These mechanical characteristics tend to destroy porosity. Only pug mills employing counterrotating blades, which impart a fluffing action, should be considered.

Recycle ratio. An ability to vary flexibly the recycle ratio permits adjustment of the starting moisture content to favor porosity, thereby limiting head loss at the outset of composting. This aspect of operational flexibility is thus supportive of the exclusive use of recycle as the bulking agent.

Ventilation

Importance of ventilation. Ventilation represents the most fundamental aspect of composting process design and control, as it supplies O_2; removes heat, water vapor, and CO_2; and can be deliberately used to control temperature. The focus is on the temperature control function, as this subsumes the other functions.

Introduction of air. The RFP specifies the forced-pressure mode of ventilation because this removes heat and controls temperature more effectively than the vacuum-induced mode. Other specifications are for a maximum head loss of 7" of water and use of radial-blade blowers (low head-high volume). Head loss is a function of porosity. Porosity in turn is a function of the moisture contents of the sludge and recycle, the recycle ratio, and compaction caused by the height of overlying material.

Mechanically, moderately higher head losses can be overcome by substituting squirrel-cage blowers (moderate head-moderate volume) for the radial-blade type, but there is an important loss of biological process control with respect to the factors of temperature and O_2. Similarly, extreme head losses can be overcome with direct-displacement blowers (high head-low volume), though at considerable capital and operating cost. The biological control difficulties associated with extreme head loss are, however, intractable. Thus, any proposal to substitute height for area should be viewed skeptically for accompanying loss of biological process control.

The specification of radial-blade blowers, especially in combination with recycle as the bulking agent, implicitly constrains pile height rather severely. Yet, a pile height specification is deliberately omitted from the model RFP. This gives the respondent an opportunity to demonstrate an appreciation of the constraint. In the absence of contrariwise justification, the sludge-recycle mixture at the start of a cycle should not be more than 7 feet high.

Although the primary motive in specifying radial-blade blowers is not cost, this type of blower is the least costly to purchase and operate. Rather, the primary motive is to serve several overlapping scientific and technical purposes in pursuit of facility optimization, as outlined in the following interrelated sequence.

Key overall objectives are to minimize the needs of facility space and materials handling, while maximizing the degree of stabilization achieved in a given processing period. Pursuit of all three objectives indicates the exclusive use of recycle as a bulking agent. Use of recycle in turn necessitates rapid decomposition with its accompanying intensive heat generation. This in turn speeds drying, which coincides with a need for dry recycle. In any event, rapid decomposition is fundamental to many aspects of good process performance. But rapid decomposition requires proper ventilation, which in turn necessitates reasonable pile height and head loss.

Blower control and delivery capacity. These aspects of the RFP address a number of highly interrelated factors, as summarized below.

Supplying of O_2. Thorough oxygenation is needed throughout the composting cycle. Assuming temperature feedback control, however, adequate oxygenation is assured during the quasi-steady-state phase (most of the cycle).

During the temperature come-up phase, ventilation should be managed to support unrestricted aerobic respiration while avoiding excessive heat removal. The idea is to speed the temperature elevation to the desired operating ceiling, quickly engaging feedback control. Although the needs to supply O_2 and retain heat are somewhat conflicting, the conflict is easily resolved. This is because at the temperatures characteristic of come-up (relatively low), a given volume of ambient air removes relatively little heat. Therefore, the objective of rapid temperature come-up is little penalized by emphasizing the O_2 supply function.

A provisional prescription is to maintain interstitial O_2 during come-up at not less than approximately 14% at any point in the pile. As a first approximation, blowers serving this phase of the cycle might be scheduled for 1.5 minutes actuation out of every 10 minutes. The schedule may be adjusted, as indicated by experience to provide thorough, though not excessive, oxygenation. In the special cases of unusually weak sludge (e.g., aerobically or anaerobically digested prior to composting) or extremely cold ambient air, a more restrictive approach to come-up ventilation is indicated to better conserve heat during this phase.

In theory, more refined blower management during come-up could be achieved through automatic O_2 feedback control. This poses a moderately difficult technical problem. More important, the benefit of O_2 feedback control compared to a fixed schedule, is marginal. A fixed schedule during come-up is adequate because air may ordinarily be supplied generously (easy resolution of aforementioned conflict). In a related

matter, an O_2-override feature subsequent to the come-up phase (overrides temperature feedback control) would be superfluous.

Mechanisms of heat removal. Heat is removed from the composting system predominantly through ventilation. The operative mechanisms are sensible heat removal (temperature of air increases with flow through matrix) and latent heat of vaporization of water (evaporative cooling). A rough approximation is that 20% of the heat is removed through sensible heating and 80% through vaporization. Though interrelated, these mechanisms are conveniently discussed separately in terms of their manifestations in the composting system.

Vertical temperature gradient. A newly formed mixture of sludge and recycle, at the start of a composting cycle, is temperature-uniform. Subsequently, as heat is transferred from the microbially active matrix to the ventilation air, a temperature gradient is established along the axis of airflow. Thus, a vertical series of temperature readings show lower values near the point of air entry and higher ones near the exit point. The gradient is variably steep over the composting cycle. It steepens during the come-up phase, is fairly constant during the quasi- steady-state phase, and becomes less steep as steady state wanes.

To prevent microbial self-limitation and its effect on treatment functions, the desired quasi-steady-state temperature ceiling is 55-60°C. Ceiling refers to the highest temperature in the vertical dimension along the airflow pathway. As was noted, this is near the point at which air exits from the pile. Thus, when the temperature ascent reaches some predetermined level, the objective of ventilation management switches from that of supplying O_2 while conserving heat (come-up phase) to that of removing heat in reference to temperature (quasi-steady-state phase). This translates into temperature feedback control of adequately sized blowers. The transfer of blower control from timer (come-up) to temperature feedback (quasi steady-state) is effected automatically.

The elements of a temperature feedback control system are a temperature sensor and controller. The sensor is strategically positioned in the pile and a temperature set point is assigned to the controller. A suitable combination of sensor position and set point is selected to result in a quasi-steady-state temperature ceiling of 55-60°C near the point of air exit. In a number of circumstances, a suitable combination has proven to be a height of 1.5 feet above the level at which air enters the composting material and a set point of 45°C. Depending on system-specific behavior, other combinations of sensor height and set point might be preferable. As such, flexibility in sensor positioning and set point temperature is desirable. (The temperature controller should be continuously variable with respect to set point.) Regardless, the idea is to find a combination that maintains a quasi-steady-state temperature ceiling of 55-60°C.

