



State of New Jersey

Department of Environmental Protection
PO Box 402
Trenton, NJ 08625-0402

Richard J. Codey
Acting Governor

Bradley M. Campbell
Commissioner
Tel. # (609) 292-2885
Fax # (609) 292-7695

March 31, 2005

Dear Interested Party:

I am pleased to release the draft Statewide Solid Waste Management Plan for review by the New Jersey Advisory Council on Solid Waste Management, by county and local officials, and by interested members of the public.

You will see that the draft Plan documents a troubling decline in New Jersey's recycling rates, uneven performance among relevant agencies with respect to planning and enforcement, and inadequate funding to promote recycling and long-term solid waste management planning. More fundamentally, court decisions limiting the role of solid waste flow control by state and local agencies call into question the very structure and efficacy of New Jersey's current solid waste management laws, as reflected in immediate problems of stranded debt and the long-term failure to plan and create new and long-term solid waste management capacity.

As you begin your review of the draft Plan, the Department will begin to implement many of the initiatives identified, starting with a concerted set of recycling compliance and enforcement measures. We also have begun a dialogue concerning restoration of dedicated funding for recycling programs. I invite the Council and the public to help us strengthen these and other aspects of the draft Plan as we move forward.

I would also call attention to a number of areas where the Plan breaks new ground, in the hope that these particular aspects of the Plan might have the benefit of further review and input. For example, the legislative initiatives suggested in the Plan bring new attention to commercial product responsibility and stewardship, including proposals on toxic packaging, mercury-containing products, and electronics recycling. The draft Plan would benefit from further attention to waste minimization and waste reduction proposals. In addition, for the first time, the draft Plan presents contingency planning for the significant solid waste challenges that might result from a terror event or natural disaster. The Council and the public will play a critical role in shaping these initiatives.

In addition, I believe there are a number of areas where the draft Plan, in its current form, requires strengthening to meet New Jersey's needs and where the perspective of the Council and the public can be most helpful. First, I hope that the final Plan can identify additional areas in which regulatory reform would contribute to more rational and cost

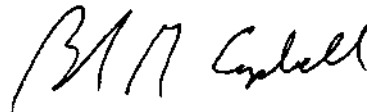
effective solid waste management and planning, and where such reform would reconcile an outdated regulatory structure with a solid waste market that has changed dramatically since New Jersey's solid waste management laws were last amended. In particular, I would urge the Council to consider whether it is time for a wholesale phase-out of remaining areas of tipping fee regulation, linked perhaps to dedication of revenues to recycling and capacity development.

Second, the current draft does not adequately address the linkages between solid waste capacity planning and New Jersey's air pollution and traffic congestion. In particular, the Plan would benefit from more specific proposals to shift solid waste transport from trucks to rail and marine facilities.

Finally, the draft does not present a comprehensive solution to the emerging problem of solid and hazardous waste transfer facilities using the federal transportation laws to evade both state and county regulation to protect public health and the environment. While the Department is revising its regulations to meet this challenge and has urged members of New Jersey's congressional delegation to clarify applicable federal law, the Council may have additional ideas and proposals to meet this challenge.

While there is additional work to do, I applaud Director Norine Binder and former Director John Castner for a draft Plan that gives long-overdue attention to New Jersey's solid waste management challenges. I look forward to your leadership, and the views of the public, in revising and finalizing the Plan before the end of 2005.

Sincerely,

A handwritten signature in black ink, appearing to read "B M Campbell". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Bradley M. Campbell
Commissioner

FORWARD

Every one of us generates waste. With approximately 8.4 million residents living in the most densely populated state in the nation, the environmentally sound management of New Jersey's solid waste is a public policy challenge that is neither static, nor insignificant in scope.

From the disposal capacity crisis of the mid- 1980's, the dissolution of regulatory flow control of the mid-1990's and on to falling recycling rates over the last several years, this issue is marked by the need for ongoing governmental attention. Upward trends in the generation of solid waste over the past several years will lead to the necessity for identification of additional disposal capacity in the not too distant future, which will result in more pressure on the quality of life in many communities of the state, in addition to increased costs for solid waste disposal. If recent generation trends continue, and we do nothing to reduce the waste stream, or increase recycling tonnage, one can predict a waste stream of some 33 million tons by 2015. The present transfer and disposal system in this state is not sufficient to provide for the management of this volume of waste, and it is in this context that the following Statewide Solid waste Management Plan update is presented.

This document is intended to provide the framework and vision necessary for all levels of government in the state to understand the current challenge and fulfill their responsibilities under the Solid Waste Management Act. The State has provided the planning tool (this document) that details the steps necessary to enhance recycling through county and local government action, and provides recommendations for legislative initiatives we feel are necessary to assist in this endeavor. When these various strategies are implemented, we believe that the diverse costs associated with solid waste management, from natural resource utilization to air and water pollution and commitment of local tax dollars, will be reduced.

Given this vision, and mindful of the consequences for failing to take action at this time, the state fully anticipates a focused and collaborative effort by all parties to reinvigorate the recycling mandate in New Jersey, and return us to a solid waste management policy that demonstrates true leadership.

EXECUTIVE SUMMARY

On April 13, 2002 New Jersey Department of Environmental Protection Commissioner Bradley M. Campbell signed Administrative Order No. 2002-10, which requires, among other things, that the Department revise, update and readopt the Statewide Solid Waste Management Plan. There has been significant change to the landscape of solid waste management in New Jersey since the last plan update in 1993. Statewide waste flow rules have been invalidated by Federal court action, and annual increases in the state's recycling rates in the late 1980's and early 1990's have been replaced by declining rates. Once financially secure disposal facilities are struggling to maintain systems burdened with significant "stranded" debt since the "Carbone" and "Atlantic Coast" Federal Court decisions. Other notable changes that have occurred since 1993 include the partial deregulation of the solid waste utility industry and the adoption of the federal hazardous waste program. Also, the state has lost a variety of funding sources since the sunseting of several taxes, including the so-called "recycling tax" and the Resource Recovery Investment Tax. As a result, the state, the counties and the municipalities do not have the range of resources once available to them to properly plan and implement for environmentally protective solid waste management. It should be noted that since "Atlantic Coast" and the end of state regulatory flow control, a number of counties have undertaken constitutional re-procurement of their disposal needs in a manner that allows them to control the flow of waste and therefore their management of it. In addition, there are several counties that have instituted intra-state flow control plans. Those plans allow for the free movement of waste out-of-state; however, if the waste stays in state, it is directed to a facility in that county. Further details on the current disposal schemes in all twenty-one counties can be found in Section A of this Plan.

The Solid Waste Management Act (the Act) has provided the framework for the collection, transportation and disposal of solid waste in the State of New Jersey for over thirty years. Over that period, the Act has been amended many times, as circumstances have dictated, in order to delineate the responsibilities of municipal, county and state government in these endeavors. Under the structure in place for the last twenty eight years, the twenty one counties and the New Jersey Meadowlands District have been responsible for (among other things) the development of plans for disposal facility siting and recycling, subject to state review. Municipalities are responsible for the collection and disposal of solid waste in accordance with those county plans. Since 1987, municipalities have also been responsible for seeing that recycling programs are available for commercial, institutional and residential generators, thus meeting the mandatory recycling goals established in the Act. Generally speaking, one can qualify the Act as very successful, as it resulted in the development of millions of tons of environmentally protective solid waste disposal capacity, and established a statewide recycling program that still provides convenient and economically sustainable curbside recycling opportunities.

At various times throughout the history of the Act, the state has provided, through legislation, certain financial assistance to local governments as an aid in meeting their responsibilities under the Act. Many of those assistance programs were limited in their duration, including the assistance provided under the Mandatory Recycling Act. However, the responsibility for providing environmentally protective solid waste management, and mandatory recycling

opportunities for all generators, have not “sunset”, even if the financial assistance has. Therefore, even though this updated Statewide Solid waste Management Plan recommends the reestablishment of financial assistance especially in the area of recycling, the responsibilities of local government to provide continued recycling education, collection programs and enforcement, when appropriate, are expected, whether or not assistance becomes available.

As is further detailed in the following pages, New Jersey residents generated over nineteen million tons of solid waste in 2003, of which nine million tons were disposed and over ten million tons were recycled. Of the tonnage disposed, approximately sixty percent was disposed of at in-state facilities, and forty percent (3.9 million tons) was disposed of out-of-state. This represents the largest tonnage of exported waste since 1989, and represents an increase of nearly seventy- percent since 1994, when exports of waste were at their lowest volume in the last twenty years.

Notwithstanding the framework provided by the Act for the creation of environmentally protective and cost-controlled disposal capacity, the ability to develop in-state capacity has been severely limited by the constitutional failure of the state’s long standing, former policy of “self-sufficiency”, and the waste disposal regulations which helped to implement that policy. In addition, the closure of the Fresh Kills Landfill on Staten Island has placed additional pressure on regional disposal facilities as New York City struggles to manage an average of 25,000 tons of solid waste produced there each day.

Data shows that in 2003 New Jersey generated 19.8 million tons of solid waste. We recycled 10.3 million tons or 51.8% and 9.5 million tons were sent for disposal. Of the 9.5 million tons disposed, 1.5 million or 8% of the total waste generated went to resource recovery facilities, 3.8 million or 20% was disposed at landfills located in New Jersey and 3.7 million or 19% was sent for out-of-state disposal. The data also shows that the municipal solid waste stream (MSW) recycling rate stood at 32 %, down from a high of 45% in 1995.

This plan reaffirms the state’s goal of recycling 50% of the MSW stream. The overall strategy for achieving this ambitious goal starts with a quantification, on a statewide basis, of the increased tonnage of recycled materials needed. As further detailed in Section B, an increase of 1.7 million tons of material recycled from that waste stream is necessary to achieve this goal. This is further calculated on a per county basis, with an analysis of current MSW recycling tonnages by county, and the necessary increases required by each county. The statewide increase needed is also expressed in terms of increased recycling tonnage by material, such as newspaper, corrugated, food waste, etc. Additionally, the plan targets specific classes of generators (schools, multi-family housing complexes, small and medium sized businesses) that need to be focused on in terms of expanded recycling opportunities for the materials identified.

As a critical first step in achieving the recycling goal, each county will have to adopt a new plan within 270 days of formal adoption of this Statewide Solid Waste Management Plan. In addition to providing any necessary updates to those plans, as further detailed in Section A, including but not limited to disposal and solid waste system financing strategies, new recycling plans will need to follow from the outline above. These plans will have to further identify the local strategies to be used to achieve the recycling tonnage target identified for each county, with particular

attention paid to how recycling opportunities will be provided to the generator classes targeted, methods for public promotion of these opportunities, and methods for enforcing local recycling mandates. In this regard, the Plan indicates that the Department will consider using its statutory and discretionary authority to withhold various grants from counties and/or municipalities that fail to perform adequately. In addition, all future plan amendments for new or expanded solid waste facilities shall be in conformance with the state's "smart growth" initiative regarding land use development.

The "Clean Communities and Recycling Grant Act" of 2002 provides up to \$4 million a year for municipal and county recycling programs. However, more needs to be done in this area to provide for a long-term and stable funding source for the remainder of the recycling program needs, as this Plan details in Section B.

Section C includes an analysis of the capacity for in-state disposal and recycling based on the current utilization of operating facilities in this state. Those operating utilizations range from 72 to 94 percent for MSW incinerators, 36-165 percent for landfills (indicating that some may close prior to their current estimated closure timeframe, and 75 percent for transfer stations. Partially as a result of the fact that new disposal facilities will always be difficult to site, and expansions of existing facilities are limited, this plan promotes a relatively new concept known as "sustainable landfills". There are a number of mechanisms used to sustain landfills, such as leachate recirculation, use of alternative covers, landfill mining and others.

Another critical aspect of solid waste management is the continued effort to insure that all landfills that have operated in this state have been closed properly. In this regard, the state will continue to: identify the universe and status of each landfill; put landfills of the Comprehensive Site List. As appropriate; use public funds where immediate environmental concerns warrant; promote brownfields redevelopment of closed landfills; implement a joint enforcement strategy; simplify financial assurance requirements for municipal landfills, and explore the possibility of alternatives to impervious caps on the smaller landfills in the Pinelands.

One of the principal contaminants of concern from resource recovery facilities and iron and steel smelters is mercury. While significant strides have taken place over the last decade and mercury emissions from these facilities have been greatly reduced, there is a need to do more. The Department is developing regulations that will further control mercury emissions by increasing the efficiency of mercury collection from the current standard of 80%. Additionally, a new rule being promulgated by the Department will require that mercury switches in scrap automobiles be removed prior to the introduction of the scrap metal in the recycling system. This is further detailed in Sections B and D.

Other current policy issues discussed in the Plan include a discussion on Security and Bioterrorism in Section J (Regulated Medical Waste), and scrap tire management in Section E. For the latter, a discussion of the implications of the passage of P.L. 2004, c.46, which establishes, for the first time, a permanent funding source for the remediation of scrap tire piles, is included.

The 1978 amendments to the New Jersey Solid Waste Management Act (N.J.S.A. 13:1E-46) require that the Statewide Solid Waste Management Plan contain a sewage sludge management strategy. Section K fulfills the statutory mandate and replaces the 1987 SSMP. Key components of this SSMP include the following:

- A historical perspective of sludge management in New Jersey;
- A policy that promotes beneficial use, but also recognizes the need for diversification;
- New Jersey's regulatory approach to sludge including a description of permitted and prohibited practices;
- An overview of existing management including production, quality and management statistics; and
- A description of ongoing and emerging issues including phosphorus limitations in land application, odors, mercury, radionuclides, dioxins, and the most recent recommendations of the National Academy of Sciences.

The implementation of the Water Pollution Control Act has resulted in greater levels of treatment of and pollutant removal from wastewater before discharge to surface or ground waters, and the generation of larger quantities of all residuals (sewage sludge, domestic septage, potable water treatment plant sludge, food processing sludge, and other nonhazardous industrial sludge) as a by-product of this treatment. In New Jersey, domestic treatment works generated about 233,300 dry metric tons of sewage sludge in 2003. About 6 percent was disposed out-of-state, 27 percent was incinerated, and 67 percent was beneficially used, either in or out-of-state.

It is the Department's policy that generators utilize beneficial use (such as the conversion of sewage sludge into products to be used as a fertilizer or soil conditioner) wherever possible. However, further increases in in-state beneficial use will be difficult due to the pressures on available land on which to apply sewage sludge products. New Jersey is a densely populated state with minimal land area available for generators to find and develop new markets for their products. Therefore, although it is the Department's policy to encourage beneficial use alternatives, it must be recognized, due to these pressures, that a policy that also encourages diversity in management alternatives is necessary.

Additionally, the process for adoption of this Plan is recognized by the Department as an opportunity to examine, from a holistic standpoint, the overall effectiveness and efficiency of the solid waste management system in the state. Collectively, this system is intended to provide an environmentally sound and economically efficient way of managing all of the non-hazardous waste generated in the state. It is important that we continually seek greater efficiencies in the way this system operates, and the services that are provided to the citizens of New Jersey by the Department of Environmental Protection, and the regulated community of solid waste collectors/transporters and solid waste disposal facility and recycling center operators. In that regard, Section L details those recommendations for statutory and regulatory initiatives that the Department feels are necessary to move these issues forward.

It is essential that we begin now to reverse current trends on recycling, explore legislative, economic and programmatic methods to reduce annual increases in the waste stream, and expand the useful life of those disposal assets that we have. Additionally, increased transfer capacity

must also be investigated. To these ends, this Plan offers recommendations for focusing awareness on, and providing financial assistance for the reduction of waste generation and increased recycling; a blueprint for achieving a recycling rate of fifty percent of the municipal waste stream in order to realize significant reductions in disposal volumes, air and water pollutants, natural resource utilization, greenhouse gas emissions and practical mechanisms for expanding the useful life of our in-state disposal assets.

A. SOLID WASTE PLANNING

A.1. Synopsis of Significant Legal Decisions Since the Last State Plan

As the most densely populated state in the union, located between major metropolitan centers, New Jersey has long been a battleground over solid waste disposal. The scarcity of open space for landfill facilities, combined with a large waste-generating population, has forced New Jersey to expend tremendous government resources and energy to ensure safe and adequate disposal capacity for the waste generated by its citizens. Some of those efforts, such as New Jersey's 60 % recycling rate, have been huge successes. Others, such as its effort to preserve in-state landfill capacity for in-state generators, have not. See, *Philadelphia v. New Jersey*, 437 U.S. 617 (1978).

The legal uncertainty regarding permissible government regulation of solid waste collection and disposal has compounded the problem. After *Philadelphia v. New Jersey*, New Jersey's counties embarked on a State-mandated program to finance and build sufficient in-state capacity to dispose of New Jersey's solid waste. Critical to the success of this program was flow control, which guaranteed the flow of solid waste and revenue necessary to maintain this capacity. Flow control originally withstood legal challenge, based on a finding that the local benefits outweighed the incidental burden on commerce. *J. Filiberto Bros. Sanitation v. NJDEP*, 857 F.2d 913 (3rd Cir. 1988). However, long after over \$1.5 billion in public debt had been incurred to build facilities, the Third Circuit reversed its prior ruling, based on the U.S. Supreme Court's decision in *Carbone v. Town of Clarkstown*, 511 U.S. 383 (1994). *Atlantic Coast Demolition and Recycling v. Board of Freeholders, Atlantic County*, 48 F.3d 701 (3d Cir. 1995), after remand 112 F.3d 652 (3d Cir. 1997) cert. denied 522 U.S. 966 (1997).

Since the 1970's New Jersey has regulated the collection, processing and disposal of solid waste through the Solid Waste Management Act, N.J. Stat. Ann. 13:1E-1 et seq. (SWMA), and the Solid Waste Utility Control Act, N.J. Stat. Ann. 48:13A-1 et seq. (SWUCA). The SWMA requires each district/county to develop a comprehensive plan for the collection, transportation and disposal of all solid waste generated in the district. N.J. Stat. Ann. 13:1E-19, 13:1E-21. The New Jersey Department of Environmental Protection (DEP or Department) reviews and certifies each district plan to ensure its consistency with statewide solid waste management objectives, criteria and standards. N.J. Stat. Ann. 13:1E-24. Under SWUCA, all solid waste facilities in the state were designated as utilities, thus subject to rate regulation ensuring a guaranteed rate of return in exchange for agreeing to accept all waste from within their service areas. N.J. Stat. ann. 48:13A-1 et seq.

The need for comprehensive public management of solid waste in New Jersey arose out of a crisis in the 1970's, as the development of new, environmentally sound disposal sites could not keep pace with the closure of old dumps and the increase in solid waste generation. In addition, the Legislature's actions were prompted by New Jersey's long history of anti-competitive conduct in the solid waste industry. As unsafe facilities within the state were closed, New Jersey became a net exporter of waste. At times, New Jersey was turned away from out-of-state landfills, as neighboring states also grappled with outdated and unsafe facilities. Accordingly, New Jersey pressed forward with its ambitious program to reduce the amount of waste it generates through mandatory recycling and to build state-of-the-art capacity for the remainder of its waste.

As a result, counties that chose to build facilities financed those projects through revenue bonds issued by the counties or by their utility and improvement authorities. The revenue assured by the guaranteed flow of waste to the publicly owned facility backed these bonds, representing billions of dollars of public debt. By 1990, thirteen new facilities had been built with public funds.

After the Third Circuit determined in *Atlantic Coast* that *Carbone* invalidated New Jersey's waste flow system, each county struggled to address the new legal landscape. Those counties that contracted with private entities for solid waste services modified their systems. Disposal contracts were either rebid in a process open to both in-state and out-of-state bidders, as permitted by the decision in *Harvey & Harvey v. Delaware Solid Waste Authority*, 68 F.3d 788 (3d Cir. 1995) cert. denied 516 U.S. 1173 (1996), or waste was permitted to flow freely based on market forces or voluntary municipal contracts.

Counties, however, that expended public funds to construct facilities could not as easily modify their systems and still pay the debt incurred. Their rates were generally higher than many out-of-state facilities, due to factors such as availability of open space and density of population, the inability to reject unprofitable portions of the waste stream, and various taxes and surcharges designed to pay for recycling programs and ensure the proper closure of landfills. These counties could not simply reinstitute waste flow through a non-discriminatory bidding process, as the entity awarding the bid would also be one of the bidders. It was thus impossible to create the "level playing field" necessary to satisfy Federal Court prohibitions against discriminatory market practices. Other efforts to offset debt payments and allow these public facilities to compete economically with landfills in less populated areas also failed.

As a result, the State has stepped in to subsidize the debt payments of certain counties and forgive certain solid waste-related state loans in order to prevent default and the difficulties that could result for public agencies statewide that seek to raise capital. These subsidies and loans are only a preliminary solution.

In *Philadelphia v. New Jersey*, 437 U.S. 617 (1978) the United States Supreme Court barred New Jersey from restricting the ability of private landfill operators to accept and process solid waste from outside the state. Although the Court recognized the economic and environmental goals of New Jersey's prohibition, it found that the means of achieving them "imposes on out-of-state commercial interests the full burden of conserving the State's remaining landfill space." *Id.* at 626-28. The Court, however, made clear that "[w]e express no opinion about New Jersey's power, consistent with the Commerce Clause, to restrict to state residents access to state-owned resources, ... or New Jersey's power to spend state funds solely on behalf of state residents and businesses." *Id.* at 627, n.6 (citations omitted). Fourteen years later, in *Fort Gratiot Sanitary Landfill v. Michigan Department of Natural Resources*, 504 U.S. 353 (1992), the Court applied the ruling in *Philadelphia v. New Jersey* to Michigan's solid waste management system, which prohibited private landfills from accepting waste from different counties within the State. Once again, the Court was careful to stress that the case did not "raise any question concerning policies that municipalities or other governmental agencies may pursue in the management of publicly owned facilities. The case involves only the validity of the Waste Import Restrictions as they

apply to privately owned and operated landfills." *Id.* at 358-59. See also, *Oregon Waste Systems v. Department of Environmental Quality, State of Oregon*, 511 U.S. 93, 106, (1994) n.9 (noting that the case did not require the court to decide whether Oregon could spread the cost of solid waste management through market participation or other means not involving the regulation of private interstate commerce).

Carbone v. Town of Clarkstown, 511 U.S. 383 (1994), upon which the opponents of flow control universally rely, also involved a private facility, and thus did not directly decide the issue raised in *United Haulers Association v. Oneida-Herkimer Solid Waste Management Authority*, 261 F.3d 245 (2d. Cir. 2001). The Court did, however, note that public ownership and/or subsidy would effect the legality of a flow control measure. The Court stated:

Clarkstown maintains that special financing is necessary to ensure the long-term survival of the designated facility. If so, the town may subsidize the facility through general taxes or municipal bonds. But having elected to use the open market to earn revenues for its project, the town may not employ discriminatory regulation to give that project an advantage over rival businesses from out of State. *Id.* at 393.

Thus, the United States Supreme Court has not ruled on the legality of a flow control measure where a government agency, rather than electing "to use the open market," has instead invested public funds to control solid waste management within its borders and/or build public facilities.

The absence of a ruling on this issue has created a quagmire for local officials in New Jersey and elsewhere seeking to ensure safe and adequate disposal of waste generated by their citizens. *Carbone* has not been interpreted to require virtually automatic invalidation of flow control measures. Many Federal and State courts have permitted flow control under specific circumstances, so that the validity of these public measures literally depends on the jurisdiction in which the challenge is heard and hair-splitting distinctions between the provisions at issue.

For example, several courts have found that a government entity that enters the market as either a buyer or seller of solid waste disposal or collection services may regulate the flow of waste without violating the dormant Commerce Clause. The Courts of Appeals for the Third and Eighth Circuits have held that county and city-owned and operated landfills may bar waste from outside the jurisdiction. *Red River Service Corp. v. City of Minot, North Dakota*, 146 F.3d 583 (8th Cir. 1998); *Swin Resource Systems v. Lycoming County, Pa.*, 883 F.2d 245 (3d Cir. 1989) cert. denied 493 U.S. 1077 (1990). The Second Circuit in the decision below, held that a county could direct waste generated by its citizens to a local facility, as long as that facility was publicly owned. *United Haulers Association v. Oneida-Herkimer Solid Waste Management Authority*, supra, 261 F.3d 245. The Third Circuit, however, found New Jersey's system of directing waste to publicly owned facilities violated the Commerce Clause. *Atlantic Coast Demolition and Recycling v. Board of Freeholders, Atlantic County*, supra.

Where the government entities are the purchasers of solid waste services, the confusion is even greater. Several Courts of Appeals have held that a government entity may award exclusive rights to collect, process or dispose of waste as long as the system for choosing the exclusive provider does not discriminate against out-of-state bidders. *Maharg, Inc. v. Van Wert Solid*

Waste Management District, 249 F.3d 544 (6th Cir. 2001) pet. cert. filed 70 U.S.L.W. 3291 (Oct. 10, 2001) (No. 01-615) Houlton Citizens' Coalition v. Town of Houlton, 175 F.3d; 178 (1st Cir. 1999); Harvey & Harvey v. Delaware Solid Waste Authority, 68 F.3d 788 (3d Cir. 1995). Others have held that regardless of the bidding process, a government entity may enter the market as a buyer of services from private companies without implicating the Commerce Clause, as long as certain criteria were met. See, Huish Detergents, Inc. v. Warren County, Kentucky, 214 F.3d 707 (6th Cir. 2000) (disposal ordinance and franchise agreement with private hauler unconstitutional absent expenditure of public funds); SSC Corp. v. Town of Smithtown, 66 F.3d 502 (2d Cir. 1995) cert. denied 516 U.S. 1112 (1996) (town may contract with a single private company for collection of its residents' waste and direct that company through contract to go to a particular disposal facility, but town can not use its regulatory power to force other collectors to use preferred disposal location); USA Recycling v. Town of Babylon, 66 F.3d 1272 (2d Cir. 1995) cert. denied, 517 U.S. 1135 (1996) (town may "take over" collection and disposal and eliminate private market consistent with Commerce Clause even if it imposes sanctions for violating flow control ordinance); Barker Brothers Waste, Inc. v. Dyer County Legislative Body, 923 F.Supp. 1042 (W.D. Tenn. 1996) (market participation exception to Commerce Clause applies to flow control ordinances only if the government entity participates in both the collection and the disposal market). But see, Waste Recycling v. Southeast Alabama Solid Waste Disposal Authority, 814 F.Supp. 1566 (M.D. Ala. 1993), aff'd sub nom. Waste Recycling v. SE AI Solid, 29 F.3d 641 (11th Cir. 1994) (market participant exception does not apply to exclusive town contract for collection that designates disposal site).

In November of 2001, the State of New Jersey filed an amicus curiae brief to the US Supreme Court on the appeal of the United Haulers Association v. Oneida-Herkimer Solid Waste Management Authority case. In that brief, the State indicated: "While granting certiorari in this case will not resolve all of the confusion in the Courts of Appeals regarding the permissible parameters of local government participation in solid waste markets, it will provide clarity in one key area that has never been resolved by this Court, i.e., whether local government discriminates against interstate commerce by expending public resources to comprehensively manage solid waste and provide for its disposal at public facilities. The Court below found that such a system was not the type of protectionist measure that implicates the Commerce Clause. The Third Circuit, however, in striking down New Jersey's system, ignored the public/private distinction found determinative in this case. Other courts have done the same, without discussion of whether public ownership of the facility effected the Commerce Clause analysis. See, Waste Systems Corp. v. County of Martin, 985 F.2d 1381 (8th Cir. 1993); Coastal Carting v. Broward County, Fla., 75 F.Supp. 2d. 1350 (S.D. Fla. 1999); Waste Recycling, Inc. v. Southeast Alabama Solid Waste Disposal Authority, 814 F.Supp. 1566 (M.D. Ala. 1993). Aff'd 29 F.3d 641 (11th Cir. 1994) Cf. Southcentral Pennsylvania Waste Haulers' Association v. Bedford-Fulton-Huntingdon Solid Waste Authority, 877 F. Supp. 935 (M.D. Pa. 1994)."

Unfortunately, the Supreme Court refused to hear the appeal of the Oneida-Herkimer case. As a result, inconsistent rulings in the Federal Appeals Courts have left unresolved certain issues related to government management of solid waste. Specifically, it is unclear whether or not the Commerce Clause is implicated when local government, using public money to construct disposal facilities, then flows waste to those facilities. In the Third Circuit, which includes New

Jersey, it would appear as though the Commerce Clause is a prime consideration. However, in the Second Circuit, that would not appear to be the case.

A.2. County Solid Waste Management Planning

In 1970, the State of New Jersey adopted the Solid Waste Management Act (SWMA) which established a regulatory framework for the implementation of environmental standards for solid waste management. The SWMA was amended in 1975 to establish the current solid waste management planning process. The 1975 amendments assigned primary planning responsibilities, subject to detailed state level review and approval, to 22 solid waste management districts, which are comprised of the 21 New Jersey counties and the New Jersey Meadowlands Commission (NJMC). The SWMA required the districts to develop solid waste systems that maximize the use of resource recovery technologies, including recycling, composting and incineration, in recognition of the state's need to reduce the dependence on landfill disposal. By the early 1980's, the Department had approved solid waste management plans for each of the 22 solid waste management districts as was required by the SWMA.

The development of county solid waste systems to meet the disposal needs for the waste generated by the residents of the state has been varied. Currently, as the following county summaries indicate, 13 districts/counties have solid waste landfills (one of these is a privately owned landfill), and 5 counties have resource recovery incinerators. Of the 5 counties with resource recovery incinerators, 3 also have landfills to receive non-processible waste. As a response to recent court decisions noted previously, four waste management systems are in use by the counties.

Non-discriminatory Bidding Flow Control.

Under this system, as a result of a non-discriminatory bidding process, which allows in-state and out-of-state companies to bid on a contract for disposal of a county's waste, counties can institute solid waste flow control on the waste contracted. The waste that is subject of the contract is required to be disposed of at the contracted location under penalty of law.

Intrastate Flow Control

An intrastate flow control system mandates that all non-recycled solid waste generated within a county which is not transported out-of-state for disposal shall be disposed of at the designated in-county disposal facility.

Market Participant

A market participant system allows a county owned facility to compete with other in-state and out-of-state disposal facilities for the disposal of the solid waste.

Free Market

A free market system allows solid waste generated within a county to be disposed at whatever disposal facility agrees to accept the waste, based on terms freely agreed to by the generator, the transporter and the disposal facility operator.

Eight counties have demonstrated non-discriminatory bidding processes for solid waste systems and/or have approved solid waste disposal controls from the Department. The remaining 13 counties utilize either a market participant or free market approach for disposal of the solid waste generated within their borders. Also, due to the previously noted debt situation that has arisen with the counties that developed solid waste facilities or attempted to develop facilities, new solid waste facility development with public financing will be a challenge for both the counties and the state.

The New Jersey Solid Waste Database Trends Analysis table, located in Table A-1, contains the solid waste generation, recycling and disposal statistics from 1985 through 2003. Also, located in Table A-2 is the Solid Waste Exports Table. As indicated in these tables, solid waste generation has been steadily increasing since 1985. Various factors may be responsible for the escalating solid waste generation rate such as the strong economic conditions New Jersey has experienced population increases and increased product packaging for security against product tampering. The tables also indicate that during the past several years recycling tonnages have been static. The possible causes of the static recycling tonnages are addressed in the chapter on recycling. However, the increasing solid waste generation and static recycling tonnages have resulted in a decreasing recycling rate since 1997.

A comparison of the previous Statewide Solid Waste Management Plan and this Plan Update indicates the evolutionary process of county and state solid waste management planning. State and federal court actions have required great flexibility in the planning process. The Department firmly supports the provisions of the SWMA that commit to county solid waste management planning primacy, with detailed state oversight, for the solid waste management planning process. In the recent past, proposals have been made in New Jersey legislature to localize solid waste management planning to the municipal level. It is the Department's position that the municipal government is not the appropriate level of government for the planning process because it would inhibit facility development, it would be much more difficult to develop and implement an environmentally comprehensive and cost effective system, and municipal government would not be able to address regional emergency situations that occasionally arise for solid waste disposal.

The state, through this Solid Waste Management Plan Update, shall establish the overall policy objectives and goals for solid waste management in New Jersey. The counties and the NJMC shall have the responsibility for developing their respective district solid waste management plans consistent with the state's goals and objectives. Therefore, each district shall, within 270 days of the adoption of the Updated Statewide Solid Waste Management Plan, adopt and submit to the Department, an updated district solid waste plan. This district plan update shall demonstrate consistency with the State Plan. Further, the district plans shall reiterate the district plan requirements contained in N.J.S.A. 13:1E-21. Specifically, revised district plan updates shall include, but not be limited to the following components:

- 1) Designation of the department, unit or committee of the county government (or district in the case of the New Jersey Meadowlands Commission) to supervise the implementation of the district plan;

- 2) An inventory of the quantity of solid waste generated within the district for the ten year period commencing with the adoption of updated district solid waste management plan;
- 3) An inventory of all solid waste and recycling facilities (lot and block and street address) including approved waste types and amounts, hours of operation and approved truck routes;
- 4) An outline of the solid waste disposal strategy to be utilized by the district for a ten year planning period;
- 5) A procedure for the processing of applications for inclusion of solid waste and recycling facilities within the district solid waste management plans. The procedure shall state the applicant requirements for inclusion into the district plan and the specific county review process/procedures, including time frames for county approvals or rejections and subsequent submittals to the Department. **Note-** the criteria for inclusion shall **not** include a requirement that local zoning or planning board approval(s) be obtained as a condition for inclusion within the district solid waste management plan, nor shall such a requirement be made a condition for subsequent construction or operation of any facility;
- 6) Utilizing the data supplied in Table B-1 that identifies the additional tonnage of recycled materials in the MSW stream (by material commodity types) required by each county to meet the mandated MSW recycling goal, a strategy for the attainment of the recycling goals as outlined above. The strategy shall include, as necessary:
 - a) the designation of the currently mandated recyclable materials and additional materials, if any, to be source separated in the residential, commercial and institutional sectors;
 - b) a listing of those entities providing recycling collection, processing and marketing services for each of the designated recyclable materials;
 - c) the communication program to be utilized to inform generators of their source separation and recycling responsibilities;
 - d) a comprehensive enforcement program that identifies the county and/or municipal entity(ies) responsible for enforcement of the recycling mandates, specifies the minimum number of recycling inspections that will be undertaken by these entities on an annual basis and details the penalties to be imposed for non-compliance with the municipal source separation ordinance and county solid waste management plan. Additionally, the updated district plan shall include copies of each municipal source separation ordinance.

In the event that the district does not mandate additional materials for source separation and recycling, the revised plan shall include the above elements for each material currently designated for recycling. Additionally, given the discussion in the recycling section of this statewide solid waste management plan update relative to targeting increases in recycling in the small business sector, multi-family housing developments and schools and other institutions, the revised plan shall indicate the anticipated increases in tonnage of recycled material, by material and by generating sector, in order to meet, at a minimum, the targets identified for each county in Table B-1.

Pursuant to the provisions of N.J.S.A. 13:1E-6, the Department is required to update not less than every 2 years the Statewide Solid Waste Management Plan. Historically, this requirement has been unmet. The Department is recommending that this legislative requirement for updating the Plan be expanded to once every 5 years.

A.3. County Plan Summaries

Atlantic County

Current Status:

In 2003, Atlantic County generated approximately 825,656 tons of solid waste. The county recycled approximately 473,786 tons and disposed of 351,870 tons, which calculates to a 57.4% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 25.2%. Atlantic County has a total of 10 Class B recycling facilities and 6 Class C (yard waste recycling facilities) recycling facilities.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, a majority of the county's waste was disposed of at GROWS Landfill in Pennsylvania via the Atlantic County Utilities Authority's (ACUA) Transfer Station at the ACUA Environmental Park in Egg Harbor Township, which was included in the County Plan on July 17, 1989. The ACUA Transfer Station began operation under a Temporary Certificate to Operate (TCAO) on August 8, 1990. The facility received a permit to operate from the Department on November 5, 1990. Furthermore, on December 13, 1988, the County adopted an amendment, which proposed an interim landfill at the same site in Egg Harbor Township. On May 26, 1989, the Department approved with modification this amendment requiring the submission of a viable bird deterrent plan for the proposed landfill. On July 25, 1989, the County adopted a subsequent amendment, which outlined a bird deterrent plan for the proposed interim landfill. On September 5, 1989, the Department rejected the July 25, 1989 amendment because the bird deterrent plan was not viable. The Department did however, state that a limited use landfill might be appropriate for the site. On November 14, 1989, the County adopted a subsequent amendment, which designated a limited use landfill for waste types 13 and 27 (bulky waste and dry industrial waste, respectively). The Department approved the limited use landfill designation on April 30, 1990. The ACUA Landfill in Egg Harbor Township received a Certificate of Authority to Operate (CAO) on March 18, 1992. Atlantic County had interdistrict agreements with Somerset, Hunterdon, Cape May, and Mercer Counties which have lapsed.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Atlantic County established a market participant strategy. On October 8, 1997, the Department issued to the ACUA a CAO for a research, development, and demonstration project at the limited use landfill to accept 300 tons per day (tpd) of type 10 municipal waste. On September 17, 1998, the Department issued another CAO to extend the research, development, and demonstration project until September 16, 1999 and increased the maximum amount of municipal waste that may be landfilled to 800 tpd and not to exceed 3,600 tons per week. In 2000, the Department approved a plan amendment to permit the disposal of municipal solid waste type 10 at the ACUA Landfill. On October 25, 2000, the Department issued a revised Solid Waste Permit, which allows for the disposal of all solid waste types at the ACUA Landfill. The Authority also owns and operates a state-of-the-art recycling center and compost facility which processes 52,000 tons per year. In addition, the ACUA provides solid waste, recycling, and yard waste collection services through contracts with municipalities, haulers, and businesses.

Bergen County

Current Status:

In 2003, Bergen County generated approximately 1,970,328 tons of solid waste. The county recycled approximately 1,011,796 tons and disposed of approximately 958,532 tons, which equates to a 51.4% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 42.1%. There are currently 3 Class B recycling facilities and 22 Class C recycling facilities operating within Bergen County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, Bergen County employed a disposal strategy in which the county's waste was delivered to either the Bergen County Utilities Authority (BCUA) Transfer Station, located in the Borough of North Arlington, or one of several private transfer stations prior to out-of-district disposal. The BCUA Transfer Station was included in the County Plan on January 27, 1988.

Bergen County also entered into interdistrict agreements with Essex and Union Counties to deliver waste to their respective resource recovery facilities. These agreements, however, have now expired or are void.

Post-Atlantic Coast Strategy:

Bergen County is currently implementing a 3-year interim solid waste plan which employs a free market system with each municipality charged with the responsibility of finding a solid waste disposal facility, regardless of the location of such facility, for their respective wastes. The County is currently conducting studies and formulating data to determine a proper long-term solid waste management plan for the district after the 3-year interim plan is concluded.

Thirty three municipalities within the county currently use the New Jersey Meadowlands Commission's (NJMC) 1-E Landfill site for the composting of leaves. Thirty three municipalities use either municipal sites or private vendors for leaf composting. The county has not yet identified the leaf disposal option(s) of four municipalities within the County Plan. The BCUA is currently in the process of developing a long-term plan for the composting of vegetative wastes.

Burlington County

Current Status:

In 2003, Burlington County generated approximately 1,013,407 tons of solid waste. The county recycled approximately 542,728 tons and disposed of about 470,679 tons, which equates to a 53.6% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 40.6%. Burlington County currently has 5 Class B recycling facilities and 16 Class C recycling facilities.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Burlington County's solid waste was disposed of at the Burlington County Landfill, which is part of the Burlington County Solid Waste Management Facilities Complex in Florence and Mansfield Townships. This facility was included in the County Plan on November 10, 1982, and was originally permitted by the Department on December 14, 1987.

Post-Atlantic Coast Strategy:

As a result of the Atlantic Coast decision, Burlington County instituted a market participant strategy, which provides for voluntary delivery of solid waste to the Burlington County Solid Waste Management Facilities Complex (Complex) in Florence and Mansfield Townships for resource recovery. The Complex has a landfill, bulky waste transfer capabilities, and a household hazardous waste collection center.

Camden County

Current Status:

In 2003, Camden County generated approximately 1,068,011 tons of solid waste. The county recycled about 542,518 tons and disposed of about 525,493 tons, which equates to a 50.8% recycling rate for the total waste stream. The County's documented municipal waste stream recycling rate was 30.7%. Camden County currently has 4 Class B recycling facilities, 8 Class C recycling facilities, and 1 Class D recycling facility.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Camden County's processible solid waste was disposed of at the South Camden Resource Recovery Facility. This facility was originally included in the County Plan on December 18, 1984. Construction of the facility was completed in March of 1991 and operations commenced in December 16, 1991. The Department issued a permit to operate the facility on June 27, 1996. Ash from the incinerator was disposed of out-of-state. The bypass and non-processible waste was taken to the Pennsauken Landfill, which was included in the County Plan on October 5, 1982, and issued a permit to operate by the Department on August 31, 1989.

Post-Atlantic Coast Strategy:

As a result of the Atlantic Coast decision, Camden County adopted a strategy to complete a nondiscriminatory procurement process for securing waste disposal services; also, Camden County implemented a strategy to regulate the flow of waste as a market regulator. On April 4, 2002, the Camden County Board of Chosen Freeholders adopted a plan amendment that included in the County Plan a new service agreement between the Pollution Control Finance Authority of Camden County and Camden County Energy Recovery Associates and the reestablishment of waste flow regulation within Camden County. On September 13, 2002, the Department approved the County Plan inclusion of the new service agreement between the Pollution Control Finance Authority of Camden County and Camden County Energy Recovery Associates. However, the Department remanded the County Plan inclusion of the reestablishment of waste flow regulation within Camden County pending submission of the documentation demonstrating that the agreement was reached in a non-discriminatory manner for both processible and non-

processable waste. The Department has not yet received the documentation; therefore, Camden County currently uses a market participant strategy.

Cape May County

Current Status:

In 2003, Cape May County generated 508,021 tons of solid waste. The county recycled approximately 293,269 tons and disposed of 214,752 tons, which equates to a 57.7% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 32%. Cape May County currently has 4 Class B recycling facilities and 2 Class C recycling facilities.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Cape May County's solid waste was disposed of at the Cape May County Municipal Utilities Authority (CMCMUA) Sanitary Landfill, which is located on the Woodbine Borough/Upper Township border. The CMCMUA Landfill was included in the County Plan on March 1, 1983 and received a permit to operate from the Department on August 12, 1983. Most municipalities direct-hauled to the landfill, while other municipalities used the CMCMUA Transfer Station in Middle Township. Also, an Intermediate Processing Facility (Class A), a bulky waste recycling facility (Class B), and an exempt leaf composting facility are operated at the landfill site.

Post-Atlantic Coast Strategy:

As a result of the Atlantic Coast decision, Cape May County adopted an intrastate disposal strategy which mandates that all non-recycled solid waste generated within Cape May County which is not transported out-of-state for disposal shall be disposed of at the CMCMUA Sanitary Landfill located in Woodbine Borough and Upper Township, Cape May County.

Cumberland County

Current Status:

In 2003, Cumberland County generated about 512,158 tons of solid waste. The county recycled approximately 332,916 tons and disposed of 179,242 tons, which calculates to a 65% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 44.7%. Cumberland County currently has 3 Class B recycling facilities and 7 Class C recycling facilities.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Cumberland County's waste was disposed of at the Cumberland County Landfill, which was part of the Cumberland County Solid Waste Complex, located in Deerfield Township. This facility was included in the County Plan on March 15, 1984 and received a permit to operate from the Department on December 30, 1985.

Post-Atlantic Coast Strategy:

As a result of the Atlantic Coast decision, Cumberland County adopted a market participant strategy. This strategy allowed continued access to the Cumberland County Improvement Authority's (CCIA) solid waste management system to be made available on a voluntary participation basis through the execution of contracts with the County's fourteen municipalities; private, collectors/haulers; and governmental, private or institutional generators of waste. Upon execution of a contract with a municipality, the CCIA offers: disposal capacity; processing and marketing of recyclables; access to a minimum of one annual household hazardous waste collection event; free disposal of roadside litter, and limited amounts of bulky waste and demolition debris; program support; and pro-rata rebate of revenues from the recycling program (as long as no statewide recycling tax is in effect). Municipalities that do not elect to utilize the Cumberland County Solid Waste Complex Landfill do not receive any above noted services of the system.

Essex County

Current Status:

In 2003, Essex County generated approximately 1,919,401 tons of solid waste. The county recycled approximately 985,814 tons and disposed of about 933,587 tons, which equates to a 51.4% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 30.5%. There are currently 3 Class B recycling facilities and 8 Class C recycling facilities operating within Essex County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Essex County's processible solid waste was disposed of at the Essex County Resource Recovery Facility (ECRRF). This facility was originally included in the County Plan on July 1, 1981 and began operating in November of 1990. Ash from the incinerator and bypass and non-processible wastes were disposed of at out-of-state landfills.

Post-Atlantic Coast Strategy:

Essex County employs a bifurcated system for the disposal of processible solid wastes. The system includes municipalities either entering into voluntary contracts with the County for disposal of their processible wastes at the ECRRF or through non-discriminatory bidding process, to have their solid waste directed to either of two Waste Management of New Jersey transfer stations, one located at 864 Julia Street, in the City of Elizabeth, Union County, the other located in Hillsdale Township, Bergen County, for processing prior to out-of-state disposal. In 2002, 69% of the county's wastes were disposed of at the ECRRF. 31% of the county's type 10 solid waste was disposed of at out-of-state facilities. Ash from the resource recovery facility is direct-hauled out-of-state.

Also, through a non-discriminatory bidding process, Essex County currently delivers its non-processible solid waste (Type 13 and 13C, the non-recycled portion of Type 23, the non-processible portion of Type 27) to the New Jersey Meadowlands Commission's Erie Landfill, located in the Borough of North Arlington, Bergen County, for disposal.

Gloucester County

Current Status:

In 2003, Gloucester County generated approximately 580,951 tons of solid waste. The county recycled about 296,596 tons and disposed of 284,355 tons, which equates to a 51.1% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 42.5%. Gloucester County currently has 5 Class B recycling facility and 9 Class C recycling facilities.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Gloucester County's processible municipal waste was disposed of at the Gloucester County Resource Recovery Facility (RRF) in West Deptford Township and all bypass, non-processible waste, and non-hazardous ash was disposed of at the Gloucester County Landfill in South Harrison Township. The Gloucester County RRF was included in the County Plan on March 4, 1985 and the Gloucester County Landfill was originally included on March 19, 1986.

Post-Atlantic Coast Strategy:

As a result of the Atlantic Coast decision, Gloucester County adopted a nondiscriminatory procurement bidding process to solicit bids for the disposal of the County's solid waste. Gloucester County demonstrated that it secured a disposal contract with Wheelabrator Gloucester Company, L.P. in a nondiscriminatory manner. As a result, all acceptable waste types (i.e., waste comprising non-recycled portions of type 10 municipal waste, portions of type 13 bulky waste, type 23 vegetative waste, and the non-animal portion of type 25 animal and food processing waste) are directed to the Gloucester County RRF located in West Deptford Township. The Gloucester County Improvement Authority (GCIA) Landfill in South Harrison was awarded a nondiscriminatory contract to receive bypass waste from the Gloucester County RRF. Ash residue and nonprocessible waste are not subject to flow control. On April 11, 2000, the County Freeholders adopted an amendment to the County Plan for a vertical expansion of the GCIA Landfill. Also, on December 17, 2003, the County Freeholders adopted an amendment to the County Plan for a horizontal expansion of the GCIA Landfill.

Hudson County

Current Status:

In 2003, Hudson County generated 1,167,745 tons of solid waste. The county recycled 553,385 tons and disposed of 614,360 tons, which calculates to a 47.4% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 16.9%. There are currently 6 Class B recycling facilities and 3 Class C recycling facilities operating within Hudson County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, the majority of Hudson County's wastes were directed to the New Jersey Meadowlands Commission (NJMC) Baler facility for processing prior to disposal. This facility was included in the Hudson County Plan on August 13, 1981. After processing, type

10 solid waste was disposed of at the NJMC 1-E Landfill, located in North Arlington, Bergen County and Township of Kearny, Hudson County. Solid waste types 13, 23, 25, and 27 were sent to the Empire Landfill, located in Taylor, Pennsylvania.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Hudson County adopted a waste strategy of regulatory flow control based upon nondiscriminatory procurement.