The sensor should not be subjected to nonrepresentative temperatures at the height selected for its positioning. This can result from air channeling or short-circuiting, and contra-indicates sensor placement too close to the point of air entrance or exit. It also indicates periodic mechanical agitation, to reverse any incipient channeling.

Although a sensitive response is desired, to control temperature with reasonable precision, excessive on-off cycling of the blower should be avoided. This may be accomplished by interposing a time-delay switch between the blower and temperature controller. A minimum delay of 3 minutes between blower actuation events might be provisionally adopted.

Drying tendency. During the quasi-steady-state phase (55-60°C ceiling maintained), roughly 80% of the total heat removal can result from the vaporization of water. This induces a drying tendency, which is both beneficial and unavoidable. Operational benefits include improvement in porosity as the composting cycle progresses (head loss decreases) and production of dry process residue. A dry residue makes for better recycle bulking agent. Moreover, drying is a major sludge treatment objective. A unique aspect of composting is that it links, via biologically driven vaporization, the objectives of drying and stabilization.

Note that the drying intrinsic to composting is distinct from "air-drying." In composting the drying is biologically driven, whereas in air-drying it is driven by unsaturation of the inlet air. It follows that, in composting, the stronger the drying tendency the faster the decomposition and the better the process performance (and vice-versa).

Premature *dryness* before the end of a cycle, in the sense of limiting microbial activity, is unlikely to occur. Two factors mitigating against this are the use of recycle and mechanical agitation. First, the recycle ratio can be adjusted to avoid this outcome. Second, agitation redistributes moisture and partially compensates for dryness with respect to microbial movement and colonization of new surfaces. As part of the transition between primary and secondary stages, it might be useful to remoisten the material.

O_2 replenishment linked to temperature feedback control. An unusual and convenient aspect of the composting process is that, in addition to controlling

temperature, the use of temperature feedback also automatically replenishes O_2 at a rate commensurate with its rate of consumption. Consider that in consuming O_2 and generating heat the temperature becomes elevated. Hence, demand for ventilation exerted in response to temperature elevation is, indirectly, also in response to O_2 consumption. Moreover, approximately 9x more air is needed to remove heat than to resupply the O_2 consumed in its generation. Because of these relationships, temperature feedback control as applied to composting (though not to other processes) is simultaneously an indirect, tightly coupled form of O_2 feedback control. As result of this linkage, thorough oxygenation is thereby assured, and while temperature feedback is operative interstitial O_2 is typically only a few percentage points lower than ambient air.

Thus, once the sensor first "sees" the set point temperature, swithching blower control from a fixed schedule (timer) to an on-demand basis (temperature feedback), O_2 requirements are automatically satisfied generously. Except for brief come-up and come-down phases (before and after initiation of temperature feedback control), this obviates a need to focus on O_2 as a process control parameter.

Development of the above interrelationships would be out of place in an RFP. In the RFP a minimum O_2 level is specified that would reflect effective temperature feedback control of adequately sized blowers, among other aspects of a well-designed ventilation system. Bidders are expected to demonstrate a grasp of these interrelationships, as manifested in scientifically and technologically competent design solutions.

Blower delivery capacity. The ventilation system must have the capacity to deliver enough air to meet the *peak* demand for heat removal, as exerted through temperature feedback control. Peak demand corresponds to the period of most intensive microbial activity. The magnitude of the peak demand depends on the strength of the sludge (content of readily metabolized substances), height of composting material, recycle ratio, and other factors. It is best to have excess blower delivery capacity, and not costly to do so. A conservative estimate for a system using recycle as the bulking agent is that peak demand could be as high as 25,000 cubic feet per dry ton of sludge per hour. This estimate is based on experience with a "strong" primary sludge.

Use of recycle promotes a rapid come-up and early exertion of a peak demand (e.g., within a few days or less of the start of a cycle). Depending on the strength of the sludge and other factors, demand might remain at near-peak levels for as much as a week. These are behavioral patterns specific to the particular waste being treated, as well as the facility design and operational conditions.

Mechanical agitation and translocation. Mechanical agitation, and associated stepwise translocation during a composting cycle, can be a useful adjunct to the control of the process via ventilation. Yet mechanical agitation has its direct and indirect costs. Direct ones stem from the machinery and operating costs. Indirect ones relate to how agitation affects overall facility design. For example, some approaches require walls that restrain the composting materials while supporting the agitator/translocator. Other approaches are possible that avoid a need for walls. These matters are left to the respondent to evaluate.

Secondary stage (curing). Similarly, the respondent is asked to evaluate the need for a curing stage. Curing furthers microbial decomposition, though this is slower than in the primary stage. An indication that the material has reached an extremely well-stabilized condition is the appearance of nitrite and/or nitrate (commencement of nitrification). Curing to this point might be indicated for the production of a "fine" compost, as in the preparation of a potting soil mixture. At the opposite extreme, composted process residue to be used as a landfill cover material might not require curing. A decision on whether curing is indicated, and if so its extent, can only be made in the context of the nature of the waste and the overall management strategy.

Final sanitation assurance. A terminal temperature come-up phase can be induced for the special purpose of grossly exceeding time-temperature regulatory requirements for pathogen inactivation. This can be at the end of either a primary or a curing stage. Unlike the initial come-up phase, any terminal one is intended to attain harsh, self-sterilizing temperatures. Self-sterilization is acceptable at this point of processing because the material is stabilized and less prone to generate troublesome odors. The extent of stabilization and proof against odors depends in part on whether the material was cured. Since biological heat generation is attenuated at this point, relatively large, hence well-insulated, piles may be indicated to conserve heat. This holds especially for cured material.

It must be cautioned that under these circumstances biological self-heating can gradually pass to a nonbiological causation ("chemical self-heating"), with a remote possibility of spontaneous ignition. The material must be rather dry for this to occur. To ensure against it, the height of curing piles should be restricted to 8 feet. This is to permit the loss of sufficient heat to make spontaneous ignition an improbable outcome.

Special Aspects of an RFP for a Composting Unit Process as Part of an Integrated Municipal Solid Waste Management Facility

Precomposting aspects of the integrated management of municipal solid waste (MSW) were discussed in the Introduction. For present purposes, it is assumed that compostables are segregated (household level) and/or separated (facility level) from other fractions.

Mixing and Recycle Ratio

Unlike sludge cake, the porosity of compostable materials in MSW tends to be adequate for gas exchange. Addition of a bulking agent to enhance the matrix structure is usually not necessary. Nevertheless, the recycling of some composted process residue is beneficial. First, recycle serves as a massive inoculum, hastening colonization of the fresh material with an adapted microbial community. Second, it transfers heat to the starting mixture, instantaneously elevating its temperature to a level more favorable for microbial activity. Both factors result in savings of processing time, hence facility space.

With respect to the inoculation function, the recycle ratio can be relatively narrow (perhaps a dry-weight ratio of 0.2 recycle to 1 fresh waste). A wider ratio (e.g., 1:1) might be indicated to transfer substantial heat to the incoming waste, especially in winter. As in the composting of sludge, this argues for a flexible range of recycle ratios.

Mixing of this material is probably best accomplished in a rotating drum. A prolonged residence time in the drum is not necessary. A few hours may suffice.

Pile Height

Because MSW has better porosity than sludge, the pile can be made higher at the start of the composting cycle. As a first approximation, the starting pile height should not exceed 8.5 feet.

Blower Delivery Capacity

This type of information is not available for MSW. In all probability, MSW would exert a smaller peak demand for heat removal than strong sludges. Note that the recommendation for sludge was based on a primary sludge (strong demand for ventilative heat removal). For MSW, a peak delivery capacity of 15,000 cubic feet per hour per dry ton would probably provide a large margin of safety.

Co-Composting

Suitable fractions of MSW and wastewater sludge may be composted together advantageously. MSW brings structure and porosity to the mixture, and sludge brings water and microbially available nitrogen. The MSW and sludge can be mixed in various proportions, depending among other things on the extent of mechanical dewatering of the sludge. This leads to a range of options with respect to sludge dewatering at the wastewater treatment facility in conjunction with initial mixing at the composting facility. A circumstance-specific integration of the two factors would be sought. A major consideration is the effect of the sludge on product quality relative to MSW-derived compost, and vice versa.

Appendix I — Misuse of the Term "High Rate"

Based on the premise that demanding circumstances indicate high, near-maximal rates of aerobic microbial waste decomposition, this publication focuses on rate. Yet, the term "high rate" is often used indiscriminately in sales brochure descriptions of proprietary composting processes and related verbal presentations. Similarly, "high rate" is used interchangeably with "high tech" in describing impressive-looking systems based on elaborate structures or vessels. In fact, advertised technologies, structures, and vessels might or might not be consistent with the realization of high rates of microbial activity.

In particular, certain proprietary composting technologies are fundamentally misconceived and cannot function properly. Others are more soundly conceived and should be examined with an eye toward microbiological and technical detail. Regardless, the decision

maker should insist on a scientifically rigorous definition of the term "high rate" as this specifically addresses the issue of microbial activity.

Appendix II - Disposition of Composted Process Residue

The composting of a "clean" putrescible waste, assuming adequate processing, results in a well-stabilized residue suitable for general use as a compost. "Clean" refers to an absence of potentially harmful levels of such substances as heavy metals and certain industrially synthesized organic chemicals. "Dirty" wastes (potentially harmful levels) might similarly be usefully composted for waste management purposes (decrease weight, volume, and contents of putrescible materials and water; destroy pathogens), but the stabilized residue would not be suitable as a general purpose compost. This reflects the fact that levels of substances that are not permissible in *compost products* intended for sensitive uses have little effect on the *composting process*. Therefore, it confuses matters to view a waste composting facility as a compost factory *per se*. Rather, the distinction between the process (composting) and a particular product (compost) should be maintained, and the focus kept on waste management needs.

The timely importance of this distinction may be illustrated by reference to the state and federal bans on ocean dumping of sludge to take effect by March 1991 and January 1992. Nine wastewater treatment plants in the New York City-northeastern New Jersey region now ocean-dump approximately 1100 dry tons of sludge per day. With treatment upgrading this could increase to 1400 tons within a few years. These sludges are not currently suitable as feedstocks for the production of general purpose composts. Nonetheless, as outlined earlier in the publication, composting could effectively advance waste management goals essential for land-based disposition.

The worst-case scenario is that the smaller amount of stabilized process residue would be landfilled. Whereas in New Jersey wastewater sludges are not legally acceptable at Class I sanitary landfills (ordinary landfills with relatively low tipping fees), composted process residues derived from dirty sludges are acceptable. This makes landfilling a feasible, though hardly optimal, alternative to ocean dumping.

Landfilling, of course, should be viewed as a disposition method of last resort. Alternatively, sludge-derived composted residues might be used as landfill cover material or in replanting areas that are not environmentally sensitive (e.g., industrially devastated areas, as in surface mining or reclaimed "ECRA" sites). Moreover, the idea of pollution prevention, now gaining momentum, is leading to a gradual improvement in sludge quality. This would be reflected in derivative compost. It is therefore important to recognize the utility of composting as a waste treatment technology apart from any immediate issue of compost production.

Finally, the importance of distinguishing between composting and compost is emphasized by a recent, highly controversial, USEPA initiative to severely restrict the land application of sludge and sludge-derived products. Any such restriction has no direct bearing on composting as a waste treatment technology in conjunction with proper disposition of the treated residue.

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Savage, G.M. & Golueke, C.G. (1986). Major cost elements in co-composting. *BioCycle.* 27(1):33-35.

U.S. Congress, Office of Technology Assessment, *Facing America's Trash — What Next for Municipal Solid Waste*, OTA O-424 (Washington DC: U.S. Government Printing Office, October 1989. (See especially the section on composting, pp. 184-190.)

Van Oostrom, A.J. & Cooper, R.N. (1989). Composting primary sewage sludge by a temperature-controlled aerated static-pile method. *Proc. Water Pollution Control Fed., Asia/Pacific Rim Conf.*, Honolulu, Hawaii, October 1989.

Addendum to Rutgers Cooperative Extension Publication E136

ELEMENTS OF A REQUEST FOR PROPOSAL (RFP) FOR SLUDGE AND MUNICIPAL SOLID WASTE COMPOSTING FACILITIES: SCIENTIFIC AND TECHNICAL ASPECTS

by

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Addendum Prepared by the Authors, October 1990

PURPOSE OF THE PUBLICATION

The original "Elements of an RFP" publication was designed to help in the crafting of real RFPs, and provide an objective, science-based, yardstick for assessing proposed approaches to the design of solid waste composting facilities. The purpose was to encourage approaches that represent sound expenditure of public funds, leading to sustainable solid waste management practices. That purpose is continued in this addendum.

NEED FOR THE ADDENDUM

Recent important developments in the fast-moving field of solid waste composting indicate a need for an addendum. The original publication remains scientifically valid, but is technologically dated without this added information.