All waste types 10 and 25 (up to 450,000 tons annually) are delivered to the Solid Waste Transfer & Recycling, Inc. Transfer Station, located in the City of Newark, Essex County for processing prior to disposal at the Grand Central Landfill, located in Pen Argyl, Pennsylvania.

All waste types 13, 23, and 27 are disposed of at the NJMC Erie Landfill, located in the Township of Lyndhurst.

Hunterdon County

Current Status:

In 2003, Hunterdon County generated 193,230 tons of solid waste. The county recycled 61,685 tons and disposed of 131,545 tons, which equates to a 31.9% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 19.4%. There is currently 1 Class B recycling facility and 2 Class C recycling facilities operating within Hunterdon County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, the County's solid waste was directed to the Hunterdon County Transfer Station, located in Clinton Township, for processing prior to out-of-district disposal. This facility was included in the County Plan on June 12, 1984. The Hunterdon/Warren Interdistrict Agreement, entered into on July 23, 1986 provided for the disposal of 100 tons per day of Hunterdon County's processible solid waste to the Warren County Resource Recovery Facility, located in Oxford Township until December 31, 2001.

Post-Atlantic Coast Strategy:

The Hunterdon/Warren Interdistrict Agreement expired in 2001. Hunterdon County did not adopt a disposal strategy to respond to the Atlantic Coast decision. Currently, the county is currently performing as a market participant with the utilization of the Hunterdon County transfer station.

Mercer County

Current Status:

In 2003, Mercer County generated approximately 774,152 tons of solid waste. The county recycled about 414,519 tons and disposed 359,633 tons, which calculates to a 53.5% recycling rate for the total waste stream. The county documented municipal waste stream recycling rate

was 29.3%. Mercer County currently has 5 Class B recycling facilities and 7 Class C recycling facilities.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, Mercer County's waste was directed to the Mercer County Improvement Authority Transfer Station in Ewing Township which was included in the original County Plan on June 24, 1980, prior to disposal out-of-state at the Waste Management, Inc. GROWS Landfill in Tullytown, Pennsylvania. Mercer County began directing waste types 10, 13, 23, 25, and 27 to GROWS Landfill on December 13, 1983. Mercer County had an interdistrict agreement with Atlantic County, however it is now void. Also, Mercer County included in the County Plan a resource recovery facility on October 14, 1986; however, the construction of the facility never came to fruition, and the facility was subsequently removed from the County Plan on December 29, 1997.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Mercer County demonstrated that it secured a disposal contract in a nondiscriminatory manner with GROWS Landfill, an out-of-state facility; therefore, Mercer County has been able to continue to direct its solid waste to the GROWS Landfill. Furthermore, the County adopted a strategy for nondiscriminatory procuring of transfer services, which allows Mercer County to continue to direct all solid waste to the Mercer County Transfer Station located in Ewing Township prior to shipment out-of-state.

Middlesex County

Current Status:

In 2003, Middlesex County generated approximately 2,196,324 tons of solid waste. The county recycled about 1,274,808 tons and disposed of 921,516 tons, which equates to a 58% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 34.7%. There are currently 15 Class B recycling facilities, 5 Class C recycling facilities, and 1 Class D recycling facility operating within Middlesex County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Middlesex County's solid waste was disposed of at the Middlesex County Landfill, located in the Township of East Brunswick. This facility, formerly known as the Edgeboro Landfill, commenced operations in 1954 and was included in the County Plan on September 16, 1982. The Middlesex County Utilities Authority assumed operation of the Edgeboro Landfill from Edgeboro Disposal, Inc. on January 1, 1988.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Middlesex County has become a market participant for the solid waste generated within its borders. As a result, Middlesex County offered each of the 25 municipalities within the County voluntary contracts to dispose of their respective solid wastes at the Middlesex County Landfill.

Monmouth County

Current Status:

In 2003, Monmouth County generated approximately 1,321,197 tons of solid waste. The county recycled about 689,590 tons and disposed about 631,607 tons, which equates to a 52.2% recycling rate for the total waste stream. The county documented municipal waste stream recycling rate was 37.2%. Monmouth County currently has 13 Class B recycling facilities and 13 Class C recycling facilities.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Monmouth County's waste was disposed of at the Monmouth County Reclamation Center shredder and landfill facility in Tinton Falls Borough. The facility has been included in the County Plan since July 23, 1981.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Monmouth County revised its disposal strategy to an intrastate waste flow, which mandates that all type 10 (municipal) solid waste generated from within Monmouth County that is not disposed of out-of-state, is to be disposed of at the Monmouth County Reclamation Center located in Tinton Falls Borough.

Morris County

Current Status:

In 2003, Morris County generated 1,017,001 tons of solid waste. The county recycled 508,097 tons and disposed of 508,904 tons, which equates to a 50% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 36.3%. There are currently 4 Class B recycling facilities and 10 Class C recycling facilities operating within Morris County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, Morris County's waste was directed to the one of the Morris County Municipal Utilities Authority's two transfer stations located in Parsippany-Troy Hills and Mt. Olive Township (which were both included in the County Plan on April 1, 1987) prior to disposal in Pennsylvania landfills. Morris County directed waste types 10, 13, 23, 25, and 27 from 17 of its 39 municipalities to the Mt. Olive Transfer Station. The remaining 22 municipalities were directed to the Parsippany-Troy Hills Transfer Station.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Morris County has reaffirmed the solid waste disposal system that was in effect prior to the decision. The system includes a non-discriminatorily procured contract executed June 25, 2002 between MCMUA and Waste Management of New Jersey to operate the two county transfer stations and provide transportation and disposal for the solid waste generated within the county for a period of 5 years.

Ocean County

Current Status:

In 2003, Ocean County generated approximately 1,291,710 tons of solid waste. The county recycled about 655,762 tons and disposed about 635,948 tons, which calculates to a 50.8% recycling rate for the total waste stream. The county documented municipal waste stream recycling rate was 27.9%. Ocean County currently has 6 Class B recycling facilities and 9 Class C recycling facilities.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, a majority of Ocean County's waste was disposed of at the Ocean County Landfill Corporation Landfill located in Manchester Township. This landfill has been operational since 1973, with an original permit dated May 10, 1972.

Post-Atlantic Coast Strategy:

Ocean County has not revised its disposal strategy in response to the Atlantic Coast decision. A majority of the County's waste continues to be disposed of at the Ocean County Landfill Corporation Landfill.

Passaic County

Current Status:

In 2003, Passaic County generated 1,095,055 tons of solid waste. The county recycled 549,774 tons and disposed of 545,281 tons, which equates to a 50.2% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 30.8%. There are currently 6 Class B recycling facilities and 11 Class C recycling facilities operating within Passaic County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, Passaic County directed its waste to private transfer stations, located within the county, for processing prior to out-of-district disposal. The County Resource Recovery Facility, included in the County Plan on February 21, 1985, was never constructed.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Passaic County employs a free market system for the disposal of solid waste generated within the county.

Salem County

Current Status:

In 2003, Salem County generated about 134,760 tons of solid waste. The county recycled about 46,025 tons and disposed about 88,735 tons, which equates to a 34.2% recycling rate for the total waste stream. The county documented municipal waste stream recycling rate was 34.5%. Salem County currently has 2 Class B recycling facilities and 1 Class D recycling facility.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Salem County's waste was disposed of at the Salem County Regional Landfill in Alloway Township. The Landfill has been in the County Plan since April 6, 1983 and was originally permitted by the Department on April 15, 1987.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Salem County adopted a market participant strategy, which provides for voluntary delivery of solid waste to the Salem County Solid Waste Facility.

Somerset County

Current Status:

In 2003, Somerset County generated 607,296 tons of solid waste. The county recycled 269,884 tons and disposed of 337,412 tons, which equates to a 44.4% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 27.9%. There are currently 5 Class B recycling facilities and 3 Class C recycling facilities operating within Somerset County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, Somerset County waste was directed to one of two transfer stations for processing, prior to disposal at out-of-district landfills. The two transfer stations, the Somerset Intermediate Recycling Center (SIRC) Transfer Station and the Bridgewater Resources, Inc. (BRI) Transfer Station were included in the County Plan on August 7, 1984 and November 19, 1986, respectively. The SIRC Transfer Station was located in Franklin Township. The BRI site is located in Bridgewater Township.

The Somerset/Warren Interdistrict Agreement, entered into on July 11, 1990 provided for the disposal of 1400 tons per week of Somerset County's processible solid waste to the Warren County Resource Recovery Facility, located in Oxford Township until December 31, 2001. From January 1, 2002 through November 30, 2008 the waste tonnages increase to 1977 tons per week.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Somerset County employs a free market system for solid waste disposal.

The Somerset/Warren Interdistrict Agreement, was invalidated by court order.

Sussex County

Current Status:

In 2003, Sussex County generated 237,253 tons of solid waste. The county recycled 100,363 tons and disposed of 136,890 tons, which equates to a 42.3% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 21.7%. There are currently 2 Class B recycling facilities and 5 Class C recycling facilities operating within Sussex County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Sussex County's solid waste was disposed of at the Sussex County Municipal Utilities Authority (SCMUA) Landfill, which is located in the Township of Lafayette. This facility was included in the County Plan on May 14, 1985 and was originally permitted by the Department on November 13, 1987.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Sussex County has become a market participant for the solid waste generated within its borders.

Union County

Current Status:

In 2003, Union County generated 1,168,736 tons of solid waste. The county recycled 566,953 tons and disposed of 601,783 tons, which equates to a 48.5% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 23.6%. There are currently 3 Class B recycling facilities, 3 Class C recycling facilities, and 1 Class D recycling facility operating within Union County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, all of Union County's type 10 and 25 waste was disposed of at the Union County Resource Recovery Facility (UCRRF) in the City of Rahway and all ash and bypass waste was disposed of at out-of-state landfills. The UCRRF was included in the County Plan on April 5, 1984 and began operating in February of 1994. All solid waste types 13, 23, and 27 generated from within Union County were directed to one of two transfer stations/material recovery facilities for processing. All residue generated from either of the two transfer station/materials recovery facilities was directed to the Linden Landfill, located in the City of Linden, which was included in the County Plan on November 23, 1982. The Linden Landfill closed in 1999.

Union also entered into an interdistrict agreement with Bergen County to accept up to 192,000 tons per year of Bergen's processible solid waste at the UCRRF. This agreement, however, is now void.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Union County, through a non-discriminatory bidding process, directs all type 10 and type 25 solid waste to one of three designated facilities, which are the UCRRF and two Waste Management of New Jersey transfer station/material recovery facilities (TS/MRFs), one located at 864 Julia Street, in the City of Elizabeth and the other at 1520 Lower Road, in the City of Linden. The two county designated TS/MRFs deliver the solid waste to out-of-state disposal facilities.

All non-recycled solid waste types 13, 23, and 27 generated from within Union County are directed to the NJMC Erie Landfill, located in the Borough of North Arlington, Bergen County, for disposal. All ash from the UCRRF and bypass waste is disposed of in out-of-state landfills.

Warren County

Current Status:

In 2003, Warren County generated 203,467 tons of solid waste. The county recycled 95,513 tons and disposed of 107,954 tons, which equates to a 46.9% recycling rate for the total waste stream. The county's documented municipal waste stream recycling rate was 19.3%. There is currently 1 Class B recycling facility and 2 Class C recycling facilities operating within Warren County.

Pre-Atlantic Coast Strategy:

Prior to the Atlantic Coast decision, the county's processible waste was directed to the Warren County Resource Recovery Facility (WCRRF) in Oxford Township, which was included in the County Plan on November 21, 1984 and received a permit to operate from the Department on October 15, 1987. The WCRRF began operating in July 1988. Ash from the WCRRF and non-processible and bypass wastes were disposed of at the Warren County District Landfill in White Township, which was included in the County Plan on March 6, 1985, and received a permit to operate from the Department on September 30, 1987. Warren County also accepted solid waste from Hunterdon and Somerset Counties at the WCRRF pursuant to interdistrict agreements entered into on July 23, 1986 and July 11, 1990, respectively.

Post-Atlantic Coast Strategy:

In response to the Atlantic Coast decision, Warren County has become a market participant for solid waste. Ash from the WCRRF, and non-processible and bypass wastes are delivered to the Warren County Landfill for disposal.

The interdistrict agreement with Hunterdon County expired in 1991 and the interdistrict agreement with Somerset County was invalidated by court order.

Table A-1
NEW JERSEY SOLID WASTE DATABASE
TRENDS ANALYSIS
(1985 through 2002)

	GENERATION	RECYCLING				DISPOSAL					
								In- State		Out-Of-State	
Year		Total	% of	MSW	% of	Total	% of	Total	% of	Total	% of
	Total Tons	Tons	Total Tons	Tons	MSW Tons	Tons	Total Tons	Tons	Total Tons	Tons	Total Tons
1985 1)	11.4	0.9	8%	0.6	9%	10.5	92%	9.7	85%	0.8	7%
1986 1)	11.5	1.1	10%	0.7	12%	10.4	90%	9.6	83%	0.8	7%
1987 1)	12.4	1.8	15%	1.2	18%	10.6	85%	9.2	74%	1.4	11%
1988 2)	14.0	5.4	39%	1.5	23%	8.6	61%	4.6	33%	4.0	28%
1989 2)	14.3	6.1	43%	2.1	30%	8.2	57%	4.5	31%	3.7	26%
1990 2)	14.8	6.8	46%	2.5	34%	8.0	54%	4.8	32%	3.2	22%
1991 2)	14.3	7.2	50%	2.8	39%	7.1	50%	4.4	31%	2.7	19%
1992 3)	13.2	6.3	48%	3.1	42%	6.9	52%	4.3	33%	2.6	20%
1993 3)	14.8	7.8	53%	3.1	40%	7.0	47%	4.5	30%	2.5	17%
1994 4)	15.9	9.0	56%	3.3	42%	6.9	43%	4.7	30%	2.2	14%
1995 4)	16.8	10.1	60%	3.6	45%	6.6	40%	4.3	26%	2.3	14%
1996 5)	16.9	10.2	61%	3.3	42%	6.6	39%	4.3	25%	2.3	14%
1997 5)	16.9	10.3	61%	3.4	43%	6.6	39%	4.2	25%	2.4	14%
1998 6)	15.7	8.7	56%	3.3	40%	6.9	44%	4.5	29%	2.4	15%
1999 6)	17.2	9.5	55%	3.4	39%	7.7	45%	5.2	30%	2.5	15%
2000 6)	17.7	9.4	53%	3.4	38%	8.3	47%	5.6	32%	2.7	15%
2001 6)	18.8	10.2	54%	3.4	36%	8.6	46%	5.2	28%	3.4	18%
2002 6)	19.2	10.3	53%	3.1	33%	9.0	47%	5.3	28%	3.7	19%

Note: All numbers are in millions of tons per year and have been rounded for presentation purposes.

- 1) Final statistics from 1985 through 1987 derived from O&D and tonnage grant figures reported to the Department.
- 2) Final statistics from 1988 through 1991 derived from O&D and tonnage grant reported figures as supplemented by industry survey information for junked autos, asphalt, concrete, heavy iron, tires and batteries.
- 3) Final statistics derived from O&D and tonnage grant reported figures and supplemented only by add-ons from the NJDOT.
- 4) Beginning with the 1994 recycling reporting period, industry documented tonnage's for other aluminum scrap, other non-ferrous scrap, white goods and sheet iron, junked autos and heavy iron form the basis for the final tonnage's in these material categories. In addition, for 1995, additional recycling tonnage's not reported by the municipalities were added to the total recycling tonnage's.
- 5) Recycling tonnage's for 1996 and '97 do not include material from the 62 and 45 municipalities respectively which did not report those years
- 6) Recycling tonnages for 1998 thru 2002 do not include data from the 47, 15, 10, 24 and 15 municipalities respectively which did not report those years..

Table A-2
State Of New Jersey
Solid Waste Exports

[illegible]

Note: Data for 1990 thru 2002 was developed from information received from solid waste transfer stations;and transporter monthly reports submitted to the NJDEP

**Table A-3
2002 MATERIAL SPECIFIC
RECYCLING RATES IN NEW JERSEY**

Materials	(1) Total % of Solid Waste Generated (Estimated)	(6) Total Tons Generated (Calculated)	Total Tons Recycled (Actual)	% of Waste Stream Recycled (Calculated)
Yard Waste	10.000%	1,930,859	1,222,572.39	63.3%
Food Waste	7.400%	1,428,835	266,700.41	18.7%
News Paper	4.200%	810,961	364,137.90	44.9%
Corrugated	6.000%	1,158,515	532,576.37	46.0%
Office Paper	2.300%	444,098	185,821.52	41.8%
Other Paper	9.100%	1,757,081	115,740.83	6.6%
Plastic Containers	0.900%	173,777	38,806.02	22.3%
Other Plastic Packages (2)	1.000%	193,086	0.00	0
Other Plastic Scrap	3.800%	733,726	10,013.16	1.4%
Glass Containers	2.500%	482,715	254,316.49	52.7%
Other Glass	0.400%	77,234	8,821.94	11.4%
Aluminum Cans	0.300%	57,926	28,500.81	49.2%

Foils & Closures (2)	0.100%	19,309	0.00	0
Other Aluminum Scrap	0.200%	38,617	32,707.06	84.7%
Vehicular Batteries	0.055%	10,523	10,467.53	99.5%
Other Non-ferrous Scrap	0.900%	173,777	32,707.06	18.8%
Tin & Bi-Metal Cans	0.500%	96,543	54,304.90	56.2%
White Goods & Sheet Iron	2.400%	463,406	367,945.05	79.4%
Junked Autos	2.040%	393,895	351,394.89	89.2%
Heavy Iron	4.500%	868,886	673,924.27	77.6%
Wood Waste	3.300%	637,183	140,571.44	22.1%
Asphalt, Concrete & Masonry	18.800%	3,630,014	3,992,249.32	110.0%
Tires (3)	0.244%	47,113	33,484.10	71.1%
Other Municipal & Vegetative (4)	8.300%	1,602,613	54,873.02	3.4%
Other Bulky & Const/Demo (5)	10.800%	2,085,327	1,549,840.42	74.3%
Total (Actual) (6)	100%	19,308,587	10,322,476.90	53.5%

NOTES

1. The "Total % of Solid Waste Generated (Estimated)" was updated for this report utilizing 1998 and 1999 percentages from the US Environmental Protection Agency's (EPA) Franklin Associates Report Characterization of Municipal Solid Waste in the United States Update and data from the Institute of Scrap Recycling Industries (ISR) and the Auto and Metal Recyclers Association(AMRA). In some instances these percentages were modified to better reflect New Jersey's waste stream composition.

2. The EPA includes "Other Plastic Packages" and "Foins and Closures" in its report. However, these catagories are not reported (NR) on the New Jersey Recycling Tonnage Grant Report. Therefore, the DEP used the 1998 EPA's percentages for these two catagories.

3. For this report, only the tonnage reported by municipalities and Class B recycling centers are used. The chart does not include tires that are either in temporary storage at homes and elsewhere, or in larger tire piles in the State. "Total Tons Recycled" also does not reflect those tires transported directly out-of-state to market, in large part.

4. "Other Municipal and Vegetative" contains anti freeze, motor oil, household batteries and textiles.

5. "Other Bulky&Const/Demo" contains stumps, oil contaminated soil, process residue and material not listed.

6. The "Total Tons Generated" column is calculated only to the nearest tenth of a percent. Therefore, adding all numbers in this column will not equal the "Total (Actual)", which equals the sum of tons disposed plus tons reported as recycled. Additionally, "tons generated" for each material is derived from the multiplication of the estimated percentage of each material shown in column two by the bottom number in that column, which which represents the sum of the total tons disposed (an actual, not estimated number plus total tons recyeld (also an actual, not estimated number).

B. Solid Waste Management Hierarchy

B.1. Source Reduction

Source Reduction is the first tier of the solid waste management hierarchy. The term source reduction is used to describe those activities that decrease the amount (weight or volume) or toxicity of waste entering the solid waste stream. It also encompasses those activities that increase product durability, reusability and reparability.

USEPA reports an average nationwide generation of Municipal Solid Waste (MSW) for 2000 to be 4.5 lb/person/day, down from 4.6 lb/person/day in 1999. Because solid waste generation is tallied differently in New Jersey than it is nationally by USEPA, a direct comparison of generation numbers is not possible. The Division of Solid and Hazardous Waste estimates that municipal solid waste generation in 2003, based on preliminary data, totaled 9,718,090 9,347,268 tons, up slightly from 9,347,268 tons in 2002. (See Table B-1.) Given the 2000 census population of 8,414,350, citizens generated an average 1.15 tons/year (2,300lbs/year), or 6.3 lb./day in 2002, also up slightly from the 6.08 lbs./person/day generated in 2002.

Citizens of New Jersey generate more waste than the average US citizen. Inasmuch as EPA and others have detailed that waste generation tracks economic activity, it is not hard to understand why New Jersey's waste generation would be much higher than the national average. According to demographic statistics for the United States, New Jersey has the highest per capita income in the nation. Since much of the municipal waste stream is dominated by single-use items, and attendant packaging, and given that two thirds of US economic activity is based on consumer spending, it's not surprising that New Jersey has such a relatively high per capita waste generation rate.

Between 1985 and 2003 (preliminary) the generation of total solid waste in New Jersey has risen by an annual average of approximately 4%. (See Table A-1.) During that period, the tonnage of material disposed has actually gone down by approximately 1.6 million tons, and the amount of MSW recycled has increased (according to reported recycling activity) by approximately 2.5 million tons. In spite of these two trends, however, the waste stream continues to grow faster than our ability to recycle it. If the total non-hazardous waste stream continues to increase at the historic rate, resulting in a 2015 waste stream of 33.0 million tons, we will have to recycle 72 percent of the stream to avoid growth in disposal. Currently, we are recycling 53 percent. We are not aware of any state that has approached an MSW recycling rate of seventy percent. Consequently, we should not look to recycling to solve all of our waste management problems; even if a revived program achieves and surpasses record highs in the recycling rate, we must also do more to prevent the generation of waste.

Impediments to Source Reduction

Notwithstanding that source reduction is at the top of the NJDEP's solid waste management strategy hierarchy, it is often overlooked due to the inherent difficulties associated with the quantification of such measures, and the lack of incentives. Indeed, significant source reduction

of certain commodities such as paper, which are recycled, may actually lower total recycling rates, and appear to be a setback, particularly since municipalities are granted monies on the basis of tons recycled, not tons avoided. It is also more difficult to achieve, depending as it does upon the cessation of activities, rather than new activities- it is harder to convince consumers to make do with less than it is to teach them to separate their trash.

Although some successful pollution prevention programs exist for specific industry segments and for general business through USEPA's WasteWi\$e program, there has not been a comprehensive source reduction program aimed at the general consumer. Existing educational efforts are mostly focused on the early grades, when children have little purchasing power. Related efforts to teach wise money management tend also to encourage source reduction; techniques such as buying in bulk do both. But these efforts are focused on adults in economic difficulty. The average or well-to-do consumer is not typically presented with engaging material directing one toward source reduction at work or at home.

Source reduction is also hampered by the fact that government has little control over the amounts and kinds of consumer goods put into the marketplace, nor over the packaging used for those goods, with the exception of certain toxic constituents. While government intervention in this aspect of commerce is naturally limited in a market-based economy, the proliferation of packaging, in particular, has made it difficult for source reduction gains to be achieved. Clearly, packaging plays an important role in terms of product integrity, promotion, safety and protection. However, the over-packaging of many products is one of the causes for the increase in solid waste generation in New Jersey. In general, manufacturers have opposed governmental attempts to make them even partly responsible for the packaging waste generated by their products. As a result, the solid waste management budget burden associated with packaging waste has fallen on local government. This situation has led to increased discussions about product (and packaging) stewardship.

Product stewardship is the term used to describe a system that addresses the environmental and economic impacts of a product through its life cycle, i.e., from cradle to grave. This approach entails everything from design and manufacturing to packaging and distribution to end-of-life management. Responsibility for end-of-life management shifts from the public sector alone, to a system where that responsibility is at least partly shared by the private sector. The goal is to encourage environmentally friendly design and recycling, and reduce the amount of waste in need of disposal. Policies that promote and implement product stewardship principles should create incentives for the manufacturer to design and produce "cleaner" products - ones made using less energy, materials, and toxics, and that result in less waste (through reduction, reuse, recycling, and composting) and use less energy to operate. These policies should also create incentives for the development of a sustainable and environmentally sound system to collect, reuse, and recycle products at the end of their lives. Until a system of product stewardship is established, either by legislation or voluntary industry agreements, it will continue to be difficult to slow down the growth in solid waste generation in New Jersey and throughout the country. Despite this fact, interest in source reduction has grown to the point where there is now a movement afoot that is dedicated to waste reduction with zero waste as the ideal long-term goal. While the establishment of such a lofty goal is noteworthy, it is clearly inconceivable in the absence of a system of product stewardship.

Existing DEP Initiatives

The Department's support for source reduction is evidenced by its membership in the WasteWi\$e program administered by the United States Environmental Protection Agency. Unlike other waste minimization programs, which shunt waste to recycling, the WasteWi\$e program aims primarily to prevent the generation of waste in the first place, secondly to recycle as much of the remaining waste stream as possible, and lastly to buy products containing recycled materials. As a WasteWi\$e member, DEP has begun to pilot operational changes to minimize its two greatest waste streams: office paper and paper hand towels. One targeted method is the default setting of all copiers to two-sided copies. As successful methods are identified, they can be transferred to all government offices, achieving significant purchase reduction in this major employment sector. Success at the state government level would give DEP expertise and authority to bring those changes to private industry.

Another example is the "Pay-as-You-Throw" system. In communities with Pay-as-You-Throw programs (also known as per container systems, unit pricing or variable-rate pricing), residents are charged for the collection of household waste based on the amount they throw away. This creates a direct economic incentive to recycle more and to generate less waste. While such systems for municipal solid waste collection and disposal are an effective means to encourage source reduction and recycling, Pay-as-You-Throw programs are not widespread in New Jersey. To address this, a publication entitled "Implementing Per Unit Pricing for Municipal Solid Waste Collection: Questions & Answers" was developed by the Department in 1995. The Department also held several informational seminars on Pay-as-You-Throw systems to assist local officials with implementing the program. Despite this effort, there has not been much interest in Pay-as-You-Throw systems in this state in recent years. As noted on the United States Environmental Protection Agency's Pay-as-You-Throw website found at <http://www.epa.gov/epaoswer/non-hw/payt/index.htm>, these programs promote environmental and economic sustainability, as well as equity. As such, the Department will continue to promote this strategy and has set forth a number of recommendations (see "Recommendations" section below) that will hopefully lead to an increase in the use of this source reduction approach.

Another effective source reduction program has been the "Grass - Cut It and Leave It" program. The objective of this program is to get residents to leave grass clippings on the lawn when they mow as grass clippings provide a natural and healthy fertilizer for a growing lawn. On-site management of grass clippings and other organic matter has proven to be not only a highly effective source reduction measure but also a popular yard waste management strategy. This is evidenced by the proliferation of "Grass - Cut It and Leave It" programs in New Jersey over the past decade. The Department helped promote these programs through the publication of two brochures on the benefits associated with this activity, as well as the support of grant programs by counties to provide educational and promotional support for the program. The benefits of "Grass-Cut It and Leave It" programs are significant; not only does leaving clippings on the lawn reduce water and nitrogen needs (and attendant runoff from increased water and nitrogen usage), but the waste generation savings can be enormous. It is estimated that as much as a ton of clippings is generated for every acre of turf in a single growing season. With nearly 900,000

acres in New Jersey covered in turf, one can easily see why this program can have such a big effect on the annual generation of MSW.

In regard to source reduction support for the business sector, the Department produced a publication in 1996 entitled "How to Reduce Waste and Save Money - Case Studies from the Private Sector." Among other things, this guide highlighted actual measures that New Jersey businesses have implemented to minimize waste generation and maximize their monetary savings. The guide was distributed to businesses throughout the state and still serves as a useful resource for the private sector. The Department's website also includes source reduction suggestions for the business sector, such as using bulletin boards or computers for interoffice communication rather than paper memos, at <http://www.state.nj.us/dep/dshw/recycle/whyrecycl/office.htm>.

The Department has also been involved in several initiatives designed to reduce the toxicity of materials entering the waste stream. For example, the Department initiated a pilot program for the collection of mercury switches from automobiles as part of the Performance Partnership Agreement (PPA)-Appliance and Vehicle Mercury Switch Recovery Incentive Program. This agreement was signed January 3, 2002 by the NJDEP, USEPA -Region II, the Automotive Recyclers of New Jersey, Association of Household Hazardous Waste Coordinators, the New Jersey Chapter of Scrap and Recycling Industries and Comus International. The agreement was designed to reduce mercury emissions from iron and steel melters while increasing the overall benefits of recycling. This was accomplished by collecting mercury containing switches from end-of-life vehicles, maximizing the amount of mercury removed from scrap prior to delivery to and further processing at a scrap recycling facility.

The Department has also worked with the Northeast Waste Management Officials' Association (NEWMOA) on the development of model legislation that would reduce or eliminate non-essential uses of mercury in household, institutional and industrial products and processes. The model legislation provides a comprehensive framework to help states develop more consistent approaches to managing mercury-containing wastes.

The Department's participation in the Toxics in Packaging Clearinghouse is another means by which source reduction is advanced in New Jersey. The Toxics in Packaging Clearinghouse, which is coordinated by the Council of State Governments, assists the member states to implement the elements of the "Toxic Packaging Reduction Act", adopted by New Jersey first in 1991. The Act requires manufacturers of packaging and packaging materials to reduce the amounts of certain toxic substances added to packaging and packaging components.

DEP's education initiatives are hampered by the absence of good models, but new source reduction material has been inserted in the latest release of "Here Today, Here Tomorrow", DEP's solid waste curricular supplement. Additionally, DEP will be updating its website to provide more varied source reduction guidance. At present, examples of source reduction strategies for consumers, such as buying products in bulk so as to avoid excess packaging, can be found on the Department's website at <http://www.state.nj.us/dep/dshw/recycle/whyrecycl/home.htm>. Additional source reduction strategies for the home can be found at www.earth911.org.

The Department's Division of Parks and Forestry sponsors an educational program called Project Learning Tree, an educational tool for public school science teachers. The program has been expanded to include a challenging and provocative unit on municipal waste, with a focus on source reduction. The Department has also recently sponsored the printing of a "redistribution manual". Nine thousand copies of this guide, listing numerous local outlets for the reuse of a wide range of consumer goods in the central Jersey region were recently printed and distributed to local officials, civic groups, realtors, colleges and universities etc.

Recommendations

As noted above, Pay-as-You-Throw systems are effective but not widespread in New Jersey. In light of this fact, the Department recommends that this source reduction strategy be revisited and reemphasized. In support of such an effort, the Department recommends that a survey of existing Pay-as-You-Throw programs be undertaken in order to better determine those aspects of such systems that have worked, as well as those aspects that have been problematic. Upon completing this task, the Department envisions working with targeted communities on the potential implementation of such programs. In addition, the Department recommends that state funding offset the initial costs associated with such programs (administrative and promotional) should a dedicated source of funding be established for recycling in New Jersey. Results would be closely monitored to determine whether such systems decrease waste generation or alter purchase patterns to favor recyclable materials.

As noted above, New Jersey has legislation in place that calls for manufacturers to reduce the amount of toxic substances added to packaging and packaging components. While this has been beneficial to the Department's source reduction efforts, the legislation needs to be amended in order to make it consistent with the updated and revised model legislation advocated by the Council of State Governments.

A statewide source reduction public education and awareness campaign is also recommended. While New Jersey's recycling program has been the focus of past efforts, insufficient public education and awareness campaigns on behalf of waste prevention have been undertaken in New Jersey. The inclusion of source reduction themes in state government procurement contracts is also recommended. Contracts for existing items may be altered to require greater recycled content, items that generate lesser amounts of disposable materials, and items with reduced toxic constituents.

The Department further recommends following up on the success of "Cut It and Leave It" with a home composting campaign, supplying or partially underwriting composting units through local government agencies. This should not only reduce the need to manage these materials in the first place (one can mulch, by way of a mower with a mulching blade, leaves onto the ground just as easily as grass clippings), but would also reduce the need to collect and centralize yard waste composting, as well as allow concomitant food composting.

Many states publish information to help citizens prevent receipt of junk mail, primarily credit offers and catalogs. The DEP recommends increasing efforts to publicize these programs, if a source of funding is secured for the effort.

Some governments fund materials exchanges, such as Minneapolis, MN. Materials exchanges are enterprises which can accept large volumes of business or home furnishings for sale at low prices. They are mostly used by established corporations who wish to avoid the cost of disposal of outdated material, and start-ups which need to avoid costs. The DEP supports these efforts, and recommends expanding existing exchanges in the state, or assisting in the institution of new exchanges where none are currently present if funding becomes available.

Project Learning Tree depends for its implementation on a body of trained teachers. At present, school systems are required to fund the training for their teachers. At such time as funding may be obtained, the Department could fund, partially or completely, the tuition of science and social studies teachers for this program, thereby increasing the attractiveness of this program in contrast to other training.

The redistribution manual, currently focusing on the counties of Mercer, Middlesex and Monmouth, should be expanded to cover all 21 counties in New Jersey.

Source reduction techniques should be introduced through the LEEDS program, which is already successfully promoting recycling, among other things, in building design and construction.

As noted above, municipal recycling grant monies are distributed on the basis of recycling tonnage. While this encourages separation and collection of recyclable materials, it does not discourage the generation of waste very much, and “punishes” source reduction when any material reduced was bound for recycling collection, such as glass and paper. The Department is considering altering the calculation of reward to towns and counties in order to give credit for source reduction activities. This approach has been well received in Maryland. Counties’ diversion rates are adjusted upward proportionally to their source reduction activities. Some activities can be more clearly linked to diminished handling and disposal, such as “Cut-It-and-Leave-It”. Others, such as general promotional advertisements may not be as clearly linked to specific reduction in MSW tonnage. The Department proposes to work with local recycling coordinators to determine if a program can be created to offer credits for source reduction activities that works with the long-standing municipal recycling tonnage grant program.

B.2. Recycling

Introduction

The Department’s statistics indicate that New Jersey recycled 32.2% of its municipal solid waste stream and 52.1% of its total solid waste stream in 2003 (preliminary). While these recycling rates are noteworthy they are significantly lower than the 1995 peak municipal solid waste recycling rate of 45% and the 1997 peak total solid waste recycling rate of 61%. Clearly, the continued downward trend in our state’s recycling rates is troubling and cannot be overlooked.

Among other factors, the loss of the program's dedicated state funding source in 1996, as well as the declining solid waste disposal fees that resulted from a landmark court decision that nullified New Jersey's waste flow system, have played major roles in this decline. The December, 2002 signing of the "Clean Communities and Recycling Grant Act" was a significant step since the Act includes funds for recycling performance grants to municipalities and eligible counties. It does not, however, fully address the funding needs of our state's recycling program. As such, it is imperative that this issue be addressed and that a strategy be put in place that will help fully fund a comprehensive state recycling program. This, in turn, will lead to the development of stronger and more effective recycling programs and increasing recycling rates throughout the state. As will be more fully detailed later, recycling has proven to be an environmental and economic success story for New Jersey. However, without action to provide the means for a comprehensive program, the recycling success that New Jersey has achieved will continue to be jeopardized even with the recent enactment of the Clean Communities legislation.

Historical Background:

Despite the recent decline in our state's recycling rates, New Jersey is still a nationally recognized leader in recycling. The passage of New Jersey's mandatory recycling legislation in 1987 was a major milestone in our state's solid waste management history and helped establish New Jersey as a leader in this field. The "New Jersey Statewide Mandatory Source Separation and Recycling Act" (Recycling Act), N.J.S.A. 13:1E-99.11 et seq., set forth an ambitious program that reshaped at least one aspect of the everyday lives of state residents, businesses and institutions. Among other things, the Recycling Act required New Jersey's twenty-one counties to develop recycling plans that mandated the recycling of at least three designated recyclable materials, in addition to leaves. County recycling plans were also required to designate the strategy to be utilized for the collection, marketing and disposition of designated recyclable materials. Other provisions of the Recycling Act required municipalities to adopt an ordinance based upon their county's recycling plan. The initial goal of the Recycling Act was to recycle 25% of the municipal solid waste stream. That goal was more than doubled through legislation enacted in 1992 (P.L. 1992, c.167), amending the 1987 Recycling Act with a new challenge to recycle 50% of the municipal solid waste stream and 60% of the overall waste stream by the end of 1995. The recycling goal for the total solid waste stream was eventually raised to 65% by the end of 2000. This was done through a Departmental policy set forth in 1997. (As a point of clarification, the 65% total solid waste recycling goal that was adopted by the Department in 1997 shall no longer be considered the state's "official" recycling target as it was established pursuant to an administrative policy and has tended to divert attention away from the more significant goal of recycling at least 50% of the municipal solid waste stream.) Of course, the Department will continue to strive for recycling success beyond the legislatively prescribed goal, however, for program planning purposes the achievement of a 50% MSW and 60% total solid waste recycling rate are the state goals that are to be pursued.

Another important provision of New Jersey's landmark recycling legislation was the establishment of a tax of \$1.50 per ton on solid waste disposed at landfills and transfer stations statewide. In accordance with the Recycling Act, revenue from this tax was credited to the State Recycling Fund and allocated and used for the following purposes:

- 40% - municipal and county recycling tonnage grants;
- 35% - low interest loans or loan guarantees to recycling businesses and industries and recycling market development research;
- 10% - public information and education;
- 8% - county recycling program grants; and
- 7% - state recycling program planning.

As mentioned above, this dedicated funding source for recycling expired at the conclusion of 1996. The expiration of this so-called “Recycling Tax” also put an end to the Department’s low-interest business recycling loan program, which had been used by many companies to start or expand their recycling operations. Over the life of the program, the Department approved 48 loans valued at over \$21 million. Recycling loans ranged from \$90,000 to \$3,000,000 and were used to finance recycling collection, processing and manufacturing equipment. Another important financial incentive that had been available to the private sector recycling industry was the recycling investment equipment tax credit. While this program also expired at the end of 1996, it was a demonstrated success in accelerating investments in recycling technology that diverted recyclable materials from landfills while creating new markets, new jobs, increasing manufacturing production and attracting additional investment. In fact, in the last year of the program, the Department approved 212 tax credit certifications for 38 corporations. Among those certifications, 142 were for the purpose of processing source separated recyclable materials, 38 were for manufacturing purposes and 32 were for transporting source separated recyclable materials.

Funds generated by the Recycling Tax were used at the local level to support recycling coordinator positions, education and promotion campaigns, business and school recycling programs and enforcement functions, among other things. Such efforts were greatly reduced or eliminated as a result of the loss of this dedicated funding source for recycling. Compounding this situation was the expiration of the Resource Recovery Investment Tax at the conclusion of 1995. While not initially designed to support recycling programs, funds generated by this tax were sometimes used by counties for recycling purposes. The Solid Waste Services Tax remains a viable tax and continues to support some county recycling efforts, however, this fund is also not sufficient, nor a replacement for a dedicated source of funding for a comprehensive recycling program.

The State Legislature authorized special appropriations for municipal and county recycling efforts in State Fiscal Years 2001 and 2002. While these measures helped local recycling efforts to some degree, the amount of funding provided was significantly less than the grant amounts previously provided by the Recycling Tax and therefore incapable of fully addressing local recycling needs. Furthermore, as noted above, the recently enacted “Clean Communities and Recycling Grant Act” will provide some funding for local recycling efforts. While this is a positive development that will result in an annual allocation of up to \$4 million (25% of the fund) of the Clean Communities Program Fund for limited municipal and county recycling grants, it too represents significantly less than the funding previously provided for this purpose by the Recycling Tax. On average, the Recycling Tax generated \$11.5 million each year for New Jersey’s comprehensive state recycling program. The Clean Communities legislation provides no funding for other components of a comprehensive state recycling program, such as

local and statewide education programs, recycling business incentives and recycling market development activities. These often-overlooked components were integral to the initial rise and success of recycling in New Jersey.

As mentioned previously in this plan, source reduction and recycling have been designated as the preferred solid waste management strategies for New Jersey. As such, they have been placed at the top of the State's solid waste management strategy hierarchy. This reemphasis on recycling could not come at a better time. A renewed focus on recycling is warranted in order to make New Jersey the preeminent state for recycling and forward-thinking recycling policy.

Environmental Benefits:

Undoubtedly, recycling is a well-documented environmental success story. In 2003 (preliminary), New Jersey recycled over 10.3 million tons of its total solid waste. Recycling not only saves resources and energy, but also reduces the need for landfills and incinerators. In regard to energy conservation, recycling is especially beneficial. According to a 2003 study by the Northeast Recycling Council (NERC), "In 2001, New Jersey's recycling efforts saved a total of 128 trillion BTU's of energy, equal to nearly 17.2% of all energy used by industry in the state, with a value of \$570 million. This energy savings is also an amount equal to 22 million barrels of oil saved, and enough power for nearly 1.2 million homes for a year." For example, aluminum produced from used beverage cans requires 90-95% less energy than aluminum produced from bauxite ore. In addition, steel produced from recycled ferrous metals requires 74% less energy than steel produced from virgin ores, while recycled glass production requires 20% less energy than glass production from virgin materials. Recycled paper production also requires between 23% to 74% less energy than virgin paper production.

Recycling also results in reduced emissions of air and water pollutants. As also detailed in the NERC report, "In 2001, the recycling of paper, plastic, glass, aluminum cans and steel cans resulted in reductions of 8,000 metric tons of water pollutants and 120,972 metric tons of air pollutants (in addition to the 5.7 million metric tons of carbon equivalent (greenhouse gas) reductions per year). Recycling reduced overall emissions of sulfur oxides by approximately 7,200 metric tons and nitrous oxides by some 7,500 metric tons." More specifically, recycled paper production creates 74% less air pollution and 35% less water pollution than virgin paper production. In addition, the production of recycled steel creates 85% less air pollution and 40% less water pollution than the production of steel from virgin ore, while recycled glass production creates 20% less air pollution than does production with virgin materials.

As previously indicated, recycling also promotes our state's Greenhouse Gas Reduction goals. The USEPA calculated that on average, approximately 1.67 metric tons of CO₂ equivalents are avoided for every ton of municipal solid waste (MSW) recycled. If the MSW recycling rate increases from 34% to 50%, a total of 7.7 million metric tons of CO₂ equivalent in avoided Greenhouse Gas emissions would result.

The environmental benefits of recycling are not only significant because of their positive impact on the air, water and land of our state, but also because they result in monetary savings for manufacturers and society, in general. While the monetary benefits resulting from the energy

savings achieved by using recycled aluminum and glass in manufacturing, for example, are easy to quantify, other savings, such as the economic benefit of reducing greenhouse gas emissions, for example, are much more difficult to quantify. Nevertheless, an economic benefit must be attributed to such activities as clean air, water and land are far more valuable than polluted resources.

Economic Benefits:

While the environmental benefits of recycling are well known, the economic benefits of recycling are also significant despite the fact that they are often overlooked. Simply stated, recycling has encouraged the growth of an industry and created jobs. On a national scale, the recycling industry continues to grow at a rate greater than that of the economy as a whole. In fact, according to the Institute for Local Self-Reliance, total employment in the recycling industry from 1967 to 2000 grew by 8.3% annually while total United States employment during the same period grew by only 2.1% annually. The recycling industry also outperformed several major industrial sectors in regard to gross annual sales as its sales rose by 12.7% annually during this period. Furthermore, the number of recycling industries in the United States increased from 8,000 in 1967 to 56,000 in 2000. These facilities employ 1.1 million people across the country.

On a more local scale, New Jersey's well-developed recycling industry, which includes manufacturers of various recycled products, specialized processing facilities and transporters, is an important segment of the state's economy. A recent study conducted by the Northeast Recycling Council and United States Environmental Protection Agency found that almost 27,000 people in New Jersey are employed in recycling and reuse establishments and that total receipts from these establishments are valued at over \$5.9 billion annually. The Department estimates that nearly 9,000 additional jobs would be created in New Jersey should the 50% municipal solid waste recycling goal be met. New Jersey's recycling infrastructure includes 17 intermediate processing facilities for Class A recyclable materials (glass bottles, metal cans, plastic containers, paper grades), over 100 NJDEP-approved recycling centers for Class B recyclable materials (concrete rubble, asphalt debris, wood scrap, scrap tires), and dozens of industrial facilities including steel mills, foundries and paper mills.

The economic benefits of recycling are significant in other ways, as well. For example, recycling can save money on disposal costs for generators. A survey (see below) conducted by the Department in April, 2004 showed that recycling asphalt debris, concrete rubble, used bricks and blocks, felled trees and stumps and wood scrap costs significantly less than disposing of these materials as solid waste.

Average Cost to Recycle:

- A. Asphalt debris* - \$5.70 per ton
- B. Concrete rubble* - \$4.85 per ton
- C. Used bricks and blocks* - \$5.49 per ton
Trees and stumps - \$37.69 per ton
- D. Wood scrap - \$46.43 per ton

Average Cost of Disposal:

Over \$75.00 per ton and can be as high as \$98.00 per ton.

* Several recycling centers did not charge any fee for the receipt of these recyclable waste materials.

Survey results based upon 63 respondents.

The sale of recycled products is also becoming an increasingly important component of the retail sector and commerce, in general. There are over 1,000 different types of recycled products on the market and due to changes in technology and increased demand, today's recycled products meet the highest quality standards. Recycled products are also more readily available than ever before. Such products can be found in major retail stores, supermarkets, garden centers, local shops, catalogs and on the Internet. Furthermore, recycled products are affordable. Many recycled products cost the same or less than comparable products made with virgin feedstock. Although some recycled products do cost more than their virgin counterparts, many are less expensive over the lifetime of the product. For example, the purchase of recycled plastic lumber makes economic sense when life cycle cost analysis is taken into consideration. By purchasing recycled products, consumers are helping to create long-term stable markets for the recyclable materials that are collected from New Jersey homes, businesses and institutions.

The Road to Goal Achievement:

Notwithstanding the environmental and economic benefits of recycling, New Jersey has not met its total solid waste (TSW) recycling goal of 60% since 1997 and has never met its 50% municipal solid waste (MSW) recycling goal.

Based upon 2003 (preliminary) waste generation data, approximately 1,570,000 additional tons of waste would need to be recycled in order to reach the 60% TSW recycling goal. Furthermore, based upon the same preliminary waste generation data, slightly more than 1,700,000 additional tons of municipal solid waste would need to be recycled in order to reach the 50% MSW recycling goal. The latter goal, in particular, represents a major challenge for our state's many recycling programs, however, it is one that can be met. Due to the fact that such an increase in recycling tonnage will not only lead to the achievement of the 50% MSW recycling goal but also the 60% TSW recycling goal, the strategies presented herein will focus primarily on ways to recycle more municipal solid waste. A county-by-county look at MSW recycling in 2002 that includes data regarding attainment of the 50% MSW recycling goal can be found in Table B-1. (Note- Table B-1 is based on final data for calendar year 2002. Once the 2003 preliminary data is deemed final, this table will be updated accordingly). Of course, another way to improve recycling rates is to slow down or halt the seemingly ever-growing amount of waste generated. A discussion of this problem, however, is contained within the Source Reduction section of this plan.

In order for recycling to grow, the collection of recyclable materials, processing of recyclable materials into raw materials or end products and manufacture of these raw materials into new products that are purchased by consumers (embodied in the three chasing arrows of the recycling

logo) must continue to be nurtured. The Department's ongoing efforts to advance recycling have supported this "recycling loop" in many diverse ways. While the initiatives undertaken typically focus on one aspect of the recycling loop, it is imperative to remember that the different phases in the recycling system are all very much interconnected.