These developments represent currently available improvements over the technological approaches described in the original publication. Because far reaching decisions on solid waste management are being formulated in New Jersey, this information must be promptly brought to the attention of decision-makers.

Certain aspects of biological control are involved, as currently routinely employed in another industry (see Suggested Reading). These relate primarily to the recirculation of "used air" in conjunction with oxygenation, heat removal, temperature control, and instantaneous measurement of the rate of waste decomposition. The capacity to recirculate air in turn benefits materials handling, the feasibility of complete enclosure, and odor prevention and control. Capital and operating costs are potentially lowered.

Copies of the original "Elements of RFP" publication may be obtained from the local

offices of the Rutgers Cooperative Extension in each New Jersey county or by writing to Rutgers Cooperative Extension, Cook College, Rutgers University, New Brunswick, NJ 08903–0231.

EXEMPTIONS FROM THESE CONSTRAINTS

As stated in the original publication, a purpose was "...to stimulate disciplined creativity within the confines of well–established, settled, scientific understanding and sound practice." Thus, an actual RFP should leave open the possibility of exemptions from the stated constraints. This was originally expressed as follows, and is repeated here for emphasis.

"Proposals not conforming to these constraints shall be considered on their scientific and technical merit and relevant operational experience. Areas of nonconformity should be justified on the basis of specific, objective data as rigorously interpreted in terms of cause–and–effect relationships."

TABLE OF CONTENTS (original plus addendum)

The original Table of Contents is reproduced below, with the added or supplemented topics indicated by underlining and asterisks. This is followed by the new information itself.

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TABLE OF CONTENTS

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TEXT OF NEW OR SUPPLEMENTED SECTIONS

*Air recirculation ratio: After passage through the composting material, used air shall either be removed from the system or blended with fresh air for recirculation through the material. The proportions of used and fresh air shall be continuously variable over the entire range (from 100% fresh air-zero recirculated, to 100% recirculated-zero fresh). The proportions of fresh and recirculated air shall be determined according to a program based on constant monitoring of temperature and O_2 content. The system shall continuously seek a thoroughly oxygenated state and a temperature supportive of maximal rates of aerobic microbial decomposition of the waste. The volume of fresh air introduced, and likewise the volume of exhaust air vented, shall be minimized, consistent with the objective of maximizing the rate of decomposition.

*Heat exchanger: It shall be possible to pass used air through a heat exchange condenser prior to recirculation, or to bypass this condenser. The exchange medium shall be either low head/high volume ambient air or water from a convenient surface supply or well.

*Monitoring Waste Decomposition Rate: Reports shall be available on demand of the instantaneous and cumulative rates of decomposition in terms of heat generation and th data that are used to calculate heat generation.

*Venting: There shall be no intermingling of used air emanating from the composting material and "building work-place air." Used air that is not to be recirculated shall be passed through a biological scrubber prior to its release to the atmosphere. Scrubber material will consist of thoroughly stabilized, nitrified compost.

*Enclosure: The primary stage composting shall be entirely enclosed. Integral to the enclosure shall be all of the features necessary to accomplish waste decomposition in the manner noted above.

*Filling: The filling of the primary stage composting unit shall preclude compaction, and b uniform to prevent air short-circuiting.

*Effects of Air Recirculation: The capacity to recirculate used air while continuously varying the ratio of fresh and recirculated air has a number of important advantages, as follows:

1) Less fresh air can be used to remove heat and supply oxygen, as needed to maintain maximal rates of aerobic decomposition.
2) Intermingling of used air with building work-place air is avoided.
3) The vertical temperature gradient described on page 9 of the original report is shallower, improving biological process control and odor prevention.
4) Because of the relatively small volume of exhaust air (see items 1 and 2 above) it becomes practical to pass the exhaust air through a biological scrubber. This provides a final odor-control step, in addition to the odor prevention intrinsic to high rates of aerobic decomposition as effected through precise biological process control.

SUGGESTED READING

This section is supplemented, as follows:

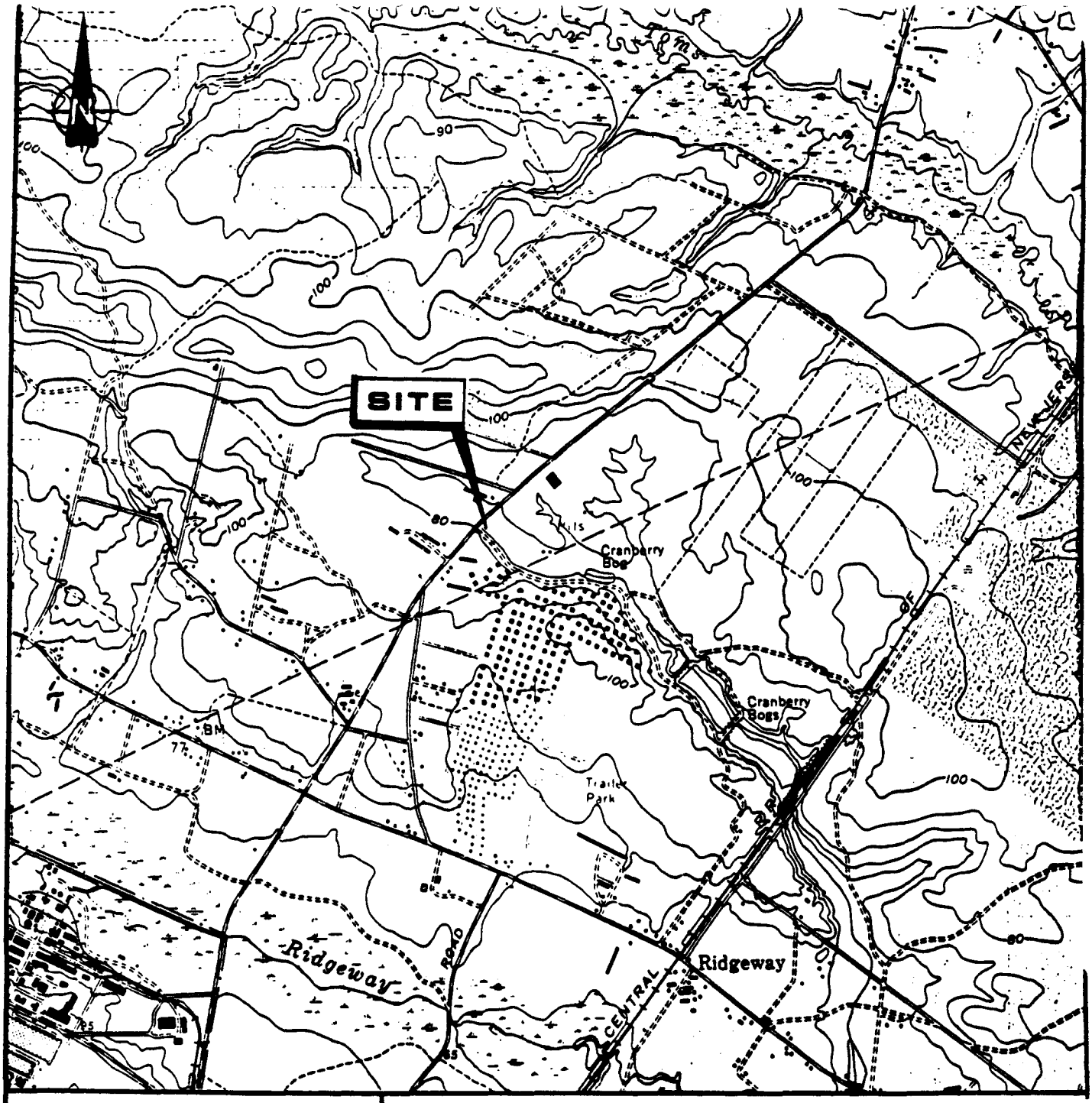
Hermans, C. (1988). Climate and cultivation technique. Chapter 9 (pp.213-248) in, The Cultivation of Mushrooms (L.J.L.D. van Griensven, ed.). Mushroom Experimental Station, P.O. Box 6042 AA Horst, the Netherlands.