➤ Milestones Reached:

Collection of Recyclable Materials:

Many initiatives have been undertaken by the Department to support recyclable materials collection programs and the public's participation in these programs. Examples of such initiatives are as follows:

- A biennial "green" building conference and trade show has been held since 1994 for those in the building community. The recycling of construction and demolition debris is promoted at these events;
- The Department is participating in a working group of governmental and non-governmental officials whose goal is to promote the design and construction of "green" school buildings. The recycling of construction and demolition debris in these projects is advanced through this organization;
- The Department helped establish the New Jersey WasteWise Business Network in 2003. One of the aims of the Network is to help businesses, government entities and non-profit organizations recycle more waste;
- In 1999, the Department developed two promotional messages that were shown at movie theaters throughout New Jersey. The promotional messages were shown prior to the start of movies on approximately 435 screens across the state and were viewed by an estimated two million people. One of the messages congratulated New Jersey residents for their recycling achievements and encouraged more of the same;
- The Department provided financial support, most recently in 1999, for Environmental Defense/National Ad Council media campaigns that encourage recycling;
- The Department has procured and distributed numerous promotional items for county and state America Recycles Day (a national recycling awareness event held every November 15) programs;
- An educational and promotional display that supports recycling, as well as solid waste management, in general, was developed for use at conferences and fairs;
- A website (www.state.nj.us/recyclenj) containing information about the importance of recycling, local recycling coordinators and recycling data, among other things, was developed by the Department;
- "Practical Recycling Economics – Making the Numbers Work for Your Program," a publication developed by the Cook College Office of Continuing Professional Education in conjunction with the Department, was provided to all municipal and county recycling coordinators in 1999. It was designed to provide specific information, tools and strategies to make recycling more cost-effective for local recycling programs. An additional chapter that focuses on cost-effective promotional strategies that can be employed on behalf of local recycling programs will be added to the manual in 2004;

- The Department continues to fund and participate in the certified recycling coordinator training program that is administered by the Cook College Office of Continuing Professional Education. Until recently, this educational and training program was the only one of its kind in the United States and has resulted in the certification of over 200 recycling professionals;
- The Department helped establish the South Jersey Environmental Information Center in the West Deptford (Gloucester County) Public Library. This facility houses a vast array of recycling related educational resources;
- The annual recycling awards program that is coordinated in conjunction with the Association of New Jersey Recyclers (ANJR) continues to be another important avenue for promoting recycling. The awards recognize the outstanding recycling achievements of municipalities, counties, businesses and industry, as well as schools and other institutions;
- Recycling poetry contests have been held by the Department as a way to get the recycling message out to children in elementary schools. The winning entries were featured in calendars that were distributed to all schools with grades 4, 5 or 6; and
- The Department updated, revised and published a new brochure on used oil recycling. The brochure is targeted at those individuals who change their own automobile's oil and is entitled "Recycle Used Motor Oil – When You Do It Yourself, Do It Right."

Processing and Manufacturing with Recyclable Materials:

Many initiatives have been undertaken by the Department to support processors of recyclable materials and manufacturing operations that utilize recyclable materials. Examples of such initiatives are as follows:

- The Department provided \$75,000 for the development of a recycled plastic lumber bridge in Wharton State Forest. The bridge was constructed in the fall of 2002 and is unique in that it is the first one to use structural I-beams made of recycled plastic lumber. The plastic lumber used in this project was made from materials collected from New Jersey's curbside recycling programs by Polywood, Inc. of Edison, New Jersey. The Department collaborated on this project with Rutgers University and the Army Corp of Engineers. The bridge is open to the public, but will be used primarily by emergency vehicles;
- The Department continued to work with the Department of Transportation (DOT) on the development of specifications that would allow various recycled materials to be used in road construction and maintenance projects. Ultimately, a number of specifications were adopted by the DOT, including those for reclaimed asphalt pavement, recycled concrete aggregate and "glassphalt," i.e., glass aggregate mixed with asphalt. The use of these recycled materials and others in such projects greatly benefited New Jersey's many recycling centers by providing new markets for the end products generated by the processing of recyclable materials;
- Through the Northeast Recycling Council, the Department participated in recycling investment forums that were held as a way to introduce recycling businesses to venture capital firms, investment banks and individual investors;
- Recycling finance workshops for economic development officials, including one in New Jersey, were also coordinated in conjunction with the Northeast Recycling Council;
- In 1996, the Department incorporated the United States Environmental Protection Agency's used oil recycling rules at 40 CFR Part 279 which reclassify used oil as a solid waste and no

longer as a hazardous waste. This regulatory change enables recycling facilities for this material to be established through the Class D recycling center approval process rather than the hazardous waste facility permitting process;

- In 2002, the Department incorporated the United States Environmental Protection Agency's Universal Waste rules which allows the recycling of certain hazardous wastes under a Class D recycling center approval rather than a hazardous waste Treatment, Storage and Disposal Facility (TSDF) permit. This regulatory change enables facilities to profitably recycle batteries, fluorescent bulbs, paints and finishes, thermostats and all other mercury-containing devices, and consumer electronics materials that would otherwise be disposed; and
- The Department has been actively engaged in a "dialogue" as part of the National Electronics Product Stewardship Initiative (NEPSI), a forum for stakeholders to identify and reduce environmental and health impacts from consumer electronic product manufacture, use, storage and end of life management.

Buy Recycled Measures:

Many initiatives have been undertaken by the Department to promote and stimulate the procurement of recycled products. Examples of such initiatives are as follows:

- The Department's biennial "green" building conference and trade show, as noted above, also promotes the use of recycled building products and furnishings by those in the building community;
- As also indicated above, the Department is participating in a working group of government and non-government officials whose goal is to promote the design and construction of "green" school buildings. The use of recycled building products and furnishings in these projects is advanced through this organization;
- The Department produced a brochure about the high quality, availability, affordability and diversity of recycled building products and furnishings. The brochure was distributed to architects, builders, engineers and others across the state;
- In addition to promoting recycling, the New Jersey WasteWise Business Network, as mentioned above, advocates the purchase of recycled products, as well as waste reduction. One of the aims of the Network is to help businesses, government entities and non-profit organizations procure more recycled products for their day-to-day operations;
- Prior to the creation of the New Jersey WasteWise Business Network, the Department helped establish and coordinate the New Jersey Buy Recycled Business Network. The role of this organization, which was founded in 1993 and reorganized as the New Jersey WasteWise Business Network in 2003, was to bring the Buy Recycled message to as many companies as possible. Among other things, the Network produced two "Buy It Again!" newsletters each year and held two general membership meetings per year. In conjunction with the Department, the Network also participated in numerous special events such as the USEPA satellite teleconference on recycled product procurement, the New Jersey League of Municipalities trade show and a number of events hosted by the National Association of Purchasing Managers – New Jersey Chapter;
- As noted above, the Department developed two promotional messages that were shown at movie theaters throughout New Jersey in 1999. The promotional messages were shown prior to the start of movies on approximately 435 screens across the state. The Buy Recycled

cause was the subject of one of the messages which also highlighted the Department's Buy Recycled website found at www.recyclenj.org;

- The Department coordinated a half-day seminar regarding the use of recycled products in road construction and maintenance for the road construction industry, as well as for NJDOT engineers. The event was well attended and helped raise the awareness of those in this field to the benefits of using recycled materials in such applications;
- The Department participated in the development of the Northeast Recycling Council's (NERC) voluntary industry agreements to buy recycled products and materials. Through the collaborative efforts of NERC and its member states, major industry groups such as the Newspaper Publishing Association and the Yellow Pages Publishing Association consented to voluntary agreements that called for their members to purchase paper with a specified minimum percentage of recycled content. According to a recent report, NERC has received commitments from newspaper publishers in the northeast that will ensure that 86% of the newsprint used in the northeast will have an average minimum recycled content rate of 27%; and
- The Department continues to advocate that state government must practice what it preaches and buy recycled products for its governmental operations. In an attempt to promote compliance with P.L. 1993, c. 109 and Executive Order #91, two measures that require state agency procurement of recycled products, the Department sponsored the development of an easy-to-use guide to the procurement of recycled and environmentally preferable products for state agencies.

Of course, the road to goal achievement is made of more than just milestones already reached. It is also made of the road ahead, which includes new directions along the way.

By following new routes, it will be possible for New Jersey's residents, business and institutions to recycle an additional 1,700,000 tons of municipal solid waste. As previously indicated, this would not only lead to the achievement of the 50% recycling goal for this waste stream but also the 60% total solid waste recycling goal. In addition to the environmental benefits associated with such an increase in recycling, this achievement would also result in the creation of thousands of new jobs and greatly enhance New Jersey's economy.

➤ New Directions On the Road: (Specific recommendations follow this section)

- The establishment of programs designed to encourage the increased recycling of "other paper," i.e., paper other than newspaper, corrugated and office paper, is recommended. Increased recycling of "other paper," which comprises slightly more than 9% of the total solid waste stream, also represents a great opportunity for achieving recycling gains since only 6.6% of this material was recycled in 2002. If new programs are developed to the extent where the recycling rate for "other paper" reaches 45%, New Jersey could realize the recycling of approximately an additional 700,000 tons of this material;
- The establishment of programs designed to encourage the increased recycling of food waste is recommended. Supermarkets, grocery stores, bakeries and institutions, such as hospitals and universities, generate large amounts of food waste. Residents also generate significant quantities of food waste in their homes. At this time, much of this waste is not recycled, but rather landfilled. In fact, less than 19% of the food waste generated in New Jersey was recycled in 2002. In light of the fact that the tonnage of food waste generated per year in

New Jersey is greater than the combined tonnage of old newspapers, glass containers and aluminum cans (three of the most commonly recognized recyclable materials), food waste recycling represents a great opportunity for achieving recycling gains in this state. If new programs are developed to the extent where the tonnage of food waste recycled is twice the current rate, New Jersey would realize the recycling of nearly an additional 300,000 tons of food waste;

- The establishment of programs designed to encourage the increased recycling of corrugated is recommended. While corrugated is increasingly being generated in the residential sector due to catalogue and Internet shopping, the bulk of this material is generated at commercial establishments. As such, programs geared towards the business sector are essential for corrugated recycling to increase in New Jersey. If new programs were developed to the extent where the recycling rate for corrugated reaches 75%, New Jersey would realize the recycling of an additional 386,310 tons of this material. This goal is realistic and is based upon the fact that the national recovery rate for old corrugated containers approached 74% in 2002, according to the American Forest and Paper Association;
- The establishment of programs designed to encourage the increased recycling of newspaper is recommended. While newspaper recycling programs are well established in New Jersey, the recycling rate for this material declined to 41% in 2002. If new initiatives were employed to the extent where the recycling rate for newspaper reaches 70%, New Jersey would realize the recycling of an additional 253,535 tons of this material. This goal is realistic and is based upon the fact that the national recovery rate for old newspapers reached 71% in 2002, according to the American Forest and Paper Association; and
- The establishment of programs designed to encourage the increased recycling of office paper is recommended. While this material is mandated for recycling throughout the state, there are still companies in New Jersey that do not have a recycling program in their office. As such, programs geared towards the office environment are essential. If new programs were developed to the extent where the recycling rate for office paper reaches 55%, New Jersey would realize the recycling of an additional 58,432 tons of this material. This goal is realistic and is based upon the fact that a 55% recycling rate for office paper was previously attained in New Jersey in 1995.
- The establishment, through legislation, of a statewide program to increase the recycling of used consumer electronics, including computer monitors, central processing units, laptop computers, computer peripherals (keyboards, mice, printers, scanners, speakers and cables) and televisions. As indicated above, the Department has been an active participant in the National Electronics Product Stewardship Initiative. This dialogue between the consumer electronic producers, government and other interested entities was intended to produce the establishment of a national consumer electronics recycling program by this date. Unfortunately, issues primarily regarding financing the collection and recycling infrastructure have frustrated efforts at achieving such a program. However, given the rapid growth in this segment of the municipal waste stream, the amount and types of toxic constituents of this waste stream (including lead, cadmium, mercury, copper, lithium, brominated flame retardants and phosphorus) and the costs for the proper management of these items which have thus far largely been borne by local governments, the Department supports the passage of legislation which would establish a system for the increased recycling of these items, in a system that would be financed other than through the use of public funds. More details on this preferred system follow in the Recommendations section.

Recommendations:

1. As noted above, there has been no dedicated source of comprehensive funding for recycling in New Jersey since the expiration of the Recycling Tax in 1996. The recently enacted “Clean Communities and Recycling Grant Act” represents a significant step since it includes funding for recycling grants to municipalities and eligible counties, however, it does not fully address the funding needs of local recycling programs, nor does it provide any funding for a comprehensive state recycling program. In order to remedy this situation, the Department has advocated and continues to advocate the passage of legislation that would establish a stable and dedicated source of funding for recycling that does not rely on the fund generated by the “Clean Communities and Recycling Grant Act”.

As further noted above, historically New Jersey has funded various solid waste-related programs through the establishment of facility or solid waste company-based taxes or assessments. These include the “Recycling Tax”, the Solid waste Services Tax, the Resource Recovery Investment Tax and the District Solid Waste Importation Tax. However, disbursement of the funds generated from these taxes has typically been on a statewide basis, based on various formulae. Naturally, these scenarios have been seen by some as unfair, and anti-competitive when applied to local solid waste disposal facilities. Therefore, the Department is proposing that a surcharge be levied on all waste either originating in the state, regardless of where the waste may ultimately be disposed, and on waste originating out-of-state but either disposed of in-state, or transferred out-of-state for disposal from in-state facilities. This would not only eliminate the problem cited above, but would also capture a larger base of waste for the surcharge, as is done in other states that import waste for disposal or transfer. The Department is proposing a \$3.00 per ton surcharge, to be disbursed pursuant to the following formula:

- Not less than 30% to be distributed to municipalities (and eligible counties) as recycling performance tonnage grants, and to assist in the implementation of “pay-as-you-throw” weight-based residential waste disposal systems, and other programs designed to increase local recycling efforts;
 - Not less than 35% to be distributed to counties for recycling program funding, including household hazardous waste programs and recycling promotion and education, and for local enforcement of recycling mandates;
 - Not less than 25% shall be used by the Department to reduce or eliminate fees for the permitting of solid waste and recycling facilities and assessments on solid waste utilities;
 - Not more than 10% shall be used for state recycling administration, including statewide recycling promotion and recycling market development.
2. The Department’s recommendations to increase the recycling of “other paper” are as follows:
 - Counties should consider designating “other paper” as a mandatory recyclable item for the residential sector in their district recycling plans;

- Education and enforcement initiatives should be developed to increase recycling compliance in the residential sector, especially in multi-family housing. While “other paper” is mandated for recycling in the residential sector in a number of counties, there are many residents in New Jersey that are not complying with the requirements of the Recycling Act. This can be attributed in part to lack of education about recycling, as well as in part to the absence of enforcement. In fact, a 1995 Tellus Institute study on recycling in multi-family housing revealed that over 20% of the residents from one of the urban multi-family housing communities surveyed were unaware that recycling is required by law in New Jersey;
 - Funds generated by the Solid Waste Services Tax could be used to offset the potential need for new or additional recycling containers resulting from the addition of “other paper” to county and municipal recycling programs; and
 - Informational sessions on markets for “other paper” should be held for recycling coordinators in northern, central and southern New Jersey. A segment of these programs, which would be coordinated and hosted by the Department, would focus on cost-effective promotional strategies that can be employed on behalf of local recycling programs. The findings of the newest chapter to the “Practical Recycling Economics – Making the Numbers Work for Your Program” manual, as noted above, would be featured.
3. The Department’s recommendations to increase the recycling of food waste are as follows:
- Programs in support of compost derived from food waste should be developed in conjunction with the Department of Agriculture since this activity would also benefit the agricultural community. The production of containerized landscaping plants and trees has become one of the most significant components of New Jersey’s agricultural base. In order to meet the demand for containerized plants and trees, farmers and nursery operators will need increasing quantities of compost;
 - Compost derived from food waste should be purchased by state agencies when the need for this material arises. Such compost should be considered the first choice among compost derived from various waste materials;
 - The DEP-funded course on composting coordinated by the Cook College Office of Continuing Professional Education should be revised to include instruction on food waste composting.
 - The Department’s compost manual entitled “New Jersey’s Manual on Composting Leaves & Management of Other Yard Trimmings” should be updated and revised to include information on food waste composting; and
 - An education and awareness campaign designed to promote on-site food waste composting at colleges, universities, hospitals and other applicable institutions should be developed and implemented. The regulatory exemptions from permitting created for such activities should be highlighted in this campaign.
4. The Department’s recommendations to increase the recycling of corrugated are as follows:
- Education and enforcement initiatives should be developed to increase recycling compliance in the business sector, especially in small businesses. While corrugated is mandated for recycling in the commercial sector in all twenty-one counties, there are many businesses in New Jersey that are not complying with the requirements of the Recycling Act. This can be

attributed in part to lack of education about recycling, as well as in part to the absence of enforcement. In fact, a 1995 research project entitled “Recycling in Small Business,” prepared by the Tellus Institute on behalf of the NJDEP, revealed that approximately 33% of the small businesses surveyed were unaware that any materials were required by law to be recycled. Furthermore, 25% of the businesses surveyed were not recycling any materials, whether required by law or not. In addition to the need for improved collection systems for small businesses, the report indicated that over 50% of the small businesses surveyed agreed that they needed more information about recycling;

- The New Jersey WasteWise Business Network, as previously described, should develop programs that promote recycling in small businesses;
- A step-by-step waste audit educational program should be developed for businesses and made available on the Department’s website. A mailing to Chambers of Commerce and other business groups would alert the business community to the existence of this program;
- Tonnage grant applications which indicate, and can document, that recycling tonnage data from 90% - 100% of the commercial entities in the municipality in question have been obtained and included therein could be eligible for a 10% bonus grant. By doing this, municipalities would help to ensure a more accurate measurement of the tonnage of material that is being recycled in New Jersey;
- Counties should designate corrugated as a mandatory recyclable item for the residential sector in their district recycling plans. As mentioned above, corrugated is increasingly being generated in the residential sector due to catalog and Internet shopping, therefore, the collection of this material from homes would result in considerable recycling gains; and
- Those municipalities that do not provide corrugated collection service to the residential or business sector should provide a recycling depot for this material.

5. The Department’s recommendations to increase the recycling of newspaper are as follows:

- Education and enforcement initiatives should be developed to increase recycling compliance in the residential sector, especially in multi-family housing. While newspaper is mandated for recycling in the residential sector in all twenty-one counties, there are many residents in New Jersey that are not complying with the requirements of the Recycling Act. As was the case with “other paper”, this can be attributed in part to lack of education about recycling, as well as in part to the absence of enforcement; and
- Bus and train poster advertisements should be developed that instruct users to either deposit their newspapers in the recycling bin at the train or bus station or to bring their newspapers home with them for recycling.

6. The Department’s recommendations to increase the recycling of office paper are as follows:

- Education and enforcement initiatives should be developed to increase recycling compliance in the business sector, especially in small businesses. While office paper is mandated for recycling in the commercial sector in all twenty-one counties, there are many businesses in New Jersey that are not complying with the requirements of the Recycling Act. As was the case with corrugated, this can be attributed in part to lack of education about recycling, as well as in part to the absence of enforcement;

- The New Jersey WasteWise Business Network, as previously described, should develop programs that promote recycling in small businesses;
 - A waste audit educational program for businesses should be developed, as per #4 above;
 - A tonnage grant incentive program should be developed, as per #4 above; and
 - Print advertisements about office paper recycling and the purchase of recycled content paper should be developed and placed in New Jersey business publications.
7. The Department recognizes that recycling programs in colleges, universities and schools have been inadequate. These facilities generate a wide variety of waste materials since they include classrooms, offices, retail establishments, cafeterias and dormitories and other types of housing. By focusing on this sector, the amount of other paper, food waste, corrugated, newspaper and office paper, among other materials, recycled in New Jersey would increase dramatically. As such, the Department's recommendations are as follows:
- Education and enforcement initiatives should be developed to increase recycling compliance in these institutional settings;
 - Training programs should be developed in conjunction with the New Jersey Higher Education Partnership for Sustainability (NJHEPS);
 - Training programs should be developed in conjunction with the New Jersey Association of School Business Administrators; and
 - A "Recycling Star" school program should be established to recognize those school recycling programs that have fully complied with the requirements of the Recycling Act.
8. As noted above in several instances, small businesses, multi-family housing and schools (including colleges and universities) are sectors that must be focused on in order for recycling gains to be realized in New Jersey. In order to improve recycling compliance in these sectors, the Department recommends that a multi-faceted statewide communications and outreach campaign be developed and implemented. The campaign should include strategies and materials to encourage recycling by residents who do not speak English. In recognition of the growing population of Hispanic residents in New Jersey, the development of outreach and communications programs in Spanish is especially recommended.
9. The Recycling Act requires municipal master plans to be revised to include provisions for the collection, disposition and recycling of designated recyclable materials within any development proposal for the construction of 50 or more units of single-family residential housing, 25 or more units of multi-family residential housing and any commercial or industrial development proposal for the utilization of 1,000 square feet or more of land. This requirement can be found at N.J.S.A. 13:1E-99.16c. While the Department has not conducted a survey to determine the exact degree of compliance with this section of the law, it is a widely held position that municipal governing bodies have largely ignored this requirement, or are unaware of it. As such, the Department recommends that a collaborative effort with the Department of Community Affairs (DCA) be initiated to address this situation. By working with the DCA and local planning boards on this requirement, the necessities for successful recycling will be incorporated into all future development proposals, which in turn will facilitate recycling at these locations. This can only help to strengthen our state's recycling program.

10. Pursuant to Executive Order #34 (adopted in 1991), as well as the Recycling Act, state agencies are required to recycle certain waste materials generated by their operations. While recycling collection programs are believed to be in place at most locations, compliance with these programs is not known. As such, the Department recommends that all state agencies conduct a reassessment of their recycling programs as it pertains to Executive Order #34 and the Recycling Act to determine if modifications or improvements are needed. By conducting such a review, state government will ensure that it is doing its share to support New Jersey's recycling efforts.
11. The Department recommends that a new Executive Order that requires state agencies to purchase recycled products and other environmentally preferable products be adopted. While state law and Executive Order #91 (both adopted in 1993) require the procurement of recycled products by state agencies, these measures, while beneficial, are no longer reflective of current marketplace conditions. For example, the number of recycled products available today is significantly greater than that of a decade ago when Executive Order #91 was written and made effective. In addition, the percentage of recycled content in today's recycled products is typically much higher than that specified in the executive order. Furthermore, the ever-growing universe of environmentally preferable products is not addressed in Executive Order #91. In light of this situation, a new and revised executive order is needed. The proposed executive order would require state agencies to purchase a wide variety of recycled products and other environmentally preferable products. It is also recommended that the proposed executive order adopt the practice of life cycle cost analysis for those environmentally-friendly products that may cost more initially, but are less expensive over the life of the product due to reduced or non-existent maintenance costs. An example of a product that would benefit from a procurement system that utilizes life cycle cost analysis is recycled plastic lumber. In the absence of a new executive order, as described above, the Department recommends that state agencies be required to comply with Executive Order #91 as the existing executive order does advance the cause of recycled product procurement and recycling, in general.
12. A renewed focus on enforcement for recycling is needed. This must involve enforcement at all levels of government and at all stages in the recycling process. As such, the Department's recommendations are as follows:
 - DEP or local enforcement staff will subject loads of solid waste received at disposal facilities to a higher degree of scrutiny during inspections to ensure that mandatory recyclable materials are not included in loads of solid waste;
 - DEP compliance and enforcement initiatives, including those that focus on the regulated community in a particular municipality, i.e., "enforcement sweeps", should enforce the source separation and recycling requirements of the Recycling Act; and
 - County and municipal recycling enforcement programs that focus on compliance with the source separation and recycling requirements in multi-family residential settings, the commercial sector and at academic institutions (schools, colleges and universities) must be established. The recycling enforcement program implemented in Middlesex County exemplifies the type of program that the Department would like to see implemented

throughout the state. Furthermore, as noted elsewhere in this plan, all district solid waste management plans must be revised to include such a local recycling enforcement strategy.

As was indicated in recommendation #1 above, in the event that a dedicated source of funding for recycling is established by the Legislature, the Department will provide some portion of the available funds to support county and/or municipal recycling enforcement programs. In the absence of a dedicated source of funding for recycling, the Department expects counties to fund recycling related enforcement efforts by either including a small recycling enforcement fee in their disposal fee (as is currently done by five counties), by using Solid Waste Services Tax funds for such purposes or through some other means. While the use of Solid Waste Services Tax funds for this purpose may make it difficult for counties to fund other recycling initiatives, such as electronics recycling programs, the Department considers recycling enforcement to be not only long neglected, but also a priority and essential for recycling to gain ground in New Jersey.

13. The Department recommends requiring county solid waste and recycling staff to develop spending plans that promote the goals identified herein for the Solid Waste Services Tax funds they receive on annual basis. Prior to the development of such plans, county solid waste and recycling staff must meet with Department staff to discuss the county proposals under consideration. Moreover, the Department will, at its discretion, use its statutory authority to withhold Solid Waste Services Tax funding from non-performing counties, with the exception of those Solid Waste Services Tax funds used exclusively for recycling enforcement activities. In addition, the Department will consider withholding a wide range of environmental funding programs, including Green Acres funding, from non-performing counties.
14. The Department recommends that as a condition for being eligible for bonus recycling grants, municipalities and counties must first document that no less than 50% of their previous year's tonnage grant funds were used for recycling program purposes. Documentation of such expenditures shall be submitted with the subsequent year's tonnage grant application. Furthermore, the Department recommends that bonus recycling grants be made available solely for the municipal or county collection of other paper, corrugated, newspaper, office paper and containers collected from commercial establishments.
15. The Department recommends that a targeted education and enforcement campaign be developed in order to make convenience stores aware of their obligation to provide containers for recyclable materials that are generated by purchases made within these stores. While there had been some debate about this issue, a February, 2004 opinion issued by the New Jersey Department of Law and Public Safety resolved this matter by finding that convenience stores are commercial premises and subject to this requirement. The Department will not only reach out to the owners and operators of convenience stores, but shall also enlist the help of both county and municipal recycling coordinators in regard to this undertaking.
16. Unlike other recyclable materials collected in local programs, brown and green glass generate little, if any, revenue for program operators. In fact, these materials often have a

negative value in the marketplace, meaning that it costs money to market them. This is largely due to the fact that the products that are packaged in brown and green glass, primarily wine, beer and other alcoholic beverages, are produced outside the state, if not outside the country. Consequently, relative to the amount of green and brown glass containers that enter the local recycling stream, there are few domestic brown or green glass container manufacturers, and few other value-added marketing options, and thus the costs for recycling these materials rises relative to their value. The Department recommends the passage of legislation that would establish a system where a refundable deposit of an amount to be determined is placed on all brown or green glass used to package alcoholic beverages. In doing so, a significant portion of recyclable glass would be managed outside municipal and county curbside collection programs. To the extent that, due to the relative convenience of continuing to place these containers for curbside recycling collection versus returning these containers to either a redemption center or a retailer, the redemption system should allow for local recycling program operators to redeem deposits from the system on those containers they continue to handle. By establishing the proposed deposit system, the industries that created this market imbalance would be responsible for addressing this situation, not local recycling operations. Ultimately, the proposed system should lead to an increase in glass recycling rates due to the refundable deposits associated with this material and will eliminate the glass marketing problems inherent in today's recycling system.

17. The Department recommends passage of legislation mandating consumer electronics manufacturer responsibility for the recycling of these items. The broad elements of this legislation should include, at a minimum:
 - 1) Within one year of passage, each manufacturer shall, either singly or jointly, submit a plan for the management of electronics to the Department. The plan would detail how the manufacturer(s) would meet the recovery targets established by law. This would include the establishment of convenient, fixed locations (or incorporation of electronics collection into existing curbside recycling programs) for the collection of covered items, methods for educating the public as to the recycling opportunities available and the method for financing the collection and recycling system to be employed;
 - 2) Within four years, manufactures, either jointly or singly, shall have in place a system that is collectively recovering at least 2 pounds of consumer electronics per capita annually;
 - 3) At least sixty five percent by weight of materials from non-reusable recovered electronics must be recycled within the four year period; and
 - 4) Per-capita recovery targets, and minimum recycling percentages, would rise in subsequent years, based on targets established by the Department through the rule-making process.

B.3. Beneficial Use Determinations

Beneficial Use Project (BUD) Approval Process

The Division of Solid and Hazardous Waste, Bureau of Resource Recovery and Technical Programs issues Certificate of Authority to Operate (CAO) for a beneficial use project determination (BUD), pursuant to N.J.A.C. 7:26-1.7(g). The Department is very interested in supporting and encouraging the beneficial use of materials that would otherwise be waste, in

environmentally sound applications. This preserves valuable landfill space for essential disposal uses and helps conserve natural resources by using valuable existing materials.

The term "BUD", an acronym for the term "beneficial use determination," has been adopted by many states and the public as a general reference to regulatory beneficial use approvals. In New Jersey the use of the term BUD may reference the process of an applicant obtaining a CAO for a beneficial use project, and can also mean the actual approval or project. The CAOs for beneficial use projects are issued under the exemptions to the solid waste regulations as specified at N.J.A.C. 7:26-1.1(a)1 and N.J.A.C. 7:26-1.7(g), allowing non-putrescible material separated at the point of generation to be sent to an approved facility for beneficial use or for on-site beneficial use at the site of generation.

To date, the Department has issued 371 CAOs authorizing beneficial use of different materials for more than approximately 6.3 million cubic yards of these materials. The Department estimates that by beneficially using these materials businesses and the general public have saved approximately two hundred million dollars versus the cost of purchasing primary products and raw materials.

An electronic copy of the Application Form and Instructions for Completing the Certificate of Authority to Operate (CAO) a Beneficial Use Project can be found at www.state.nj.us/dep/dshw/rrtp/benuseap.htm. To ensure all of the necessary information needed to complete the application review is included on the CAO application, a CAO-Approval Application Review Checklist is provided at the following web link: www.state.nj.us/dep/dshw/rrtp/budchkls.pdf. A list of authorized New Jersey beneficial use projects is available at <http://www.state.nj.us/dep/dshw/rrtp/abenusep.htm>.

Technology Acceptance Reciprocity Partnership Tier II Beneficial Use Determination Protocol

The New Jersey Department of Environmental Protection (NJDEP) through the Office of Innovative Technology and Market Development (OITMD) assumed the lead role for developing the Technology Acceptance Reciprocity Partnership (TARP) Tier II Beneficial Use Determination (BUD) Protocol. TARP, which is made up of individuals from the environmental agencies of IL, MA, MD, NJ, NY, PA, and VA, is a workgroup of the Environmental Council of States (ECOS). In addition to the OITMD, the staff from the Division of Solid and Hazardous Waste was consulted to include overall technical, procedural and administrative information to develop and finalize this document.

Beneficial uses of non-hazardous RCRA solid wastes can provide an environmentally preferable source of raw materials, save energy, reduce greenhouse gas emissions, reduce emissions of air and water pollutants, and conserve natural resources. Therefore, the goal of this Tier II BUD Protocol is to encourage the use of certain non-hazardous RCRA solid wastes as raw materials. Also, as described within the Tier II BUD Protocol, the uses of the materials must maintain specified State's acceptable level of risk, protect human health and the environment, and be managed in accordance with the conditions of the determination.

The first final draft of the BUD Protocol was accepted in January 2002 by the NJDEP. Recently, the TARP States decided to revise the original document to make it more "user- friendly". Therefore, the TIER II BUD Protocol was revised into two separate documents - one for regulators and the other for vendors. Presently, the two documents are being finalized, after which they will be submitted for the NJDEP's acceptance, and made available to the respective regulatory programs and the public.

B.4. Mercury Reduction

The Department convened its first Mercury Task Force in 1993. This Task Force recommended a stringent reduction in mercury emissions from municipal solid waste (MSW) incinerators, which were subsequently implemented by NJDEP and resulted in a 90 percent reduction from this source. The second Task Force convened in 1998, triggered by a concern that additional significant sources existed and that energy deregulation would increase the output from Midwestern power plants.

The 1998 Mercury Task Force advocated an overall goal of the virtual elimination of anthropogenic sources of mercury. Towards this goal, a two step milestone of a 75% reduction in air emissions below estimated 1990 levels by 2006 and an 85% reduction below 1990 levels by 2011 was recommended. The Task Force reviewed all local and regional mercury sources and New Jersey is looking for reductions in all sources as practicable. New Jersey expects this effort to result in the attainment of water quality standards given the scientific and quantitative basis of the current recommendations combined with the successful track record of the implementation of the primary recommendation of the first Mercury Task Force.

The Report of the Mercury Task Force contained seventeen recommendations including both enforceable and voluntary actions. New Jersey has either implemented or is working on the implementation of twelve of the seventeen recommendations. Of enforceable actions, New Jersey is in the process of implementing Task Force emission reduction recommendations for new emission rules adopted on December 6, 2004 for iron and steel manufacturing, coal combustion, medical waste incineration and additional controls on municipal solid waste incineration. New Jersey is also reviewing its enforcement policy regarding emission limits already in effect pursuant to permits for individual iron and steel manufacturing facilities.

The Report of the Mercury Task Force can be viewed on the web at http://www.state.nj.us/dep/dsr/mercury_task_force.htm

Mercury Switch Data Collection Project

As part of the New Jersey State effort to reduce the extent of mercury entering the environment, the Department initiated a pilot project to collect data to facilitate the development of a cost-effective program to collect mercury-containing switches from end-of-life vehicles (EOLV), for maximizing the amount of mercury that can be removed prior to their delivery to a scrap recycling facility for processing.

USEPA has estimated that approximately 10 tons of mercury are contained in autos recycled in the US annually. The primary source of mercury is convenience lighting switches, such as those found in the trunks and hoods of most vehicles. This mercury can be released to the environment by scrap auto shredders and by melters that use this scrap metal. It should be noted that emissions from secondary iron and steel melters are estimated to be the greatest single source category from work conducted by NJDEP staff for the NJ Mercury Task Force.

Using guidance and lessons learned from other state and regional efforts, New Jersey conducted a pilot switch removal program to determine the feasibility of removing mercury-containing switches from EOLVs and the potential effectiveness of such removal in preventing the release of this mercury to the environment. The study found that a typical EOLV contains 0.8 mercury convenience lighting switches and each switch contains an average of 1.2 grams of mercury. While removal of a mercury-containing convenience switch takes less than a minute, it may take several minutes to inspect a vehicle to determine the presence of a switch. Approximately one minute is required to document the vehicle and switch removal data, resulting in a total time to remove a mercury switch of less than five minutes.

The total cost of mercury switch removal, handling, transportation, and proper disposal is estimated to be \$3.00 per switch. On this basis, a switch removal program in New Jersey would have an estimated cost of \$1.5 million annually, based on the assumption that approximately 500,000 vehicles are shredded in the state annually. Such a program, if effective statewide, could lead to the collection and proper management of approximately 1000 pounds per year of mercury that might otherwise be released to the environment. Mercury convenience light switches will be present in end-of-life vehicles for at least the next 15 years.

As part of an associated effort, the scrap generated through the pilot project was melted at a steel mill, and a voluntary stack test was performed. Preliminary data suggest that removal of mercury switches prior to shredding resulted in a reduction in mercury emissions of approximately 50 percent. The report recommended that a switch removal program be implemented on a regional basis due to the significant amount of interstate commerce involved in the handling and processing of EOLVs, as well as the marketing of shredded scrap.

The “Mercury Switch Removal Act of 2004” (S1292) adopted by the New Jersey Legislature requires the removal of mercury switches from automobiles by automobile recyclers and requires automobile manufacturers to develop plans for the collection and recycling of mercury switches.

Legislative Recommendation

On July 23, 2002 the Department issued advisories warning people about unsafe mercury levels found in 21 species of freshwater fish from water bodies around NJ. Mercury found in products is a significant contributor to the mercury emissions that result in fish contamination.

During 1998 and 1999, the Department worked with the Northeast Waste Management Officials' Association (NEWMOA) to develop model legislation designed to eliminate or reduce non-essential uses of mercury in household, institutional, and industrial products and processes. The

model legislation provides a comprehensive framework to help states develop more consistent approaches to managing mercury-containing wastes.

Most of the Northeast states have either proposed or adopted portions of the model legislation. The Department is drafting legislation based on NEWMOA's model to be introduced into the legislature.

B.5. Landfill Gas/Recovery and Greenhouse Gas Emissions Reductions/Emission Trading

Methane, a naturally occurring byproduct of anaerobic decomposition of organic matter, is a powerful greenhouse gas with a global warming potential 21 times greater than equivalents. Solid waste landfills are by far the largest anthropogenic source of methane emissions in the State, representing 72% (13.3 million tons) of methane emissions.

Greenhouse gas savings could be realized through the installation of methane collection and combustion systems at certain landfills that are currently undergoing closure, or other structurally related construction.

Forty seven landfills, some open, but most closed, account for about 35% (1.9 million tons) of methane emissions. Utilizing this methane for energy recovery further reduces greenhouse gases from the current fossil fuel usage and is defined as a renewable energy source. Cost effective methods to recover methane from these landfills are available. In instances where the collected methane gas is resold, or utilized to generate electricity, additional revenue stream is afforded the landfill owner.

The Electric Discount and Energy Competition Act (EDECA) N.J.S.A. 48:3-49 et. seq. includes methane gas from landfills as a feedstock qualifying for Class 1 renewable energy support. There are already a handful of landfill gas to energy projects operating at large landfills in New Jersey. In one instance, revenue is being derived not only from the electricity sales, but also from sale of the carbon dioxide emission credits which result from the project. But other, smaller sized landfills could be suitable for such landfill methane to energy projects. As a strategy to help fund proper landfill closure, and subsequent post-closure monitoring, this landfill gas to energy projects at all suitable landfill facilities within New Jersey should be developed.

B.6. Household Hazardous Waste Collection Programs

Many jobs around the home require the use of products containing hazardous components. Certain paints, cleaners, stains and varnishes, car batteries, motor oil, and pesticides are some of these products. The unused portions of these products that require disposal are known as "household hazardous waste." The types of materials that actually constitute a household hazardous waste (HHW) range from more obvious materials like bleach, oil-based paint, paint thinner, gasoline, and lighter fluid, to some less ones like hair coloring products, floor wax, and air fresheners. Americans generate approximately 1.6 million tons of household hazardous waste

per year. An average home can accumulate as much as 100 pounds of household hazardous waste in the basement or garage and in storage closets.

According to the United States Environmental Protection Agency's hazardous waste regulation at 40 CFR 261.4(b)(1), that have been adopted by the New Jersey Department of Environmental Protection (Department), household hazardous waste is excluded from regulations as hazardous waste, and is considered solid waste that the households can dispose of with the regular trash. However, the disposal of these materials in a municipal solid waste landfill is not the most environmentally acceptable disposal option. Household hazardous wastes are sometimes disposed of improperly by individuals pouring wastes down the drain, on the ground, into storm sewers and into septic systems. The improper disposal, or the putting of HHW out with the regular trash can pose a potential risk to people and the environment. Certain types of household hazardous waste have potential to cause physical injury to the sanitation workers during collection, could react with other waste in the garbage collection vehicles causing fire, could emit dangerous fumes from chemical reactions at the waste handling facility, contaminate septic systems or wastewater treatment systems, and present hazards to children and pets while accumulated in the homes.

To discourage residents from disposing of HHW in their garbage and to avoid other improper disposal, all counties in New Jersey have developed and set up HHW collection programs. The Department has provided technical assistance in design of these programs and facilities. Each county has designated HHW collection days when residents can bring their HHW to the county collection site. Three counties, namely Burlington, Monmouth and Morris operate permanent household hazardous waste collection facilities. The collected HHW is characterized by county personnel and shipped to an appropriate facility for recycling or disposal. Over the years the counties have collected materials such as aerosol products, antifreeze, batteries, household driveway sealer, fire extinguishers, gasoline, mercury devices and liquid mercury, motor oil, oil filters, muriatic (hydrochloric) acid, paint and paint stains, pesticides, photo chemicals, pool chemicals, thinners and solvents.

Each county in New Jersey has a designated Household Hazardous Waste Coordinator. The coordinators have the option to join the Association of New Jersey Household Hazardous Waste Coordinators (ANJHHWC) as members. The ANJHHWC produces a yearly newsletter that covers issues pertaining to HHW collection programs. The yearly newsletter features achievements of various counties.

The HHW collection programs have been very popular with the general public and an enormous amount of hazardous waste has been removed from the environment, from the municipal solid waste stream and from people's homes.

A summary of the number of households participating in the HHW collection programs and the amounts of HHW collected at the permanent HHW collection sites in the counties of Burlington, Morris, Monmouth and Middlesex is located in Table B-2.

The Department does not require the counties to report data on the amounts of HHW collected and some counties may not have the data available for previous years. However, the data

obtained from counties with permanent HHW collections facilities, as shown above demonstrates that the number of households participating in these programs and the amounts collected have been rising every year. Therefore, the Department should encourage and assist the rest of the counties to construct permanent HHW collection facilities to prevent the disposal of such waste in the municipal solid waste landfills.

B.7. Recycling Centers for Class D Recyclable Materials

Used Oil

Until October 21, 1996 the Department regulated used oil as hazardous waste and existing facilities were operating under the Hazardous Waste Facility permits. On this date the Department reclassified used oil as a Class D recyclable material and it became subject to the Recycling Regulations at N.J.A.C. 7:26A. The Department's used oil recycling regulations are based on the United States Environmental Protection Agency's used oil regulations codified at 40 CFR 279.

A Recycling Center for Class D Recyclable Material (used oil) is a facility that receives used oil from various generators and registered transporters for storage and processing and is subject to the provisions of N.J.A.C. 7:26A, known as the Recycling Regulations. A typical used oil recycling center operator collects used oil from generators utilizing a fleet of tank trucks, registered with the Department, ranging in nominal capacity approximately from 1,000 to 10,000 gallons. Upon arrival at a recycling center, all the bulk shipments of used oil are analyzed for parameters required by the regulations. Once the analysis is complete and the operator has determined that the material is acceptable, the oil is unloaded into storage or processing units. The material is then processed by utilizing techniques such as sedimentation, filtration, heat treatment, chemical treatment and blending to produce an on-specification oil product for sale. All residues generated from the processing of used oil are disposed of at authorized facilities.

There are five facilities currently operating in the State and have been issued a General Approval by the Department's Division of Solid and Hazardous Waste. These five approved facilities have a combined daily storage/processing capacity of 5,254,020 gallons. According to the data reported to the Department, during the years 2002, 2001 and 2000, 21,687,699 - 18,123,425 and 14,716,628 gallons, respectively, of used oil were processed by these used oil storage/processing facilities.

Used oil recycling centers are required to have adequate spill control mechanisms in place to prevent and contain releases from material handling. The used oil storage and processing tanks are equipped with overfill control devices such as high level alarm, feed cut off etc. to prevent overfilling and spillage during facility operations. All used oil storage and processing units must have an adequate secondary containment system. The secondary containment system must be sufficiently impervious to used oil. The secondary containment system is sloped and operated to drain and remove liquid resulting from leaks, spills or precipitation. The secondary containment system, in addition to the volume displaced by containers, tanks, or equipment, must have a capacity to contain precipitation from a 25-year, 24-hour rainfall event.

Used oil facilities must also have an acceptance/inspection plan for all incoming shipments of used oil. The plan includes a checklist for the use of the facility personnel and contains sufficient details to ascertain that the center does not accept unauthorized materials at the center. The used oil processing centers shall have an on-site laboratory to analyze incoming shipments of off-specification oil and processed on-specification used oil.

The currently operating facilities have a sufficient storage and processing capacity to meet the needs of New Jersey used oil generators. In addition to the used oil processing facilities, there are several used oil transfer facilities operating in the State. The used oil transfer facilities are transportation related facilities that collect used oil from various generators and bring it to their centralized facility for storage for not longer than thirty five (35) days and for consolidation of different loads of oil. The used oil transfer facilities can also accept used oil for consolidation from other registered transporters. The transfer facilities cannot process used oil to make an on-specification used oil product. The transfer facilities are required to ship all consolidated used oil to a used oil processing facility with thirty five (35) days of its receipt at their used oil transfer facility. Most of the used oil from transfer facilities is shipped to out-of-state used oil processing facilities. Used oil transfer facilities are not required to obtain an approval from the Department but are subject to periodic inspection by the Department's Enforcement personnel.

Two used oil recycling facilities have also been collecting antifreeze (ethylene glycol) and shipping it to antifreeze recycling operators. During the years 2000, 2001 and 2002, approximately 400,000, 500,000 and 700,000 gallons respectively of antifreeze have been collected by New Jersey used oil processing facilities and shipped for recycling. The amount of antifreeze to be collected in the future is expected to increase.

Universal Waste Recycling

In 1996 the Department also incorporated the USEPA's Universal Waste Rule into the NJ Recycling Regulations. This allows the recycling of certain hazardous wastes under a Class D recycling center approval rather than a hazardous waste Treatment, Storage, and Disposal Facility (TSDF) permit. This will enable facilities to profitably recycle materials that would otherwise be disposed. The readoption of the Department's recycling regulations in 2002 amended the Universal Waste Rule to include additional materials. The rule applies to the following materials: batteries, hazardous waste lamps, hazardous waste finishes, thermostats and all other mercury-containing devices, and consumer electronics. Additional text and recommendations regarding the management of consumer electronics can be reviewed above, in Section B.2.

B.8. Composting

Organic material is estimated to account for approximately 15% of the total solid waste stream in New Jersey. This organic stream consists of leaves, grass clippings, brush and other yard wastes, tree trimmings, food waste from residential, commercial and institutional sources and food processing wastes from commercial food processors.

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

The State's objective for the management of organic wastes is through a hierarchy of practices as follows:

- 1) Natural decomposition at the point of generation (i.e., Cut-it-and-Leave-It, on-site degeneration and composting);
- 2) Diversion to farmers; Composting using a combination of composting technologies; and Biomass Conversion.

The framework for achieving the state's policy indicated above is currently in place. Regulations were adopted that allow for the mulching of leaves on farmland; a manual that details various leaf composting methods for use by New Jersey municipalities was developed in 1994; brochures explaining the benefits of backyard composting of homeowner generated yard waste and of leaving grass clippings on the lawn were also developed; many counties adopted solid waste management plan amendments that provide for automatic inclusion of vegetative waste composting sites; and a ban on the disposal of leaves as solid waste was established by statute in 1987. These activities, in addition to new strategies, will be continued, as discussed below.

The most cost-effective method of organic material management is simply to allow organic materials to decompose naturally at the site of generation. The Department's Cut-It-and-Leave-It policy to promote the on-site management of the State's grass clippings is an example of this policy in action. On-site management also prevents off-site dissemination of pesticides and herbicides in organic matter to which it was applied, which has become an issue of concern in recent years especially concerning the broadleaf (dicotyledonous) herbicide Clopyralid. Grass clippings from sites where this chemical was used have been banned from compost facilities in the State of Washington. New Jersey's Pesticide Control Program is investigating the contamination of compost in New Jersey. Future incorporation of grass clippings into off-site composting will be evaluated in view of that Office's report. If the product from the composting process is not safe, it should not be produced according to the New Jersey Advisory Council on Solid Waste Management.

Following the statutory ban on the disposal of leaves as solid waste, effective in 1988, and an amendment to that ban in 1989 which allowed for the mulching of leaves on farmland, the Department, with strong technical and regulatory support from the Department of Agriculture, adopted regulations in 1989 which greatly expanded the options available to municipalities in proper management of their leaves, by allowing for the mulching of up to a six-inch layer of leaves directly onto farmland. These regulations were expanded in 2002 to allow exemptions

from permitting for composting on farms and mine reclamation lands when the finished compost is used on site. By providing these alternatives the department made available to farmers large quantities of organic material for incorporation into the soil. This organic addition to farmland is beneficial to much of the soil in New Jersey, and the Department will continue to support this option for New Jersey municipalities and farmers.

To promote the composting of yard trimmings, the Department adopted rules in 1996 that classified yard trimmings as recyclable materials and the facilities that accepted and processed them as recycling centers. Removing the solid waste facility definition removed many onerous requirements that the Department no longer believed were necessary for these types of operations. The rule change also added an exemption from approval for sites accepting less than 10,000 cubic yards of yard trimmings. Several new yard trimmings compost facilities have been developed as a result of the rule changes of 1996. To maintain this trend, the Department adopted additional rules in 2002 that exempt additional types of compost facilities from approval.

In the rule changes of 1996, the Department also attempted to promote composting of organic material other than yard trimmings by redefining source separated organic material as recyclable material such that facilities developed to compost this material would be considered to be recycling centers. Rules for the design and operation of the facilities were less difficult than those for the design and operation of solid waste facilities. One example of this is the provision that allows operations at sites that only accept vegetative food waste without the need for a full enclosure. To continue efforts to promote food waste composting, the Department also added a provision to the rules of 2002 that allows the composting of food waste at the site of generation with distribution of product off site without the need for approval. The Department expects many food processors and other institutions in the state to take advantage of this new provision.

The Department is considering further changes to the recycling rules including a reduction in the 1000-foot buffer requirement for the receipt and processing of grass clippings and food waste in outdoor operations where neighboring property owners agree to a lesser distance. Also being considered generally is addition of flexibility in other design requirements. One example is the requirement for an impervious surface for the composting of vegetative food waste where the Department is studying the possibility of allowing environmental monitoring in lieu of strict adherence to the pad design requirement.

To date, most organic waste recycling has been accomplished through composting. Currently, over 175 facilities for the composting of yard trimmings, including leaves, exist within the State and many of the citizens of the State have come to expect municipal collection and composting of their vegetative yard waste. However, if we expect to attain the 50% MSW recycling goal set by the State in 1993, recycling options for the food waste fraction of organic waste must also be investigated.

Food waste includes uneaten food, food preparation wastes, and biodegradable wastes associated with the consumption and packaging of foods, such as paper plates, napkins, and waxy cardboard. Current estimates by the NJDEP show that in 2000, food waste was 7.4% by weight of the Municipal Solid Waste (MSW) generated within New Jersey. Food waste consists almost exclusively of organic materials. Its chemical (relatively low lignin content) and physical

compositions (high moisture content) make it the most readily degradable fraction of MSW. This fact makes food waste an obvious candidate for keeping out of landfills and thus saving diminishing landfill capacity.

Despite having what would seem to be an optimal set of conditions (high population density, and abundance of supermarkets, and a high demand for soil amendments) for the development of a highly successful food waste recycling program, New Jersey currently only recycles 24.7% of its food waste. Even though New Jersey ranks number two in percentage of food waste recycled by state (Goldstein, 2001), it is obvious that much more can be done within the State to increase the recycling rate of food waste and thus MSW. The Department must begin looking at other processing technologies for organic wastes such as digestion, worm composting, and animal feed production and amending the rules to ensure that these methodologies are clearly covered as recycling activities and not solid waste processing; however, obstacles exist.

Obstacles to Food Waste Recycling

The nature of the material; although the optimal moisture content of material for composting is approximately 50-60%, the typical moisture content of food waste can be up to 70%. This relatively high moisture content makes collections more difficult than for the more traditional dry components of MSW. Moist materials are more likely to develop odors and thus collection systems employed would have to be designed to minimize this potential problem. In addition, dry materials, such as leaves and/or cardboard, must be added to food waste prior to composting to decrease the potential odor problems associated with high moisture content and zones of anaerobic degradation. The carbon to nitrogen (C/N) ratio, another important parameter for composting, of food waste is generally less than the optimal ratio of 25:1 and thus materials with a higher C/N ratio, such as paper, cardboard, and/or leaves must be added to food waste prior to composting.

Lack of available facilities and cost: in order to locate a successful food waste recycling facility, several factors must be considered including, but not limited to, positive sentiment by local, County and public organizations, haul distance from the generators to the facility, and distance from the facility to the nearest residences. Currently, the capacity to accommodate food waste recycling on a large-scale is not in place. Only one large-scale facility for composting of food waste exists in New Jersey. And, New Jersey with a very high population density and lack of available land of sufficient size makes siting an outdoor windrow facility very difficult, especially in the northeastern portion of the state. As a result, the feasibility of using large indoor in-vessel composting facilities or digesters would most likely have to be assessed if food waste recycling on a Statewide basis was to be pursued. These facilities minimize the odors and environmental impacts of windrow composting, produce similar quality compost in a reduced time span, and require less land area; however, they have significantly higher capital costs associated with their operation. These costs vary significantly, based on design and operating criteria. Digesters offer the added benefit of producing methane, which can be used in power generating operations. However, taking on costs associated with siting and constructing any type of new facility will most likely not happen any time soon due to debt repayment obligations that most counties are still under and a reluctance to divert any new solid waste types from their current disposal facilities.

Consumer confidence and lack of standardized analytical criteria. Another problem with food waste compost is the lack of confidence the public or other end users have in the quality of the material. Many investigations in Europe indicate that quality and marketing of the end product is the most crucial composting issue. In order to increase the confidence and thus demand for organic waste compost, clear and uniform regulations with regard to what is suitable to be composted and how the end product should be managed and controlled need to be developed and supported on a state and national scale.

The US Composting Council (USCC) has initiated a Seal of Testing Assurance (STA) Program, which intends to improve customer confidence in compost quality by encouraging compost producers to employ standardized analytical methods to test the chemical, physical and biological quality of their products. If the compost is sent to approved laboratories and meets all state and federal regulations concerning heavy metals and pathogens, the USCC will approve the compost as "STA certified" permitting the use of the STA logo on the bagged product. This program closely resembles the successful programs followed in Europe in providing consistent quality compost products. However, the program is still in its infancy and until the demand for a certified product increases, the number of participants in the STA program will be limited. In addition, each state has different regulations and standards for certain types of compost and it's difficult to satisfy a national customer base.

Overall, food waste recycling is an idea that the State wants to promote. This Plan update does not propose specific solutions to the problem, but emphasizes that the State needs to seek the input of all stakeholders, including generators, haulers, composters and markets in an attempt to determine how best to proceed in moving food waste recycling forward in New Jersey.

Table B-1
Recycling and Disposal Data

County	2002 MSW Disposal Increase (actual tons)	2002 MSW Recycling Tonnage/Rate (actual)	MSW Recycling Tonnage @50% recycling rate	MSW Recycling Tonnage Needed to Reach 50% MSW Recycling Goal
Atlantic	249,715	99,355 (28.5%)	174,535	75,180
Bergen	634,,406	447,176 (41.3%)	540,791	93,615
Burlington	322,076	252,875 (44.0%)	287,476	34,601
Camden	329,967	135,821 (29.2%)	232,894	97,073
Cape May	124,005	54,886 (30.7%)	89,445	34,559
Cumberland	115,083	82,495 (41.8%)	98,789	16,294
Essex	610,932	310,670 (33.7%)	460,801	150,131
Gloucester	179,564	116,009 (39.2%)	147,786	31,777
Hudson	434,615	91,989 (17.5%)	263,302	171,313
Hunterdon	81,810	16,397 (16.7%)	49,103	32,706
Mercer	255,644	103,571 (28.8%)	179,607	76,036
Middlesex	528,674	319,622 (37.7%)	424,148	104,526
Monmouth	436,142	299,985 (40.8%)	368,063	68,078
Morris	335,728	197,518 (37.0%)	266,623	69,105
Ocean	432,669	172,957 (28.6%)	302,813	129,856
Passaic	358,028	201,900 (36.1%)	279,964	78,064
Salem	38,184	16,563 (30.3%)	27,373	10,810

Somerset	204,678	66,166 (24.4%)	135,422	69,256
Sussex	84,439	21,195 (20.1%)	52,817	31,622
Union	381,031	105,343 (21.7%)	243,187	137,844
Warren	72,693	24,691 (25.4%)	48,692	24,001
Total:	6,210,082	3,137,184	4,673,633	1,536,449

Table B-2 HOUSEHOLD HAZARDOUS WASTE COLLECTION SUMMARY

COUNTY	2002	2001	2000	1999
<i>Burlington</i>				
Households	Not Available	5,558	5,565	4,788
Total Amt. (lbs)	Not Available	647,911	623,556	533,720
C. Morris				
Households	1,315	1,524	1,080	Not Available
Total Amt. (lbs)	171,540	189,300	83,740	Not Available
D. Monmouth				
Households	1,886	4,168	4,020	Not Available
Total Amt. (lbs)	156,795	529,478	469,559	Not Available
E. Middlesex				
Households	Not Available	5,167	4,474	4,353
Total Amt. (lbs)	Not Available	8,500	7,690	5,775
Drums	Not Available	563	505	249

C. SOLID WASTE DISPOSAL

C.1. Capacity Analysis

The current capacities and recent utilization (calendar years 2001 and 2002) of commercial waste and recycling facilities are presented in Appendix tables C-1A and C-1B. The capacities listed were drawn from current permits/approvals, district plan amendments or submitted application documents. The capacities listed for landfills are the total remaining volumes as of the most recent topographic surveys. The capacities listed for transfer stations and Class B recycling centers are provided as tons per day, while the capacities listed for resource recovery facilities are provided as tons per year. The capacities listed for Class C recycling centers are provided as cubic yards per year; where they were reported in tons, a conversion of 5 cubic yards per ton was used. The utilization shown was drawn from the monthly tonnage reports submitted by transfer stations and resource recovery facilities, the annual topographic surveys submitted by landfills and the annual reports submitted by recycling centers. The percent utilization values listed for transfer stations and Class B recycling centers were derived by dividing the calendar year utilization of each facility by an annualized capacity for the facility computed on the basis of 300 days of operation (or 250 days of operation, for 5 day per week operations, and 350 days of operation, for 7 day per week operations). The percent utilization values listed for resource recovery facilities were derived by dividing the calendar year utilization of each facility by the facility's annual capacity. The percent utilization values listed for Class C recycling centers were derived by dividing the calendar year utilization of each facility by the annual capacity of the facility. The percent utilization values listed for landfills were derived by dividing the calendar year utilization by the average utilization of the landfill for the previous four years.

The analysis shows that the utilization of the five resource recovery facilities ranged from 72% to 94%, indicating marginal additional capacity available, while the utilization of the thirteen landfills ranged from 36% to 165%, with a typical value of approximately 120%, indicating little additional capacity available. Because a landfill has a fixed total capacity, an increase in capacity utilization corresponds to a decrease in the lifespan of the landfill, and will result in an earlier closure. The analysis also shows that the utilization of transfer stations ranged from 33% to over 100%, with a typical value of approximately 75%, indicating a modest additional capacity available. However, the utilization of commercial facilities increased from 2001 to 2002. The analysis further shows that the utilization of Class B recycling centers ranged from 1% to over 100%, with a typical value of approximately 30%, indicating a substantial additional capacity available. Lastly, the analysis shows that the utilization of Class C recycling centers ranged from 5% to well over 100%, with a typical value of approximately 100%, with over 40% of the facilities exceeding their authorized capacities. This indicates that many of the Class C recycling centers are undersized.

The following abbreviations are used in the table:

Solid Wastes:

10 = Municipal (household, commercial, institutional) waste

13 = Bulky waste

13C = Construction and Demolition waste

23 = Vegetative waste
25 = Animal and Food Processing waste
27 = Dry Industrial waste
27A = Asbestos, or Asbestos-Containing, waste
27I = Incinerator Ash or Ash-Containing waste

Class B and Class C Recyclable Materials:

A = Asphalt
ABRM = Asphalt-Based Roofing Material
B = Brush
B&B = Brick and Block
C = Concrete
CWA = Commingled Wood and Aggregate
G = Grass
L = Leaves
PCS = Petroleum-Contaminated Soil
SS = Street Sweepings
SSSW = Source Separated Supermarket Waste
T = Tires
TP = Tree Parts
TRS = Trees
TS = Tree Stumps
W = Wood (unpainted, not chemically-treated)
WC = Wood Chips

Capacities:

cy = cubic yards
cy/yr = cubic yards/year
tpd = tons per day
tpy = tons per year

Other:

7 day per week facilities are noted by a superscripted “1” on their capacity
5 day per week facilities are noted by a superscripted “2” on their capacity

C.2. Sustainable Landfills

The siting and construction of any new regional landfill would be an expensive proposition, and most likely become a lengthy process and raise significant public opposition. Such opposition would not only include the expected objections from those persons near the proposed landfill site and those along the primary access routes, but would also include objections from local taxpayers opposed to the incurrence of bonded debt necessary to finance the project, should the proposed facility be publicly financed. Indeed, in certain areas of the State there may be no suitable site to locate a new regional landfill. The existing regional landfills in New Jersey have

limited area for lateral expansions through the addition of new cells, and limited onsite supplies of cover soils to support facility expansions.

Consequently, the employment of innovative technologies to extend the useful life of the existing regional landfills is a growing trend. This concept has become known as the "sustainable landfill". Several such innovative technologies have been proposed, and a number are already being tested at regional landfills around the State. These innovative technologies include:

Leachate Recirculation

Also referred to as a "bioreactor" landfill, this technology entails the recirculation of leachate through the waste of a filled landfill cell. Such recirculation accelerates the rate of decomposition of the waste by engendering decomposition deeper into the landfill. There are two types of bioreactors: aerobic and anaerobic systems. Aerobic bioreactors involve both leachate recirculation and air injection, which occur simultaneously. Anaerobic bioreactors involve only leachate recirculation. The aerobic decomposition occurs much more rapidly than the typical anaerobic decomposition that would otherwise prevail, due to an increase in microbial digestion rates, and leads to a more rapid settlement of the waste in the cell. Anaerobic bioreactors result in an increase in methane gas generation, which may be suitable for energy recovery such that capital costs are subsidized by the increase in gas generation rates. Due to enhanced degradation and stabilization rates, both aerobic and anaerobic bioreactors result in "reclaimed" capacity for future additional landfilling.

Use of Temporary Caps

The placement of a synthetic membrane over top of a filled landfill cell, as a temporary cap, rather than the placement of the normal final cover layer, which would entail substantial quantities of soils, avoids the consumption of space that the soils would otherwise occupy. The membrane of the temporary cap can be weighed down with removable items, such as old tires, without the use of soils. When used in conjunction with leachate recirculation or active gas extraction, the temporary cap is readily removable, and consumes no capacity, when the cell is reopened for future landfilling.

Use of Tarps as Daily Cover Material

The use of retractable tarps to replace the use of daily cover soil is being tested by some landfills. The avoidance of the use of daily cover soils can substantially increase the landfill space available for the waste. Use of sprayed foam material as an alternative to daily cover soil has also been suggested, although it is not currently used or proposed for any landfill in New Jersey.

Use of Alternative Daily and Intermediate Cover Materials

The use of soil-like waste materials, rather than actual soils, as daily and/or intermediate cover materials, also can substantially increase the landfill space available for the waste. Similarly, such wastes have also been used as select fill on the base of new landfill cells, to protect the bottom liners from risk of puncture.

Use of Geosynthetic Clay Liners in Place of Compacted Clay Liners

Several landfills have opted to replace the originally-planned compacted clay bottom liners with Geosynthetic Clay Liners (GCLs) that have equivalent performance standards. Since the compacted clay liners would have been several feet thick and GCLs liners are less than one inch thick, this substitution substantially increases the landfill space available for the waste.

Landfill Mining

The concept of excavating old landfilled areas to recover recyclable items, cover soils or the landfill capacity itself, has been around for several years. Although the department has not found the recovery of recyclable items from old landfills to be viable, due to the poor quality and contamination of the separated materials, there may be instances where cover soils, and the landfill space, may be recoverable items. Landfill mining, however, may be conducive following the aerobic or anaerobic bioreactor decomposition process since the waste has been fully decomposed and stabilized.

Deterrence of Bulky Wastes

Several landfills have developed strategies to deter bulky wastes, including construction and demolition wastes, tires, carpets, tree parts etc. Many bulky wastes are inert, and will not decompose in a landfill, and may cause sizeable void spaces around them when they are buried in a landfill. Consequently, they can represent an inefficient use of landfill space. Additionally, recycling opportunities often exist for many of the bulky wastes, and others are under development. One deterrence strategy employed to date is higher tipping fees for bulky wastes. Another is the construction of recycling and/or materials recovery facilities at the landfills, to remove the bulky wastes from the incoming shipments. One facility segregates tires, and shreds them for use as an alternative to crushed stone in landfill construction. Another proposes to crush construction and demolition wastes to create alternative cover material. Several regional landfills have associated regional Class B and Class C recycling centers that can handle the deterred bulky wastes, if properly segregated at the source.

Landfill Surcharging:

The practice of surcharging a landfill when it nears final elevations has also been suggested. A substantial weight of surcharge materials would be placed on top of the landfill and left there for a period of 6 to 12 months. This added weight could significantly increase the settlement of the landfill, thereby creating additional capacity that would be realized after the surcharge materials were removed. Typically, clean soils would be used as the surcharge materials, as they could be used elsewhere at the landfill after the surcharging was completed. However, structural design limitations must be considered.

The Department supports these initiatives to maximize and extend the useful life of existing landfills. The department has allowed innovative technologies to be developed and tested under Research, Development and Demonstration (RD&D) permits, and will continue to support the development of new technologies through this means.

C.3. Landfill Closure Planning

Objectives and Criteria: New Jersey is blessed with a wealth of precious natural resources and unique landscapes. Nevertheless, it is the nation's most densely populated state, and the most developed. Development claimed the State's resources in the past and continues to claim them today; many in critical natural resource areas and other environmentally sensitive lands. New Jersey residents and businesses generated over 10 million tons of solid waste each year over the past decade. Historically, this material was disposed of in landfills, many of which were poorly sited, and inadequately designed and controlled. Prior to the late 1970s, there were no detailed statewide regulatory requirements governing the manner in which solid waste was landfilled. Material also came into New Jersey from neighboring states in an uncontrolled manner. The material generally was dumped with little or no provision for cover to prevent odor, to control birds, insects and rodents or to minimize long-term environmental impact. All too often these substandard or fully filled landfills were closed to the receipt of waste but proper closure and remediation were left unresolved. Beginning in the 1970s, the state began to register landfills and regulate their operation, imposing increasingly stringent environmental controls. Currently, New Jersey has among the most stringent design and environmental performance requirements for new landfills in the nation. Additionally, we are seeing once abandoned landfills and other brownfields sites being brought back into productive use. Brownfields redevelopment has been and continues to be successful throughout the state, as old landfills are used for golf courses, commercial buildings, and shopping malls. Nevertheless, the legacy of past landfills that were not designed with stringent controls for protection of the environment and which were, for the most part, not properly closed, remains a significant challenge facing the state. Improperly closed landfills present a series of potential problems:

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

In light of the above, the State has taken action to balance New Jersey's future growth needs with the fundamental needs of its citizens so that everyone can enjoy clean drinking water, clean air, a vibrant economy, good schools and recreational opportunities outdoors. The comprehensive Smart Growth Initiative has focused the Department and all other agencies of state government on three central objectives:

- Make developed areas healthier, more appealing places – with cleaner air, cleaner water, and more parks and open space;
- Reduce the rate at which forests, open space, farmland and other undeveloped areas are being lost to development; and
- Promote and accelerate development in urban and suburban areas or other growth areas identified through sound planning.

As a cornerstone to New Jersey's Smart Growth Initiative, brownfields redevelopment serves to promote Smart Growth by cleaning up and preserving existing areas, such as old landfill sites, for future use. It gives business and industry new places to expand and members of a community new places to gather, visit, shop, work, or recreate. Undoubtedly, brownfields redevelopment spurs economic opportunity and a sense of community throughout New Jersey's towns.

In furtherance of the Smart Growth Initiative, the Department's landfill closure objectives are to:

- Identify those landfills which have terminated operations, but have not been properly closed consistent with DEP closure requirements;
- Identify the closure requirements needed by each of these landfills;
- Rank these landfills according to the severity and significance of the environmental risks they pose;
- Identify responsible party or alternative funding sources to pay for proper closure of these landfills;
- Where necessary, remediate those landfill sites that are polluting the ground and surface waters of the state; and
- Promote the redevelopment of landfill sites which have been properly closed and remediated with an emphasis on development of parks and open space where appropriate.

Universe of Concern: There are over 600 known or suspected landfills in New Jersey. There have been approximately 400 landfills that registered with DEP and are known to have accepted solid waste, and DEP has fairly detailed records on these facilities. There are approximately 200 additional sites that are known or suspected to contain buried solid waste, but never registered with the DEP. The DEP has very limited records on these unregistered facilities. These numbers are stated as approximations because there have been different representations of the numbers in the past, and the numbers themselves are subject to change. There have been new registration numbers issued to existing landfills in the past, particularly when the landfills have changed ownership, expanded in capacity, or added new lots or blocks, and consequently some previously reported numbers of registered landfills have included certain redundancies. Additionally, the numbers of unregistered landfills, as well as suspected landfills, change frequently as new discoveries of previously unidentified waste burial locations are uncovered by environmental site assessments and redevelopment activities.

Of the approximately 400 registered landfills, more than half ceased operations prior to January 1, 1982, and were not required to submit detailed closure and post closure care plans, although they were required to install and maintain a two foot soil final cover. The DEP commonly refers to these landfills as the "pre-1982" facilities. Detailed plans are required of the 166 landfills which operated beyond January 1, 1982, as they are subject to the "Sanitary Landfill Facility Closure and Contingency Fund Act" (Closure Act), N.J.S.A. 13:1E-100, which makes those landfills subject to comprehensive regulatory controls upon closure. The Closure Act also imposed a tax on those landfills that operated beyond January 1, 1982, with the proceeds accruing in escrow accounts specifically dedicated to landfill closure. The DEP commonly refers to these landfills as the "post-1982" facilities. Presently, 146 of the 166 post-1982 landfills have closed, while 20 continue to operate.

The DEP divides the universe of landfills into three broad categories:

Regional commercial (R): larger landfills which accepted solid waste from multiple municipalities and which, in most cases, charged a BPU approved tariff rate or tipping fee;

Municipal (M): landfills which almost exclusively accepted municipal solid waste only from the community within which it was located; and

Sole source (SS): generally smaller landfills which accepted solid waste only from a single source, such as an industrial landfill for plant-generated waste, or a business landfill, such as that used for a contractor's disposal of construction and demolition debris or tree stumps.

The regional commercial landfills comprise 13 of the 20 active post-1982 landfills and 23 of the 146 closed post-1982 landfills. The latter number includes 8 that have completed approved closure plans and are now under post-closure care, 4 that have not yet completed an approved closure plan, 2 with closure plans under review and 3 with no closure plans. The municipal landfills comprise 1 of the 20 active post-1982 landfills and 80 of the 146 closed post-1982 landfills. The latter number includes 17 that have completed approved closure plans and are now under post-closure care, 19 that have not yet completed an approved closure plan, 35 with closure plans under review and 4 with no closure plans. The sole source landfills comprise 6 of the 20 active post-1982 landfills and 43 of the 146 closed post-1982 landfills. The latter number includes 2 that have completed post-closure care, 8 that have completed approved closure plans and are now under post-closure care, 8 that have not yet completed an approved closure plan, 15 with closure plans under review and 8 with no closure plans. In total, 2 of the 146 closed post-1982 landfills have completed post-closure care, 37 have completed approved closure plans and are now under post-closure care, 32 have not yet completed approved closure plans, 59 have closure plans under review and 16 have no closure plans. Appendix table C-2 identifies the 20 active post-1982 landfills, while Appendix table C-3 identifies the 146 closed post-1982 landfills, listed by closure plan status.

Financing Landfill Closure: The availability of funding to pay for proper closure of a landfill is the critical factor in achieving the closure. The unregistered universe is primarily comprised of landfills that closed prior to the January 1, 1982 effective date of the Closure Act and therefore, it is reasonable to assume that no dedicated funds exist for closure. Similarly, the registered landfills that closed prior to January 1, 1982 are unlikely to have any dedicated funding source to

address closure. Essentially, only the 163 facilities that remained in operation beyond the January 1, 1982 effective date of the Landfill Closure Act have any accrued funds to pay for closure and post-closure care costs.

Generally, the 36 regional commercial landfills have significant funds placed within DEP established and monitored escrow accounts (although a few have insufficient funds). Most of the 81 municipal landfills have negligible escrow resources, while most of the 49 sole source facilities are without any dedicated closure accounts. This has partially resulted from the design of the Landfill Closure Act tax program where monies were collected on the basis of cubic yards of solid waste received. Municipal and sole source landfills which closed shortly after January 1982, or which remained open and took very small amounts of waste, have extremely limited escrow reserves.

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

For presentation purposes, it is possible to estimate closure costs on a per acre basis. Based upon existing DEP regulations found at N.J.A.C. 7:26-2A.9, all closure activities involve some degree of grading, landscaping, revegetation, site securing, drainage control, capping and groundwater monitoring. Based upon historical experience in the DEP's solid and hazardous waste management programs, the following broad cost estimates can be made. For a facility that requires the most limited level of closure, involving a soil cap, revegetation, security, drainage control and groundwater monitoring, a cost of up to \$180,000 per acre can be estimated. A more detailed closure involving an impermeable cap with a single synthetic geomembrane could cost up to \$225,000 per acre. Finally, a full capping scenario involved in a remediation case where substantial contamination has been identified and where a 24-inch clay cap and synthetic membrane was used, could cost up to \$700,000 per acre. Given these rough estimates and assuming a municipal landfill size of 20 acres, the capital cost of closure could range from \$3.6 million to \$14 million for a single site.

The Department has implemented the following actions to address landfill closure over the past several years:

Addition of Pre-1982 registered facilities to the Comprehensive Site List

Since pre-1982 registered landfills are usually not required to submit closure plans, an initial strategy was to add these facilities to the Comprehensive Site List (CSL) maintained by the DEP's Site Remediation Program (SRP). This action was completed in the mid-1990s, with the intent that site assessments would be performed, and the information gathered would provide the basis for ranking the sites on potential human health and environmental risk to enable the worst sites to be identified and remediated first. However, due to the very large number of sites on the CSL, few assessments had been completed through the year 2000. In 2001, these sites were included in the site evaluation and scoring developed and conducted in response to the

impending expiration of authority to press claims under the Statute of Limitation (SOL) legislation. The sites scored relatively low, but this may have been largely from the lack of real data about the environmental conditions at the sites and biases within the scoring towards sites of known chemical contamination.

Use of Public Funds

Two years ago the DEP assessed the universe of closed landfills to identify those that were potentially significant contributors of greenhouse gas emissions and that posed significant threat of leachate impacts to ground and surface waters. Those landfills (both pre- and post-1982) having the greatest volume of municipal solid waste were identified, and then screened on the basis of watershed priorities, availability of a responsible party with funding, and the degree to which environmental controls have been accomplished to date. Approximately 100 candidate landfills were reviewed and the focus was narrowed to 16 facilities located within the Hackensack Meadowlands area, the Barnegat Bay watershed area, the Delaware River drainage area and the Pinelands. Appendix table C-4 identifies these 16 landfills. The DEP anticipated using excess Corporate Business Tax (CBT) funds and other public money sources (such as federal greenhouse gas grant funds and Maritime Resources dredging funds), in conjunction with available escrow funds and third party initiatives (such as New Jersey Meadowlands Commission (NJMC) and private developers) to seek proper closure of these 16 sites on a priority basis. The DEP is taking the lead on closing the largest site with CBT funds, and the NJMC plans to close two of the sites through limited additional landfilling of select waste. Private developers are pursuing closure/redevelopment of two of the sites (plus two additional smaller adjacent sites), and the landfill owners are to close two of the sites. The remaining nine have been transferred to the SRP for publicly funded closure and cost recovery actions. These actions are ongoing.

Brownfields Redevelopment

In addition to the private developer landfill closures noted above, the DEP has also supported several other third party landfill closure projects. Some of these have included traditional closures using purchased capping materials and clean fill soils, spurred by the potential recovery of expenditures from future tax collections on new businesses operating on the closed site, under the provisions of the Municipal Landfill Site Closure, Remediation and Redevelopment Act and the Brownfields Redevelopment Act. Others have been self-funding closures financed by the acceptance of revenue-producing residual materials beneficially used in landfill drainage, venting, capping and cover systems.

Joint Enforcement and Permit Strategy

The universe of post-1982 closed landfills was evaluated to identify:

- 1) Those landfills that had completed approved closure plans and were under post-closure care;
- 2) Those that had received approval of closure plans but had not yet completed the closure work;
- 3) Those that had submitted closure plans that the DEP had found deficient; and,
- 4) Those that had never submitted closure plans.

The evaluation revealed 38 landfills that had completed approved closure plans and were under post closure care (10 regional, 19 municipal and 9 sole source), 15 landfills that had received approval of closure plans but had not completed the closure work (1 regional, 7 municipal and 7 sole source), 53 landfills that had submitted closure plans that had been found deficient (30 municipal and 22 sole source), and 35 landfills for which closure plans had never been submitted (10 regional, 22 municipal and 3 sole source).

The DEP enforcement program issued notices of violation to the owners of the 35 landfills for which closure plans had never been submitted and the landfill permit program then sent follow-up letters to the owners, advising that the department was willing to meet to discuss the closure requirements. To date, closure plans have been submitted for 20 of the landfills (17 municipal and 3 sole source), and the department has approved 7 of the closure plans.

Simplify Financial Assurance Requirements for Municipal Landfills

Many of the inactive post-1982 landfills that have not yet received approval of closure plans are municipal landfills (48 out of 75), and a significant fraction of these closed shortly after the January 1, 1982 effective date of the Closure Act. Consequently, in many instances these municipal landfills have only modest sums in their escrow accounts, and this lack of dedicated funds to pay for closure and post-closure care activities has often been the major deficiency preventing the department from issuing a closure plan approval. Additionally, maintaining oversight of these modest sum escrow accounts has proven to be a costly burden on the department, the municipalities and the financial institutions involved. The department had previously required municipalities to incur bonded debt or to enter Administrative Consent Orders (ACOs), with stipulated penalties, to compel the municipalities to include landfill closure and post-closure care costs in their municipal budgets each year as an alternative to fully-funded escrow accounts. Several municipalities had balked at the harshness of these requirements. The department has recently explored allowing municipalities the freedom to use the modest sums in the escrow accounts to pay for closure plan development and implementation, and not require that the escrow accounts be maintained as the last resort. The department has also explored relying on the good faith commitment of the municipalities to annually budget the necessary closure and post-closure care costs, without the requirement of the onerous bonded debt or ACOs.

Strategies for the Future:

Completely Identify the Universe and Status of each Landfill

The department should develop and maintain clear and updated records of the complete known and suspected landfill universe. These records should include detailed information about the location, type, size and age of each landfill, as well as the closure requirements applicable to each landfill and the current closure compliance status of each landfill. This information should be posted on the internet for ready access by the general public. The department will strive to complete this data development and posting by the end of calendar year 2005.

Continue current strategies

The department should continue the strategies implemented to date, as each offers the potential to advance an incremental portion of the closed landfill universe towards completion of proper closure. Specifically, the department will target the following:

Comprehensive Site List (CSL) - Although the CSL itself may be replaced by an alternative records database, the Department will develop a list all of the known landfills, including unregistered facilities. The department will include all solid waste disposal sites known to the SRP in the Division of Solid and Hazardous Waste records, to ensure that the list include all known landfills. The department will strive to complete this by the end of calendar year 2005.

Use of Public Funds - The department is in the process of re-evaluating landfills as part of a larger strategy on determining how best to prioritize the use of public funds.

Brownfields Redevelopment - The department will aggressively promote the private developer and self-funding landfill projects, to maximize the accomplishment of desired landfill closures that can be achieved without use of public funds.

Joint Enforcement and Permit Strategy - The department will continue the strategy and expand it to target inspection and evaluation of closure status at landfills for which approval of closure plans had been issued, but closure completion had not been certified, as well as to pursue the submittal of acceptable closure plans for those landfills for which previous closure plan submittals had been found deficient. The department will strive to follow up on all of the landfills in these categories by the end of calendar year 2005. Additionally, the department will expand the strategy thereafter to include the field assessment of proper closure conditions at pre-1982 closed landfills. The department will strive to complete these assessments, and to initiate such directives for improvement as may be warranted based on these assessments, by the end of calendar year 2006.

Simplify financial assurance requirements for municipal landfills - The department will pursue the phase out of the modest-sum escrow accounts for municipal landfills and to eliminate the requirements for bonding future closure and post-closure care costs and the use of ACOs. The department will instead rely on the good faith commitment of municipalities to annually budget the necessary closure and post-closure care costs.

Pursue alternatives to impervious caps on the smaller landfills in the Pinelands

A sizeable fraction of the post-1982 landfills that have not yet been properly closed are situated in the Pinelands, where there is a requirement for an impervious cap for such proper closure. Many of these were relatively small municipal landfills where solid wastes were deposited in shallow trenches or area fills in sandy soils, and which ceased operating shortly after 1982. The department believes that for some of these landfills an impervious cap may be an unwarranted and excessively expensive requirement at this point in time, due to the decomposition of the wastes that may have occurred since the landfills stopped operating, the porous nature of the local soils and the shallow depths of the deposited wastes. The department proposes to explore for possibilities to reduce the impervious cap requirement for some of these landfills, to hopefully enable an acceptable alternative closure plan to be implemented, and to finally achieve an acceptable closure of such landfills.

Acceptable Use for Dredged Materials

The State of New Jersey considers dredged material to be a resource, which can be used in an acceptable manner consistent with its chemical and physical properties. The State of New Jersey is committed to an overall strategy for maintaining our navigable waterways which includes: the reduction of contaminants and the volume of sediment entering our waterways, reducing the bioavailability of contaminants through decontamination technologies, the use of dredged material as a resource wherever and whenever possible and the disposal of only that material which cannot be used as a resource. Consistent with this approach, New Jersey does not consider dredged material to be a waste. Consequently, to make this distinction clear, the State of New Jersey terms such uses of dredged material “Acceptable Uses” because the terms “Beneficial Uses” and “Beneficial Use Determinations” have a strong association with solid waste.

The Department and private sector partners have begun an innovative program aimed at using dredged material from the New York Harbor to facilitate the closure of abandoned landfills and the remediation of brownfield sites in the metropolitan region. The primary goal of the program is to successfully manage dredged material in a manner that is protective of human health and the environment. An added benefit of the program is the remediation of contaminated upland sites in urban areas and their restoration to economic use. The first site to be successfully remediated using dredged material was the Elizabeth Landfill, now home of the Jersey Gardens Mall. This management strategy is presently being expanded to other areas of the State including the Delaware River, thereby renewing capacity at existing confined disposal facilities and eliminating the need to expand or site new facilities.

TABLE C-1A

CY 2001 CAPACITIES AND UTILIZATION OF COMMERCIAL WASTE AND RECYCLING FACILITIES, BY COUNTY

<u>FAC. TYPE</u>	<u>FAC. NAME</u>	<u>AUTHORIZED WASTE</u>	<u>CAPACITY</u>	<u>UTILIZED 2001</u>	<u>% UTILIZED</u>
<u>ATLANTIC COUNTY</u>					
Resource Recovery	NONE				
Landfill	ACUA	10, 13, 13C, 23, 27, 27A	4,950,715 cy	556,873 cy	155.5%
Transfer Station	ACUA	10, 13, 13C, 23, 25, 27	1,950 tpd ¹	281,896 tons	41.3%
	Cifaloglio, Inc.	10, 13, 13C, 27	95 tpd	13,428 tons	47.1%
	Magic Disposal, Inc.	10, 13, 13C, 27	99.5 tpd ¹	79,743 tons	229.0%
Class B	A.E. Stone	A, B&B, C, W	2,075 tpd	142,273 tons	22.9%
	ACUA	TRS, TS, B, W	130 tpd	81,301 tons	208.5%
	B&J Recycling	A, B&B, B, C, W	225 tpd	16,467 tons	24.4%
	Tony Canale, Inc.	A, ABRM, B&B, C, T, TRS, W	358 tpd	9,631 tons	9.0%
	Arawak Paving Co.	C, A	707 tpd	6,663 tons	3.1%
	Iaconelli Contracting	C, A, B&B, W	105 tpd	612 tons	1.9%
	Penn Jersey Bldg Mats.	C, A, B&B	455 tpd	14,394 tons	10.5%
	Anthony Puggi	C, A, B&B, TRS, TP, TS, W	750 tpd	26,615 tons	11.8%
	L. Ferriozzi Concrete	A, C	248 tpd	8,125 tons	10.9%
	Robert T. Winzinger	C, B&B	72 tpd	Not open	-----
Class C	Absecon City	L	10,000 cy/yr	2,100 cy	21.0%
	ACUA	L, G, B	70,000 cy/yr	79,100 cy	113.0%
	Cummings Compost	L	10,000 cy/yr	487 cy	4.9%
	Egg Harbor Township	L	10,000 cy/yr	9,835 cy	98.4%
	Galloway Township	L	10,000 cy/yr	11,690 cy	116.9%
	Mullica Township	L	10,000 cy/yr	1,855 cy	18.5%

BERGEN COUNTY

Resource Recovery	NONE				
Landfill	NJMC – 1-E	13, 13C, 23, 27, 27A	Closed	394,186 tons	112.9%

Transfer Station	NJMC - Erie	13, 13C, 23, 27	1,143,144 cy	Not open	-----
	Englewood City	10, 13, 13C	99 tpd	17,931 tons	60.4%
	BFI – Fairview	10, 13, 13C, 23, 25, 27	800 tpd	225,452 tons	93.9%
	Garofalo Recy/Transfer	10, 13, 13C, 23, 27	600 tpd	139,240 tons	77.4%
	WMTNJI-Hillsdale	10, 13, 13C, 23, 27	900 tpd	154,357 tons	57.2%
	National Transfer	10, 13, 13C, 23, 27	80 tpd	28,954 tons	120.6%
	S&L Zeppetelli	13, 13C, 27	20 tpd	4,234 tons	70.6%
	BCUA	10, 13, 13C, 23, 25, 27	Closed	506,646 tons	33.8%
	WMTNJI -No. Arlington	10, 13, 13C, 23, 27	2,000 tpd	102,492 tons	17.1%
	WMTNJI – Perry St.	10, 13, 13C, 23, 27	500 tpd	111,457 tons	74.3%
	Miele Sanitation	10, 13, 13C	90 tpd	19,477 tons	72.1%
Class B	PJR Industries	A, B&B, C	1,500 tpd	NA	-----
	Red Rock Land Devt	C, A, B&B	250 tpd	Not open	-----
	Miele Sanitation	A, C, B&B, W, TP, L	75 tpd	3,248 tons	14.4%
Class C	Abma & Son Farm Compost	L	10,000 cy/yr	7,140 cy	71.4%
	Allendale Borough	L	10,000 cy/yr	8,915 cy	89.2%
	Alpine Borough	L	10,000 cy/yr	10,000 cy	100.0%
	NJMC Kingsland Park LF	L, G, B, WC	50,000 cy/yr	NA	-----
	Closter Borough	L, G	10,000 cy/yr	9,980 cy	99.8%
	Demarest Borough	L	10,000 cy/yr	8,979 cy	89.8%
	Fair Lawn Borough	L	10,000 cy/yr	10,000 cy	100.0%
	Franklin Lakes Borough	L	10,000 cy/yr	2,050 cy	20.5%
	Glen Rock Borough	L	10,000 cy/yr	29,435 cy	294.4%
	Harrington Park Borough	L	10,000 cy/yr	4,666 cy	46.7%
	Haworth Borough	L	10,000 cy/yr	13,895 cy	139.0%
	Leonia Borough	L	10,000 cy/yr	11,920 cy	119.2%
	Mahwah Township	L	14,000 cy/yr	11,311 cy	80.8%
	Northvale Borough	L	10,000 cy/yr	NA	-----
	Norwood Borough	L	10,000 cy/yr	5,505 cy	55.1%
	Oakland Borough	L, B	10,000 cy/yr	3,804 cy	38.0%
	Old Tappan Borough	L	10,000 cy/yr	10,740 cy	107.4%
	Paramus Borough	L	10,000 cy/yr	3,065 cy	30.7%
	Ridgewood Village	L, B	30,000 cy/yr	46,463 cy	155.0%
	River Edge Borough	L	10,000 cy/yr	6,055 cy	60.6%
	Riverside Cemetery	L	10,000 cy/yr	319 cy	3.2%
	Tenafly Borough	L, G	10,000 cy/yr	10,973 cy	109.7%
	Wyckoff Township	L	20,000 cy/yr	40,702 cy	203.5%

BURLINGTON COUNTY

Resource Recovery	NONE				
Landfill	Burlington County	10, 13, 13C, 23, 25, 27I	6,485,711 cy	586,123 cy	114.7%
Transfer Station	BFI – Mt. Laurel	10, 13, 13C, 23, 27	650 tpd	132,903 tons	68.2%
Class B	Moorestown Township	W, TP, B	100 tpd	Not open	-----
	Sta Seal	A, B&B, C	2,000 tpd ¹	65,901 tons	9.4%
	Herman's Trucking, Inc.	C, A, B&B, TS, TP, TRS, B	1,748 tpd	Not open	-----
	Mimlitsch Enterprises, Inc.	W, TP, B, L	50 tpd	Not open	-----
	Burlington County	W, A, B&B, C, T	500 tpd	27,605 tons	18.4%
Class C	Bass River Township	L	10,000 cy/yr	1,124 cy	11.2%
	Bryony/Woodhue Ltd.	SSSW, L, G, B, WC	118,000 cy/yr	49,276 cy	41.8%
	Burlington City	L	10,000 cy/yr	2,620 cy	26.2%
	Burlington Township	L	10,000 cy/yr	3,821 cy	38.2%
	Cinnaminson Township	L	10,000 cy/yr	44,590 cy	445.9%
	Delanco Township	L	10,000 cy/yr	7,364 cy	73.6%
	Delran Township	L	10,000 cy/yr	17,803 cy	178.0%
	Evesham Township	L	10,000 cy/yr	NA	-----
	Fillit Sand and Gravel	L, B	10,000 cy/yr	8,240 cy	82.4%
	Herman's Trucking	L	10,000 cy/yr	9,500 cy	95.0%
	Maple Shade Township	L	10,000 cy/yr	4,950 cy	49.5%
	Moorestown Township	L	20,000 cy/yr	19,398 cy	97.0%
	Mount Holly Township	L	10,000 cy/yr	5,205 cy	52.1%
	Mount Laurel Township	L	10,000 cy/yr	20,435 cy	204.4%
	Riverside Township	L	10,000 cy/yr	517 cy	5.2%
	Westampton Township	L	10,000 cy/yr	8,790 cy	87.9%

CAMDEN COUNTY

Resource Recovery	Camden Co.Env Recvy .	10, 13, 13C, 23, 27	451,140 tpy	324,794 tons	72.0%
Landfill	PCFACC	10, 13, 13C, 23, 25, 27, 27A, 27I	1,609,288 cy	91,829 cy	39.3%
Transfer Station	Winslow Township	10, 13, 13C, 23, 25, 27	95 tpd	0 tons	0.0 %

Class B	RiverFront Rec/Aggr	C, B&B, A, W, T	2,000 tpd	Not open	-----
	Lower County Recy	A, B&B, C	625 tpd	65,347 tons	34.9%
	Vi-Concrete Recy Ctr	A, B&B, C	800 tpd ²	5,531 tons	2.8%
	W. Hargrove Recy.	A, B&B, C	1,600 tpd ¹	36,383 tons	6.5%
Class C	Bellmawr Borough	L, G, WC	70,000 cy/yr	58,655 cy	83.8%
	Berlin Township	L	10,000 cy/yr	5,009 cy	50.9%
	Cherry Hill Ecology Ctr	L	70,000 cy/yr	97,813 cy	139.7%
	Collingswood Borough	L	10,000 cy/yr	NA	-----
	Gloucester Twp MUA	L, G	120,000 cy/yr	69,733 cy	58.1%
	Pennsauken Township	L	10,000 cy/yr	10,141 cy	101.4%
	Voorhees Twp-Osage	L	10,000 cy/yr	15,475 cy	154.8%
	Voorhees Twp-Tri Sand	L	10,000 cy/yr	21,615 cy	216.2%

CAPE MAY COUNTY

Resource Recovery	NONE				
Landfill	CMCMUA	10, 13, 13C, 23, 25, 27, 27A, 27I	8,658,646 cy	340,370 cy	130.8%
Transfer Station	CMCMUA	10, 13, 13C, 23, 25, 27	620 tpd	70,661 tons	38.0%
Class B	Action Supply	C	350 tpd	12,566 tons	12.0%
	CMCMUA	C, A, B&B, T, TRS, TS, TP, W	570 tpd	9,896 tons	5.8%
	Daley's Pit	A, C	300 tpd	22,513 tons	25.0%
	Future Mining & Recy	A, B&B, C, TS, TRS	800 tpd ²	59,346 tons	29.7%
Class C	CMCMUA	L, G	10,000 cy/yr	35,200 cy	352.0%

CUMBERLAND COUNTY

Resource Recovery	NONE				
Landfill	CCIA	10, 13, 13C, 23, 25, 27, 27A, 27I	5,731,292 cy	406,537 cy	122.4%
Transfer Station	NONE				
Class B	MART	PCS	2,016 tpd ¹	156,052 tons	22.1%

	South State	A, B&B, C, PCS, SS	3,750 tpd	100,934 tons	9.0%
	Kennedy Concrete, Inc.	C	186 tpd ²	520 tons	1.1%
Class C	Maurice River Township	L	10,000 cy/yr	NA	-----
	Bridgeton City	L	10,000 cy/yr	12,347 cy	123.5%
	Emerald Grow Products	L, G	240,000 cy/yr	NA	-----
	Hopewell Township	L	10,000 cy/yr	1,741 cy	17.4%
	Millville City	L	10,000 cy/yr	24,065 cy	240.7%
	Vineland City - Elm Rd.	L	10,000 cy/yr	18,644 cy	186.4%
	Vineland City - Union Rd	L	10,000 cy/yr	8,338 cy	83.4%

ESSEX COUNTY

Resource Recovery	American Ref-Fuel	10, 13, 27	985,500 tpy	920,996 tons	93.5%
Landfill	NONE				
Transfer Station	SWT&R	10, 13, 13C, 23	2,600 tpd	598,306 tons	76.7%
	Recycling & Salvage Corp.	10, 13, 13C, 27	150 tpd	149,546 tons	332.3%
Class B	Advanced Enterprises	W, TRS, B, L	500 tpd	NA	-----
	T. Fiore Recycling Corp.	A, C, B&B, T, ABRM, TRS, TS, TP, B, W	1,865 tpd	Not open	-----
	Waste Management, Inc.	T	300 tpd	NA	-----
Class C	Caldwell Borough	L, G, B	10,000 cy/yr	8,043 cy	80.4%
	Essex County Parks	L	10,000 cy/yr	2,470 cy	24.7%
	Essex Fells Borough	L	10,000 cy/yr	9,866 cy	98.7%
	Fairfield Township	L, G	10,000 cy/yr	8,076 cy	80.8%
	Millburn Township	L, B	14,200 cy/yr	20,543 cy	144.7%
	South Orange Village	L	10,000 cy/yr	22,980 cy	229.8%
	West Caldwell Township	L	10,000 cy/yr	1,614 cy	16.1%
	West Orange Township	L	10,000 cy/yr	25,494 cy	254.9%

GLOUCESTER COUNTY

Resource Recovery	Wheelabrator Gloucester	10, 13, 23, 25	209,875 tpy	179,369 tons	85.5%
Landfill	Gloucester County	10, 13, 13C, 23, 25, 27, 27A, 27I	2,685,113 cy	293,399 cy	56.8%

Transfer Station	NONE				
Class B	Clearland, Inc.	TS, TRS	300 tpd	3,069 tons	3.4%
	Recycled Wood Products	W, TP	100 tpd	NA	-----
	Robert T. Winzinger	A, B, B&B, C, L, TP, TRS, TS, W	1,440 tpd	NA	-----
	R.E. Pierson Matls, Inc.	C, A	2,000 tpd	129,763 tons	21.6%
	County Conservation	B, TRS, TP, TS	260 tpd	Not open	-----
Class C	Clayton Borough	L	10,000 cy/yr	5,777 cy	57.8%
	County Conservation	L, G, B	25,000 cy/yr	75,545 cy	302.2%
	Deptford Township	L	10,000 cy/yr	58,335 cy	583.4%
	Franklin Township	L	10,000 cy/yr	18,680 cy	186.8%
	Glassboro Borough	L, G, B	10,000 cy/yr	NA	-----
	Mantua Township	L, B, WC	10,000 cy/yr	NA	-----
	Pitman Borough	L	10,000 cy/yr	10,788 cy	107.9%
	Smith Orchards -Mantua	L, G, B	10,000 cy/yr	9,220 cy	92.2%
	Smith Orchards – Sewell	L, G, B	10,000 cy/yr	9,955 cy	99.6%

HUDSON COUNTY

Resource Recovery	NONE				
Landfill	NONE				
Transfer Station	C. Pyskaty & Sons	10, 13, 13C, 27	100 tpd	8,233 tons	27.4%
	Allegro Sanitation	10, 13, 13C, 27	95 tpd	27,348 tons	96.0%
	Cardella Trucking	13, 13C	400 tpd	74,986 tons	62.5%
	P&N/SJG	10, 13, 13C, 23	353 tpd	Not open	-----
	Onyx Waste – Broadway	10, 13, 13C, 23, 27	375 tpd	69,076 tons	61.4%
Class B	Bayonne Durable Const	ABRM, B&B, C, W	1,310 tpd ¹	70,871 tons	15.5%
	Bedrock Stone, Inc.	A, B&B, C, TP, TS, TRS, W	1,400 tpd	462,292 tons	110.0%
	North Bergen Recycling	A, C	500 tpd	142,395 tons	94.9%
	Resource Mgt Tech	.C, A, B&B, W, TP, TRS, L	950 tpd	93,686 tons	32.9%
	ITL Concrete RecyCorp.	A, C, B&B	1,500 tpd	0 tons	0.0%
	Recycling Specialists, Inc.	C, A, B	1,400 tpd	Not open	-----