Klaver, J.S. & van Gils, J.J. (1988). Construction and equipment. Chapter 6 (pp.125-143) in, The Cultivation of Mushrooms (L.J.L.D. van Griensven, ed.). Mushroom Experimental Station, P.O. Box 6042 AA Horst, the Netherlands.

Miller, F.C., Harper, E.R., Macauley, B.J. & Gulliver, A. (1990). Composting based on moderate thermophilic and aerobic conditions for the production of commercial mushroom growing composts. Australian J. Exp. Agric. 30:287-296.

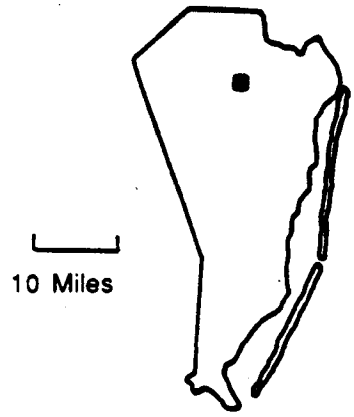
APPENDIX M

Facility Location Maps



Key Map

Ocean County

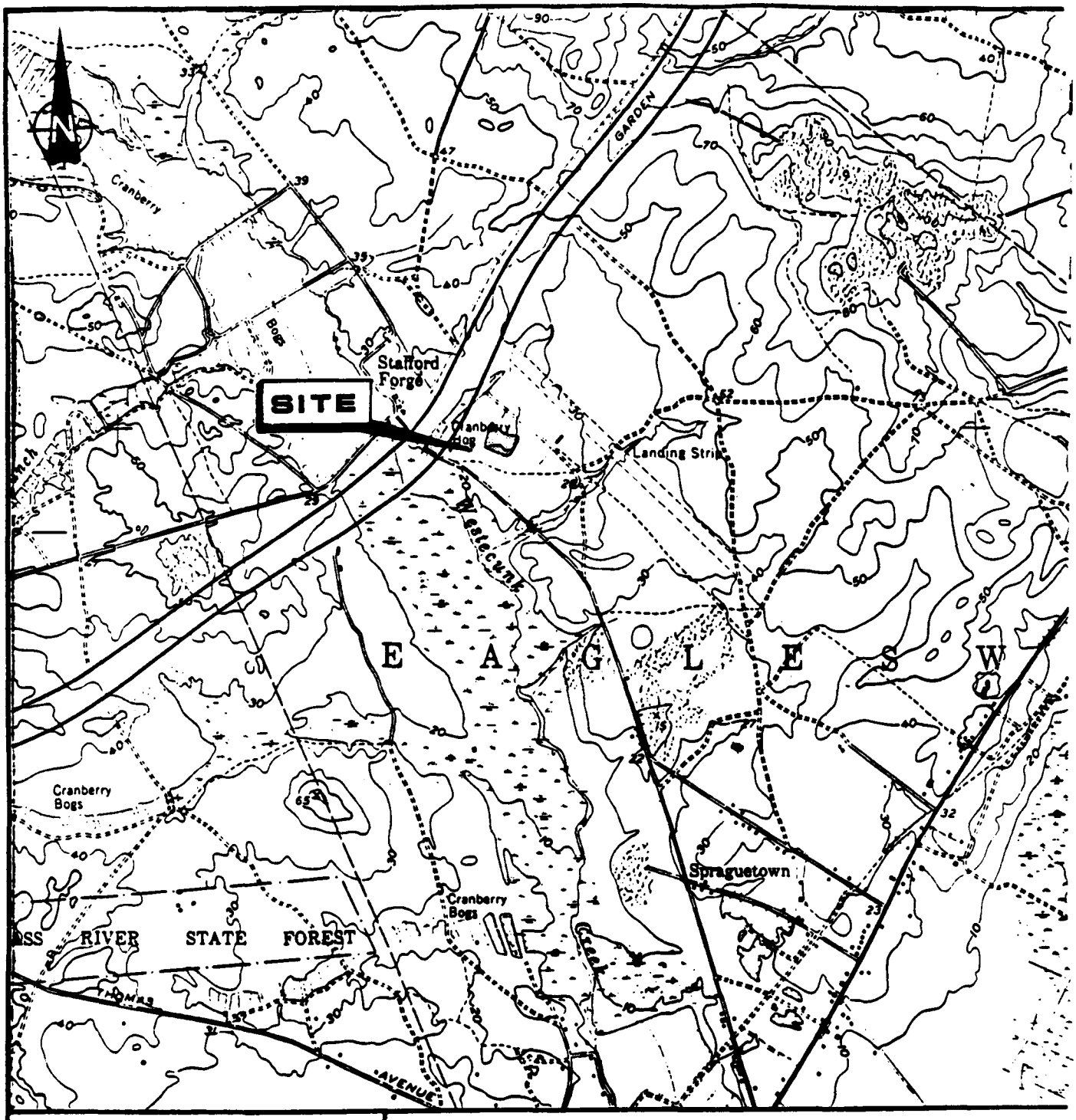


Ocean County
Solid Waste Management Plan

Facility Location Map

Bil-Jim Construction/Recycling Activity Center

Scale: 1" = 2,000'
Source: U.S.G.S. Lakehurst Quadrangle, 7.5 Minute Series



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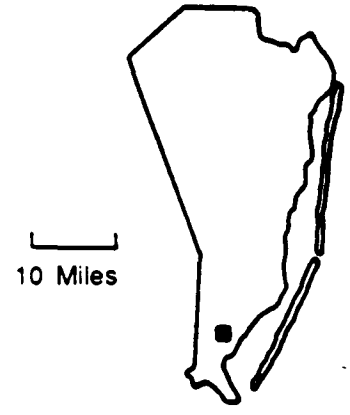
Ocean County



10 Miles

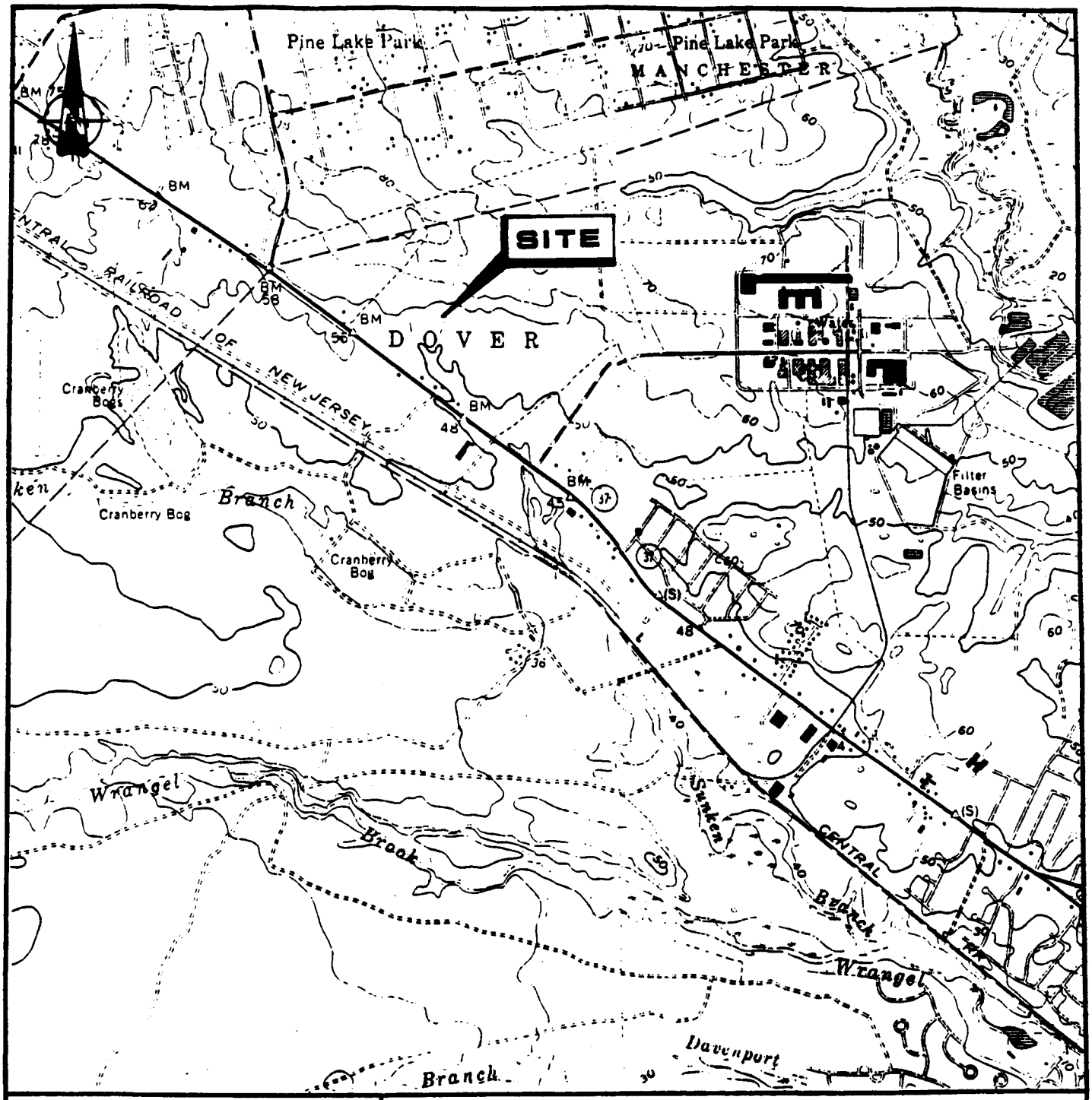
Ocean County
Solid Waste Management Plan

Facility Location Map

John Kummings'
Stump Reduction Center

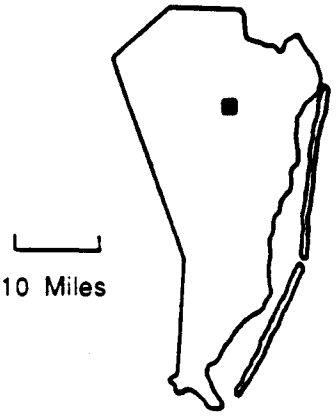
Scale: 1" = 2,000'