Class C	NJMC	L, G	70,000 cy/yr	NA	-----
	Kearny Town	L	10,000 cy/yr	3,100 cy	31.0%
	Secaucus Town	L	10,000 cy/yr	8,615 cy	86.2%

HUNTERDON COUNTY

Resource Recovery	NONE				
Landfill	NONE				
Transfer Station	HCUA	10, 13, 13C, 23, 25, 27	500 tpd	64,779 tons	43.2%
Class B	Raritan Valley Recycling	C, A, B	300 tpd	9,280 tons	10.3%
Class C	Clinton Town	L	10,000 cy/yr	605 cy	6.1%
	Raritan Township	L	10,000 cy/yr	3,958 cy	39.6%

MERCER COUNTY

Resource Recovery	NONE				
Landfill	NONE				
Transfer Station	MCIA	10, 13, 13C, 23, 25, 27	1,000 tpd	340,368 tons	113.5%
Class B	Albert E. Barrett	A, B&B, C	250 tpd ²	4,843 tons	7.7%
	Mercer Group Intl	C, A, B&B, W, L	2,350 tpd	103,067 tons	14.6%
	Mid-Jersey Mulch Prod	TRS, TP, TS, W, L	600 tpd	29,242 tons	16.2%
	Vinch Recycling	A, B&B, C, ABRM, W	650 tpd	50,602 tons	25.9%
	Hamilton Township	C, A, W, B, L, T	175 tpd	Not open	-----
Class C	Ewing Township	L	16,000 cy/yr	49,590 cy	309.9%
	Hamilton Ecol Facility	L	16,000 cy/yr	68,983 cy	431.1%
	Hightstown Borough	L	10,000 cy/yr	1,711 cy	17.1%
	Hopewell Township	L	10,000 cy/yr	22,999 cy	230.0%
	Lawrence Township	L	22,000 cy/yr	45,566 cy	207.1%
	Trenton City	L	10,000 cy/yr	6,172 cy	61.7%
	West Windsor Twp	L, B	10,000 cy/yr	19,253 cy	192.5%

MIDDLESEX COUNTY

Resource Recovery	NONE				
Landfill	MCUA	10, 13, 13C, 23, 25, 27, 27A	12,454,484 cy	735,348 cy	120.7%
Transfer Station	Importico Company	10, 13, 13C, 23, 25, 27	150 tpd	22,138 tons	49.2%
	RSNJI – Middlesex	10, 13, 13C, 23, 25, 27	600 tpd	10,557 tons	5.9%
	Perth Amboy City	10, 13, 13C, 23	100 tpd	23,108 tons	77.0%
	RSNJI – South Plainfield	10, 13, 13C, 23, 27	1,000 tpd	188,231 tons	62.7%
	RSNJI – New Brunswick	10, 13, 13C, 23, 27	750 tpd ¹	14,105 tons	5.4%
Class B	Cardell, Inc.	A, C	1,000 tpd ²	39,391 tons	15.8%
	S.D.&G Aggregates, Inc.	PCS	1,538 tpd ²	214,901 tons	55.9%
	Clayton Block	A, B&B, C	800 tpd	38,318 tons	16.0%
	Dauman Recycling, Inc.	TRS, TS, W, L	600 tpd	NA	-----
	Gallo Asphalt	C, A	1,300 tpd ²	2,462 tons	0.8%
	Coffmann Tree Service	W, TP, L	425 tpd	38,514 tons	30.2%
	J.H. Reid	B, TRS, TP, TS, W, L	250 tpd ²	26,118 tons	41.8%
	Odaco, Inc.	B, TP, TS, W	300 tpd	11,302 tons	12.6%
	Iron Leaf	T, TP, TS, B, W, L	500 tpd	Not open	-----
	Reclamation Tech., Inc.	W	300 tpd	18,278 tons	20.3%
	Carteret Materials	A, B&B, C	1,000 tpd ²	47,001 tons	18.8%
	South Brunswick Recy	A, B&B, C	1,000 tpd	110,612 tons	36.9%
	Stavola Old Bridge Mtls	A, C, B&B	1,200 tpd ²	19,565 tons	6.5%
	Bayshore Recy Corp.	C, A, B&B, PCS	2,000 tpd ¹	109,586 tons	15.9%
	Middlesex County	B, TRS, TP	50 tpd	Not open	-----
Class C	East Brunswick Twp	L	36,000 cy/yr	23,517 cy	65.3%
	Middlesex County	L	26,000 cy/yr	16,283 cy	62.6%
	Plainsboro Township	L, B	10,000 cy/yr	8,170 cy	81.7%
	Sayreville Borough	L	20,000 cy/yr	30,260 cy	151.3%
	South Plainfield Borough	L	10,000 cy/yr	17,525 cy	175.3%
	South River Borough	L	10,000 cy/yr	5,320 cy	53.2%

MONMOUTH COUNTY

Resource Recovery NONE

Landfill	MCRC	10, 13, 13C, 23, 25, 27, 27A, 27I	14,528,857 cy	549,857 cy	82.9%
Transfer Station	MCRC MRF	10, 13, 13C	2,700 tpd	522,490 tons	64.5%
	Recy Technology Center	13, 13C	600 tpd	Not open	NA
	RSNJI – Tinton Falls	13, 13C	450 tpd	Not open	NA
Class B	Ace Manzo, Inc.	C, A	120 tpd	1,732 tons	4.8%
	Benoit Recycling Center	TP, TRS, TS	250 tpd	9,951 tons	13.3%
	Rosano Asphalt, LLC	A, C	600 tpd	38,185 tons	21.2%
	Freehold Cartage, Inc.	C, B&B, A, TP, TRS, TS, W, T	300 tpd ¹	14,945 tons	14.2%
	Clayton Block Co., LLC	A, C, B&B	1,400 tpd	13,301 tons	3.2%
	J. Manzo Recycling	A, B&B, C, TP, TRS, TS, W, SS	1,100 tpd	31,005 tons	9.4%
	John Blewett, Inc.	T	0.5 tpd	0 tons	0.0%
	Lertch Recy Co., Inc.	A, B, C, TP, TRS, TS, W	1,500 tpd	79,785 tons	17.7%
	Lucas Bros., Inc.	A, B&B, C	200 tpd ²	18,057 tons	36.1%
	RecyTechCenter, Inc.	A, B&B, C, ABRM, B, TRS, TS, W, T, SS	2,577 tpd	11,472 tons	1.5%
	Stavola Truckg Co., Inc.	A, C	2,000 tpd	12,613 tons	2.1%
	P. Deponte Const. Co.	TS, TP, W, B	120 tpd	NA	-----
	Kerr Concrete Pipe, Inc.	C, A	1,250 tpd	Not open	-----
Class C	Aberdeen Township	L	10,000 cy/yr	6,038 cy	60.4%
	Eatontown Borough	L	10,000 cy/yr	10,119 cy	101.2%
	Gary Laurino	L	10,000 cy/yr	0 cy	0.0%
	Holmdel Township	L	10,000 cy/yr	NA	-----
	Howell Township	L	10,000 cy/yr	16,735 cy	167.4%
	Middletown Township	L	42,000 cy/yr	68,048 cy	162.0%
	Ocean Township	L	16,000 cy/yr	21,073 cy	131.7%
	Oceanport Borough	L	10,000 cy/yr	4,935 cy	49.4%
	Red Bank Borough	L	10,000 cy/yr	3,580 cy	35.8%
	Shrewsbury Borough	L	10,000 cy/yr	13,803 cy	138.0%
	Spring Lake Borough	L	10,000 cy/yr	13,915 cy	139.2%
	Tinton Falls Borough	L	10,000 cy/yr	7,980 cy	79.8%
	Wall Township	L	10,000 cy/yr	40,195 cy	402.0%

MORRIS COUNTY

Resource Recovery	NONE
Landfill	NONE

Transfer Station	MCMUA – Mt. Olive	10, 13, 13C, 23, 25, 27	650 tpd	174,633 tons	89.6%
	MCMUA – Par-Troy	10, 13, 13C, 23, 25, 27	1,150 tpd	256,187 tons	74.3%
Class B	Camp Pulaski	B, TRS, TP, TS	152 tpd	Not open	-----
	Mt. Hope Rock Products	PCS, A, B&B, C, SS	10,000 tpd	153,397 tons	5.1%
	Nature's Choice Corp.	TS, TRS, B	125 tpd	NA	-----
	Tilcon Of NJ	A, C	2,000 tpd	46,406 tons	7.7%
Class C	Camp Pulaski	L, G, B, WC	40,000 cy/yr	45,778 cy	114.4%
	Chatham Borough	L	10,000 cy/yr	11,836 cy	118.4%
	Chatham Township	L, G, B	10,000 cy/yr	3,241 cy	32.4%
	Dan Como & Sons, Inc.	L, G	10,000 cy/yr	7,684 cy	76.8%
	Dover Town	L	10,000 cy/yr	2,450 cy	24.5%
	Florham Park Envi Ctr	L	10,000 cy/yr	7,840 cy	78.4%
	Mine Hill Township	L	10,000 cy/yr	NA	-----
	Morris Cty Shade Tree	L, G, B	38,000 cy/yr	45,234 cy	119.0%
	Netcong Borough	L	10,000 cy/yr	2,542 cy	25.4%
	Rockaway Township	L	10,000 cy/yr	3,690 cy	36.9%

OCEAN COUNTY

Resource Recovery	NONE				
Landfill	OCLF	10, 13, 13C, 23, 25, 27, 27A, 27I	10,518,111 cy	934,534 cy	103.3%
Transfer Station	NONE				
Class B	Recy of Cen. Jersey, LLC	A, C, TS, W	1,600 tpd	22,719 tons	4.7%
	Brick Wall Corp.	A, C, B&B	300 tpd	17,530 tons	19.5%
	Ocean County Recycling	A, C, T	670 tpd	88,934 tons	44.2%
	Rubbercycle, Inc.	T	80 tpd	10,009 tons	41.7%
	Walter R. Earle Corp.	PCS	5,000 tpd	21,843 tons	1.5%
	Suffolk Recycling Corp.	C, A, B&B	600 tpd	31,180 tons	17.3%
Class C	Beachwood Borough	L	10,000 cy/yr	10,520 cy	105.2%
	Berkeley Township	L	10,000 cy/yr	5,140 cy	51.4%
	Brick Township	L	25,000 cy/yr	64,275 cy	257.1%
	Dover Township	L	10,000 cy/yr	69,590 cy	695.9%

Jackson Township	L	10,000 cy/yr	35,195 cy	352.0%
Lacey Township	L	20,000 cy/yr	53,695 cy	268.5%
Manchester Township	L	10,000 cy/yr	39,025 cy	390.3%
Ocean Co No Regional	L, G, B	60,000 cy/yr	126,335 cy	210.6%
Ocean Co So Regional	L	10,000 cy/yr	33,585 cy	335.9%

PASSAIC COUNTY

Resource Recovery NONE

Landfill NONE

Transfer Station	Onyx Waste Iowa Ave	10, 23	150 tpd	Not open	-----
	Onyx Waste – River St	10, 13, 13C, 23, 27	350 tpd	11,056 tons	10.5%
	Onyx Waste – Fulton St	10, 13, 13C, 23, 25, 27	1,000 tpd	343,526 tons	114.5%
	Gaeta Recycling Co.	10, 13, 13C, 27	95 tpd	28,965 tons	101.6%
	Onyx Waste – Totowa	10, 13, 13C, 23, 25, 27	1,000 tpd	134,438 tons	44.8%
Class B	Tilcon of New Jersey	C, A, B&B	750 tpd ²	101,878 tons	54.3%
	Passaic Cr Stone Co., Inc.	A, C	1,110 tpd	25,599 tons	7.7%
	Stone Industries, Inc.	A, B&B, C	3,333 tpd ¹	69,620 tons	6.0%
	Tilcon NJ, Inc.	A, B&B, C, ABRM	530 tpd ²	86,903 tons	65.6%
	West Paterson Recycling	B, TP, TRS, TS, W	70 tpd	NA	-----
	Skytop Recycling, Inc.	C, A, B&B, TP, TS, B, W, ABRM	770 tpd	11,713 tons	5.1%
Class C	Bloomingtondale Borough	L	10,000 cy/yr	3,709 cy	37.1%
	Env Renewal, Inc.	L, G, B	37,000 cy/yr	NA	-----
	Farms View Farm	L	10,000 cy/yr	903 cy	9.0%
	Haledon Borough	L	10,000 cy/yr	6,460 cy	64.6%
	Hawthorne Borough	L	10,000 cy/yr	9,820 cy	98.2%
	Little Falls Township	L	10,000 cy/yr	1,230 cy	12.3%
	North Haledon Borough	L	10,000 cy/yr	6,460 cy	64.6%
	Ploch Farms	L, WC	10,000 cy/yr	2,100 cy	21.0%
	Prospect Park Borough	L	10,000 cy/yr	1,063 cy	10.6%
	Ringwood Borough	L	10,000 cy/yr	6,472 cy	64.7%
	West Milford Township	L	10,000 cy/yr	9,230 cy	92.3%
	West Paterson Borough	L	10,000 cy/yr	478 cy	4.8%

SALEM COUNTY

Resource Recovery	NONE				
Landfill	Salem County UA	10, 13, 13C, 23, 25, 27, 27A, 27I	1,537,507 cy	125,115 cy	115.3%
Transfer Station	NONE				
Class B	Soil Safe, Inc.	PCS	7,000 tpd	NA	-----
	South Jersey Agr. Prod	B, TRS, TS, W	510 tpd	NA	-----
Class C	NONE				

SOMERSET COUNTY

Resource Recovery	NONE				
Landfill	NONE				
Transfer Station	Bridgewater Res Inc.	10, 13, 13C, 23, 25, 27	1,400 tpd	231,302 tons	55.1%
Class B	Active Trucking	W, TRS, TP, TS, B, L	400 tpd	8,955 tons	7.5%
	Stavola Cnstr. Matls, Inc	.C, A	3,000 tpd	Not open	-----
	Trap Rock Industries	A, B&B, C	1,500 tpd	126,467 tons	28.1%
	Vollers Excavating, Inc.	A, B&B, C, W	1,573 tpd ²	37,382 tons	9.5%
	Weldon Asphalt Co.	A, C	1,000 tpd	239,201 tons	79.7%
Class C	Bernardsville Borough	L	10,000 cy/yr	8,250 cy	82.5%
	Green Brook Township	L	10,000 cy/yr	3,880 cy	38.8%
	Somerville Borough	L	10,000 cy/yr	4,733 cy	47.3%

SUSSEX COUNTY

Resource Recovery	NONE				
Landfill	Sussex County UA	10, 13, 13C, 23, 25, 27, 27A, 27I	2,032,381 cy	109,073 cy	72.5%
Transfer Station	NONE				

Class B	Grinnell Recycling, Inc. Weldon Asphalt Co	A, B&B, C, W A, C	200 tpd 2,000 tpd	47,358 tons NA	78.9% -----
Class C	Byram Township	L	10,000 cy/yr	475 cy	4.8%
	Hopatcong Borough	L	10,000 cy/yr	8,120 cy	81.2%
	R.E.R. Center	L, G, B, WC	10,000 cy/yr	NA	-----
	Sparta Township	L, B	10,000 cy/yr	1,034 cy	10.3%
	Stanhope Borough	L	10,000 cy/yr	10,330 cy	103.3%
	Sussex County MUA	L, G, B	10,000 cy/yr	12,265 cy	122.7%

UNION COUNTY

Resource Recovery	Covanta Union, Inc.	10, 25, 27	562,100 tpy	484,687 tons	86.2%
Landfill	NONE				
Transfer Station	WMTNJI – Julia St.	10, 13, 13C, 23, 25, 27	1,600 tpd	364,371 tons	75.9%
	WMNJ – Flora St.	10, 13, 13C, 23, 27	350 tpd	6,202 tons	5.9%
	WMNJ – Amboy Ave.	10, 13, 13C, 23, 27	2,000 tpd	404,178 tons	67.4%
	T. Luciano Disposal	10, 13, 13C, 23, 25, 27	1,200 tpd	206,237 tons	57.3%
	Plainfield City	10, 13, 13C, 23	99 tpd	24,073 tons	81.1%
	Summit City	10, 13, 13C, 23, 25, 27	100 tpd	10,603 tons	35.3%
Class B	Grasselli Point Ind	B&B, C	2,600 tpd ²	120,712 tons	18.6%
	Rockcrete Recy Corp.	A, B&B, C	1,000 tpd	108,212 tons	36.1%
	Waste Mgmt, Inc.	A, B&B, C, W	1,000 tpd ¹	6,012 tons	1.7%
Class C	Linden City	L	10,000 cy/yr	2,796 cy	28.0%
	Summit City	L	10,000 cy/yr	11,645 cy	116.5%
	Union County Cons	L, G	150,000 cy/yr	204,230 cy	136.2%

WARREN COUNTY

Resource Recovery	Covanta Warren En. Res.	10, 23, 27	160,000 tpy	144,075 tons	90.0%
Landfill	Warren County	10, 13, 13C, 23, 25, 27, 27A, 27I	1,217,744 cy	349,784 cy	152.4%

Transfer Station	NONE				
Class B	Tilcon of NJ	A, C	2,400 tpd ²	12,257 tons	2.0%
	Rotondi & Sons, Inc.	B, TRS, TP, TS	200 tpd	Not open	-----
Class C	Nature's Choice	L, G, B	190,000 cy/yr	155,703 cy	81.9%
	Richard C. Cotton	L	10,000 cy/yr	NA	-----
	Rotondi & Sons, Inc.	L, G, B, WC	100,000 cy/yr	65,525 cy	65.5%

TABLE C-1B

CY 2002 CAPACITIES AND UTILIZATION OF COMMERCIAL WASTE AND RECYCLING FACILITIES, BY COUNTY

<u>FACILITY TYPE</u>	<u>FACILITY NAME</u>	<u>AUTHORIZED WASTE</u>	<u>CAPACITY</u>	<u>UTILIZED 2002</u>	<u>% UTILIZED</u>
<u>ATLANTIC COUNTY</u>					
Resource Recovery	NONE				
Landfill	ACUA	10, 13, 13C, 23, 27, 27A	4,480,087 cy	470,628 cy	105.9%
Transfer Station	ACUA	10, 13, 13C, 23, 25, 27	1,950 tpd ¹	NA	-----
	Cifaloglio, Inc.	10, 13, 13C, 27	95 tpd	13,750 tons	47.6%
	Magic Disposal, Inc.	10, 13, 13C, 27	99.5 tpd ¹	85,313 tons	245.0%
Class B	A.E. Stone	A, B&B, C, W	2,075 tpd	79,577 tons	12.8%
	ACUA	TRS, TS, B, W	130 tpd	213,705 tons	548.0%
	B&J Recycling	A, B&B, B, C, W	225 tpd	6,020 tons	8.9%
	Old Cape, Inc.	A, ABRM, B&B, C, T, TRS, W	358 tpd	NA	-----
	Arawak Paving Co.	C, A	707 tpd	2,121 tons	1.0%
	Iaconelli Contracting	C, A, B&B, W	105 tpd	2,369 tons	7.5%
	Penn Jersey Building Materials	C, A, B&B	455 tpd	31,185 tons	22.8%
	Anthony Puggi	C, A, B&B, TRS, TP, TS, W	750 tpd	22,608 tons	10.0%
	L. Ferriozzi Concrete	A, C	248 tpd	14,042 tons	18.9%
	Robert T. Winzinger	C, B&B	72 tpd	NA	-----
Class C	Absecon City	L	10,000 cy/yr	1,950 cy	19.5%
	ACUA	L, G, WC	70,000 cy/yr	91,765 cy	131.1%
	Cummings Compost	L	10,000 cy/yr	477 cy	4.8%
	Egg Harbor Township	L	10,000 cy/yr	9,395 cy	94.0%
	Galloway Township	L	10,000 cy/yr	11,795 cy	118.0%
	Mullica Township	L	10,000 cy/yr	1,605 cy	16.1%

BERGEN COUNTY

Resource Recovery	NONE				
Landfill	NJMC - Erie	13, 13C, 23, 27	971,972 cy	171,172 cy	45.5%
Transfer Station	Englewood City	10, 13, 13C	99 tpd	15,352 tons	51.7%
	BFI – Fairview	10, 13, 13C, 23, 25, 27	800 tpd	245,084 tons	102.1%
	Garofalo Recycling & Transfer	10, 13, 13C, 23, 27	600 tpd	144,634 tons	80.4%
	WMTNJI-Hillsdale	10, 13, 13C, 23, 27	900 tpd	145,255 tons	53.8%
	National Transfer	10, 13, 13C, 23, 27	80 tpd	28,396 tons	118.3%
	S&L Zeppetelli	13, 13C, 27	20 tpd	4,549 tons	75.8%
	BCUA	10, 13, 13C, 23, 25, 27	Closed	143,817 tons	9.6%
	WMTNJI – North Arlington	10, 13, 13C, 23, 27	2,000 tpd	195,824 tons	32.6%
	WMTNJI – Perry St.	10, 13, 13C, 23, 27	500 tpd	117,151 tons	78.1%
	Miele Sanitation	10, 13, 13C	90 tpd	20,890 tons	77.4%
Class B	PJR Industries	A, B&B, C	1,500 tpd	NA	-----
	Red Rock Land Development	C, A, B&B	250 tpd	32,608 tons	43.5%
	Miele Sanitation	A, C, B&B, W, TP, L	75 tpd	6,859 tons	30.5%
Class C	Abma & Son Farm Compost	L	10,000 cy/yr	NA	-----
	Allendale Borough	L	10,000 cy/yr	7,276 cy	72.8%
	Alpine Borough	L	10,000 cy/yr	9,981 cy	99.8%
	Closter Borough	L, G	10,000 cy/yr	9,860 cy	98.6%
	Demarest Borough	L	10,000 cy/yr	8,473 cy	84.7%
	Fair Lawn Borough	L	10,000 cy/yr	10,000 cy	100.0%
	Franklin Lakes Borough	L	10,000 cy/yr	NA	-----
	Glen Rock Borough	L	10,000 cy/yr	16,140 cy	161.4%
	Harrington Park Borough	L	10,000 cy/yr	9,975 cy	99.8%
	Haworth Borough	L	10,000 cy/yr	12,185 cy	121.9%
	Leonora Borough	L	10,000 cy/yr	18,910 cy	189.1%
	Mahwah Township	L	14,000 cy/yr	11,695 cy	83.5%
	Northvale Borough	L	10,000 cy/yr	5,063 cy	50.6%
	Norwood Borough	L	10,000 cy/yr	5,177 cy	51.8%
	Oakland Borough	L	10,000 cy/yr	4,057 cy	40.6%
	Old Tappan Borough	L	10,000 cy/yr	8,960 cy	89.6%
	Paramus Borough	L	10,000 cy/yr	18,748 cy	187.5%
	Ridgewood Village	L	30,000 cy/yr	45,814 cy	152.7%
	River Edge Borough	L	10,000 cy/yr	9,464 cy	94.6%

Riverside Cemetery	L	10,000 cy/yr	224 cy	2.2%
Tenaflly Borough	L, G	10,000 cy/yr	5,958 cy	59.6%
Wyckoff Township	L	20,000 cy/yr	35,934 cy	179.7%

BURLINGTON COUNTY

Resource Recovery NONE

Landfill	Burlington County	10, 13, 13C, 23, 25, 27I	5,939,165 cy	546,546 cy	102.1%
Transfer Station	RSNJ – Mt. Laurel	10, 13, 13C, 23, 27	650 tpd	140,932 tons	77.3%
Class B	Sta Seal	A, B&B, C	2,000 tpd	77,906 tons	13.0%
	Herman's Trucking, Inc.	C, A, B&B, TS, TP, TRS, B	1,748 tpd	32,932 tons	6.3%
	Mimlitsch Enterprises, Inc.	W, TP, B, L	50 tpd	3,802 tons	25.3%
	Burlington County	W, A, B&B, C, T	500 tpd	26,622 tons	17.7%
Class C	Bass River Township	L	10,000 cy/yr	1,711 cy	17.1%
	Bryony/Woodhue Ltd.	SSSW, L, G, WC	118,000 cy/yr	35,387 cy	30.0%
	Burlington City	L	10,000 cy/yr	3,035 cy	30.4%
	Burlington Township	L	10,000 cy/yr	3,814 cy	38.1%
	Cinnaminson Township	L	10,000 cy/yr	33,065 cy	330.7%
	Delanco Township	L	10,000 cy/yr	6,497 cy	65.0%
	Delran Township	L	10,000 cy/yr	16,319 cy	163.2%
	Evesham Township	L	10,000 cy/yr	21,149 cy	211.5%
	Fillit Sand and Gravel	L	10,000 cy/yr	9,686 cy	96.9%
	Herman's Trucking	L	10,000 cy/yr	9,464 cy	94.6%
	Maple Shade Township	L	10,000 cy/yr	3,770 cy	37.7%
	Moorestown Township	L	20,000 cy/yr	20,089 cy	100.4%
	Mount Holly Township	L	10,000 cy/yr	3,640 cy	36.4%
	Mount Laurel Township	L	10,000 cy/yr	20,795 cy	208.0%
	Riverside Township	L	10,000 cy/yr	1,002 cy	10.0%
	Westampton Township	L	10,000 cy/yr	NA	-----

CAMDEN COUNTY

Resource Recovery	Camden Co. En. Recov. Assoc.	10, 13, 13C, 23, 27	451,140 tpy	350,057 tons	77.6%
-------------------	------------------------------	---------------------	-------------	--------------	-------

Landfill	PCFACC	10, 13, 13C, 23, 25, 27, 27A, 27I	1,542,091 cy	67,197 cy	36.3%
Transfer Station	Winslow Township	10, 13, 13C, 23, 25, 27	95 tpd	not open	-----
Class B	River Front Recyc. & Aggr. LLC	C, B&B, A, W, T	2,000 tpd	NA	-----
	Lower County Recycling, LLC	A, B&B, C	625 tpd	60,748 tons	32.4%
	Vi-Concrete Recycling Center	A, B&B, C	800 tpd ²	3,731 tons	1.9%
	W. Hargrove Recycling	A, B&B, C	1,600 tpd ¹	NA	-----
Class C	Bellmawr Borough	L, G, WC	70,000 cy/yr	49,020 cy	70.0%
	Berlin Borough	L	10,000 cy/yr	NA	-----
	Berlin Township	L	10,000 cy/yr	3,160 cy	31.6%
	Cherry Hill Ecology Center	L	70,000 cy/yr	138,644 cy	198.1%
	Collingswood Borough	L	10,000 cy/yr	4,312 cy	43.1%
	Gloucester Township MUA	L, G	120,000 cy/yr	NA	-----
	Pennsauken Township	L	10,000 cy/yr	9,851 cy	98.5%
	Voorhees Township-Osage Ave.	L	10,000 cy/yr	2,850 cy	28.5%
	Voorhees Twp-Triborough Sand	L	10,000 cy/yr	58,395 cy	584.0%

CAPE MAY COUNTY

Resource Recovery NONE

Landfill	CMCMUA	10, 13, 13C, 23, 25, 27, 27A, 27I	8,288,658 cy	369,988 cy	128.5%
Transfer Station	CMCMUA	10, 13, 13C, 23, 25, 27	620 tpd	73,610 tons	39.6%
Class B	Action Supply	C	350 tpd	10,438 tons	9.9%
	CMCMUA	C, A, B&B, T, TRS, TS, TP, W	570 tpd	NA	-----
	Daley's Pit	A, C	300 tpd	21,293 tons	23.7%
	Future Mining & Recycling	A, B&B, C, TS, TRS	800 tpd ²	NA	-----
Class C	CMCMUA	L, G	10,000 cy/yr	35,575 cy	355.8%
	Lower Township MUA	L	10,000 cy/yr	NA	-----

CUMBERLAND COUNTY

Resource Recovery NONE

Landfill	CCIA	10, 13, 13C, 23, 25, 27, 27A, 27I	5,416,404 cy	314,888 cy	91.6%
Transfer Station	NONE				
Class B	MART	PCS	2,016 tpd ¹	205,455 tons	29.1%
	South State	A, B&B, C, PCS, SS	3,750 tpd	60,578 tons	5.4%
	Kennedy Concrete, Inc.	C	186 tpd ²	1,744 tons	3.8%
Class C	Commercial Township	L	10,000 cy/yr	NA	-----
	Maurice River Township	L	10,000 cy/yr	NA	-----
	Bridgeton City	L	10,000 cy/yr	10,150 cy	101.5%
	Nature's Choice Upper Deerfield	L, G	240,000 cy/yr	NA	-----
	Hopewell Township	L	10,000 cy/yr	NA	-----
	Millville City	L	10,000 cy/yr	23,410 cy	234.1%
	Vineland City - Elm Road	L	10,000 cy/yr	25,773 cy	257.7%
	Vineland City - Union Road	L	10,000 cy/yr	5,523 cy	55.2%

ESSEX COUNTY

Resource Recovery	American Ref-Fuel	10, 13, 27	985,500 tpy	892,245 tons	90.5%
Landfill	NONE				
Transfer Station	SWT&R	10, 13, 13C, 23	2,600 tpd	630,783 tons	80.9%
	Recycling & Salvage Corp.	10, 13, 13C, 27	150 tpd	47,957 tons	106.6%
Class B	Advanced Enterprises	W, TRS, B, L	500 tpd	NA	-----
	T. Fiore Recycling Corp.	A, C, B&B, T, ABRM, TRS, TS, TP, B, W	1,865 tpd	NA	-----
	Waste Management, Inc.	T	300 tpd	closed	-----
Class C	Caldwell Borough	L, G	10,000 cy/yr	8,325 cy	83.3%
	Essex County Parks	L	10,000 cy/yr	2,542 cy	25.4%
	Essex Fells Borough	L	10,000 cy/yr	9,300 cy	93.3%
	Fairfield Township	L, G	10,000 cy/yr	7,261 cy	72.6%
	Millburn Township	L	14,200 cy/yr	20,983 cy	147.8%
	South Orange Village	L	10,000 cy/yr	22,740 cy	227.4%
	West Caldwell Township	L	10,000 cy/yr	8,320 cy	83.2%
	West Orange Township	L	10,000 cy/yr	20,094 cy	200.9%

GLOUCESTER COUNTY

Resource Recovery	Wheelabrator Gloucester	10, 13, 23, 25	209,875 tpy	179,914 tons	85.7%
Landfill	Gloucester County	10, 13, 13C, 23, 25, 27, 27A, 27I	2,280,334 cy	404,779 cy	74.6%
Transfer Station	NONE				
Class B	Clearland, Inc.	TS, TRS	300 tpd	NA	-----
	Recycled Wood Products	W, TP	100 tpd	NA	-----
	Robert T. Winzinger	A, B, B&B, C, L, TP, TRS, TS, W	1,440 tpd	44,759 tons	10.4%
	R.E. Pierson Materials, Inc.	C, A	2,000 tpd	83,903 tons	14.0%
Class C	Clayton Borough	L	10,000 cy/yr	4,271 cy	42.7%
	County Conservation	L, G	25,000 cy/yr	29,136 cy	116.5%
	Deptford Township	L	10,000 cy/yr	7,725 cy	77.3%
	Franklin Township	L	10,000 cy/yr	17,155 cy	171.6%
	Glassboro Borough	L, G	10,000 cy/yr	NA	-----
	Mantua Township	L, WC	10,000 cy/yr	NA	-----
	Pitman Borough	L	10,000 cy/yr	11,190 cy	111.9%
	Smith Orchards - Mantua	L, G, WC	10,000 cy/yr	9,991 cy	99.9%
	Smith Orchards – Sewell	L, G, WC	10,000 cy/yr	10,152 cy	101.5%
	Smith Orchards – Harrison	L, G, WC	10,000 cy/yr	NA	-----

HUDSON COUNTY

Resource Recovery	NONE				
Landfill	NONE				
Transfer Station	C. Pyskaty & Sons	10, 13, 13C, 27	100 tpd	6,765 tons	22.6%
	Allegro Sanitation	10, 13, 13C, 27	95 tpd	25,785 tons	90.5%
	Cardella Trucking	13, 13C	400 tpd	65,488 tons	54.6%
	P&N/SJG	10, 13, 13C, 23	353 tpd	35,159 tons	33.2%
	Onyx Waste – Broadway	10, 13, 13C, 23, 27	375 tpd	87,705 tons	78.0%
Class B	Bayonne Durable Construction	ABRM, B&B, C, W	1,310 tpd ¹	31,847 tons	6.9%
	Bedrock Stone, Inc.	A, B&B, C, TP, TS, TRS, W	1,400 tpd	455,595 tons	108.5%

	North Bergen Recycling	A, C	500 tpd	NA	-----
	Resource Management Tech.	C, A, B&B, W, TP, TRS, L	950 tpd	130,136 tons	45.7%
	ITL Concrete Recycling Corp.	A, C, B&B	1,500 tpd	0 tons	0.0%
	Recycling Specialists, Inc.	C, A, B	1,400 tpd	not open	-----
Class C	NJMC	L, G	70,000 cy/yr	NA	-----
	Kearny Town	L	10,000 cy/yr	NA	-----
	Secaucus Town	L	10,000 cy/yr	6,760 cy	67.6%

HUNTERDON COUNTY

Resource Recovery	NONE				
Landfill	NONE				
Transfer Station	HCUA	10, 13, 13C, 23, 25, 27	500 tpd	49,448 tons	33.0%
Class B	Raritan Valley Recycling	C, A, B	300 tpd	9,199 tons	10.2%
Class C	Clinton Town	L	10,000 cy/yr	625 cy	6.3%
	Raritan Township	L	10,000 cy/yr	5,975 cy	59.8%

MERCER COUNTY

Resource Recovery	NONE				
Landfill	NONE				
Transfer Station	MCIA	10, 13, 13C, 23, 25, 27	1,000 tpd	354,135 tons	118.0%
Class B	Albert E. Barrett	A, B&B, C	250 tpd ²	3,187 tons	5.1%
	Mercer Group International	C, A, B&B, W, L	2,350 tpd	159,088 tons	22.6%
	Mid-Jersey Mulch Products	TRS, TP, TS, W, L	600 tpd	42,965 tons	23.9%
	Vinch Recycling	A, B&B, C, ABRM, W	650 tpd	43,198 tons	22.2%
	Hamilton Township	C, A, W, B, L, T	175 tpd	11,098 tons	21.1%
Class C	Ewing Township	L	16,000 cy/yr	47,600 cy	297.5%
	Hamilton Ecological Facility	L	16,000 cy/yr	76,855 cy	480.0%

Hightstown Borough	L	10,000 cy/yr	360 cy	3.6%
Hopewell Township	L	10,000 cy/yr	22,054 cy	220.5%
Lawrence Township	L, G	22,000 cy/yr	42,478 cy	193.1%
Trenton City	L	10,000 cy/yr	3,264 cy	32.6%
West Windsor Township	L	10,000 cy/yr	23,252 cy	232.5%

MIDDLESEX COUNTY

Resource Recovery NONE

Landfill	MCUA	10, 13, 13C, 23, 25, 27, 27A	11,431,133 cy	1,023,351 cy	164.7%
----------	------	------------------------------	---------------	--------------	--------

Transfer Station	Importico Company	10, 13, 13C, 23, 25, 27	150 tpd	35,509 tons	78.9%
	RSNJI – Middlesex	10, 13, 13C, 23, 25, 27	600 tpd	108,842 tons	60.5%
	Perth Amboy City	10, 13, 13C, 23	100 tpd	22,198 tons	74.0%
	RSNJI – South Plainfield	10, 13, 13C, 23, 27	1,000 tpd	190,645 tons	63.5%
	RSNJI – New Brunswick	10, 13, 13C, 23, 27	750 tpd ¹	159,052 tons	60.6%

Class B	Cardell, Inc.	A, C	1,000 tpd ²	20,435 tons	8.2%
	JNC Materials, Inc.	PCS	1,538 tpd	226,272 tons	49.0%
	Clayton Block	A, B&B, C	800 tpd	37,496 tons	15.6%
	Dauman Recycling, Inc.	TRS, TS, W, L	600 tpd	46,806 tons	26.0%
	Gallo Asphalt	C, A	1,300 tpd ²	12,414 tons	3.8%
	Coffmann Tree Service	W, TP, L	425 tpd	25,881 tons	20.3%
	J.H. Reid	B, TRS, TP, TS, W, L	250 tpd ²	36,995 tons	59.2%
	Odaco, Inc.	B, TP, TS, W	300 tpd	15,241 tons	16.9%
	Iron Leaf	T, TP, TS, B, W, L	500 tpd	20,251 tons	13.5%
	Reclamation Tech., Inc.	W	300 tpd	NA	-----
	Carteret Materials	A, B&B, C	1,000 tpd	4,227 tons	1.4%
	South Brunswick Recycling	A, B&B, C	1,000 tpd	109,744 tons	36.6%
	Stavola Old Bridge Materials	A, C, B&B	1,200 tpd ²	33,958 tons	11.3%
	Bayshore Recycling Corp.	C, A, B&B, PCS	2,000 tpd ¹	253,739 tons	36.6%
	Middlesex County	B, TRS, TP	50 tpd	NA	-----

Class C	East Brunswick Township	L	36,000 cy/yr	38,148 cy	106.0%
	Middlesex County	L	26,000 cy/yr	13,244 cy	50.9%
	Plainsboro Township	L	10,000 cy/yr	8,550 cy	85.5%
	Sayreville Borough	L	20,000 cy/yr	12,928 cy	64.6%
	South River Borough	L	10,000 cy/yr	4,650 cy	46.5%

MONMOUTH COUNTY

Resource Recovery	NONE				
Landfill	MCRC	10, 13, 13C, 23, 25, 27, 27A, 27I	13,813,712 cy	715,145 cy	104.6%
Transfer Station	MCRC MRF	10, 13, 13C	2,700 tpd	NA	-----
	Recycling Technology Center	13, 13C	600 tpd	41,088 tons	22.8%
	RSNJI – Tinton Falls	13, 13C	450 tpd	53,169 tons	39.4%
Class B	Ace Manzo, Inc.	C, A	120 tpd	1,241 tons	3.4%
	Benoit Recycling Center	TP, TRS, TS	250 tpd	12,290 tons	16.4%
	Rosano Asphalt, LLC	A, C	600 tpd	40,949 tons	22.7%
	Freehold Cartage, Inc.	C, B&B, A, TP, TRS, TS, W, T	300 tpd ¹	3,591 tons	3.4%
	Clayton Block Co., LLC	A, C, B&B	1,400 tpd	37,496 tons	8.9%
	J. Manzo Recycling	A, B&B, C, TP, TRS, TS, W, SS	1,100 tpd	26,900 tons	8.2%
	John Blewett, Inc.	T	0.5 tpd	NA	-----
	Lertch Recycling Co., Inc.	A, B, C, TP, TRS, TS, W	1,500 tpd	55,602 tons	12.4%
	Lucas Bros., Inc.	A, B&B, C	200 tpd ²	12,246 tons	24.5%
	Recycling Technology Center, Inc.	A, B&B, C, ABRM, B, TRS, TS, W, T, SS	2,577 tpd	64,380 tons	8.3%
	Stavola Trucking Co., Inc.	A, C	2,000 tpd	20,171 tons	3.4%
	P. Deponte Const. Co., Inc.	TS, TP, W, B	120 tpd	NA	-----
	Kerr Concrete Pipe, Inc.	C, A	1,250 tpd	2,882 tons	0.8%
Class C	Aberdeen Township	L	10,000 cy/yr	7,075 cy	70.8%
	Eatontown Borough	L	10,000 cy/yr	29,300 cy	293.0%
	Gary Laurino	L	10,000 cy/yr	0 cy	0.0%
	Holmdel Township	L	10,000 cy/yr	9,702 cy	97.0%
	Howell Township	L	10,000 cy/yr	NA	-----
	Middletown Township	L	42,000 cy/yr	78,620 cy	187.2%
	Ocean Township	L	16,000 cy/yr	15,048 cy	94.1%
	Oceanport Borough	L	10,000 cy/yr	3,615 cy	36.2%
	Red Bank Borough	L	10,000 cy/yr	NA	-----
	Shrewsbury Borough	L	10,000 cy/yr	5,844 cy	58.4%
	Spring Lake Borough	L	10,000 cy/yr	12,230 cy	122.3%
	Tinton Falls Borough	L	10,000 cy/yr	1,100 cy	11.0%
	Wall Township	L	10,000 cy/yr	30,335 cy	303.4%

MORRIS COUNTY

Resource Recovery	NONE				
Landfill	NONE				
Transfer Station	MCMUA – Mt. Olive	10, 13, 13C, 23, 25, 27	650 tpd	188,680 tons	96.8%
	MCMUA – Par-Troy	10, 13, 13C, 23, 25, 27	1,150 tpd	255,699 tons	74.1%
Class B	Mt. Hope Rock Products	PCS, A, B&B, C, SS	10,000 tpd	126,731 tons	4.2%
	Nature's Choice Corp.	TS, TRS, B	125 tpd	NA	-----
	Tilcon Of NJ	A, C	2,000 tpd	87,139 tons	14.5%
Class C	Chatham Borough	L	10,000 cy/yr	8,671 cy	86.7%
	Chatham Township	L, G, B	10,000 cy/yr	5,913 cy	59.1%
	Dan Como & Sons, Inc.	L, G	10,000 cy/yr	9,950 cy	99.5%
	Dover Town	L	10,000 cy/yr	2,905 cy	29.1%
	Florham Park Envir. Center	L	10,000 cy/yr	NA	-----
	Mine Hill Township	L	10,000 cy/yr	NA	-----
	Morris County – Mount Olive	L, G	40,000 cy/yr	45,601 cy	114.0%
	Morris County - Parsippany	L, G, B	38,000 cy/yr	36,074 cy	94.9%
	Netcong Borough	L	10,000 cy/yr	0 cy	0.0%
	Rockaway Township	L	10,000 cy/yr	1,980 cy	19.8%

OCEAN COUNTY

Resource Recovery	NONE				
Landfill	OCLF	10, 13, 13C, 23, 25, 27, 27A, 27I	9,441,842 cy	1,076,269 cy	114.8%
Transfer Station	NONE				
Class B	Recycling of Central Jersey, LLC	A, C, TS, W	1,600 tpd	37,257 tons	7.8%
	Brick Wall Corp.	A, C, B&B	300 tpd	14,556 tons	16.2%
	Ocean County Recycling	A, C, T	670 tpd	105,593 tons	52.5%
	Rubbercycle, Inc.	T	80 tpd	6,436 tons	26.8%
	Walter R. Earle Corp.	PCS	5,000 tpd	21,116 tons	1.4%
	Suffolk Recycling Corp.	C, A, B&B	600 tpd	37,245 tons	20.7%

Class C	Beachwood Borough	L	10,000 cy/yr	1,160 cy	11.6%
	Berkeley Township	L	10,000 cy/yr	NA	-----
	Brick Township	L	25,000 cy/yr	59,110 cy	236.4%
	Dover Township	L	10,000 cy/yr	68,025 cy	680.3%
	Jackson Township	L	10,000 cy/yr	25,065 cy	250.7%
	Lacey Township	L	20,000 cy/yr	32,955 cy	164.8%
	Manchester Township	L	10,000 cy/yr	35,770 cy	357.7%
	Ocean County North Regional	L, G	60,000 cy/yr	78,295 cy	130.5%
	Ocean County South Regional	L	10,000 cy/yr	33,970 cy	339.7%

PASSAIC COUNTY

Resource Recovery NONE

Landfill NONE

Transfer Station	Onyx Waste – Iowa Avenue	10, 23	150 tpd	Not open	-----
	Onyx Waste – River Street	10, 13, 13C, 23, 27	350 tpd	NA	-----
	Onyx Waste – Fulton Street	10, 13, 13C, 23, 25, 27	1,000 tpd	374,756 tons	124.9%
	Gaeta Recycling Co.	10, 13, 13C, 27	95 tpd	25,895 tons	90.9%
	Onyx Waste – Totowa	10, 13, 13C, 23, 25, 27	1,000 tpd	210,343 tons	70.1%
Class B	Tilcon of New Jersey	C, A, B&B	750 tpd	NA	-----
	Passaic Crushed Stone Co., Inc.	A, C	1,110 tpd	39,406 tons	11.8%
	Stone Industries, Inc.	A, B&B, C	3,333 tpd ¹	87,766 tons	7.5%
	Tilcon NJ, Inc.	A, B&B, C, ABRM	530 tpd	NA	-----
	West Paterson Recycling	B, TP, TRS, TS, W	70 tpd	NA	-----
	Skytop Recycling, Inc.	C, A, B&B, TP, TS, B, W, ABRM	770 tpd	43,410 tons	18.8%
Class C	Bloomingtondale Borough	L	10,000 cy/yr	3,548 cy	35.5%
	Environmental Renewal	L, G, B	37,000 cy/yr	86,598 cy	234.0%
	Farms View Farm	L	10,000 cy/yr	886 cy	8.9%
	Haledon Borough	L	10,000 cy/yr	905 cy	9.1%
	Hawthorne Borough	L	10,000 cy/yr	3,940 cy	39.4%
	Little Falls Township	L	10,000 cy/yr	1,390 cy	13.9%
	North Haledon Borough	L	10,000 cy/yr	6,625 cy	66.3%
	Ploch Farms	L, WC	10,000 cy/yr	1,920 cy	19.2%

Prospect Park Borough	L	10,000 cy/yr	814 cy	8.1%
Ringwood Borough	L	10,000 cy/yr	6,344 cy	63.4%
West Milford Township	L	10,000 cy/yr	9,956 cy	99.6%
West Paterson Borough	L	10,000 cy/yr	500 cy	5.0%

SALEM COUNTY

Resource Recovery	NONE				
Landfill	Salem County UA	10, 13, 13C, 23, 25, 27, 27A, 27I	1,378,422 cy	159,085 cy	143.2%
Transfer Station	NONE				
Class B	Soil Safe, Inc. South Jersey Agr. Products	PCS B, TRS, TS, W	7,000 tpd 510 tpd	187,563 tons 119,936 tons	8.9% 78.4%
Class C	NONE				

SOMERSET COUNTY

Resource Recovery	NONE				
Landfill	NONE				
Transfer Station	Bridgewater Resources Inc.	10, 13, 13C, 23, 25, 27	1,400 tpd	211,723 tons	50.4%
Class B	Active Trucking Stavola Constr. Materials, Inc. Trap Rock Industries Vollers Excavating, Inc. Weldon Asphalt Company	W, TRS, TP, TS, B, L C, A A, B&B, C A, B&B, C, W A, C	400 tpd 3,000 tpd 1,500 tpd 1,573 tpd ² 1,000 tpd	NA 20,171 tons 138,287 tons 96,643 tons 258,098 tons	----- 2.2% 30.7% 24.6% 86.0%
Class C	Bernardsville Borough Green Brook Township Somerville Borough	L L L	10,000 cy/yr 10,000 cy/yr 10,000 cy/yr	8,350 cy 3,640 cy 4,565 cy	83.5% 36.4% 45.7%

SUSSEX COUNTY

Resource Recovery	NONE				
Landfill	Sussex County UA	10, 13, 13C, 23, 25, 27, 27A, 27I	1,903,553 cy	128,828 cy	87.6%
Transfer Station	NONE				
Class B	Grinnell Recycling, Inc. Weldon Asphalt Company	A, B&B, C, W A, C	200 tpd	54,872 tons	91.5%
			2,000 tpd	26,550 tons	4.4%
Class C	Byram Township	L	10,000 cy/yr	350 cy	3.5%
	Hopatcong Borough	L	10,000 cy/yr	5,654 cy	56.5%
	R.E.R. Center	L, G	10,000 cy/yr	NA	-----
	Sparta Township	L, B	10,000 cy/yr	4,775 cy	47.8%
	Stanhope Borough	L	10,000 cy/yr	8,555 cy	85.6%
	Sussex County MUA	L, G	10,000 cy/yr	14,085 cy	140.9%