Source: U.S.G.S. West Creek Quadrangle, 7.5 Minute Series



Key Map

Ocean County



10 Miles

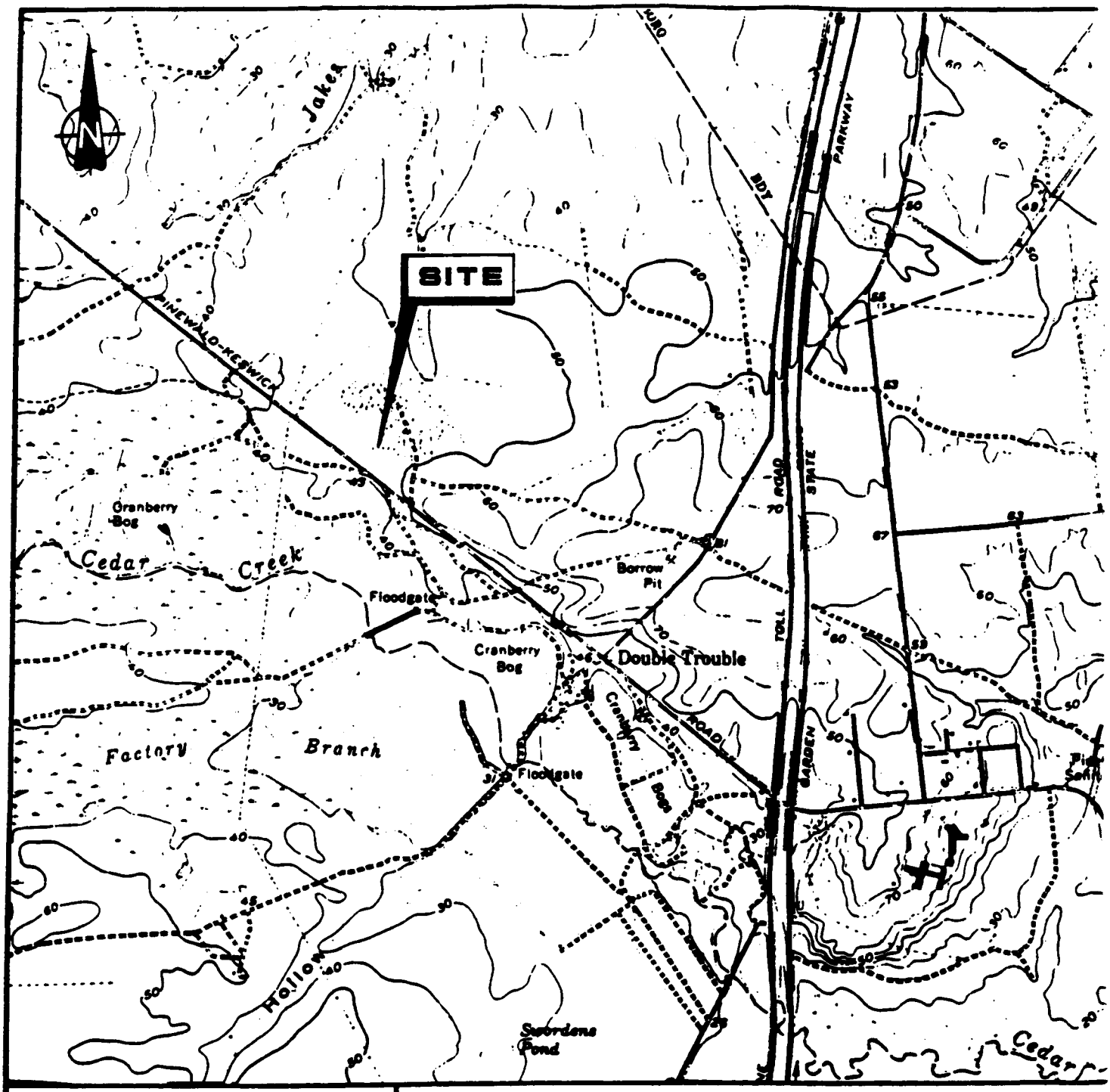
Ocean County
Solid Waste Management Plan

Facility Location Map

Rosetto Commercial MRF

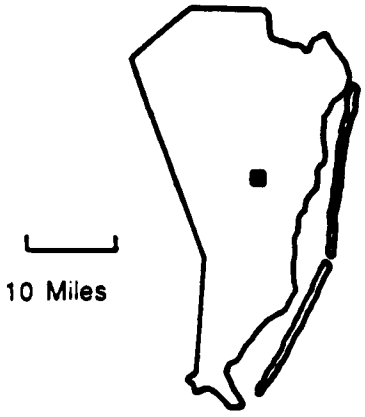
Scale: 1" = 2,000'