UNION COUNTY

Resource Recovery	Covanta Union, Inc.	10, 25, 27	562,100 tpy	509,877 tons	90.7%
Landfill	NONE				
Transfer Station	WMTNJI – Julia St.	10, 13, 13C, 23, 25, 27	1,600 tpd	371,988 tons	77.5%
	WMNJ – Flora St.	10, 13, 13C, 23, 27	350 tpd	11,877 tons	11.3%
	WMNJ – Amboy Ave.	10, 13, 13C, 23, 27	2,000 tpd	427,677 tons	71.3%
	T. Luciano Disposal	10, 13, 13C, 23, 25, 27	1,200 tpd	201,364 tons	55.9%
	Plainfield City	10, 13, 13C, 23	99 tpd	32,514 tons	109.5%
	Summit City	10, 13, 13C, 23, 25, 27	100 tpd	10,601 tons	35.3%
Class B	Grasselli Point Industries	B&B, C	2,600 tpd ²	158,894 tons	20.4%
	Rockcrete Recycling Corp.	A, B&B, C	1,000 tpd	56,483 tons	18.8%
	Waste Management, Inc.	A, B&B, C, W	1,000 tpd ¹	7,412 tons	2.1%
Class C	Linden City	L	10,000 cy/yr	NA	-----
	Summit City	L	10,000 cy/yr	3,717 cy	37.2%
	Union County Conservation	L, G	150,000 cy/yr	128,452 cy	85.6%

WARREN COUNTY

Resource Recovery	Covanta Warren En. Res. Co.	10, 23, 27	160,000 tpy	150,720 tons	94.2%
Landfill	Warren County	10, 13, 13C, 23, 25, 27, 27A, 27I	803,916 cy	413,828 cy	161.8%
Transfer Station	NONE				
Class B	Tilcon of NJ	A, C	2,400 tpd ²	NA	-----
Class C	Nature's Choice – White Twp. Rotondi & Sons, Inc.	L, G, B L, G, B, WC	190,000 cy/yr 100,000 cy/yr	NA 120,876 cy	----- 120.9%

TABLE C-2

UNIVERSE OF ACTIVE Post 1982 LANDFILLS

Regional Commercial Landfills

Facility

Location

Atlantic County	Egg Harbor Township
Burlington County	Florence Township
Camden County	Pennsauken Twp.
Cape May County	Upper Township
Cumberland County	Woodbine Borough
Gloucester County	Deerfield Township
New Jersey Meadowlands Commission – Erie Landfill	South Harrison Township
Middlesex County	North Arlington Borough
Monmouth County	East Brunswick Township
Ocean County Landfill Corp.	Tinton Falls Borough
Salem County	Manchester Township
Sussex County	Alloways Township
Warren County	Lafayette Township
	White Township

A. Municipal Landfill

Borough and Township of Princeton	Princeton Township
-----------------------------------	--------------------

B. Sole Source Landfills

<u>Facility</u>	<u>Location</u>
Valero Refining Co.	Greenwich Township, Gloucester County
C. A. Lertch	Wall Township, Monmouth County
Hercules, Inc.	Roxbury Township, Morris County
Ciba Specialty Chemicals, Inc.	Dover Township, Ocean County
DuPont Chambers Works	Carneys Point Township, Salem County
Ingersoll-Rand Company	Phillipsburg Town, Warren County

Table C-3 UNIVERSE OF CLOSED POST-1982 LANDFILLS**POST-1982 LANDFILLS – POST CLOSURE CARE COMPLETED**

<u>NAME</u>	<u>ID</u>	<u>CITY</u>	<u>TYPE</u>
George Bradford	1213F	Monroe Twp	SS
Carrino Contracting	1605A	Upper Montclair	SS

POST-1982 LANDFILLS - CLOSURE COMPLETE – UNDER POST CLOSURE CARE

<u>NAME</u>	<u>ID</u>	<u>CITY</u>	<u>TYPE</u>
Pinelands Park	0108B	Egg Harbor Twp	R
Stockton State College	0111E	Galloway Twp	SS
Abex	0233C	Mahwah	SS
Parklands Reclamation	0304A	Bordentown Twp	R
Griffin Pipe	0315A	Florence Twp	SS
Lumberton Twp	0317A	Lumberton Twp	M
Moorestown Twp	0322A	Moorestown Twp	M
Mar-Tee	0506C	Middle Twp	R
Upper Twp	0511A	Upper Twp	M
Fairfield Twp	0605A	Fairfield Twp	M
Lawrence Twp – Shaws Mill	0608C	Lawrence Twp	M
Stow Creek Twp	0612A	Stow Creek Twp	M
Kinsley	0802B	Deptford Twp	R
Elk Twp	0804A	Elk Twp	M
Essex Chemical	0814A	Paulsboro	SS
Kitchen Property	-----	West Amwell Twp	SS
George Bellezio	1221A	South Brunswick Twp	SS
Englishtown Disposal	1312A	Englishtown Boro	M
Waste Disposal Inc.	1319B	Howell Twp	R
MCRC Phase I	1336B,E	Tinton Falls Boro	R
Rockaway Twp	1435A	Rockaway Twp	M
James H. James	1506A	Brick Twp	R
Lakewood Twp	1514A	Lakewood Twp	M
Oldsman Twp	1706A	Oldsman Twp	M
Pittsgrove Twp	1710A	Pittsgrove Twp	M
Upper Pittsgrove Twp	1714A	Upper Pittsgrove Twp	M
Johns Manville – Schuller	1811A	Manville/Hillsborough	SS
Hopatcong	1912A	Hopatcong Twp	M
Hamms Sanitation	1913C	Lafayette Twp	R
Stillwater Twp	1920A	Stillwater Twp	M
JE Runnells	2001A	Berkeley Heights Boro	SS
Independence Twp	2112B	Independence Twp	M
Belvidere-White Twp	2123A	White Twp	M

POST-1982 LANDFILLS - CLOSURE PLAN APPROVED – CLOSURE NOT COMPLETE

<u>NAME</u>	<u>ID</u>	<u>CITY</u>	<u>TYPE</u>
Winzinger	0108D	Egg Harbor Twp	SS
Estell Manor	0109A	Estell Manor City	M
Folsom Boro	0110A	Folsom Boro	M
Galloway Twp	0111B	Galloway Twp	M
Mullica Twp	0117A	Mullica Twp	M
J. Vinch	0307A	Chesterfield Twp	SS
Kingsland Park	0232B,C	Lyndhurst/North Arlington	R
Westwood Boro	0267A	Westwood Boro	M
US Pipe	0306A	Burlington Twp	SS
Evesham Twp	0313A	Evesham Twp	M
Bridgeton City	0601A	Bridgeton City	M
Commercial Twp	0602A	Commercial Twp	M
Deerfield Twp	0603A	Deerfield Twp	M
Hopewell Twp	0607A	Hopewell Twp	M
Vineland City	0614B	Vineland City	M
DuPont Repauno Plant	0807A	Greenwich Twp	SS
Greenwich Twp	0807B	Greenwich Twp	M
Ralph Rambone	0813B	Newfield Boro	SS
Bayonne	0901A	Bayonne City	M
Pastore	1001A	Alexandria Twp	SS
Edgeboro	1204A	East Brunswick Twp	R
ILR	1205C	Edison Twp	R
NL Industries	1219D	Sayreville Boro	SS
South Plainfield Twp	1222A	South Plainfield Twp	M
Red Bank	1340A	Red Bank Boro	M
Mount Arlington Boro	1426A	Mount Arlington Boro	M
Southern Ocean	1520A	Ocean Twp	R
Mannington Mills	1705A,C	Mannington Twp	SS
Salem City	1712A	Salem City	M
Bernards Twp	1802A	Bernards Twp	M
Linden	2009A	Linden City	M

POST-1982 LANDFILLS – CLOSURE PLANS UNDER REVIEW

<u>NAME</u>	<u>ID</u>	<u>CITY</u>	<u>TYPE</u>
Buena Boro	0104A	Buena Boro	M
Buena Vista Twp	0105A	Buena Vista Twp	M
Egg Harbor City	0107A	Egg Harbor City	M
Puggi	0108L	Egg Harbor Twp	SS
Galloway Twp – Herschel St	0111D	Galloway Twp	M
Hamilton - Somers Point	0112B	Hamilton Twp	M
Hammonton	0113A	Hammonton Town	M
Port Republic City	0120A	Port Republic City	M
Weymouth Twp	0123A	Weymouth Twp	M
Hillsdale Boro	0227A	Hillsdale Boro	M
Bass River Twp	0301A	Bass River Twp	M
Burlington City	0305A	Burlington City	M
Tenneco	0306D	Burlington Twp	SS
Patsaros	0308C	Burlington Twp	SS
Medford Twp	0320A	Medford Twp	M
Tabernacle Twp	0335A	Tabernacle Twp	M
Woodland Twp	0339A	Woodland Twp	M
Ancora State Hospital	0436B	Winslow Twp	SS
VA Associates	0436D	Winslow Twp	SS
Rinker/Wozniak Street Dump	0436E	Winslow Twp	SS
Dennis Twp – Belleplain	0504B	Dennis Twp	M
Dennis Twp – South Seaville	0504C	Dennis Twp	M
Downe Twp	0604B	Downe Twp	M
Maurice River Twp	0609B	Maurice River Twp	M
Millville City	0610A	Millville City	M
Franklin Twp	0805A	Franklin Twp	M
Monroe Twp	0811A	Monroe Twp	M
HMD C 1-E	0907W	Kearny/North Arlington	R
Carteret Boro	1201B	Carteret Boro	M
Edison Disposal Area	1205A	Edison Twp	R
Stanley Olbrys	1213B	Monroe Twp	SS
Plainsboro	1218B	Plainsboro Twp	M
South Brunswick Twp	1221B	South Brunswick Twp	M
Woodbridge Pottery	1225E	Woodbridge Twp	SS
Benoit	1336C	Tinton Falls Boro	SS
Mendham Boro	1418A	Mendham Boro	M
US Mineral Products	1428A	Netcong Boro	SS
Beachwood	1504A	Beachwood Boro	M
Berkeley Twp	1505A	Berkeley Twp	M
Holiday City West	1505C	Berkeley Twp	SS
Parker Stump Dump	1512C	Lacey Twp	SS
Little Egg Harbor	1516A	Little Egg Harbor Twp	M
Tuckerton Sand & Gravel	1516B	Little Egg Harbor Twp	SS
Manchester Twp	1518A	Manchester Twp	M
South Toms River	1529A	South Toms River Boro	M
Tanner Trucking	1533A	Barneget Twp	SS
Quinton Twp	1711A	Quinton Twp	M
Bernardsville Boro	1803A	Bernardsville Boro	M

Hillsborough Boro	1810A	Hillsborough Boro	M
Hardyston Twp	1911A	Hardyston Twp	M
Sparta Twp	1918A	Sparta Twp	M
J.T. Baker	2110B	Harmony Twp	SS

POST-1982 LANDFILLS – NO CLOSURE PLAN

<u>NAME</u>	<u>ID</u>	<u>CITY</u>	<u>TYPE</u>
Oakland Boro	0242B	Oakland Boro	M
Smith	0505D	Lower Twp	R
Gates Construction	0906D	Jersey City	SS
Wenczel Tile	1107B	Lawrence Twp	SS
Middlesex LF Corp.	1201A	Carteret Boro	R
Alloway Twp	1701A	Alloway Twp	M
Mannington Mills	1705B	Mannington Twp	SS
Eckert & Sons	1706B	Oldsman Twp	SS
Pennsville Twp	1708A	Pennsville Twp	M
Q.T.	1711B	Quinton Twp	R
Clemente	1713A	Carneys Point Twp	SS
NJ NeuroPsychiatric Hospital	1813A	Montgomery Twp	SS
M&M Mars	2101B	Allamuchy Twp	SS
Shandor	2110B	Harmony Twp	SS
Hope Twp	2111A	Hope Twp	M

POST-1982 LANDFILLS – SUPERFUND SITES

<u>NAME</u>	<u>ID</u>	<u>CITY</u>	<u>TYPE</u>
L & D ^a	0323A	Mount Holly Twp	R
Fort Dix #1 ^b	0329B	Pemberton Twp	SS
Upper Deerfield Twp ^a	0613A	Upper Deerfield Twp	M
Global ^c	1209A	Old Bridge Twp	R

a= approved closure complete, under post-closure care

b= closure plan approved, closure not complete

c= no closure plan

TABLE C-4

Former Landfills, Not Properly Closed

Ranked Highest Potential for Greenhouse Gas Emission/Leachate Pollution

1. MSLA 1D (Kearny, Hudson County)
2. Avon (Lyndhurst, Bergen County)
3. Pennsauken (Pennsauken, Camden County)
4. Keegan (Kearny, Hudson County)
5. Southern Ocean (Ocean, Ocean County)
6. Malanka (Secaucus, Hudson County)
7. Stafford Township (Stafford, Ocean County)
8. Foundations & Structures (Woodbine, Cape May County)
9. Edison Township (Edison, Middlesex County)
10. Bergen County/Overpeck Park - Leonia section (Leonia, Bergen County)
11. Fazzio (Bellmawr, Camden County)
12. Frank Fenimore (Roxbury, Morris County)
13. Winslow Township (Winslow, Camden County)
14. Somerville Borough (Somerville, Somerset County)
15. Woodstown Borough/Pilesgrove Township (Pilesgrove, Salem County)
16. Erie (North Arlington, Bergen County)

D. WASTE AND RECYCLING FACILITIES - CROSS MEDIA ISSUES

D.1. Guidance for Class B Recycling Facilities

Class B Recycling facilities are diverse and may process demolition wastes, such as concrete, asphalt, and brick, scrap tires, tree parts, and petroleum contaminated soils. During the processing of all of these materials, there exists the potential for particulate emissions from the source, such as a concrete crusher or conveyor, from storage, such as soil piles, from the movement of the material on-site and from truck traffic. In New Jersey, there have been instances of excessive and unnecessary particulate emissions from Class B Recycling facilities. Such instances create the potential for violations of the facility's Air Pollution Control Permit as well as creating a nuisance off-site. Of particular concern are the emissions of PM-10 particulate which include all particulate matter having an aerodynamic diameter less than or equal to a nominal 10 micrometers. Inhalation of PM-10 has the potential to accumulate in the lungs. Also, PM-10 may contain heavy metals, such as lead and arsenic. Emissions of heavy metals are minimized with good particulate control and limits on the heavy metals concentrations in the contaminated soil accepted at the facility.

The emissions of volatile organic compounds (VOC), such as benzene, are a concern at facilities that process petroleum contaminated soils. VOC emissions can be minimized through proper handling procedures and APC controls, such as thermal oxidization and activated carbon adsorption, on the discharge stacks from the source operation.

To minimize the impact of the air contaminants from Class B Recycling facilities, the Department anticipates requiring the following when permitting new or modified equipment or processes, depending on the materials being processed and the equipment used to process the materials.

Dust Management Plan

A Dust Management Plan (DMP) should be developed to address fugitive emissions. The plan must include the following:

1. Procedures for visual inspections of material handling and process equipment;
2. Dust management procedures;
3. Corrective actions; and,
4. A checklist of sources and areas to be checked for visible emissions and accumulations of dusty material in open area (other than storage piles).

The DMP is subject to the review and approval of the Department and should contain, at a minimum, the following sections: General Overview of Operations (Site Description, Description of Operations), Dust Emission Sources, Best Available Control Measures (e.g. Employee Training, Good Housekeeping Practices, Periodic Inspection Program,

Corrective Action Procedures, Recordkeeping), and the DMP Schedule for Implementation and Reporting.

Thermal Treatment of Soils

Three stationary commercial treatment facilities and several site remediation locations employ thermal treatment. The thermal treatment is typically done in a rotary kiln unit. The unit is controlled with, at a minimum, volatile organic compound (VOC) and particulate air pollution control devices. Since the unit must be operated under negative draft, the only air contaminant emissions are those exiting the stack of the equipment.

Biological Degradation as a Treatment Methodology

One commercial soil treatment facility employs aerobic degradation to remediate the VOC contamination. This occurs in a building which is vented to a particulate control device followed in series by a VOC control device.

Soil Stabilization

One site remediation facility in New Jersey employed a pugmill, in which contaminated soils are mixed with cement to increase the bearing capacity of the soil. This pugmill is maintained under negative pressure and vented to a particulate control device followed in series by a VOC control device.

Water Sprays

Water sprays should be available to prevent and address the generation of fugitive emissions not captured and directed to an air pollution control device.

Conveyors

Conveyors should be covered at a minimum. A determination should be made based on the potential to emit air contaminants as to whether the conveyor should be vented to and controlled by an APC device.

Truck Traffic

Actions should be taken to prevent or minimize fugitive emissions from the movement of trucks, possibly including the following: sufficient water should be applied to paved roads, trucks should be covered with a plastic tarp when not loading or unloading materials, and truck wheels should be washed down on an appropriate basis. Trucks should not be operated on unpaved areas.

Weather Conditions

In the facility-operating plan, provisions should be included which would halt processing and movement of materials if weather conditions, such as excessive wind or heat, would result in visible fugitive emissions occurring.

Need for Air Pollution Control Permits and Certificates

The types of equipment which require APC Permits and Certificates are listed in N.J.A.C. 7:27-8.2 "Applicability".

D.2. Guidance for Transfer Stations

Transfer Stations are solid waste facilities at which solid waste is transferred from one solid waste vehicle to another solid waste vehicle, including a rail car, for transportation to an off-site solid waste facility. During the transfer of waste, there exists the potential for odor or particulate emissions. If the emissions are not controlled and exceed regulatory parameters, they create the likelihood for violations of the facility's Air Pollution Control (APC) Permit as well as creating a nuisance off-site. Emissions to the atmosphere can be minimized through proper waste handling procedures (Good Solid Waste Handling Practices - GSWHP) and installation/operation of APC controls such as filters and activated carbon adsorption.

To minimize the impact of the air contaminants from Transfer Stations, the Department anticipates incorporating the following air contaminant control measures. These measures, as appropriate, will be required through modification to the New Jersey Administrative Code, or through inclusion in APC Permits.

A good Odor/Dust Management Plan (ODMP) addresses and minimize atmospheric emissions and off property effects. Facilities should follow Good Solid Waste Handling Practices (GSWHP) which include: 1. Procedures for visual inspections of material handling and process equipment, 2. Odor and dust management procedures, 3. Corrective actions.

Odor Related Emissions

Generally carbon based filters are the most common form of odor control that are used at Transfer Stations. These filters are a part of a three stage panel housing where the pre-filter and after-filter are used to remove particulate related emissions and are sandwiched with the carbon filter panels which knock-out and control odor related emissions.

The most common method of determining carbon breakthrough generally involves taking a sample of carbon and sending it out to a lab to determine saturation and remaining life.

Another method of monitoring for breakthrough involves using color cards (similar to a litmus test) where a change to a brownish color helps in determining the remaining life of

the carbon. This method works well in a dry environment and has a tendency to give false results since it is sensitive to humid conditions where waste is very moist.

The frequency of monitoring for breakthrough is generally on a case-by-case basis depending on location and severity of odors. Monthly monitoring is very common however quarterly monitoring is not out of the question and is also used.

The use of carbon canisters is also another method for odor control but is not commonly used at transfer stations.

Particulate Emissions

Generally Particulate Panel Filters are commonly used. They consist of a pre-filter and after-filter housing.

A pressure drop meter is used to monitor and determine how well the filters are working and if it is time to replace them. If pressure readings are within the manufacturers specified range, then filters are "doing their job". Generally it is asked that the operators check the meters on a monthly basis. However, some install an alarm that gets triggered if the pressure readings are outside the range.

Baghouse and cyclones can also be used to control particulate emissions. A pressure drop meter is used to monitor. If pressure readings are within the manufacturers specified range, then the Baghouse or Cyclone is "doing the job". Generally, it is asked that the operators check the meters on a monthly basis. However, some propose to install an alarm that gets triggered if the pressure readings are outside the range.

Water Suppression

Using water misting to "wet down" garbage and prevent particulates from becoming airborne can also be used in addition to one of the above listed methods of controlling particulate emissions. Literature has shown that water suppression can be about 50% effective. However, water suppression cannot be used solely by itself as a primary method of particulate control. The biggest problem with this method is humidity related to the carbon media, which affects odor control.

Truck Traffic

Actions should be taken to prevent and minimize fugitive emissions from the movement of trucks, possibly including the following: sufficient water should be applied to paved and, especially unpaved roads, trucks should be covered with a plastic tarp when not loading or unloading materials (if applicable), and truck wheels should be hosed down on an appropriate basis.

Need for Air Pollution Control Permits and Certificates

The types of equipment which require APC Permits and Certificates are listed in N.J.A.C. 7:27-8.2 "Applicability".

D.3. Municipal Solid Waste and Regulation Medical Waste Incinerators, Iron and Steel Foundries and Mills - Mercury Emissions__

Mercury is a highly toxic heavy metal and bioaccumulative material. Its unique physical and chemical properties have led to its use in a wide variety of commercial and industrial applications. These uses and long term combustion of various fuels have resulted in the global dispersion of mercury. The toxic mercury has been found at very high levels in all environmental media. The main concern is its impact on the human nervous system. Therefore, the Department created a Mercury Task Force in April 1992 to review and study sources of mercury pollution, its impact on health and ecosystem and to develop a mercury pollution reduction plan for the state of New Jersey.

As a result of the first task force recommendations accepted by NJDEP, standards for municipal solid waste incinerators (MSWI) were promulgated in 1994 at NJAC 7:27-27: Control and Prohibition of Mercury Emissions. All of New Jersey's MSWI have met the mercury standard although the two facilities with ESP control have exceeded the limits at times. Overall mercury emissions have been reduced by about 94% over the last eleven years.

On March 9, 1998, the Department established a second Mercury Pollution Task Force to develop and recommend a comprehensive mercury pollution reduction plan for the State of New Jersey, including recommendations on mercury emission controls and standards for all other sources. The Task Force was composed of representatives from various sectors, including academia, business and industry, utilities, environmental groups, and federal and local governments. The New Jersey Mercury Pollution Task Force reviewed mercury emissions data from over 30 source categories in New Jersey and developed recommendations for reducing mercury use and emissions. Based on the Task Force recommendations, the Department has adopted revision of the mercury emission regulations for municipal solid waste incinerators and adopted new mercury emissions limits for fossil fuel combustion, the iron and steel industry, and medical waste incinerators. The Department adopted the new rules and amendments to its rules at N.J.A.C. 7:27-27 and N.J.A.C. 7:27-3.10, relating to the Control and Prohibition of Mercury Emissions. The adoption was published in the New Jersey Register on December 6, 2004

The Mercury Task Force recommended a strategic goal of an 85 percent decrease of in-state mercury emissions from 1990 to 2011. The Task Force has found that numerous actions are needed to achieve the New Jersey air emissions reduction milestones. These milestones are based on the Task Force's assessment that realistic reduction of mercury from various sources can be achieved in New Jersey.

Based on stack tests results, it is estimated that a total of approximately 1,800 pounds per year of mercury is being emitted in New Jersey from the five municipal solid waste incinerator (MSWI) plants, three medical waste incinerators, and six iron and steel manufacturing plants.

Municipal Solid Waste Incinerators

MSW is generated by residential, commercial and institutional sources within a community. MSW contains an estimated 2 ppm of mercury. The mercury content of municipal solid waste has declined in the last decade. This is due to virtual elimination of mercury in dry cell batteries, packaging, and other items required by the Dry Cell Battery Management Act, N.J.S.A., 13:1E-99.59 through 13:1E-99.81, and the Toxic Packaging Reduction Act, N.J.S.A. 13:1E-99.44 et seq. Separation of mercury containing items from MSW has also reduced mercury in MSW.

When waste is incinerated, some of the mercury contained in the waste is released to the atmosphere. The high temperatures involved in the solid waste incineration process (in the range of 2000°F) can be expected to vaporize virtually all of the mercury present in the waste. The best emission controls on New Jersey solid waste incinerators, which primarily consist of the injection of finely-divided carbon prior to fabric filters, remove 95% to 99% of the mercury from the combustion exhaust gas stream. The injected carbon is ultimately mixed with the ash. Work by the first New Jersey mercury task force indicates that mercury remains adsorbed on the injected carbon and that mercury releases from municipal solid waste combustion ash are low. Over the past decade, due to NJDEP requirements that were implemented as a result of the efforts of New Jersey's first Mercury Task Force, all MSW incinerators have installed the carbon injection emission controls.

New Jersey's five MSW incinerator facilities are required to report results of stack tests of the mercury concentration of the emitted gas stream on at least a yearly basis. These results are converted to pounds-per-year estimates of mercury emissions. These estimates provide evidence of a dramatic decline in mercury emissions over the past decade, as shown in Appendix Table D-1.

Additional source separation is one option for further reducing air emissions of mercury from MSW incinerators. Further steps could be taken to remove mercury-containing items, such as fluorescent tubes and thermostats from waste. A municipality, county or the state could ban certain mercury-containing products from disposal or determine them to be a mandatory recyclable material. Alternatively, waste-containing mercury could be directed to a landfill, rather than to MSW incinerators. Unfortunately, due to recent court decisions related to State-mandated waste flow, New Jersey no longer has the degree of authority it once had over the flow of solid waste within its borders. A significant volume of solid waste destined for MSW incinerators is received from out-of-district and out-of-state sources. Given the economics of disposal, the importation of out-of-district waste may increase. Without effective waste flow control, a requirement that mercury-

containing products should not be incinerated and should only be landfilled will be difficult to implement because New Jersey cannot require communities outside of the State to implement source separation practices.

N.J.A.C. 7:27-27 sets an interim mercury emission standard of 65 micrograms per dry standard cubic meter (ug/dscm) corrected to 7% oxygen to be met by the year 1996 and 28 ug/dscm to be achieved by the year 2000. The mercury emissions standard of 28 ug/dscm was set based on a presumption of at least 80% control with carbon injection and 80 % reduction with source separation/waste stream mercury reduction measures. For all MSWI's in New Jersey 80% reduction was set as an alternative limit in case source separation was not fully successful.

On November 7, 1994, these regulations were adopted and the resulting installation of air pollution control devices significantly reduced mercury emissions (reducing emissions from about 4,400 pounds per year (lbs/yr) to more than 300 lbs/yr). Since 1995, carbon injection systems have been operating on all thirteen units at all five resource recovery facilities in the State of New Jersey of the following counties:

1. CAMDEN
2. ESSEX
3. GLOUCESTER
4. UNION
5. WARREN

Mercury test data for carbon injection control technology on municipal solid waste combustors, after the control devices is summarized in Table D-2. The system reduces mercury emissions from 80 to 99%, primarily depending on the particulate air pollution control device (electrostatic precipitator (ESP) or baghouse).

The current New Jersey rules require an emission standard of 28 micrograms per dry standard cubic meter (ug/dscm) or 80 percent emission reduction as an alternative standard. Testing over the last five years have demonstrated that carbon injection on MSW incinerators can consistently achieve over 95 percent mercury reduction with baghouse particulate collection. Also, Camden CRRF has demonstrated over 95 percent mercury reduction with electrostatic precipitator (ESP) particulate control. Based on the demonstrated success of carbon injection, the Department has proposed to revise the State's air pollution control regulation governing Municipal Solid Waste Incinerator (MSWI) emissions to further reduce mercury emissions.

The adopted amendments allow two alternatives for compliance. One alternative would be phased in, with the first phase beginning one year after the proposed amendments become operative, and the second phase beginning seven years after the proposed amendments become operative. In the first phase, at an incinerator with annual average mercury emissions exceeding 28 µg/dscm, the air pollution control apparatus must achieve an annual average 85 percent reduction efficiency in mercury emissions. In the second phase, at an incinerator with annual average mercury emissions exceeding 28 µg/dscm, the air pollution control apparatus must achieve an annual average 95 percent

reduction efficiency in mercury emissions. In both cases continued compliance with 28 µg/dscm requires no further action by the MSW incineration facility.

The Department adopted a second compliance alternative that possibly would not require additional control technology. The second alternative would deliver emission reductions comparable to what the 95 percent/28 µg/dscm standard would achieve, and would deliver those reductions several years earlier. For an MSW incinerator that chooses the second alternative, the 95 percent reduction efficiency requirement would not apply. Instead, the incinerator would provide early reductions of mercury emissions beyond what would be required by 28 µg/dscm or 85 percent control. Specifically, under this second alternative the incinerator's mercury emissions could not exceed 14 µg/dscm, averaged over three years. The three-year averaging period would make it less likely that isolated spikes in mercury emissions would cause an exceedance of the stricter 14 µg/dscm standard. The Department estimates that this option would provide an emission reduction comparable to what the first alternative's second phase would achieve.

For the Essex CRRF, which is not achieving the proposed limit this time a combination of improved mercury separation in the facility's incoming waste stream, and substantial increases in the rate of carbon injection, may make it possible to achieve the 14 µg/dscm standard, especially considering the three-year averaging period. If the facility cannot achieve the standard, the 95 percent/28 µg/dscm standard under the first alternative would then apply to the facility after January 3, 2012.

Stack Test Results

Testing is done on every unit for mercury levels in the stack gases and prior to air pollution control system. Inlet mercury concentrations vary widely around a 300 ug/dscm average, which has dropped from an average of 700 ug/dscm in the early 1990's. Data shows better than expected performance for most of the facilities. All thirteen units are now achieving the existing 28 ug/dscm or 80% reduction mercury emission standard. Gloucester, Union, Warren, and Camden CRRFs are achieving the proposed standard. Essex CRRF is not consistently achieving the proposed standard.

Medical Waste Incinerators

Medical waste, which includes infectious and non-infectious waste from medical and veterinary offices, clinics, and hospitals, is incinerated at three facilities in New Jersey, including hospitals and research facilities. Stack tests carried out pursuant to NJDEP permits indicate that the total emissions from these facilities are very low, in the range of 2 pounds per year.

Pollution prevention measures, including source reduction, re-use, recycling, and separation prior to incineration have been effective at controlling mercury from these facilities. These practices are currently being employed to a large degree, and this is a major reason emissions from this sector are so low in New Jersey. Mercury sources in

medical waste could include batteries, fluorescent lamps, thermometers, plastic pigments, antiseptics, diuretics, infectious waste bag pigments and CAT scan paper.

Many previous sources have been closed due to more stringent air emission standards. The federal government has set a goal of reducing air emissions of mercury from this source by 90% by the year 2005.

The NJDEP adopted a mercury emission limit of 55 ug/dscm for medical waste incinerators which is more stringent than EPA's 550 ug/dscm standard. This emission level is consistent with the New England Governors/Eastern Canadian Premiers' Mercury Action Plan and standards adopted by several northeast states. Also, stack test results show that 55 ug/dscm limit is being achieved. Currently, there are three MWI facilities in New Jersey, including hospitals and research facilities. Adopted emission limit will prevent backsliding and help provide an example to other jurisdictions.

Iron and Steel Foundries and Mills

In New Jersey, there are six iron and steel melting facilities, which are the largest mercury emitting source category in the state. There is no emission limit in the existing New Jersey mercury rule for these facilities. Stack tests conducted pursuant to permit conditions at five of the facilities indicate that total mercury emissions are in the range of 1000 pounds per year. Mercury emissions concentrations for iron and steel production are in the range 10 to 100 ug/dscm. Mercury Task Force Report recommended mercury emission limits be developed to achieve significant overall mercury emission reduction. Analogous to New Jersey's Municipal Waste Incinerator rules, a performance standard for iron and steel manufacturers will be designed to reduce mercury emissions through a combination of pollution prevention, source separation, and available controls.

The three cupola and three electric arc furnaces in NJ melt scrap, which includes recycled metals from the shredding of motor vehicles, home appliances, and waste metals from demolished building structures. Thermostats, relays, switches, control devices, and measuring devices contain mercury and find its way into this metallic scrap.

Reducing mercury emissions from iron and steel manufacturers will undoubtedly require a multi-media, multi-sector pollution prevention approach, including removal of mercury from feedstock scrap. Such removal will necessitate: 1) elimination of mercury-added parts from new cars; and 2) removal of mercury switches from existing cars when they are dismantled or prior to shredding. Scrap management becomes the focus of source reduction efforts.

The three facilities that produce steel by melting scrap in electric arc furnaces are operating with baghouses for particulate control. Three other facilities produce cast iron from melting scrap in cupolas. Two of these units are operating with scrubbers and one unit at U.S. Pipe and Foundry operates with a baghouse. Iron and steel furnaces with baghouses could use carbon injection to significantly reduce mercury emissions, as was done with the MSW incinerators. Air pollution controls at iron and steel manufacturing

facilities may be necessary in addition to mercury separation from the scrap. The current use of baghouse air pollution control devices on one of the cupola furnaces and all three of the electric arc furnaces makes carbon injection a relatively low capital cost option for four of the six facilities. The two cupola furnaces with scrubbers would need to rely on scrap management or enhanced scrubbing, or both. Scrubbers do remove some forms of mercury, but are less effective than carbon injection with baghouses. Measures to oxidize mercury prior to a scrubber would substantively increase the mercury removal effectiveness of scrubbers. Removal of mercury from the scrubber residue and liquor would be needed.

Prior to implementation of additional control, iron and steel manufacturers, auto dismantlers, and scrap processors are being provided with time to work with auto manufacturers to develop cooperative programs to reduce mercury in scrap. In two USEPA regions (Region 2 and Region 5), a “bounty” program for mercury is under discussion, based on the premise that if mercury switch a bounty, they would be removed from scrap before ever reaching the smelters. Such a bounty, to be paid to dismantlers or shredders, could be funded by the auto manufacturers and/or iron and steel manufacturers.

Recovery and recycling or retirement of mercury in vehicles will be greatly facilitated because mercury-containing switches have been designated as Universal Waste in New Jersey and other states participating in a bounty program. Because non-mercury-containing replacement switches are readily available for vehicle convenience lighting, state government and other fleet operators could replace mercury switches while cars are still in service. Purchasing specifications for new cars could require that mercury switches be exchanged for non-mercury switches before cars are delivered.

The Mercury Task Force Report recommended that NJ consider banning the sale of vehicles containing mercury products; designate mercury switches as a Universal Waste in New Jersey; require testing of carbon injection to determine its effectiveness for iron cupolas and steel furnaces; where scrubbers are used, require testing of effectiveness and measures to improve effectiveness; require periodic stack testing with the frequency depending upon the mercury emission level; educate auto dismantlers, shredders, fleet managers, vehicle service facilities, and other relevant audiences about the importance of removing mercury from vehicles before they are processed into scrap; and determine through measurements whether scrap processing operations including shredding release significant quantities of mercury to the environment. A scrap management plan, which involves pollution prevention upstream of the iron and steel plants, may substantially reduce mercury emissions from iron and steel production. Separation of mercury containing waste materials from scrap management could significantly lower iron and steel mercury emissions, perhaps by greater amounts.

Under the Department's November 4, 2004 new rules, each facility would be required to stack test in order to provide the Department with data on the impact of any source separation efforts on their emissions. Under the new rules, if source separation does not succeed in achieving the 35 milligram per ton of steel production (mg/ton), iron or steel

melting would be required to install mercury control technology. The new rules specify that within five years after the operative date of these new rules, each iron or steel melter of any size must reduce its mercury emissions by at least 75 percent as measured at the exit of the mercury control apparatus; or in the alternative, mercury emissions may not exceed 35 mg/ton, based on the average of all tests performed during four consecutive quarters. This 35mg/ton standard is also based on an overall 75 percent reduction in mercury emissions from iron and steel manufacturers. It is based on the maximum estimated emissions after 75 percent control, divided by the maximum production rate in tons. The Department expects a reduction in mercury emissions of approximately 700 pounds per year upon implementation of the proposed new rules for this industry.

The November 4, 2004 new rules also include work practice standards for iron or steel melters similar to the recently adopted Federal MACT rules applicable to iron and steel industry. The owner or operator of iron or steel melters would submit to the Department for approval a written certified mercury minimization or source separation plan to minimize the amount of mercury in scrap processed at the facility. The new rules require iron or steel melters to implement a plan for inspecting incoming scrap to assure that it purchases only mercury-minimized scrap. The new rules require each facility to maintain on site copies of the mercury minimization and source separation plan, records reflecting the results of visual inspections, and a copy of the procedures that each supplier uses to remove mercury from scrap provided to the facility.

D.4. Radioactive Municipal Solid Waste

New Jersey participates in the U.S Department of Transportation (U.S. DOT) exemption (DOT exemption) program through the Conference of Radiation Control Program Directors (CRCPD) to allow the transportation of contaminated trash (CT). As a result, it assists the waste industry and reduces the potential for a contamination event that could adversely impact on the health of the people, the environment and commerce in New Jersey.

Almost all the incidents involving CT includes waste contaminated with radioactive material from patients who have undergone a nuclear medicine procedure. Radioactive materials used in nuclear medicine procedures typically have half-lives of hours to about a week and almost always less than 300 days. Soiled diapers, urinary catheters and bags are examples of such trash. Therefore, the probability of long-term consequences resulting from these CT incidents is minimal.

Incidents involving radioactive materials with longer half-lives occur at metal recycling facilities. Typical half-lives for these radionuclides ranges from 30 to 600 years. Items such as nuclear gauges, radium dials, and smoke detectors are included in this category. A CT incident involving these radionuclides poses more of a significant health and environment risk.

A radiation level of greater than .05 milli-roentgen per hour ($>.05\text{mR/hr}$) qualifies the trash as CT, which triggers notification to the Department and issuance of a DOT exemption for CT. No DOT exemption can be issued for radiation levels equal to or exceeding 50 milli-roentgen ($>50\text{mR/hr}$).

If a transporter refuses to comply with the Department's regulations and DOT exemption or leaves while waiting for approval of the DOT exemption, then SHWE and all parties normally informed in the DOT exemption process shall be contacted and informed that the carrier is in violation of U.S. DOT regulations. The incident will be reported to the U.S. DOT and the New Jersey State Police.

The Radiation Protection Programs (RPP) investigate actual or suspected sources of radiation for the determination of any possible radiation hazards. However, the level of response will depend on the radiation hazards involved, the origin of the radioactive source and other factors depending on the situation

Table D-1

**AVERAGE MERCURY EMISSIONS FROM 5 MUNICIPAL WASTE INCINERATORS IN NJ IN
LBS/YR**

YEAR	CAMDEN	ESSEX	GLOUCESTER	UNION	WARREN	TOTAL
	With ESP's Control (Approx. 80% of Mercury from MSW remains)		With BH's Control (Approx. 20% of Mercury from MSW remains)			
1991,'92 or '93	1,084	1,771	149	844	562	4,410
1996	362	195	29	45	4	635
1997	235	273	29	35	3	575
1998	110	130	17	18	3	278
1999	93	156	13	26	4	292
2000	141	115	6	14	4	280
2001	83	424	17	28	5	557
2002	78	198	19	12	3	310

Table D-2

**SUMMARY OF ANNUAL AVERAGE OUTLET MERCURY CONCENTRATION IN UG/DSCM
@7% OXYGEN**

Name of the Facility	Unit #	1996	1997	1998	1999	2000	2001	2002
Essex CRRF	1	26.8	25.1	12.3	18.5	21.5	27.1	20.6
	2	19.4	31.8	13.4	18.6	21.4	26.6	25.7
	3	26.8	38.0	14.2	271.2	21.1	73.3	18.7
Warren CRRF	1	2.3	2.2	2.2	2.6	2.1	2.5	1.4
	2	2.7	2.4	1.7	2.4	4.7	4.2	2.1
Camden CRRF	1	93.1	106.0	30.8	14.3	12.2	17.9	9.3
	2	125.6	47.1	35.9	19.3	31.0	29.6	13.5
	3	70.5	43.1	19.4	22.5	22.9	12.3	38.5
Union CRRF	1	17.1	6.6	2.4	3.4	2.5	4.1	1.4
	2	4.5	9.4	6.1	5.6	2.8	3.7	4.4
	3	5.9	7.6	4.2	6.4	3.3	7.4	1.5
Gloucester CRRF	1	14.0	8.4	5.1	7.7	4.5	2.1	7.9
	2	16.3	21.4	13.1	6.0	1.2	18.1	9.5

E. Scrap Tire Management in New Jersey

Early automobiles were not very enjoyable to ride in because they featured rigid metal wheels that made every bump in the road a painful experience. The invention of the rubber tire changed the fate of the automobile by allowing for a smoother, more comfortable ride. Clearly, this development was instrumental in helping to usher in the automobile era. The growing popularity of the automobile led to the production of more and more tires and ultimately to an ever-increasing number of scrap tires to manage. While retreading old passenger car tires was well established for many years, the decline of this industry marks the start of the scrap tire management problem in the United States. This problem is two-pronged in that it regards those scrap tires that are newly generated each year and those scrap tires that have been illegally dumped in the environment over the course of many years.

Management of Newly Generated Scrap Tires:

It is estimated that 8.4 million scrap tires are generated each year in New Jersey. This estimate is based upon the nationally accepted formula for scrap tire generation of one scrap tire per person per year. Based upon recent research conducted by the Department for the Northeast Waste Management Officials' Association (NEWMOA), scrap tires generated in New Jersey are managed at several facilities in New Jersey, as well as numerous out-of-state facilities. Major in-state scrap tire management facilities include both processors and storage and transfer operations. Scrap tires processed in New Jersey are marketed as playground cover material, equestrian track surfacing, alternative fuel and for civil engineering applications, among other things. While scrap tire processing in New Jersey has grown over the years, there is still a need for additional scrap tire processing facilities, particularly in the northern part of the state.

In general, scrap tires handled by in-state storage and transfer operations are directed toward out-of-state fuel markets. A closer look at New Jersey's scrap tire trail for the year 2000 (see Table E-1) is quite illuminating in that it shows the long distances scrap tires are transported for final management. More specifically, scrap tires from New Jersey are shipped to distant facilities in Connecticut, Delaware, Maryland, Massachusetts, New York and Pennsylvania. In addition, scrap tires that still have usable tread are often shipped to Mexico and other Central American countries for reuse.

The prices charged for the receipt of scrap passenger tires at both in-state and out-of-state facilities have increased in the last two years after a period of declining tipping fees. The Department's most recent price survey, conducted in February 2004, (see Table E-2) found tipping fees ranging from \$60.00 per ton to \$200.00 per ton. The average price charged at the major facilities in the area is approximately \$100.00 per ton. Using the nationally accepted standard of 20 pounds per passenger tire, a \$100.00 per ton tipping fee is equivalent to a price of \$1.00 per scrap tire.

In general, scrap tire management facilities that charge a competitive tipping fee will have no difficulty in attracting scrap tires. The challenge that such facilities face pertains

to securing end markets for the tire chips produced or whole tires received. Fortunately, scrap tire market conditions have improved greatly over the past decade. According to the Recycling Research Institute, end markets were secured for 70% of the scrap tires generated in the United States in 2002. The largest end use of scrap tires continues to be as alternative fuel, also known as tire derived fuel (TDF). Slightly less than half the scrap tires diverted to end markets were consumed as TDF in 2002. The use of scrap tires in civil engineering applications continues to grow as this end market accounts for 26% of the scrap tires diverted for recycling or reuse. Furthermore, ground rubber applications represent 17% of the market, while miscellaneous markets, such as the export and agricultural market, account for 9% of the scrap tires diverted for recycling or reuse. While these end markets are stable, existing end markets need to be further expanded while new end markets need to be established in order to create market demand that can keep pace with scrap tire supply. The NJDEP has several market development initiatives underway that will hopefully lead to new and expanded end markets for scrap tires. For example, the Department is working to promote the use of scrap tire chips in various county landfill construction applications. Thus far, Salem County has used scrap tire chips as a protective layer over the leachate collection system and as bedding for the leachate recirculation/gas collection system. While other counties are considering such civil engineering applications, no other projects are pending.

The Department has also provided technical and financial support for an innovative project involving the use of scrap tires as a flow control device to mitigate scouring around bridge piers. The technology was developed by Continuum Dynamics, Inc. (CDI), a local engineering research and development firm, and has been embraced by the New Jersey Department of Transportation (NJDOT). A demonstration project is planned for the Route 46 bridges over the Passaic River. According to CDI, there are 400 bridges in New Jersey and over 18,000 bridges in the United States that are “scour critical” which means that they may fail during severe run-off conditions, i.e., high flow conditions as may occur during and immediately after storms, if they are not remediated. Based upon this information, it is clear that a significant number of scrap tires could potentially be utilized if a percentage of these bridges were remediated using CDI’s scrap tire scour mitigation system. While the number of scrap tires used per bridge would vary for a number of reasons, it is clear that this technology and demonstration project could lead to the development of a new and important end market for scrap tires. In addition, it could yield bridge engineering benefits that would greatly benefit the NJDOT’s bridge maintenance efforts.

Another civil engineering application that the NJDEP has embraced is the use of scrap tire chips as a substitute for gravel in the trenches of septic systems. This practice was approved by the Department on May 1, 2003. While this innovative use of scrap tire chips has not yet taken hold in New Jersey as it has in many other states, the Department believes that this application will have a very positive impact upon the local scrap tire recycling market since each septic system would utilize a significant amount of scrap tire chips. For example, a field trial conducted in Vermont wherein two-inch tire shreds were installed in two 4-foot wide by 70-foot long by 1-foot deep trenches utilized 25 – 30 cubic yards of tire shreds, which translates to about 1,350 tires. In light of the fact that

over 10,000 new septic systems are installed annually in New Jersey, this end use shows much promise.

Illegal Dumping and Scrap Tire Stockpiles:

The Department's research for NEWMOA also revealed that despite the increasing number of legal options available to generators of scrap tires, illegal dumping remains a significant problem. It should be noted that unless mandated for recycling in a county recycling plan, scrap tires may still be legally disposed as solid waste. Notwithstanding this fact, illegal dumping continues to occur in New Jersey. Often, illegal dumping on a well-concealed site continues unabated for years until a large stockpile is created and ultimately discovered by local officials. Unfortunately, this scenario has been played out in New Jersey many times, especially in the southern part of the state. Typically, scrap tire dump sites are situated on private property and contain anywhere from 20,000 to 1,000,000 scrap tires. At this time, the Department's Solid Waste Enforcement Office estimates that the fourteen remaining major scrap tire stockpiles in New Jersey contain approximately 1.3 to 2.1 million scrap tires. All but one of these sites is located in the southern half of the state. The owners of scrap tire stockpile sites are often unable to pay cleanup costs and fines, are deceased or have disappeared. Compounding this problem is the fact that New Jersey had no dedicated source of funding for scrap tire management and stockpile remediation until the signing of P.L. 2004, c.46 on June 29, 2004 and therefore was unable to fund cleanups of these sites. As a result, most of these stockpiles remain intact and in need of attention. It is estimated that the tire fee established by P.L. 2004, c.46 will generate an estimated \$12.3 million in annual revenue, of which \$2.3 million would be allocated for scrap tire pile cleanup. The fee became effective on August 1, 2004.

Scrap tire stockpiles are not only an eyesore, but also pose a serious environmental and public health threat. In particular, scrap tire stockpiles represent a significant fire safety threat. Once ignited, either through natural causes or more typically by arsonists, scrap tire fires are difficult to extinguish. The black clouds of acrid smoke from a scrap tire fire can be seen for miles around and often burn for days or weeks. Oftentimes, nearby residents must be evacuated from their homes when such fires are ignited. In addition to the air pollution and respiratory concerns raised by scrap tire fires, the oily runoff from the burning tires also contaminates the soil and sometimes even the groundwater located beneath the site. In addition to the environmental hazards associated with scrap tire stockpile fires, they also cost hundreds of thousands of dollars to fight and extinguish. Furthermore, the additional cost of cleaning a tire fire site to mitigate any hazardous waste liability can escalate to millions of dollars.

Mosquitoes are also a problem associated with scrap tire stockpiles. Abandoned scrap tires are perfect breeding grounds for mosquitoes because rainwater can easily get into the tires creating the small stagnant pools needed for mosquito propagation. For many years, the primary concern associated with such mosquitoes was their ability to spread encephalitis. Notwithstanding the severity of this disease, recent attention has focused on the role that mosquitoes play in transmitting the potentially deadly West Nile Virus.

Clearly, the threat of the West Nile Virus has heightened interest in scrap tire stockpile remediation. Scrap tire stockpiles are also prime locations for disease carrying rodents.

As mentioned above, scrap tire stockpiles, as well as scrap tires abandoned in parks, along roadways and in vacant lots, also spoil the aesthetic beauty of the environment. A landscape littered with scrap tires is diminished in value and has a negative impact on the quality of life for New Jersey residents. While only a small percentage of the total solid waste stream in regard to tonnage, scrap tires are obviously a big problem in terms of their impact on the environment. There has been some progress in the area of scrap tire stockpile cleanup. According to the Department's Solid Waste Enforcement Office, ten stockpile cleanup projects accounting for approximately 1,500,000 – 2,000,000 scrap tires have already been completed in New Jersey, (see Table E-4). There are also four major stockpile cleanup projects underway that have resulted in the removal or processing of approximately 1,200,000 – 1,500,000 scrap tires. Almost 700,000 additional scrap tires will be removed through continued work at these sites. These projects were funded through various special legislative appropriations, including funds allocated to the Department for county tire cleanup grants, and not through a dedicated source of funding such as the one recently signed into law.

The NJDEP provided grant funds to counties in the fall of 2000 for scrap tire cleanup programs that focused on removing scrap tires from roadsides, vacant lots and parklands. Counties could also use these funds for scrap tire amnesty days, i.e., programs wherein residents can deposit scrap tires at county collection centers at no cost, among other things. The Department distributed \$2.4 million among its 21 counties for these efforts. In the fall of 2001, the Department made available an additional \$2.4 million to counties for large-scale scrap tire pile cleanup projects. As part of this program, grantees were required to provide a funding match equal to 25% of the Department's grant. The maximum grant allowed under this program was \$200,000. While three counties – Burlington (\$200,000), Cumberland (\$7,000) and Salem (\$200,000) - received funding under this program, the vast majority of this fund remained untouched due to the lack of applications received by the Department. As a result of this situation, the focus and application requirements of the program were changed in April, 2002 to allow for both large-scale and small-scale scrap tire cleanup efforts. In addition, the matching funding requirement and \$200,000 cap associated with this program were dropped. These changes to the program led to a second round of grant applications and the disbursement of the remaining funds in June, 2002. Nine counties received grants ranging from \$30,000 to \$750,000 for various scrap tire cleanup projects through this program. It should be noted that Burlington County and Salem County received funds in both rounds of this grant program.

As noted above, P.L. 2004,c.46 (C.13:1E-224) established the Tire Management and Cleanup Fund as a nonlapsing fund in the Department of Environmental Protection in which shall be annually deposited the sum of \$2,300,000. Funds will be awarded to counties and municipalities on a competitive basis for the proper cleanup of abandoned tire piles within their respective jurisdictions. On October 15, 2004, the FY'05 Local Tire Management Fund Program Procedural Guide and Application Form was mailed to

county solid waste coordinators and municipal officials with known tire pile sites within their jurisdictions. Counties and municipalities were to submit their applications by December 15, 2004. The Department received twenty applications totaling more than \$2.9 million. The Department awarded grants ranging from \$25,000 to \$300,000 to twelve counties and four municipalities.

Recommendations:

The Department recommends that the newly created scrap tire management fund be used to clean up the scrap tire stockpiles identified by the DEP's Solid Waste Enforcement Office, as well as any others that are identified henceforth. In addition, the Department recommends that every effort be made to recover cleanup costs from those landowners whose properties contained scrap tire stockpiles and have benefited from the scrap tire management fund and the resulting cleanup program. Furthermore, the Department recommends that an educational and promotional campaign on behalf of the program be created so that the general public is made aware of the cleanups that have taken place and the resulting environmental and economic benefits associated with the tire fee.

The Department also recommends that funding for scrap tire recycling market development and research be made a consideration in future legislative appropriations as expanded and new end markets are needed for scrap tire recycling to continue to grow and flourish in New Jersey.

F. Table E-1 New Jersey Scrap Tire Trail for the Year 2000

Casings, Inc. (NJ)	-	1,400,000
Lakin (CT)	-	985,000
Magnus Environmental. (DE)	-	750,000
F & B (MA)	-	600,000
Emmanuel Tire (PA)	-	562,000
Systech Environmental (PA)	-	511,191
Emmanuel Tire (MD)	-	450,000
Rubbercycle, Inc. (NJ)	-	343,785
Tony Canale, Inc. (NJ)	-	234,270
Known Illegal Facilities (NJ/PA)*	-	226,250
Integrated Tire (NJ)	-	197,000
JBH/Waste Tire (NY)	-	174,000
Mahantango (PA)	-	160,000
Recycling Tech. Center (NJ)	-	106,724
American Ref-fuel (PA)	-	105,717
Meridian (CT)	-	76,148
Legal Disposal as SW in NJ	-	40,100
Don Stevens (CT)	-	34,000
Seneca Meadows (NY)	-	22,500
BRI (NJ)	-	19,473
Absolute Auto (NJ)	-	18,000
R.U.T.S (NY)	-	6,856
Total	-	7,023,014

*Estimate based upon NJDEP and PADEP Enforcement information on 3 facilities.

Note: Tonnage information was converted to scrap tires using the 20 pounds per tire conversion factor.

Note: In regard to those scrap tires not accounted for in the above, it is believed to be a function of several factors, including:

1. Incomplete and inaccurate reporting. Scrap tires handled at temporary storage sites operating pursuant to an exemption from the recycling center approval process are required to report tonnage information to the NJDEP. Compliance with this requirement is not uniform;
2. Non-applicability of the underlying assumption regarding scrap tire generation; and
3. Illegal disposal.

Table E-2

For your information, please find below the results of the NJDEP, DSHW, Bureau of Recycling and Planning's semi-annual informal telephone survey of the fees charged for the receipt of whole scrap passenger car tires at existing facilities in New Jersey and the surrounding area. (As of 2/5/04)

-	<u>Facility</u>	<u>Location</u>	<u>Price</u>
-	Absolute Auto 732-469-2202	Middlesex, NJ	\$175.00/ton
-	American Ref-Fuel Company of Delaware Valley 610-497-8101	Chester, PA	\$125.00/ton
-	Atlantic County Utilities Authority 609-646-5500	Egg Harbor Twp., NJ	\$ 160.00/ton
-	Cape May County Municipal Utilities Authority (Scrap tires must originate in Cape May County) 609-465-9026	Woodbine, NJ	\$165.00/ton
-	Carbon Services Corp. (Primary business - Large off-road tires) 610-377-3120	Central City, PA	Price upon request
-	Casings, Inc. of New Jersey 908-851-7766	Hillside, NJ	\$125.00/ton
-	Common Ground Recycling 609-685-3689	Pennsauken, NJ	\$150.00/ton
-	Don Stevens Tire Co. Inc. 860-621-3256	Southington, CT	\$1,500.00-\$2,000.00/100 cubic yard container
-	Emanuel Tire 610-277-6670	Conshohocken, PA	\$ 72.50/ton
-	Emanuel Tire 410-947-0725	Baltimore, MD	\$100.00/ton
-	Exeter Energy 860-564-7000	Sterling, CT	By contract only
-	F & B Rubberized 508-999-4124	New Bedford, MA	\$1,500.00/100 c.y. container or 48 ft. trailer
-	Lakin Tire 800-368-8473	West Haven, CT	\$125.00/ton
-	Magnus Environmental 302-655-4443	Wilmington, DE	\$100.00/ton
-	Mahantango Enterprises, Inc. 717-444-3788	Liverpool, PA	\$80.00/ton
-	Meridian, Inc. 860-564-8811	Plainfield, CT	\$ 10.00/c.y. (approx. \$120.00/ton)
-	Ocean County Recycling Center, Inc. 732-244-8844	Toms River, NJ	\$100.00/ton
-	Penn Turf, Inc. 814-696-7669	Hollidaysburg, PA	\$86.00/ton
-	Recycling Technology Center 732-922-9292	Tinton Falls, NJ	\$170.00/ton
-	Re-Tire, LLC. 973-242-3225	Newark, NJ	\$ 125.00/ton

-	Rubbercycle, Inc. 732-363-0600	Lakewood, NJ	\$100.00/ton
-	Seneca Meadows 800-724-7537	Waterloo, NY	\$55.00 – \$60.00/ton
-	Solid Waste Transfer & Recycling, Inc. 973-565-0181	Newark, NJ	\$200.00/ton
-	Systech Environmental Corp. 610-261-3450	Whitehall, PA	\$95.00/ton
-	Wade Salvage, Inc. 856-767-2760	Atco, NJ	\$175.00/ton

The NJDEP, DSHW, Bureau of Recycling and Planning recommends that the above listed facilities be contacted for detailed cost and service information as prices may vary due to a number of factors, e.g., amount of tires, type of tires, cleanliness of tires, inclusion of rims on tires, etc.

Table E-3
Major Tire Piles in New Jersey

Tire Pile Site Name	Owner Name	Owner's Residence Address	Site Street Address	Township and County	Block and Lot # of Site	Estimate of Volume
+ Blewett Auto Salvage Yard Inc.	John Blewett	County Route #549 Adjacent to salvage yard	County Route #549	Howell Twp., Monmouth County	Blk. 46, Lots 9 & 10	750,000 to 1,000,000 Estimated
Clayton Auto Recycling, Inc.	Robert G. Kirk	3477 Delsea Drive or Post Office Box 570	3477 Delsea Drive or Post Office Box 570	Franklin Township Gloucester County	Block 2301 Lot 6	75,000 to 100,000 estimated
Clarence Brown Site	Estate of Clarence Brown	File indicates 373 Magnolia St., Salem, NJ	.5 mile south of Cohansey Road on Stretch Road	Quinton Twp., Salem County	Blk. 61, Lot 5	In excess of 100,000
+ Coach Used Auto Parts	Conrad Stipp	RR #1 170 E Mullica Hill 08062	2278 Black Horse Pike	Williamstown Gloucester County	Blk. 5501 Lot 11	20,000-50,000
Conquest Tire Dump	Lawrence Conquest	3253 Jackson Road, Monroe Twp.	2360 Tuckahoe Road, County Rte. 522	Franklin Twp. Gloucester County	Blk. 6002, Lot unknown	100,000 plus estimate
Estate of Joseph Perona	Estate of Joseph Perona	1801 Columbia Road	1801 Columbia Road	Mullica Twp. Atlantic County	Blk. 2401 Lot 10	100,000 or more used auto and truck tires both rimmed and unrimmed
+ Forest Grove Motors	Pete Crescitelli & Sons	4 Main Rd. Vineland, NJ	4 Main Rd. Franklin Twp.	Gloucester County		25,000-50,000 used car & truck tires rimmed and unrimmed
Foster Farm Tire Site	Grace Foster and FFF, Inc.	P.O. Box 2343 Vincetown, NJ	205 Chatsworth Road	Tabernacle Twp., Burlington	Blk. 1501, Lots 2, 3, 3A	1,000,000 plus
Gary V. Gates Tire Recycling, Inc.	This is an abandoned site that was once owned by Gary V. Gates	Unknown	RD 1, Box 23 Kings Highway/ Salem County Route 620	Mannington Township Salem County	Block 9, Lot 22	In excess of 30,000
+ Green Acres Auto Recycling Center Inc.	Green Acres Auto Recycling Center, Inc.	Unknown	Double Trouble Road	Bayville Berkeley Twp. Ocean County	Block 23 Lot 1	50-100,000 mostly on rims. This is an operating salvage yard.
Griner Tire Site	George & Linda Griner	Elmer Road	Rear of Elmer Road Residence	Fairton, Fairfield Twp., Cumberland County	Blk. 34, Lot 26 and Blk. 11, Lot 3	In excess of 50,000
Likanchuks, Inc.	James & Nadeshda Krasnov	Unknown as this time. Owner of lots where tires on is in Poland.	Bridgeton Millville Pike Route 49 R.D.1	Millville Cumberland County	Block 5 Lots 40, 43, 44, 45 in Fairfield Twp. And Block 1 Lot 54 in Millville	100,000-200,000 estimated.
Meszaros	Frank Meszaros	Unknown at the present time	Corner of Lindbergh & South Hill Roads	East Amwell Twp. Hunterdon County	Blks. 35.01 Lot 38, 39 Blk 38 Lot 21	Estimated at 50,000-100,000 on the ground.
One Stop Auto Salvage	George Federow	1205 Route #9 North	1205 Route 9 North	Howell Township Monmouth County	Block 144, Lots 109 & 113.01	75,000 to 125,000
Osborn Auto Wreckers Inc.	John Blewett, Inc.	260 Herbertsville Road	260 Herbertsville Road	Howell Township Monmouth County	Blk. 46 Lots 7 & 8	500,000 1,000,000
+ Porch Town Recycler, Inc.	Harvey C. Shover & Roy C. Baldwin Jr.	4408 Rt. 40, Newfield, NJ 08344	Rt. 40	Franklin Twp., Gloucester County		100,000 plus used car & truck tires
Tinton Falls Tire Pile	Boro of Tinton Falls but Mazza is accepting ownership of site	Boro Hall, Tinton Falls, NJ	Rear of 3230 Shafto Road	Tinton Falls, Monmouth County	Immediately adjacent to Blk. 145, Lots 11, 12, 26 & 26A	50,000 to 100,000 estimated
+ Walt & Al's Auto Salvage	Mark Lemoine	317 No. Tuckahoe Rd. Monroe Twp.	317 No. Tuckahoe Rd. Williamstown	Gloucester County		50,000-75,000 used car & truck tires rimmed and unrimmed

+ Indicates site is currently an operational auto salvage yard and accepting tires.
Updated on March 4, 2004

F. PUBLIC SOLID WASTE DEBT

In the early 1970's there were numerous poorly located, designed and operated sanitary landfills. The burden to develop needed environmentally sound disposal facilities was placed on the counties in the 1975 modification to the Solid Waste Management Act. Ultimately the counties and their authorities sited 31 new long-term solid waste facilities consisting of 12 modern double lined landfills, 5 energy recovery incinerators and 14 transfer stations. The amount of public debt associated with these facilities was close to 2 billion dollars. This amount of debt was incurred on the premise that waste could be "flowed" to the facilities thereby assuring adequate revenues to make the required debt service payments. This changed with the 1997 "Atlantic Coast" decision (see section on legal history). With the striking down of our waste flow regulations, facilities had to charge competitive rates to attract sufficient waste. Tipping fees that were once commonly over \$100 fell to the \$50 to \$60 per ton range soon after the "Atlantic Coast" decision, though as of January 2005 have edged up to the \$60 to \$80 per ton range. Basically once the initial lowering of the tipping fees occurred, rates have remained relatively stable since then. A few counties have re-instituted flow control and are able to have higher tipping fees, however, not all of the debt service is being collected even in some of these counties. There is a concern that the higher the tipping fee more customers are likely to avoid the system, creating a significant enforcement problem. Therefore, even the waste flow counties are generally trying to achieve a near competitive tip fee. There are a number of counties that are virtually collecting no funds to cover their debt, the tip fee is basically just covering current operational costs. The term "stranded debt" has been utilized to recognize that some counties and authorities are unable to collect sufficient revenues to cover all their debt service payments by charging a competitive tip fee.

While most of the counties had some sort of debt service contingency fund, it did not take long for many of the counties to need assistance in making debt payments. As a result the state appropriated \$20 million annually from FY 98 to FY 01 to provide an \$80 million dollar default "safety net" to subsidize county or county authority debt service payments for solid waste debt. These appropriations were intended to provide short-term financial assistance to select counties and authorities and that had difficulty making debt payments through the collection of their respective tip fees.

The total amount of state assistance to help with the solid waste debt was supplemented through a Public Question approved by New Jersey voters in November 1998. In 1980 and 1985, Bond Act approval was gained in the aggregate amount of \$168 million toward assisting counties in developing long term solid waste disposal facilities. Public Question #3 allowed the State to forgive approximately \$107 million in prior solid waste Bond Act loans provided to eight count governments. The balance of historic solid waste Bond Act funds, which total \$61 million, has been used, along with the referenced \$80 million in General Fund allocations to partially address relief to the counties unable to make debt service payments and to ensure that local bonding capabilities for important public works projects are not compromised. Appendix table F-1 shows a summary of the amount of debt assistance given as of December, 2003. As can be seen from that table the total amount of outstanding debt is approximately \$932 million.

There has been significant debate over the past several years, since the "Atlantic Coast " decision how to solve the "stranded debt" problem. Unfortunately one of the realities of the solid waste planning that occurred over the past 25 years is that there were 21 distinct systems developed over different time frames. With 21 distinct systems in place, it had not been possible to identify a "one size fits all" legislative strategy for future solid waste planning and long-term debt retirement. There had been two distinct views on how best to move forward in the wake of "Atlantic Coast". One set of legislative proposals have called for what amounts to a statewide "debt averaging" where all citizens are asked to contribute to the outstanding debt equally, notwithstanding the amount of debt actually incurred within their own county. These same proposals call for complete and immediate dismantling of the county planning system, as well as varying levels of State assistance in paying the county debt, including one proposal where the State would pay off all the solid waste debt. These proposals raised serious equity issues in counties than either had no solid waste debt, or had sufficient revenues on an ongoing basis to make their necessary debt payments. The alternative view, which the State had favored, advocated a gradual phase-out of the existing system and a migration to a free market economy. This would have been accomplished through legislation to clarify

recognition of environmental investment cost and non-discriminatory procurement strategies as interim measures for the duration of outstanding debt, with the State continuing to provide some level of financial assistance. Neither of these alternatives was able to garner enough support to move ahead.

Finally, in a somewhat different direction, legislation had been passed at the end of 2001 to help reduce the debt burden of the counties. Amendments to the Economic Development Authority (EDA) funding statute would have allowed for refinancing of the debt to occur, with the state being responsible for a portion of the county debt. The statute allowed the state to be responsible for up to 50% of the debt, except where there was a regional facility involved, then the maximum host county share is determined by the tonnage percentage to be provided by the host county. Regulations to provide for the implementation of this program were proposed on July 1, 2002 and were adopted in October 2002. In accordance with provisions in the act, the refinancing had to be accomplished by December 31, 2002. Thirteen counties had applied to be part of this program, and they are: Atlantic, Burlington, Camden, Essex, Gloucester, Hudson, Mercer, Monmouth, Passaic, Salem, Sussex, Union and Warren. Ultimately it was determined that it made more fiscal sense to continue to help the counties that need it in the short term, than to increase the fiscal burden over the long term, thus the refinancing was not accomplished by the required date. Therefore, the state has to go back to assisting the counties on a piecemeal basis, when debt service funds are needed, and when state funds are available.

Summary of County Solid Waste Debt Assistance										
County	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005 (thru 12/04)	Total (thru 12/04)	Loans Forgiven	Debt Outstanding (as of 4/1/02)
Atlantic	1,100,000	1,400,000	11,821,222	9,386,000	5,630,747	5,630,747	0	34,968,716	6,750,000	71,400,000
Bergen	25,000,000	0	0	11,500,000	0	0	0	36,500,000	0	96,200,000
Burlington	0	0	7,500,000	1,700,000	4,584,088	0	4,584,088	18,368,176	11,000,000	104,300,000
Camden	0	7,399,227	22,644,836	19,081,424	22,296,131	19,327,530	14,625,972	105,375,120	19,120,000	127,700,000
Cape May	0	0	0	0	0	0	0	0	4,000,000	32,400,000
Cumberland	0	0	0	0	0	0	0	0	0	12,400,000
Essex	0	0	0	0	2,913,000	4,500,000	0	7,413,000	43,800,000	106,700,000
Gloucester	800,000	0	0	0	0	0	0	800,000	5,150,000	15,400,000
Hudson	0	0	0	0	0	4,000,000	3,000,000	7,000,000	0	95,900,000
Hunterdon	0	0	0	0	0	0	0	0	0	0
Mercer	0	0	5,785,002	8,648,135	9,952,275	7,497,033	3,997,832	35,880,277	0	110,500,000
Middlesex	0	0	0	0	0	0	0	0	0	11,000,000
Monmouth	0	0	0	0	0	0	0	0	0	20,700,000
Morris	0	0	0	0	0	0	0	0	0	6,600,000
Ocean	0	0	0	0	0	0	0	0	0	0
Passaic	1,760,000	3,750,750	10,172,800	3,597,275	3,588,075	3,581,450	3,356,200	29,806,550	0	55,800,000
Salem	0	0	0	0	0	0	0	0	0	8,100,000
Somerset	0	0	0	0	0	0	0	0	0	0
Sussex	0	0	1,500,000	1,300,000	1,493,351	1,114,196	925,139	6,332,686	0	41,300,000
Union	0	0	0	0	0	0	0	0	11,900,000	82,700,000
Warren	0	2,501,873	6,712,256	6,828,397	6,954,579	7,080,689	6,539,626	36,617,420	5,629,000	48,000,000
TOTAL	28,660,000	15,051,850	66,136,116	62,041,231	57,412,245	52,731,645	37,028,857	319,061,944	107,349,000	1,047,100,000

G. SOLID WASTE UTILITY REGULATION

Solid waste utility regulation began in New Jersey when the Legislature enacted the Solid Waste Utility Control Act (Utility Act) which took effect in 1970. The Utility Act was adopted in response to a State of New Jersey Commission of Investigation (SCI) report published in 1969 that detailed the influence organized crime held on the New Jersey solid waste collection industry. The Board of Public Utilities (BPU) was given the responsibility of regulating the economic aspects of solid waste collection and disposal. In determining whether a proposed increase or decrease in rates was justified and reasonable, the BPU could consider the safety and adequacy of service rendered. The BPU required that each utility maintain a uniform system of accounts, furnish a detailed report of finances and operations on an annual basis and have an approved uniform tariff of its rates and services.

In 1989 the SCI released a second report concerning the solid waste industry in New Jersey. This report was highly critical of continued rate regulation of solid waste collection utilities. The SCI found that traditional rate regulation of solid waste collectors had no impact on corruption in the industry. Moreover, the SCI contended that deregulation of the solid waste collector rate aspect of the industry would serve to protect consumers by creating a more competitive marketplace. Persons with criminal backgrounds would continue to be excluded from the solid waste industry by way of the A-901 Disclosure Law (N.J.S.A. 13:1E-126 et seq.) wherein known criminals or associates are precluded or removed from participation in the industry. The responsibility for the economic regulation of solid waste was transferred to the Department of Environmental Protection (Department) under Reorganization Plan No. 002-1991, section 6, effective August 19, 1991. In response to the 1989 report, the Legislature enacted the Solid Waste Collection Regulatory Reform Act (Reform Act) on April 14, 1992. The Reform Act established a four-year transition period during which time the Department phased out its rate setting authority over solid waste collectors. Solid waste collection companies remained public utilities but were no longer required to petition the Department for authority to raise or lower their rates. Solid waste disposal utilities remained under traditional rate regulation.

On June 3, 1996, new solid waste utility regulations were adopted in response to the Reform Act. In regard to solid waste collectors, the Department no longer had authority to set collection rates. The new focus for the Department would be monitoring the collector industry to insure that the rates which collectors charged were rates that resulted from effective competition in the marketplace. Criteria for evaluating effective competition in the marketplace included, but was not limited to, the following:

1. Existence of barriers to entry into the solid waste collection industry;
2. Intensity of competition in the industry within each service area;
3. Concentration of ownership in the industry within each service area;
4. Observable patterns of anti-competitive behavior; and
5. Availability of substitute services within the service area.

The Department retained the authority to adjust a collector's rate when it could be shown that the rate charged by a particular collector was a rate that did not result from effective competition.

A significant result of the deregulation of rates was a major consolidation within the collection industry in New Jersey. Major national solid waste companies began to purchase almost all of the large and medium sized independently owned and operated solid waste companies. Waste Management, Inc., Republic Services of New Jersey, Inc., Allied Waste Industries, Inc., and Onyx Waste Services, Inc. purchased most of the large and medium size collection companies in the State. During 2003 Waste Management, Inc., purchased essentially all of Allied Waste Industries, Inc.'s New Jersey assets except for one transfer station and five small container routes that the United States Justice Department required Waste Management, Inc. to sell off due to effective competition issues. Chart G-1 demonstrates the consolidation that occurred in the collection industry. Of the top fifty collection companies in 1995, based on gross operating revenue, only six were not acquired by one of the four major companies by 2002. During calendar year 2004, the three major collection companies in New Jersey (Republic, Waste Management and Onyx) accounted for 52% of all the gross operating revenue reported by the collection industry. (See chart G-1). Although the gross operating revenue in the industry is becoming more concentrated in the three major collection companies, the number of collectors in the entire marketplace has risen to 660 in 2004, up from 462 in 1993 and 431 in 2000. Most of the new collection companies entering the industry are small, one or two truck operations that focus on commercial customers.

The Reform Act also required the Department to establish bid specifications for municipalities that contract with private solid waste collection companies to provide service to their municipality. In fact, the 1969 SCI report was most critical of the limited number of collectors that bid on municipal contracts, and concluded that bid rigging and collusion were common practices in this area of the industry. New regulations were adopted that went into great detail regarding how a municipality could advertise for solid waste collection services. The purpose of the specifications was to prevent arbitrary requirements in the bid document or the contract. For example, a municipality could no longer require that a bond be posted for the entire length of the contract period. Instead a bond was required to be secured on an annual basis during each year of the contract. This would allow smaller companies that could not afford a bond for the entire length of a contract, to bid on municipal collection contracts. Once a municipal solid waste collection contract was awarded, the collection company must file a copy of the contract with the Department. The municipality is then responsible for filing a Department form, which summarizes the contract. The Bureau of Solid Waste Regulation has entered this municipal solid waste collection contract data into a database and the information is available on the Bureau's web page, www.state.nj.us/dep/dshw/swr. Municipal purchasing officials may access the information and determine what similar municipalities are paying for their collection services.

Solid waste disposal utilities have remained subject to traditional rate control with one major change. As a result of the loss of solid waste flow control following the Atlantic Coast court decision in 1997, traditional rate regulation of solid waste disposal utilities has become a system fraught with inequities. The Department established the concept of a "peak rate" defined as a facility's Department approved rate for each waste type on the day that flow control ended, November 10, 1997. Each facility could adjust their rate up or down without Department approval as long as the facility did not exceed its peak rate. At the time it was believed that this would allow facilities the flexibility to adjust rates in a competitive market place without coming

before the Department in a protracted rate case. Unfortunately, the current definition of peak rate has only helped those facilities with high rates under flow control and those that abandoned county oversight. Facilities that had low rates during flow control and counties that didn't abandon their solid waste system have come to the Department requesting rate increases on several occasions following the end of flow control.

After a thorough review of the current rules and in an effort to remove the inequities created by the definition of a peak rate, the Department is initiating regulatory reform of the solid waste utility rules. The Department believes that the changes described below will provide solid waste facilities the flexibility to adjust rates in a competitive marketplace, yet still allow the Department a substantial role in rate oversight to protect against excessive rates.

The current definition of peak rate will be changed to put all solid waste facilities on an equal playing field. The proposed peak rate will be the highest Department approved rate for each waste type statewide, prior to November 10, 1997. This definition will establish the rate for type 10 waste at \$132.00 per ton for all facilities that accept type 10. If the proposed definition is adopted and higher peak rates established, it would be imperative that the Department continue to monitor rates especially in those areas where there is a lack of effective competition. A facility holding a dominate market share could raise rates above those that would result from effective competition but also keep rates below the peak rate.

In order to retain some rate oversight at disposal facilities the Department should use two concepts that already exist in statute and regulation. The Commercial Landfill Regulatory Reform Act, which was enacted at the end of 2003, defines "market-based rates" as the solid waste disposal rates collected by a privately-owned sanitary landfill facility which do not exceed rates charged at other solid waste facilities in this State or at competing out-of-state facilities. This definition only addresses privately owned landfills. An expanded definition of market-based rates could include each type of facility, for example privately owned transfer stations or publicly owned/operated landfills, and rates in each case would only be compared facilities in the same market sector.

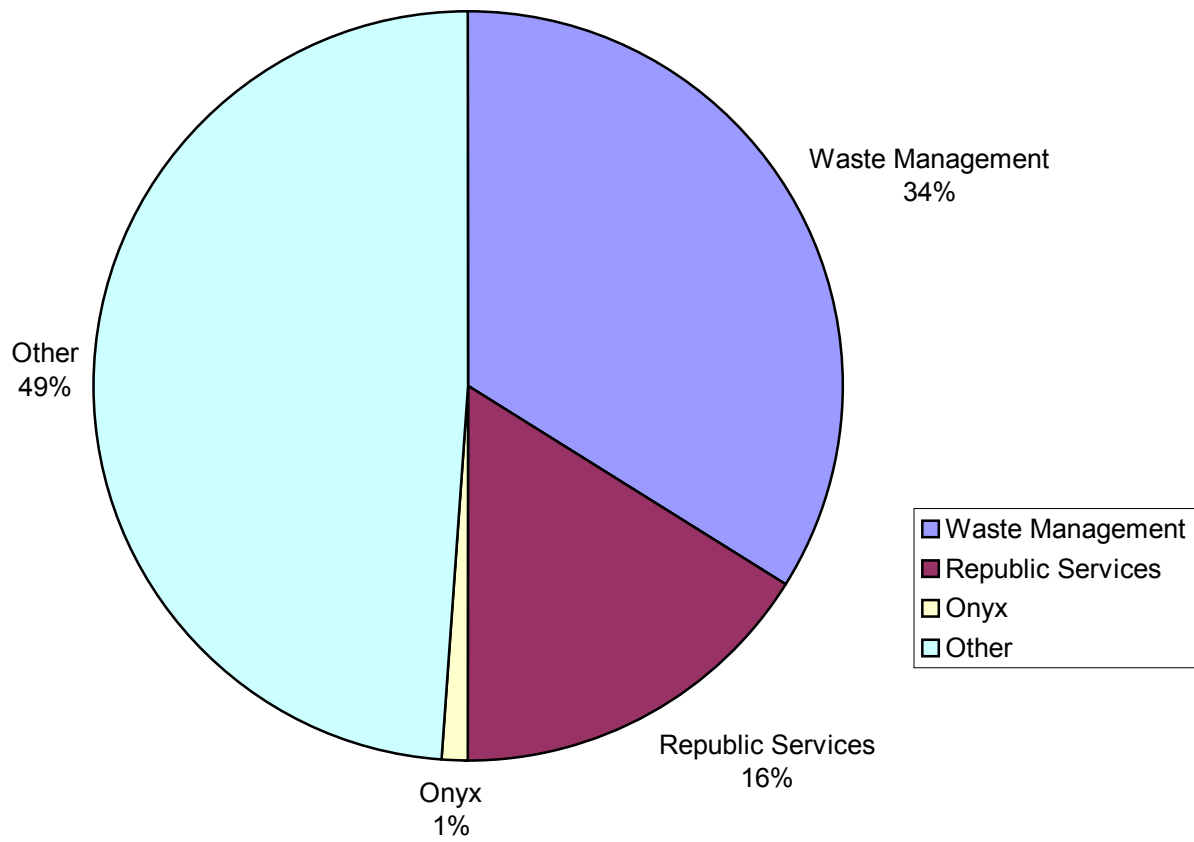
The Solid Waste Collector Regulatory Reform Act removed solid waste collection companies from traditional rate regulation, but it did create a mechanism for the monitoring of rates charged by collectors. In those instances where the Department can demonstrate a lack of effective competition in a particular service territory (county), the Department can then use cost of service models to determine if the rate is excessive. If the Department can demonstrate that a particular rate is excessive, the facility can be ordered to reduce the rate on a going forward basis. Using these two concepts the Department could investigate (using cost of service models) the facility with the highest market-based rate as well as any facility that has dominate control over the market place. Cost of service models would evaluate the rate based on numerous factors including outstanding debt, administrative costs, enforcement costs (county), and also any revenue received from outside sources (state funds).

In addition, recognizing the importance of recycling activities in reducing waste flow and its economic and environmental benefits, facilities may include costs related to recycling activities in their solid waste disposal rates at their own discretion. The statute is clear at N.J.S.A. 48:13A-

4(c) where all recyclable or potentially recyclable materials, when markets are available, are exempt from rate regulation. When a facility can demonstrate that it has a certain rate component dedicated to recycling activities, that particular rate component will not be considered part of a facility's peak rate or market rate and will be outside the purview of utility regulation.

*see chart on following page

Chart G-1 2003 Gross Operating Revenues For SW Collection



H. ENFORCEMENT STRATEGIES

H.1. Sites & Facilities

Enforcement plays a pivotal role in ensuring that transporters, facilities and recycling centers comply with solid waste and recycling regulations and site-specific permits and/or approvals. Over the last eight years, the Department's solid waste enforcement program has shifted a significant percentage of its routine inspection resources from solid waste facilities (landfills, transfer stations and incinerators) to recycling centers (Class B's, C's and D's). This was done for the following reasons:

- ? To keep pace with the increasing numbers of recycling centers being approved to engage in the processing of recyclable materials¹;
- ? To accommodate the formal promulgation of recycling center rules and operating standards issued in 1995;
- ? To address deficient compliance rates determined to exist at a number of these centers (with the exception of the Class D centers); and
- ? To accommodate the deregulation of waste oil from a hazardous waste to a Class D recyclable.

Table H-1 identifies solid waste facility and recycling center compliance rates from 1995 through 2003. A review of this data demonstrates that the State's thermal destruction facilities (incinerators) and operating landfills are, by and large, well run and have good compliance rates. Solid waste transfer stations and recycling centers, both of which comprise the majority in the industry, however, are not faring as well. Further dissection of the low compliance rates finds the majority of the transfer facilities/recycling centers are operating well while a lesser number have significant problems.

At the same time there remain a significant number of non-operating sites where proper cleanup of unauthorized waste activity has not occurred or proper landfill closure has not been completed. These sites are not reflected in the chart but remain a compliance problem.

The Solid Waste enforcement program currently inspects transfer and recycling facilities on a monthly basis. In the upcoming year the enforcement program will identify transfer and recycling facilities with poor compliance histories and target these facilities for more frequent inspection. Greater attention to non-compliant facilities could result in either an improvement in the overall compliance rate for a particular facility or an increase in the number of enforcement actions and associated penalties that the facility receives as a result of greater oversight.

¹ It should be noted that while overall recycling rates are down from a few years ago, the number of facilities engaged in recycling activities is at an all time high (currently exceeding 275 facilities), compared to just 79 facilities for solid waste.

The Department is also using its CEHA (County Environmental Health Act) partners to conduct recycling center inspections (a more in-depth discussion of CEHA activities follows later in this report). It is also anticipated that operational regulations for these centers revised and effective November 2002 will help reduce instances of violations.

In addition to increases in inspection frequency, the Solid Waste Enforcement Program will endeavor to provide compliance assistance in the upcoming year to transfer and recycling facilities as they receive either new permits/approvals or renewals. The assistance will be an on-site review of the facility's operational requirements including record keeping and reporting with appropriate facility personnel to ensure there are no misunderstandings as to how inspections will be conducted and what the facility's permit/approval and regulations allow.

The Solid Waste Enforcement program is also concerned with the decline in the State's recycling rate and the appearance of increasing percentages of recyclable materials making their way into the solid waste stream for disposal rather than being recycled. While this is a difficult issue to ascertain, the Department is increasing its vigilance at transfer and disposal facilities by ensuring that processes are and remain in place to detect recyclables in incoming loads and undertaking additional investigations of hauling practices involving recyclable bottles, cans and paper. In addition, the Department has implemented a pilot use of a "Recycling Checklist" during compliance and enforcement inspections performed by programs outside of the Solid Waste Enforcement program including CEHA agencies. This checklist reviews a commercial entity's compliance with the Statewide Mandatory Source Separation and Recycling Act. Entities found in non-compliance will be referred to appropriate county and municipal recycling coordinators for follow-up and possible enforcement.

In an effort to better address regulatory requirements of handlers of Class D universal waste, inspections of these facilities will be conducted by personnel from the Bureau of Hazardous Waste Compliance and Enforcement commencing July 1, 2004. Enforcement staff from this program will be developing comprehensive inspection procedures to address universal waste requirements at Class D recycling centers and also household hazardous waste storage requirements at many local county and municipal storage yards as these practices become more prevalent throughout the State. Class D used oil facilities have historically been inspected by the hazardous waste enforcement program that will continue to do so.

There remain a significant number of non-operating sites where proper cleanup of unauthorized waste activity has not occurred. Examples of these sites are abandoned tire piles, defunct recycling operations, illegal landfills and improperly completed landfill closures.

At the present time, there are 18 sites containing approximately 3,313,000 used tires. While the Department was successful in utilizing FY '02 Scrap Tire Management Fund grants to fund the removal of a significant number of abandoned tires at the State's largest abandoned tire piles, this source of funding is now exhausted. Without an influx of additional funding, these remaining sites will continue to present a health threat due to their potential for providing a breeding ground for West Nile mosquitoes and blight on the neighboring community.

In addition, there remain approximately 578 pre and post 1982 landfills where proper closure of these non-operating landfills has not been completed. Many of these sites can be found on the Site Remediation program's (SRP) contaminated site list because of concerns about groundwater contamination. For the next several years, the Solid Waste Enforcement program will systematically examine each of these sites to ascertain their current state and to determine whether or not additional enforcement actions can be taken to compel proper closure.

The Solid Waste Enforcement program has historically relied on its standard enforcement tools to compel cleanup of illegal solid waste activity. In some cases the program has proceeded through the court system with protracted legal actions only to be stymied at the end by the responsible party declaring bankruptcy. These sites are generally abandoned or improperly closed and added to the list of New Jersey's brownfield sites in need of remediation. In some cases these sites are also suspected of having handled hazardous materials. The Solid Waste Enforcement program has historically been underfunded in its ability to effectively deal with such sites. Over the next year the program will seek Legislative support for a "Trash Fund", similar to the Spill Compensation and Control Act or "Spill Fund", to be dedicated to the cleanup of abandoned or improperly closed solid waste sites. The fund would be used to pay for the removal of solid waste where the responsible party is known but unwilling or unable to pay for the removal of solid waste or the responsible party is unknown. The fund would also be used to determine if a solid waste site is also contaminated with hazardous materials.

Finally, the Solid Waste Enforcement Program believes there is a need for development of generator regulations. Historically the solid waste program has begun the process of regulating solid waste at the transporter and facility level leaving the regulation of generators to the counties and municipalities. This results in inconsistent regulation among generators. The Solid Waste Enforcement program believes there is a need to hold some generators, particularly commercial entities responsible for the solid waste they generate.

H.2. Transporters

At the same time that the number of recycling facilities increased so did the number of solid waste transporters, both commercial and non-commercial. Commercial transporters collect and transport solid waste for profit. Non-Commercial transporters can haul only their own self-generated waste (e.g. construction/ demolition contractor). The increase in the number of transporters is due in part to the partial deregulation (especially with regards to rate regulation) of the Solid Waste Utility Control Act brought about by the Solid Waste Regulatory Reform Act (enabling regulations enacted in 1996) and also the reduced timeframes for A-901 review and approval. As a result of these increases in facilities and transporters though, enforcement resources have become stressed and our ability to monitor the transportation segment of the industry is somewhat lacking. This has become evident not only by the 77% compliance rating for "General Transporter Inspections" noted in the lower portion of Table H-1, but also by the recent proliferation of complaints regarding self-generators (non-commercial transporters or haulers) who are acting in a commercial capacity and undercutting the legitimate commercial transporters.

To address some of these issues, DEP has developed a protocol for its field and administrative staff to refer questionable vehicle registration applications to enforcement staff to conduct additional investigations to ensure the legitimacy of the application. The Department recently revised certain mandates required of the CEHA agencies requesting that these agencies increase their vigilance of the non-commercial transporter universe. In addition, the Department has dedicated an investigator to perform transporter investigations on a full-time basis. Solid Waste enforcement staff are also increasing the amount of time spent at transfer and disposal facilities to monitor transporters and their associated loads. The Department has noticed a tendency for certain facilities to be less vigilant with regards to accepting waste from unregistered/improperly registered haulers and accepting overweight vehicles. For these facilities, the Department will set up special inspection details to address these issues.

One of our more useful strategies in monitoring the transporter industry has been the imposition of roadside vehicle inspections conducted throughout the State and in particular, our participation in TRASHNET for the last four years.

Roadside inspection checks, done in conjunction with the NJ State Police, and also vehicle checks set up at solid and hazardous waste facilities make a strong visual impact on the haulers as well as the general public. As a consequence of the 9/11 attacks, these inspection details were curtailed in 2001 due to the unavailability of the State Police road troopers for obvious reasons. Normal scheduling has resumed.

TRASHNET is a multi-state, weeklong vehicle inspection event during which the Department and the NJ State Police will stop upwards of 200 vehicles at various locations throughout the State and perform an in-depth safety and credentials check. Other participating States include Delaware, Maryland, New York, Ohio, Virginia, West Virginia, Commonwealth of Pennsylvania and the District of Columbia. The TRASHNET concept originated as a result of negative publicity the above States, including New Jersey, were experiencing with accidents involving trucks transporting waste and the implied lack of safety inspections. In addition it has become obvious to anyone who drives that the number of waste transfer trailers traveling the roads has increased. The TRASHNET events are usually scheduled twice a year, however it was cancelled in the fall of 2001 and the spring of 2002 again due to the 9/11 attacks. Normal scheduling has resumed. While TRASHNET has historically been particular to solid waste, the Department expanded this event in New Jersey in calendar year 2002 to include inspections of vehicles hauling hazardous waste and in certain locations performed vehicle diesel emissions tests. Appendix table H-2 identifies NJ's inspection results since its participation in this event.

H.3. Regulated Medical Waste

In June of 1995, the DEP's Bureau of Compliance and Enforcement performed an in-depth compliance analysis of the State's Regulated Medical Waste (RMW) Program spanning in time from its inception in 1988 to early 1995. The resultant report is attached at the end of this section. In broad strokes, this report was favorable and identified a consistent increase in compliance rates in all sectors of the industry including generators, transporters and facilities. In addition, the

number of incidents involving RMW (abandoned waste, beach wash-ups, etc.) was also in decline.

Since that time, the Program has undergone a significant change in that the vast majority of the enforcement responsibilities have been transferred to the Department of Health and Senior Services (DHSS) including the inspection and monitoring of the largest segment of the industry, the generator segment, comprised of 18,000(+) entities. Through a Memorandum of Agreement signed in January of 1997 between DEP and DHSS, DHSS assumed jurisdiction of all inspections of generators, non-commercial collection facilities and destination facilities (excepting incinerators). In addition, DHSS assumed responsibility for emergency incident response involving reports of illegal disposal and abandonment, transportation accidents, wash-ups of medical waste and reports of citizen exposure.

DEP retained jurisdiction over all inspections of commercial and limited transporters, commercial collection facilities, incinerators disposing of regulated medical waste and certain incident responses at solid waste transfer stations and landfills.

With regard to the RMW transporters, commercial collection facilities and incinerator/destination facility segments of the regulated medical waste industry, Appendix table H-3 identifies the compliance rates from 1997 through 2003. These compliance ratings continue the upward trend initially identified in the 1995 report.

While these rates are prominent, it must be noted that the transporter, commercial collection and incinerator facility universe is very small (around 40 total) in comparison to RMW generators numbering 18,000(+).

Analysis of RMW complaints and incidences determines a substantial drop over the last 6 years. As noted in Appendix table H-4, from 1992 to 1996, the Department received 362 complaints/reports involving regulated medical waste. From 1997 to 2002 the number dropped to 49 to the point where RMW incidents now account for only 1.4 % of the total volume of all solid waste complaints/incidents.

With regard to RMW transporters, while the inspection compliance rates are noteworthy, the Department has noticed a decline in the number of commercial entities engaged in the transportation segment of the business. In 1995 there were twenty-five or so commercial transporters. At present there are thirteen, five of which are subsidiaries of the same company. While the diminished number of transporters makes compliance monitoring easier, the Department is obligated as per the Solid Waste Utility Control Act to ensure disposal services are readily available to customers and that there is effective competition. Thus far aside from a few complaints by certain transporters, the Department finds no evidence to conclude there are any disposal availability problems nor that the industry is non-competitive. However this aspect will continue to be monitored.

In the Spring of 2004 representatives from the Department of Environmental Protection and the Department of Health and Senior Services conducted joint inspections to ascertain compliance among regulated medical waste generators.

H.4. Solid Waste Utility Control

As previously noted in the Transporters section, the partial deregulation of the Solid Waste Utility Control Act through the Solid Waste Regulatory Reform Act helped increase the number of transporters throughout the State. This, in turn, had the effect of increasing competition among transporters, and thus making available additional companies from which customers could select service (a primary goal of the enabling legislation). The Reform Act regulations also carried an added benefit in that, by simplifying rate regulation, additional program resources were now available to focus on customer service items. One such item was the development of the "Customer Bill of Rights" which plainly identified a customer's rights and service expectations in addition to identifying customers' responsibilities to the transporter.

Continuing in that vein, in November of 2002, the Department readopted the Customer Bill of Rights and put forth additional provisions as follows:

1. Make the collector responsible for assisting the customer in the selection of the most favorable service to meet the customers needs at reasonable rates;
2. Provide that in the event of inclement weather or when operation of a solid waste vehicle would pose a threat to the safety of the public and/or the equipment and personnel of the collection company, that pick-up shall be made no later than the next regularly scheduled day or as soon as weather permits when pick-up is made on a once per week basis;
3. Require the collector to transmit copies of any notice of discontinuance of service to the Department at the same time it is transmitted to the customer;
4. Prohibit solid waste service contracts or agreements from including any clause which calls for an automatic renewal of the contract or agreement; and
5. Require solid waste collection utilities to display their name as it appears on their Certificate of Public Convenience and Necessity (CPCN) along with their also known as trading name, if applicable, on all vehicles and containers.

As the Department is statutorily charged with safeguarding the interests of consumers with respect to solid waste collection and disposal, these new requirements should go far in educating customers about their solid waste disposal options and services and ensuring that they receive fair service at reasonable rates. Additionally, the requirement to have the name of the collector on all vehicles and containers, will assist customers in reporting problems with collectors.

In addition to increasing customer protections, the Department has also sought to quicken enforcement of these protections and other requirements and make the penalty assessment process more predictable. Previously, while the Act identified maximum penalty limits it did not provide any routine assessment guidelines. To address this deficiency, the Department in November of 2002 codified the following penalty assessment procedures:

The Department adopted formal procedures for the assessment and payment of penalties. In order to assess a penalty under the Control Act, and the Reform Act, and any rule which implements these statutes, the Department shall, by means of a penalty assessment, notify the violator by

certified mail or by personal service. This notice of penalty assessment shall identify the section of the Act, rule, administrative order, etc. which was violated; concisely state the facts constituting the violation; specify the amount of the penalty to be imposed; and advise the violator of the right to request a hearing.

The Department created minimum or base penalties for some violations. By creating minimum or base penalties for violations, all violators of the same regulatory provision are treated equally, eliminating any competitive advantages and/or disadvantages. In fixing the base penalties, the Department assumed the optimal or least aggravating circumstances for each of the statutory criteria; that the violator has been fully cooperative and has promptly implemented all appropriate mitigation or prevention measures; and has an otherwise satisfactory compliance or operating history. As to the monetary amount for each violation, each base penalty reflects the Department's expertise in administering the solid waste utility program and the potential impact of each violation. Additionally, the base penalties are set at an amount determined to be minimally necessary to help deter future violations. In this regard, the base penalties assume that the violation was neither intentional nor even negligent, except as may otherwise be implicit in the particular infraction.

The Department has implemented a penalty matrix assessment system to be used when the violator has not been fully cooperative nor has promptly implemented all appropriate mitigation or prevention measures, and/or the violator has an unsatisfactory compliance or operating history. In such cases, the base penalty would be insufficient to provide an effective deterrent because the penalty amount assessed would be too low. The penalty matrix assigns a specific penalty amount for each violation depending upon both the seriousness of the violation and the conduct of the violator. The violation levels are based upon the potential effects of each type. Major violations are those which tend to cause a serious risk to the health, safety and welfare of the people of this State and the economic viability and competitiveness of the solid waste collection industry. Moderate violations would or could potentially result in a substantial risk to health, safety and welfare or to economic viability and competitiveness. Minor violations are those which are not included in either of the above categories or which are procedural in nature. Major conduct includes any deliberate or willful act. Moderate conduct includes those cases in which there is no evidence that the violation was intentional, but such may be inferred from the circumstances that the violator knew or should have known that the act or omission is a violation of the regulations. Minor conduct includes any violation that may not properly be included in the above two categories. Matrix penalties issued by the Department may be adjusted based on the following factors: 1) the compliance history of the violator; 2) the nature, timing and effectiveness of any measures taken by the violator to minimize the effects of the violation; 3) the nature, timing, and effectiveness of any measures taken by the violator to prevent future similar violations; 4) any unusual or extraordinary costs or impacts directly or indirectly imposed on the public or the environment as a result of the violation; and/or 5) other specific circumstances of the violator or violation.