Source: U.S.G.S. Keswick Grove and Toms River Quadrangles, 7.5 Minute Series



Key Map

Ocean County



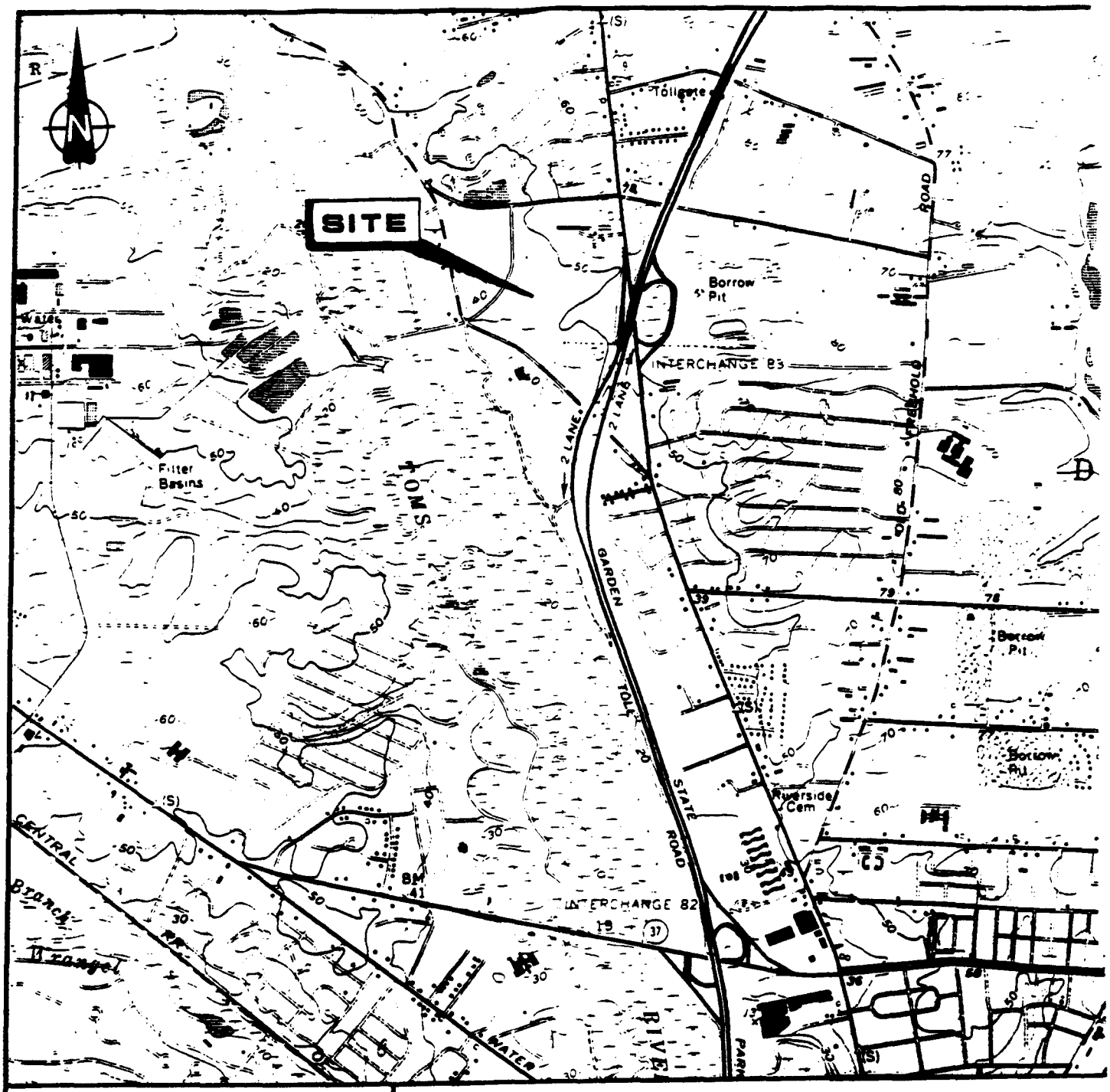
10 Miles

Ocean County
Solid Waste Management Plan

Facility Location Map

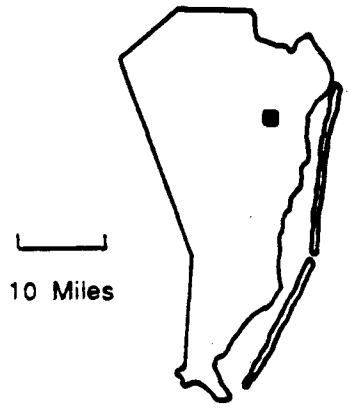
Berkeley Township Vegetative Waste Composting Facility

Scale: 1" = 2,000'
Source: U.S.G.S. Toms River Quadrangle, 7.5 Minute Series



Key Map

Ocean County



10 Miles

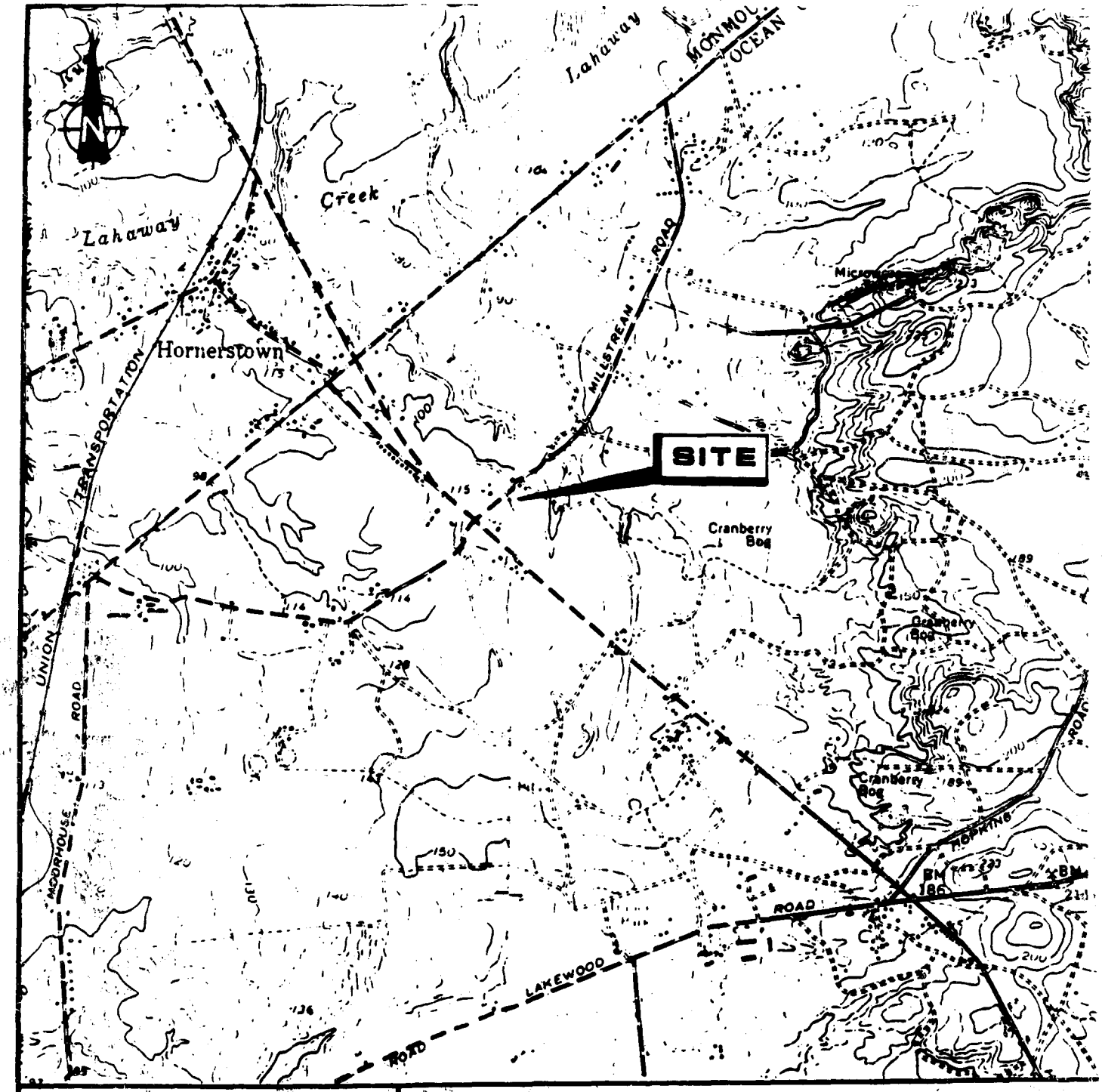
Ocean County
Solid Waste Management Plan

Facility Location Map

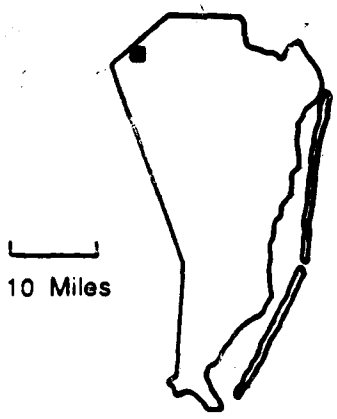
Whitesville Road
Leaf Composting Facility

Scale: 1" = 2,000'

Source: U.S.G.S. Toms River Quadrangle, 7.5 Minute Series



Key Map
Ocean County



Ocean County
Solid Waste Management Plan

Facility Location Map

Nemeth Farm
Leaf Mulching Site

Scale: 1" = 2,000'
Source: U.S.G.S. New Egypt and Cassville Quadrangles, 7.5 Minute Series