The Department also established specific penalties for submitting inaccurate or false information and for failure to allow lawful entry and inspection. These penalty amounts range from \$10,000 for the first offense, not more than \$25,000 for the second offense, and not more than \$50,000 for the third and subsequent offenses.

Last, the Department codified statutory penalties for transporting food in vehicles which also transport solid waste. With few exceptions, this section provides that no vehicle (including any truck, trailer or other haulage vehicle other than a truck tractor) utilized for the transportation of solid waste in New Jersey shall be subsequently utilized for the transportation of fresh food or fresh food products, including meat, poultry, produce or other non-processed fresh food products intended for sale for human consumption unless sanitized in accordance with rules and regulations adopted by the Department.

H.5. County Environmental Health Act (CEHA)

The CEHA statute (N.J.S.A. 26:3A2-21 et seq.) authorizes the Commissioner to delegate authority for the implementation of any program and enforcement of specified environmental health laws to certified local health agencies and provide funding for these activities. In addition, certified local health agencies, which have operating landfills in their respective counties, are authorized to collect a solid waste enforcement fee, which is a percentage of the tipping fee, to help provide funding for compliance monitoring of the county's solid waste program. In 2005, Burlington, Cumberland, Gloucester, Middlesex and Ocean counties were granted approval by the Department to collect this fee. As part of their mandatory activities, these agencies are obligated to complete an increased number of solid waste activities compared to other CEHA agencies, including a higher number of recycling inspections. Lastly, all local boards of health, whether they are certified CEHA agents or not, are authorized to enforce the Solid Waste Management Act in addition to State and local health codes. Currently, twenty one counties have CEHA programs that perform solid waste work.

The CEHA agencies provide additional valuable services to the Department's solid waste program by aiding in the response to complaints and conducting facility inspections. The Department, through the CEHA grant process coordinated by the Office of Local Environmental Management (OLEM), identifies the priority activities and inspections it requires these agencies to perform (see Chart H-5) and establishes performance criteria.

CEHA - Solid Waste Priority Activities

- ? Monitor transporters hauling solid waste to ensure compliance with NJDEP regulations and the County's Solid Waste Management Plan.
- ? Investigate all solid waste complaints received from citizens and NJDEP, such as illegal dumping of solid waste materials, unregistered transporters, and unpermitted facilities. Respond back to NJDEP within ten (10) days of receipt with the initial or final outcome of complaint as the case may warrant.
- ? Conduct an annual routine compliance monitoring inspection of Class A recycling centers, General Class B recycling centers, Class C compost facilities, transfer/MRF stations, resource recovery facilities, operating landfills (except as noted below), and intermodal facilities. It is recommended that the annual inspections are conducted with an inspector from the NJDEP's

Office of Solid Waste Compliance and Enforcement, provided a mutually agreed upon date can be arranged.

- ? Note: All five counties (Burlington, Cumberland, Gloucester, Middlesex, and Ocean) who are collecting solid waste enforcement fees at operating sanitary landfills, pursuant to N.J.A.C. 7:26-4.5, are to conduct a minimum of two compliance monitoring inspections per month of operating landfills within their counties.
- ? Conduct semi-annual routine compliance monitoring inspections of exempt compost facilities. Concentrate on conducting the first inspection in late Spring and the second inspection in late Fall.
- ? Conduct inspections as needed of exempt and limited Class B facilities, when notification of activity at these sites is received from the NJDEP's Bureau of Recycling and Planning or Bureau of Landfill and recycling Management as appropriate.
- ? Conduct 50 recycling audits at commercial generators to ensure compliance with the State's Mandatory Source Separation and Recycling Act.
- ? Conduct an annual routine compliance monitoring inspection during the operation of farmland mulch sites.
- ? Continue to update the list of all known convenience centers and farmland mulch sites and Class A recycling centers and provide this list to NJDEP, Office of Local Environmental Management by December 31st.
- ? Conduct inspections as needed to ensure contaminated soil is handled as per NJDEP guidelines.
- ? Enforce the State Solid Waste Management Act as required by NJDEP, initiate enforcement proceedings in a court of competent jurisdiction against violators as appropriate. NJDEP shall be notified five (5) days prior to the convening of all settlement conferences and/or court actions. The notification shall include the proposed settlement amount or the penalty amount to be sought in the court action. In addition, follow-up reports on the outcome of all settlement conferences and court actions, including the penalty assessment and compliance plan (if applicable), shall be forwarded to NJDEP's Solid Waste Compliance and Enforcement Program.
- ? On a spreadsheet developed by the NJDEP, electronically submit a quarterly report to NJDEP's Office of Local Environmental Management indicating the solid waste facility inspected, date of inspection, name of inspector, compliance status, and whether an NOV was issued to the facility.
- ? Compile and maintain files and records to support NJDEP and county enforcement actions.

While the CEHA program is an excellent resource, historically the Bureau of Solid Waste Compliance and Enforcement has experienced difficulty in the oversight of these activities due to a lack of staff at the Bureau level to perform audits of each individual CEHA program to ascertain methodologies and consistencies, and to advise of policy and/or regulation changes. The Solid Waste Enforcement program has recently reassigned an inspector to the role of CEHA coordinator. It is expected that the coordinator will participate in individual CEHA agency audits. Additionally, the inability to compile real time electronic data on inspections conducted, violations issued and compliance information and then incorporate this data into the Department's NJEMS data system for analysis and reporting purposes further adds to this difficulty.

One area in particular that requires increased oversight and clarification involves waste flow enforcement. Some counties like Union and Hudson are putting almost all their emphasis on this one activity, while most other counties continue to focus on compliance at solid waste facilities and compliance of transporters. There is inconsistency among the counties regarding this activity.

To further expand on the issue of inconsistency, each county is required to implement its County Solid Waste Management Plan, which is approved by the Department. Some counties strictly enforce transporter routes, while others do not. Certain counties collect compensatory damages from transporters bypassing the county plan requirements while others collect both compensatory damages and penalties to deter repeat violations. In addition, counties with operating landfills may not be vigilant in keeping recyclables out of the waste stream, since they seek to maintain or increase the volume of solid waste coming to the facility.

Further, as noted previously, all local boards of health, whether they are certified CEHA agents or not, are authorized to enforce the Solid Waste Management Act; however, the Department has not been able to explore and/or develop a distinct role for these local programs. Since the Department lacks resources to oversee these local programs, there is the concern that inconsistent enforcement is occurring.

Recent efforts to address some of these issues include the realignment of the Office of Local Environmental Management under the Director of County Environmental and Waste Enforcement Programs, the establishment of a single point of contact for all CEHA issues within the Bureau of Solid Waste Compliance and Enforcement and the ability of the CEHA programs to view Department enforcement data through the NJEMS/OPRA (Open Public Records Act) web portal.

H.6. Compliance Assistance/Education/Outreach Initiatives

With the simple premise that it is often easier to address an issue up-front rather than wrestle with it after it becomes a problem, the Department has initiated several compliance assistance/educational/ outreach strategies to proactively promote compliance in certain areas. These initiatives include the Greenstart program, Department of Public Works (DPW) Compliance Assistance Project, Marina Compliance Assistance Project, and Schools Multi-media Compliance Assistance Project.

The Greenstart Compliance Assistance Program was created by the Department to provide on-site assistance to help small businesses and municipalities understand their environmental obligations, through multi-media site inspections and review of applicable environmental regulations. The Office of Local Environmental Management (OLEM) oversees the program and utilizes Department compliance and enforcement inspectors to conduct the on-site visits. The Department believes that future environmental gains are to be made through joint problem solving by the State and those segments of the regulated community most in need of assistance. Through this program, the Department seeks to build a trust that will encourage businesses and governments to proactively address potential problems and cooperatively improve compliance. Penalties will be waived by the Department if the violation is corrected within a period of time not to exceed 6 months, or up to one year if the entity is correcting the violation through the implementation of pollution prevention measures. This policy shall not apply for violations: (a) of a criminal nature; (b) that cannot be remedied immediately and are causing significant environmental or human harm; (c) which require mandatory penalties pursuant to the Clean Water Enforcement Act; (d) that are repeat offenses; or (e) required to be reported to the Department, such as information in Discharge Monitoring Reports.

In 2002, a total of 25 requests for Greenstart inspections were made with 13 conducted, and in 2003 there were 12 requests with 10 inspections conducted. In 2004, there were 2 requests. The DPW Compliance Assistance Project was created based on the Greenstart premise. From 2001 to 2004, the CEHA agencies conducted 439 multi-media on-site inspections, and countless follow-up visits at municipal and county DPW facilities. The inspector's proactively assisted the municipalities in complying with solid and hazardous waste regulations, which prevented the negative impacts non-compliance could have on air and water. This approach to provide compliance assistance has been more effective than the voluntary approach in the Greenstart program.

Another proactive compliance assistance pilot program, funded by the Federal EPA, was recently completed at marinas. From 2002 to 2004, site visits were conducted by CEHA county inspectors at 115 marinas. These visits focused on compliance in multiple media programs in addition to solid waste. A similar initiative commenced in 2004 and is expected to run for several years targeting environmental compliance (especially chemical management and recycling) -at public and private elementary and high schools throughout New Jersey.

Finally the Department's Compliance & Enforcement programs have developed a standardized format for providing compliance information helpful to the regulated community through the Department's website. The website contains helpful information concerning enforcement activities across media programs, enforcement focuses and areas of regulatory non-compliance as well as compliance assistance materials. The website was developed and is maintained by the Bureau of Enforcement and Compliance Services in the Compliance & Enforcement program.

H.7. Multimedia Efforts/NJEMS/Task Forces:

Over the last few years, the Department's enforcement programs (air, water, land use, solid waste and hazardous waste) have emphasized joint inspections in an effort to help familiarize inspectors

with the key regulatory components of each media. The goal is to develop well-rounded inspection staff able to identify potential major violations in any media. Additionally, all enforcement staff are currently utilizing "NJEMS" (New Jersey Environmental Management System) which is a centralized data management and reporting system allowing staff to view all activities undertaken by any program at a given site. Relative to solid waste enforcement, the multimedia efforts provide additional 'eyes' to help identify compliance issues while the NJEMS system provides the necessary tools for more coordinated, comprehensive and effective enforcement actions.

Different areas of the Department have also joined forces to create the Watershed Task Force and the Waterways Enforcement Team.

The Watershed Task Force will identify a specific watershed out of the twenty statewide and coordinate comprehensive inspections by all media (air, water, land use, pesticides, solid waste and hazardous waste) of all facilities, sites, businesses, and manufacturers which could have an impact on the selected watershed.

The Waterways Enforcement Team, made up of water, land use and waste inspectors will respond to complaints from riverkeepers and baykeepers as well as do periodic boat surveillance along the State's waterways. Also, they would plan and execute about three waterway strikes a year in various parts of the state.

While these task forces do not specifically target solid waste compliance issues, they will invariably uncover sites illegally storing waste and other similar type violations while providing the opportunity for this program to inspect entities such as scrap processing facilities and junkyards where we have historically had little presence.

Table H-1
SOLID WASTE COMPLIANCE AND
ENFORCEMENT

1995 - 2003 Inspection Compliance Rates by Facility Type

	1995			1996			1997			1998			1999			2000			2001			2002			2003			Totals		
Solid Waste Facilities	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)
MajorThermal Destruction	151	1	99.3	174	0	100.0	164	0	100.0	139	0	100.0	115	2	98.3	79	2	97.5	57	3	94.7	55	0	100	47	0	100	981	8	99
Minor Thermal Destruction	35	0	100.0	45	1	97.8	63	1	98.4	98	2	98.0	103	2	98.1	56	0	100.0	39	0	100.0	23	0	100	15	0	100	477	6	99
Major Sanitary Landfill	520	4	99.2	510	5	99.0	477	5	99.0	406	9	97.8	276	12	95.7	183	18	90.2	163	4	97.5	141	6	96	153	17	89	2829	80	97
Minor Sanitary Landfill	172	14	91.9	171	8	95.3	141	10	92.9	149	11	92.6	110	12	89.1	115	15	87.0	95	11	88.4	77	7	90	56	0	100	1086	88	88
Major Transfer Station	394	116	70.6	329	80	75.7	344	73	78.8	499	78	84.4	429	60	86.0	332	48	85.5	318	59	81.4	332	101	70	329	98	70	3306	713	95
Minor Transfer Station	254	41	83.9	229	22	90.4	228	54	76.3	306	67	78.1	258	52	79.8	266	41	84.6	247	38	84.6	87	27	69	62	39	37	1937	381	95
Intermodal	0	0	0.0	0	0	0.0	2	0	100.0	1	0	100.0	1	0	100.0	5	1	80.0	3	0	100.0	2	0	100	5	2	60	19	1	81
Research, Development and Demonstration Projects	0	0	0.0	0	0	0.0	0	0	0.0	9	1	88.9	16	0	100.0	39	2	94.9	74	3	95.9	57	3	95	68	2	97	263	11	76
Reg. Med Waste Destination Facility	0	0	0.0	0	0	0.0	0	0	0.0	2	0	100.0	9	0	100.0	12	0	100.0	6	0	100.0	4	0	100	26	0	100	59	0	100
Recycling Centers																														
Class B	214	59	72.4	213	45	78.9	280	66	76.4	354	63	82.2	503	68	86.5	1007	135	86.6	1080	123	88.6	902	95	89	928	86	91	5481	740	93
Class B (Limited)	0	0	0.0	2	0	100.0	7	5	28.6	24	3	87.5	19	5	73.7	28	9	67.9	37	7	81.1	39	3	92	33	1	97	189	33	94
Class C	32	7	78.1	25	4	84.0	70	12	82.9	263	71	73.0	430	80	81.4	405	80	80.2	366	68	81.4	225	49	78	246	35	86	2062	406	95
Exempt Compost	1	0	100.0	0	0	0.0	15	0	100.0	143	17	88.1	208	32	84.6	202	21	89.6	213	32	85.0	251	28	89	260	25	90	1293	155	92
Class D (Universal Waste)	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	10	0	100.0	0	0	0	0	0	0	10	0	100
Class D (Waste Oil)	n/a	n/a	n/a	n/a	n/a	n/a	12	0	100.0	32	2	93.8	50	0	100.0	38	1	97.4	n/a	n/a	n/a	44	5	89	42	5	88	218	13	83

	1995			1996			1997			1998			1999			2000			2001											
Transportation Activities	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viols	Compliance Rate (%)	No. of Insp.	No. of Viol s	Compliance Rate (%)
General Transporter Inspection	19	12	36.8	13	12	7.7	78	18	76.9	177	44	75.1	185	17	90.8	80	12	85.0	119	40	66.4	45	22	51	50	21	58	766	198	61
Reg. Med Waste Transporter	n/a	n/a	n/a	n/a	n/a	n/a	73	7	90.4	107	8	92.5	91	3	96.7	98	0	100.0	97	0	100.0	89	9	90	49	3	94	604	30	80
Reg. Med Waste Collection Facility	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	0	100.0	3	0	100.0	11	0	100.0	6	0	100.0	4	1	75	2	0	100	27	1	73

Figure H-1

Table H-2
NJ Trashnet Results 1999 - 2002

	Feb-99	May-99	Apr-00	Oct-00	Mar-01	Oct-02	Totals
Total Non-Hazard Waste Loads Stopped	661	359	115	243	114	209	1701
Level 1 Inspections Completed	n/a	5	0	72	11	35	123
Level 2 Inspections Completed	n/a	88	36	78	48	70	320
Level 3 Inspections Completed	n/a	11	0	15	6	15	47
Man Power Utilized							
State Police	72	44	9	31	23	37	216
NJDEP	45	28	10	35	18	38	174
Total Manpower	117	72	19	66	41	75	390
Overweight Vehicles	122	12	1	37	10	18	200
Out of Service Vehicles **	35	5	9	25	7	37	118
Steering, Suspension, or Tires	0	5	0	4	12	10	31
Brakes	8	11	0	10	2	14	45
Unsecured Load	0	0	0	1	0	6	7
Drivers Out of Service*	5	3	1	7	1	4	21
Trucks Without any Violations (safety or waste)	n/a	n/a	92	123	80	110	405
Trucks with Waste Violations	72	51	23	48	18	37	249
Total Waste Violations	n/a	77	23	80	38	57	275
Total Violations (safety & waste)	685	278	145	540	222	503	2373

Table H-3
NJDEP - SOLID WASTE COMPLIANCE AND ENFORCEMENT

1997 - 2003 RMW Inspection Compliance Rates by Facility Type																								
	1997			1998			1999			2000			2001			2002			2003			TOTALS		
Regulated Medical Waste	No. of Insp.	Notices of Violation Issued	Compliance Rate (%)	No. of Insp.	Notices of Violation Issued	Compliance Rate (%)	No. of Insp.	Notices of Violation Issued	Compliance Rate (%)	No. of Insp.	Notices of Violation Issued	Compliance Rate (%)	No. of Insp.	Notices of Violation Issued	Compliance Rate (%)	No. of Insp.	Notices of Violation Issued	Compliance Rate (%)	No. of Insp.	Notices of Violation Issued	Compliance Rate (%)	Total Insp.	Total Notices of Violation Issued	Total Average Compliance Rate (%)
RM W Transporter	73	7	90.4	107	8	92.5	91	3	96.7	98	0	100.0	97	0	100.0	76	11	86	62	4	94	604	18	94.5
RMW Collection Facility	n/a	n/a	n/a	1	0	100.0	3	0	100.0	11	0	100.0	6	0	100.0	4	1	75	2	0	100	27	1	96.3
RMW Destination Facility	0	0	0.0	2	0	100.0	9	0	100.0	12	0	100.0	6	0	100.0	4	0	100	24	1	96	57	1	98.3

Table H-4			
Regulated Medical Waste Complaints Received by NJDEP (1997-2002)			
Year	RMW Complai nts Rec'd	Total Complaints Rec'd	% RMW of Total Complaints
'92 – '96	362	n/a	n/a
1997	2	470	0.4
1998	10	531	1.9
1999	8	480	1.7
2000	7	495	1.4
2001	7	578	1.2
2002	15	875	1.7
Totals '97-02	49	3429	
avg/yr '97-02	8.2	571.5	1.4

**Table H-5
CEHA OUTPUTS**

PROGRAM	FREQUENCY OF INSPECTION		2001 COUNTY ENVIRONMENTAL HEALTH ACT PROGRAM ACTIVITIES			2002 COUNTY ENVIRONMENTAL HEALTH ACT PROGRAM ACTIVITIES		
II Solid Waste Control			County	Solid Waste Facility Inspections	Solid Waste Complaint	County	Solid Waste Facility Inspections	Solid Waste Complaint
A. Operating Sanitary Landfill Inspections	Annually or BiMonthly		Atlantic	61	491	Atlantic	67	243
B. Closed Landfill Inspections	N/A		Bergen	119	52	Bergen	61	52
C. Transfer Station/MRF Inspections	Annually		Burlington	181	32	Burlington	664	60
D. Resource Recovery Facility Inspections	Annually		Camden	42	44	Camden	87	59
E. Class A Recycling Center Inspections	Annually		Cape May	17	28	Cape May	11	27
F. Class B Recycling Center Inspections	Annually		Cumberland	55	115	Cumberland	62	108
G. Exempt and Limited Class B Sites	As Required		Essex	48	16	Essex	87	26
H. Class C	Annually		Gloucester	47	18	Gloucester	75	23

I. Exempt Compost Facilities	Semi-Annually		Hudson	33	29	Hudson	39	25
J. Intermodel Facility Inspections	Annually		Hunterdon	59	37	Hunterdon	34	87
K. Farmland Mulch Site Inspections	Annually		Middlesex	447	566	Middlesex	451	462
L. Convenience Center Inspections	Annually		Monmouth	422	83	Monmouth	460	76
M. Contaminated Soil Generator Inspections	As Required		Ocean	310	678	Ocean	266	639
N. Complaint Investigations			Passaic	59	57	Passaic	51	52
1. DEP Referrals	As Required		Salem	57	89	Salem	19	88
2. Citizen Complaints	As Required		Somerset	58	0	Somerset	56	0
O. DPW Site Inspections	10 Facilities		Sussex	27	27	Sussex	28	111
			Union	29	25	Union	32	29
			Warren	31	42	Warren	43	22
			TOTAL	2,102	2,429	TOTAL	2,593	2,189

2004 COUNTY ENVIRONMENTAL HEALTH ACT PROGRAM ACTIVITIES		
County	Solid Waste Facility Inspections	Solid Waste Complaint
Atlantic	31	87
Bergen	128	47
Burlington	505	37
Camden	96	34
Cape May	60	35
Cumberland	114	119
Essex	221	20
Gloucester	150	29
Hudson	81	10
Hunterdon	8	56
Mercer	0	0

Middlesex	1,820	198
Monmouth	513	33
Morris	47	14
Ocean	407	454
Passaic	82	36
Salem	62	77
Somerset	83	15
Sussex	19	67
Union	116	21
Warren	37	28
TOTAL	2,102	2,429

I. EMERGENCY MANAGEMENT

The handling, transportation, treatment, and disposal of solid waste, hazardous waste, medical waste and recyclable materials are subject to comprehensive regulatory standards in New Jersey, including emergency preparedness and prevention procedures for regulated entities. The State's emergency prevention and preparedness regulations are designed to address day-to-day emergencies which may occur at facilities, for example fires or materials spills. The Department recognizes, however, that certain emergency circumstances, such as natural disasters (i.e., floods, severe storms), and technological disasters (hazardous materials incidents, acts of terrorism), may not be sufficiently addressed by these standards. Such emergencies generate immense quantities of material that may include human and animal remains. All of these materials must be safely and timely handled in a manner which preserves evidence if necessary; is protective of human health and the environment; and provides the victims, their families and loved ones an appropriate level of dignity. Depending on the circumstances of the emergency, therefore, the Department has found it necessary to temporarily relax some of its regulatory requirements to quickly and safely address environmental and health concerns. The Department is able to do this through the emergency powers granted to it under the Solid Waste Management Act (N.J.S.A. 13:1E-1 et seq.) and the Solid Waste Utility Control Act (N.J.S.A. 48:13A-1 et seq.) upon the declaration of a state of emergency by the Governor's office.

In New Jersey, however, the Governor has the overall responsibility for Emergency Management activities. On behalf of the Governor, all activities and departments are coordinated, directed and controlled from the State Office of Emergency Management (OEM), Emergency Operations Center, located in the basement of the New Jersey State Police Headquarters building. OEM is responsible for planning, directing and coordinating emergency operations within the State which are beyond local control. When an emergency situation occurs that involves the disposition of waste or recyclable materials, the Department works closely with the OEM, local, state, and other federal agencies (such as the United States Environmental Protection Agency and the Federal Emergency Management Agency), to determine the nature of the emergency and the level to which regulatory standards can be relaxed to facilitate material cleanup, yet ensure that public health, safety, and the environment is protected.

To this end, the Department has developed generic guidance on the handling

solid waste facilities and recycling facilities, and consider requests from solid waste and recycling facilities for authorization to accept additional solid waste types or extension of operating hours on a case-by-case basis. Additionally, the Department could designate secure areas such as landfills or public properties to temporarily stage materials in an environmentally sound manner. These temporary staging areas would ensure that large amounts of debris do not pile up at residences, businesses, or roadsides. These sites would be established in areas capable of maximum feasible containment of the materials (preferably a paved surface) with adequate provisions for stormwater run off, vector control, and security (preferably a fenced area). Such sites would not be located in environmentally sensitive areas such as wetlands or delineated flood plains. Lastly, the Department would allow such temporary staging areas to exist until the Department rescinds its emergency specific guidance.

In the event that an emergency involved human remains (such as resulted from the World Trade Center disaster), the Department would coordinate its efforts with the Department of Health and Senior Services (DHSS), and the State Medical examiner or his designee to address the handling of human remains in a dignified and respectful manner. To the extent possible, the Department would consider the religious, cultural, family, and individual beliefs of the deceased person when disposing of any human remains. If a public health emergency were declared, the Department would work with the DHSS to issue and enforce orders to provide for the safe disposition of human remains as necessary to respond to the public health emergency. Such measures may include the temporary staging of human remains. These temporary staging areas would allow for collection of evidence, forensic investigations, and the recovery of human remains for identification and proper and respectful internment or cremation at the direction of the appropriate authority(ies.) Such measures may also include the temporary mass burial or other internment, cremation, disinternment, transportation, and disposal of human remains.

In the event a public health emergency involved the disposal of infectious waste, the Department may take the following actions in consultation with the DHSS: issue and enforce orders for the safe disposal of infectious waste; and require entities authorized to collect, store, handle, destroy, treat, transport, or dispose of infectious waste, and any landfill or other such property to accept infectious waste or provide services or the use of the business property if such action is reasonable and necessary to respond to the emergency.

In the event an emergency involved infected or other animals, the Department would

followed by debris disposal. For animals which are not infected, the Department may also consider landfill disposal.

Depending on the circumstances of the emergency, the Department may need to suspend county waste flows, especially if necessary to open impacted transportation arteries. Guidance documents that are issued are typically effective immediately and valid until such time as the Department officially rescinds them.

In addition to developing and refining such “off the shelf” guidance, the terrorist attack on New York City has necessitated the re-evaluation of the Department’s emergency preparedness plans addressing situations which cause the closure of the agency for various periods of time. The Department has reassessed what functions are critical functions that must be continued during these interruptions. The Department has also developing a five tiered Threat Advisory System to address emergency preparedness procedures and actions the Department must take during times of no discernable terrorist activity up through times of imminent attack against a known target or when an attack has occurred. Though this exercise, the Department will further define and develop its emergency communications, personnel needs, emergency guidance documents, and authority delegation procedures. Lastly, the Department maintains a 24-hour Environmental Incident Hotline to receive reports of environmental incidents affecting the State. Reports to this hotline are disseminated to appropriate Department personnel for investigation and response.

J. REGULATED MEDICAL WASTE

On March 6, 1989 the New Jersey Comprehensive Regulated Medical Waste Management Act N.J.S.A. 13:1E-48 et seq. (Comprehensive Act) was signed into law. This law, as well as earlier state and federal regulatory programs, was primarily in response to beach wash-up incidents along eastern coastal areas during the summers of 1987 and 1988. As a fundamental component of the Comprehensive Act, the New Jersey Departments of Environmental Protection (DEP or department) and Health and Senior Services (DHSS) (departments) formulated a comprehensive regulated medical waste (RMW) management plan (RMW State Plan) addressing the immediate, interim and long-term needs of the state. That management plan was issued in 1993 as section in the Solid Waste Management State Plan Update 1993-2002 in Section II: entitled “Comprehensive Regulated Medical Waste Management Plan”.

Generally, the Comprehensive Act specified plan contents in the three areas of: baseline information of generator, waste composition and quantity information and disposal practices including: (1) an inventory of available treatment and disposal technologies; (2) forecasting of generation rates and waste composition; (3) county disposal capacity; (4) addressing the application of the most appropriate statewide RMW disposal strategy; (5) the degree to which RMW can be recycled; (6) the appropriateness of accepting RMW for incineration at county resource recovery facilities; (7) the need, if any, for a small quantity generator exemption from regulation; and (8) rule changes necessary to fully implement the Comprehensive Act.

During the period covered by the Solid Waste Management State Plan Update 1993-2002 - Section II entitled “Comprehensive Regulated Medical Waste Management Plan”, the departments established baseline information and monitored the accuracy of the prior forecasts. In 1993, there were over 16,000 generators of RMW in New Jersey while in 2005 there are approximately 19,000 generators. This data reflects the identification and management of medically-related waste pursuant to regulations presently in effect. Data analysis has been performed in the following areas: RMW generation by facility type; waste generation by county; waste composition by class (i.e., sharps, pathological waste, cultures and stocks, etc.); transporter inventory; and disposal capacity by county.

J.1 Alternative Treatment Technology Review

Alternative Treatment Technology Review

The Department, in conjunction with the DHSS oversees the review and approval of RMW

sites utilizing one of these approved technologies in New Jersey. There are no commercial facilities currently operating that use any of these technologies although there is a single application for such a facility under review. The only facilities in New Jersey that treat and destroy RMW on-site are either the 6 on-site operating incinerators or one of the 11 registered sites using an authorized alternative technologies (see Table J-1).

J.2. Body Art Regulation

The public health risks inherent to tattoos and other forms of body art arise largely from the use of sharps and the potential to transmit bloodborne pathogens. Therefore, in 2001 the DHSS promulgated regulations at N.J.A.C. 8:27 et seq. entitled "Body Art Procedures". These new training and licensing requirements significantly raise the current health standards among body art professionals. This subchapter also incorporates the RMW regulations at N.J.A.C. 7:26-3A et seq. by cross-reference. This will insure safe handling and disposal of sharps generated by tattoo, body piercing and permanent cosmetic professionals. Prior to the adoption of these rules no state standards existed for this industry. As a result of this rule the number of body art establishments that have registered with DEP as medical waste generators in 2004 has risen to 116 establishments. This is up from 35 in 2001 and there were none registered in 2000.

J.3. Floatables and Abandonment Monitoring

The Interagency Protocol For Response to Medical Waste Abandonments and Marine Floatables Incidents (Protocol) is a document that is compiled and updated each year by the various agencies involved and is distributed to local health departments by Memorial Day. The Department coordinates this activity, in conjunction with the Department of Health and Senior Services and several other State agencies. The Protocol outlines the procedures for notification and response in the event of exposures to potentially infectious waste and other solid wastes that can occur near the shore but also inland and usually in the warm weather season. The Protocol is responsible for helping coordinate agencies' responses to medical waste and other wastes that might have escaped the RMW and solid waste streams so that they can be handled responsibly. The Department has continued its publication of this document yearly through the years 1993 through 2004. Due to recent events, in 2002 a reporting procedure and new definition were included in the protocol to reflect the potential risk of bioterrorism.

J.4. RMW – Generator Universes

J.5. RMW - Generation Trends

Most of the RMW generated in New Jersey was generated by general medical centers until 1998. In that year, dialysis centers generated approximately the same amount of RMW as general medical centers. Dialysis wastes are in the form of liquid RMW, while general medical centers generate mostly solid RMW. In subsequent years dialysis centers have surpassed general medical centers in the generation of RMW. Liquid RMW generation has risen steadily since 1990. Since 1999, dialysis centers, which generate almost solely liquid RMW as dialysate, have generated over two thirds of New Jersey's RMW on a weight basis. Most of this liquid waste is not transported over roadways but is disposed of via the sanitary sewer. Liquid RMW totals remained under 10,000 tons until 1998 when the total liquid RMW reached over 16,000 tons. Since then liquid RMW generation has nearly tripled and peaked with nearly 60,000 tons in the year 2000. Reporting of liquid RMW generation decreased with the delisting of dialysate as a RMW in regulatory amendments adopted December 2001, with only approximately 38,000 tons reported in 2003.

J.6. Security and Bioterrorism

The advent of real concerns about future bioterrorist incidents whereby large-scale epidemics of contagious disease are caused by the intentional release of biohazardous agents by terrorists raises the issue of disposal of the wastes related to these incidents. Various forms of wastes would be generated by such incidents including: decontamination, medical, and home self-care wastes. Decontamination wastes would emanate from both wrapping contaminated materials and also disinfected materials that would still be considered contaminated to ensure safe disposal. Facilities and practitioners that treated affected persons would generate medical wastes on a large scale. A large-scale bioterrorism incident would of its very nature produce much larger amounts of waste than the regulated medical waste management infrastructure presently handles. Further, more types of patient-contact materials than are normally considered regulated medical wastes would be included in the waste categorization such as the present Class 6 Isolation Waste class to prevent additional exposures to the contaminated materials. A large-scale incident would also likely mean that much patient care would necessarily take place in home or nontraditional medical facilities such as temporary infirmaries to handle large numbers of affected persons. Contamination could quite literally be almost everywhere. Home self-care medical wastes are exempted from regulation under present law, but in the event of a release of a virulent and highly contagious agent, wastes from homes and related patient contact wastes would need to be handled as regulated medical waste.

generated at site cleanups are managed under the authority of both State and Federal hazardous waste regulations based on the character of the waste not the source of waste generation as is the case with medical wastes under the CRMWMA.

Transporters and disposal facilities are not authorized or licensed to transport or process wastes other than regulated medical waste. Amending the CRMWMA to include wastes known or suspected of containing dangerous biological agents from any source, for example those on New Jersey Select Agent List or biological agent registry, would allow the existing medical waste companies and medical facilities with expertise in packaging and handling infectious agents to help deal with wastes generated during cleanup of biological or certain toxic agents at contaminated sites, or other situations unrelated to direct medical or research venues covered by the existing CRMWMA State law.

The commercial infrastructure of transporters and disposal facilities would be of great value to assist in the proper handling, transport and disposal of secured biologicals and biological cleanup wastes. In a large-scale incident, the existing medical waste infrastructure established for disposing of medical wastes could be instantly mobilized to assist with management of wastes from accidental or terroristic releases of certain biological or toxic agents.

J.7. RMW- Regulatory Issues

Irrespective of whether the CRMWMA is amended to directly address biological incidents beyond the medical, research and biological production arenas as outlined above, the regulated medical waste regulations at N.J.A.C. 7:26-3A et seq. need to be evaluated for updating in view of new agents such as Prions that were not recognized years ago as being nearly indestructible and the possibility of medical facilities needing to deal with new Biosafety Level 3 and 4 agents.

Regulatory issues needing evaluation in view of new agents such as Prions and the threats of bioterrorism include:

- ? More clearly defining proper packaging requirements and disposal facilities for wastes known or suspected of containing select list biologicals in view of the present regulatory reference to Class 6 Isolation Wastes; (i.e., prions require complete incinerative oxidation, or complete hydrolysis through various chemical mechanisms such as alkaline or other extreme chemical oxidative hydrolysis and, therefore, are not suitable for many management approaches including incomplete incineration which occurs in most typical waste incinerators.)

- ? further evaluation of the existing medical waste regulations following any future recommendations of the Domestic Security Task Force or other government agency recommendations.

Other regulatory issues needing evaluation for regulatory clarification to ensure the safe management and disposal of more dangerous medical wastes in the future and for relaxation of regulatory provisions based on historical compliance patterns, are as follows:

- ? Develop a permitting process to allow commercial privately owned wastewater treatment works to accept liquid RMW for treatment;
- ? relax the intermediate handler requirements for in-house treatment of wastes in line with the recommendations of the DHSS;
- ? ensure the proper treatment of Prions by creating a separate waste class of RMW that is known or suspected of containing Prions to distinguish such waste from other RMW. Also, specify proper treatment methods for prions as prions require particularly unique destruction requirements making them unsuitable for treatment by normal means used for other RMW containing more typical infectious agents and wastes containing these agents should be isolated for special treatment;
- ? specify the permitting requirements for commercial RMW treatment, destruction and processing facilities;
- ? clarify and simplify the requirements for certifying bona fide out-of-state RMW processors for generators using mail order disposal systems to out-of-state facilities;
- ? explain in regulation how to manage RMW that has been abandoned;
- ? to prevent concentrated amounts of infectious agents from being disposed of into the municipal sewerage system specify that Class 1 Cultures and Stocks of Infectious Agents cannot be disposed of in that manner; and
- ? develop an on-line system for completion of the annual generator reports to allow simple entry of the information at the source of generation.

share program responsibilities. The Department has responsibility for all inspections of commercial and limited transporters, commercial collection facilities, RMW incinerators, transfer stations, registration and billing functions, waste flow reports of illegal disposal at transfer stations, and landfills. DHSS's, Public Health, Sanitation & Safety Program is responsible for inspection of generators, non-commercial collection facilities functioning at sites registered as medical waste generators, and destination facilities (excepting incinerators). DHSS is also responsible for 24-hour emergency response to incidents involving illegal disposal and abandonment, transportation accidents, washups of medical waste, and reports of citizen exposure. Both Departments have performed thousands of inspections, issued hundreds of Administrative Orders and responded to and investigated over hundreds of incidents involving mishandled RMW.

In July 1997, the responsibility for inspecting and providing technical assistance to all RMW generators was shifted to the DHSS. Previously this was a shared responsibility between the Departments. Without additional resources, the DHSS assumed the direct responsibility to inspect the more than 18,500 active RMW registered generators located throughout the 21 counties of New Jersey. Since the onset of the RMW regulation, there have been more than 54,200 inspections conducted. Over the last three calendar years (2000-2002), an average of 2,864 inspections were conducted per year. In addition to inspection, field investigations are conducted relative to non-licensed generators and cases of abandonment of medical waste.

To address the task of inspecting the vast number of generators, steps were implemented to incorporate inspection frequency modifications. The basic intent of this frequency schedule is that the larger generators, that have potentially more problems, would be inspected on a more frequent basis. The basic frequency of inspecting RMW generators is outlined below:

GENERATOR CATEGORY	WEIGHT PER YEAR (PDS)	INSPECTION FREQUENCY
1	Less than 50	Every 5-7 years
2	50-200	Every 3-5 years
3	200-300	Every 2 years
4	300-1000	Every year
5	Greater than 1000	Twice per year

Using the total of 18,514 active generators and multiplying it by the frequency of inspections by weight generation equals an approximate average of 5,000 inspections that are designated to be completed each year. Historically there have never been sufficient monies to fund the necessary number of Registered Environmental Health inspectors to complete the expected "minimum"

The following table illustrates that since 1996, large category generators have been targeted at a rate of approximately 500% higher then prior years:

**1. Large Generators Inspected as a
Percentage of Total Inspection 1992-2003**

Calendar Year	DHSS Total Inspections	Total Inspections	3-4-5- Generators Inspected	3-4-5- Percentage Total Inspected
2003	437	437	206	47%
2002	2184	2184	481	22%
2001	2476	2476	804	33%
2000	3931	3931	860	22%
1999	2646	2646	861	33%
1998	2383	2383	834	35%
1997	3285	3285	725	22%
Note 1997 was the first full calendar year that DHSS conducted all generator inspections				
1996	3562	4328	326	8%
1995	4272	6758	419	6%
1994	2937	5357	338	6%
1993	3416	5870	377	6%
1992	2778	7072	239	3%

Generators with a violation history are inspected based upon the severity of the past violation(s) and the date of their last inspection. With this inspection schedule plan, a Category 1 generator with a good inspection history may not be inspected in excess of 7 years, therefore it is imperative to have each generator understand the RMW regulations and be in the highest degree of compliance possible. The inspection compliance rate has basically improved each year since the inception of the RMW statute. However it should be noted, that since the DHSS has been targeting generators that have failed to pay the appropriate registration fees, inspections were purposefully scheduled with known violations. Therefore the compliance rate has been directly reduced. If only the last date of inspection was used as the criteria for scheduling inspection then obviously the compliance rate would be significantly higher.

Generator Compliance* Rate by Calendar Year 1990-2003

Note 1997 was the first full calendar year that DHSS conducted all generator inspections.

1996	66.8	74.2
1995	71.8	73.6
1994	63.2	57.6
1993	53.3	59.8
1992	35.1	64.8
1991	21.6	77.3
1990	15.9	75.3

***Compliance denotes an inspection where no violations were issued.**

We conclude there are a number of reasons for this overall increase in compliance. Obviously, over time, the individual physicians, hospitals, transporters, etc. and their professional support associations (AMA, ADA, etc.) are becoming increasingly aware and educated on the requirements of the regulations. As noted in Appendix table J-8, the current trend towards increased compliance seems to have started at the beginning of 1992, which is when the first round of inspections was completed.

Lastly, increased interaction between the Departments ensures that inspections are conducted uniformly and that the information supplied is consistent and up-to-date.

In April 2004, the Departments conducted a joint countywide compliance inspections of regulated medical waste generators in Ocean County to ensure that medical waste is properly disposed and that the public is protected from the potential hazards of discarded needles, syringes and other medical waste. The universe of regulated medical waste generators inspected included doctors; dentists; veterinarians; hospitals; healthcare facilities; nursing, assisted living and convalescent homes; medical analytical laboratories; outpatient surgical clinics; biomedical research facilities; funeral homes; schools; and body piercing and tattoo parlors

The Departments used a two-phase approach for Ocean County. The first phase, known as the Compliance Sweep, began in March 2004 and focused on providing outreach and assistance to known and potentially regulated individuals, businesses and government operations. Each potential regulated entity was mailed a copy of an enforcement alert publicized on the DEP's Compliance and Enforcement web page. The alert identified that unannounced inspections were conducted during two weeks of April 2004 in Ocean County. The DHSS provided outreach and assistance to interested entities on three occasions at two locations. Dates, times and locations were posted on the DEP's webpage. The second phase, known as the Enforcement Sweep, involve a large-scale inspection effort utilizing approximately 21 inspectors from both the DEP and DHSS.

Of the 1541 entities inspected, 800 were found to generate regulated medical waste. Of the 800 regulated medical waste generators, 160 were found with one or more violations. Of the 160 sites where violations were found, 110 occurred at registered generators while 50 were found at unregistered generators. Of the 160 sites with violations, 73 had more than 1 violation cited. A summary of the violations found appears in the chart below.

Regulation	Description	Number of Violations
N.J.A.C. 7:26-3A.8(a)	Registration – Generator failed to register with the Department	50
N.J.A.C. 7:26-3A.19(a)	Tracking Form – Generator failed to use an approved tracking form for each shipment of regulated medical waste	31
N.J.A.C. 7:26-3A.21(a)1	Tracking Form - Generator failed to retain a copy of the completed tracking form for a period of three years	38
N.J.A.C. 7:26-3A.21(d)	Annual Report - Generator failed to submit an annual report to the Department	75
N.J.A.C. 7:26-3A.21(f)	Annual Report - Generator failed to retain a copy of the annual report for a period of three years	80
N.J.A.C. 7:26-3A.12(a)1	Storage - Generator failed to store regulated medical waste in a manner and location that is appropriate.	7
N.J.A.C. 7:26-3A.12(a)2	Storage - Generator failed to store regulated medical waste in a non-putrescent state, using refrigeration when necessary.	4
N.J.A.C. 7:26-3A.12(a)3	Storage - Generator failed to prevent unauthorized access to outdoor storage area(s) containing regulated medical waste.	4
N.J.A.C. 7:26-3A.12(a)4	Storage - Generator failed to limit access to on-site storage areas to authorized employees.	4
N.J.A.C. 7:26-3A.12(a)5	Storage - Generator failed to store regulated medical waste in a manner that affords protection from animals or insects.	3

N.J.A.C. 7:26-3A.11	Marking/Labeling/Packaging – Generator failed to properly package their regulated medical waste	3
N.J.A.C. 7:26-3A.14	Marking/Labeling/Packaging – Generator failed to properly label regulated medical waste container.	3
N.J.A.C. 7:26-3A.15	Marking/Labeling/Packaging - Generator failed to properly mark package of regulated medical waste.	3
N.J.A.C. 7:26-3A.12(b)2	Storage - Generator stored regulated medical waste for greater than 1 year	4
N.J.A.C. 7:26-3A.22(b)	Generator failed to submit exception report to Department for missing completed tracking form.	3
N.J.A.C. 7:26-3A.19(d)1	Failure to complete box 4 of the tracking manifest	2
N.J.A.C. 7:26-3A.19(e)	Generator failure to properly complete tracking form for self transported regulated medical waste.	1
N.J.A.C. 7:26-3A.8(a)1	Failure by generator to pay annual fee.	1

The last aspect of this analysis was to identify any areas currently in need of attention. To accomplish this, we reviewed violation tallies to see if there were any program areas, (aside from the previously discussed 'serious violations' which indicate increased compliance), in which the number of violations were actually increasing. This review determined that there are five areas in need of additional attention.

1. Efforts to identify potential non-notifiers are ongoing. The DEP is developing an on-line capability to register as a regulated medical waste generator. The Department anticipates having an on line registration system in the Spring of 2005. One complaint repeated heard from the regulated community during the Compliance and Enforcement Sweep, especially from non-notifiers is that the requirement to be registered is not well known. A program to advise new doctors, dentists and entities establishing businesses in New Jersey, of their regulatory requirements concerning the handling and disposal of medical waste is needed.
2. The number of generators registering in the wrong category and the number of generators who fail to pay registration fees on time continues to be problematic. From the inspections perspective, we can remind the regulated community of their registration responsibilities, however we currently only see a small portion of the population each registration year.

4. Since the late 1980's the frequency of incidents involving medical waste beach washups have dramatically dropped. Visual analysis of the debris from recent washup events demonstrate that little to no regulated medical waste is being disposed in this manner. The bulk of the waste is solid waste with little to no medical waste present. For the small amount that is found, most if not all, is improperly disposed syringes either homeowner generated through diabetic or other legitimate use or illegal drug use. The Departments are working to update current information provided to the public regarding the safe and proper disposal of syringes as well as improving the current collection system for homeowner generated syringes.

J.9. The Regulated Medical Waste Project

Infrequently exposure may result from contact with improperly handled RMW. Though remote there is an increased risk of disease. The Regulated Medical Waste Project operated through DHSS provides the necessary consultation, advisement and investigation if appropriate. This Project is solely responsible for the surveillance of needlestick injuries and human exposure to medical waste. Relative to each exposure, case management is orchestrated that involves the completions of a questionnaire and assisting the treating physician. The victim is instructed to report immediately to their primary care physician and/or clinic. The current immunization status is ascertained relative to the victim. Tetanus vaccination should be current. Hepatitis B vaccination and HIV serological testing is recommended if appropriate. HIV counseling is available if requested. This service is available during and after normal business hours 24 hours, 7 days per week. This Project, relative to all reported needlestick injuries and human exposure to medical waste, maintains a case file system/data base. Since 1989, there have been more than 300 human exposures to medical waste reported to this program.

The Regulated Medical Waste Project has the sole responsibility to address all incidents involving medical waste throughout the state. Incidents involving medical waste are such things as: emergency response, consumer and regulated community complaints assistance to other state and local governmental agencies, abandonment of RMW, motor vehicle accidents involving medical waste, beach wash-up of medical waste, employee and consumer medical waste exposures, needlestick surveillance, site remediation; and personal protection recommendations and techniques. This Regulated Medical Waste Project response is twenty-four hours per day, seven days per week.

The Regulated Medical Waste Project provides the following technical support and assistance to field staff, DEP, regulated community and the general public relevant to medical waste issues: telephone and general consultations, legislative and legal review, assistance and review of letter

The Department supports the enactment of legislation that would assist in the management of the collection and disposal of sharps/needles from home health care or less legal uses. Unauthorized and/or illegal disposal of sharps/needles has resulted in beach wash-ups causing the closure of New Jersey beaches. Proposed legislation allowing needle exchanges would reduce the possibility of illegal disposal and resultant negative environmental effects.

Table J-1
ALTERNATIVE MEDICAL WASTE MANAGEMENT TECHNOLOGIES AUTHORIZED IN NEW JERSEY
(AS OF 6/08/04)

TECHNOLOGY	PROCESS	PRODUCT**	VENDOR**
1 Steam Sterilization and Shredding	Air is evacuated from the sterilization chamber and steam is injected into the chamber. The treated material is shredded and ground.	Remedy-One Rotoclave®* Models 1250-G1, 1500-D1, 2500-D1, 1500-D(formerly 1500D2)	Tempico, Inc P.O. Box 428 251 Highway 21 North Madisonville, LA 70447-0428 (800) 728-9006
		San-I-Pak™Mark VII Sterilizer Compactor with Shredder*	San-I-Pak™, Inc. 23535 South Bird Road Tracy, CA 95378-1183 (209) 836-2310
2 Chemical disinfection and Mechanical Shredding	A chemical disinfectant is mixed with the waste and then the material is shredded and ground in a mechanical grinder or Hammermill chamber.	Condor™ Medical Waste Treatment System*	Condor Healthcare Services, LLC 1532 East Katella Avenue Anaheim, CA 92805-6627 (714) 456-0790
		MST 1200 ENRC* Medical Safetec Brand	Circle Medical Products, Inc. 5616 Massachusetts Ave Indianapolis, IN 46218 (317)-541-8080
	Chemical disinfectant & water mixed w/ RMW in grinding chamber. Processed waste rinsed w/ water and solid/liquid waste separated in rinse/seperator chamber.	Steris® Ecocycle 10™ Processing System Model P 3000*	Steris Corporation 5960 Heisley Road Mentor, OH 44060 (216) 354-2600
	NaOCL applied to RMW then dropped into shredder. After shredding more chem. & water applied, then solid and liquid separated w/ film remaining.	STI Chem-Clav Processing System Model STI-2000CV*	Sterile Technology Industries, Inc. 1155 Phoenixville Pike, Unit 105 West Chester, PA 19380 (610)-436-9980

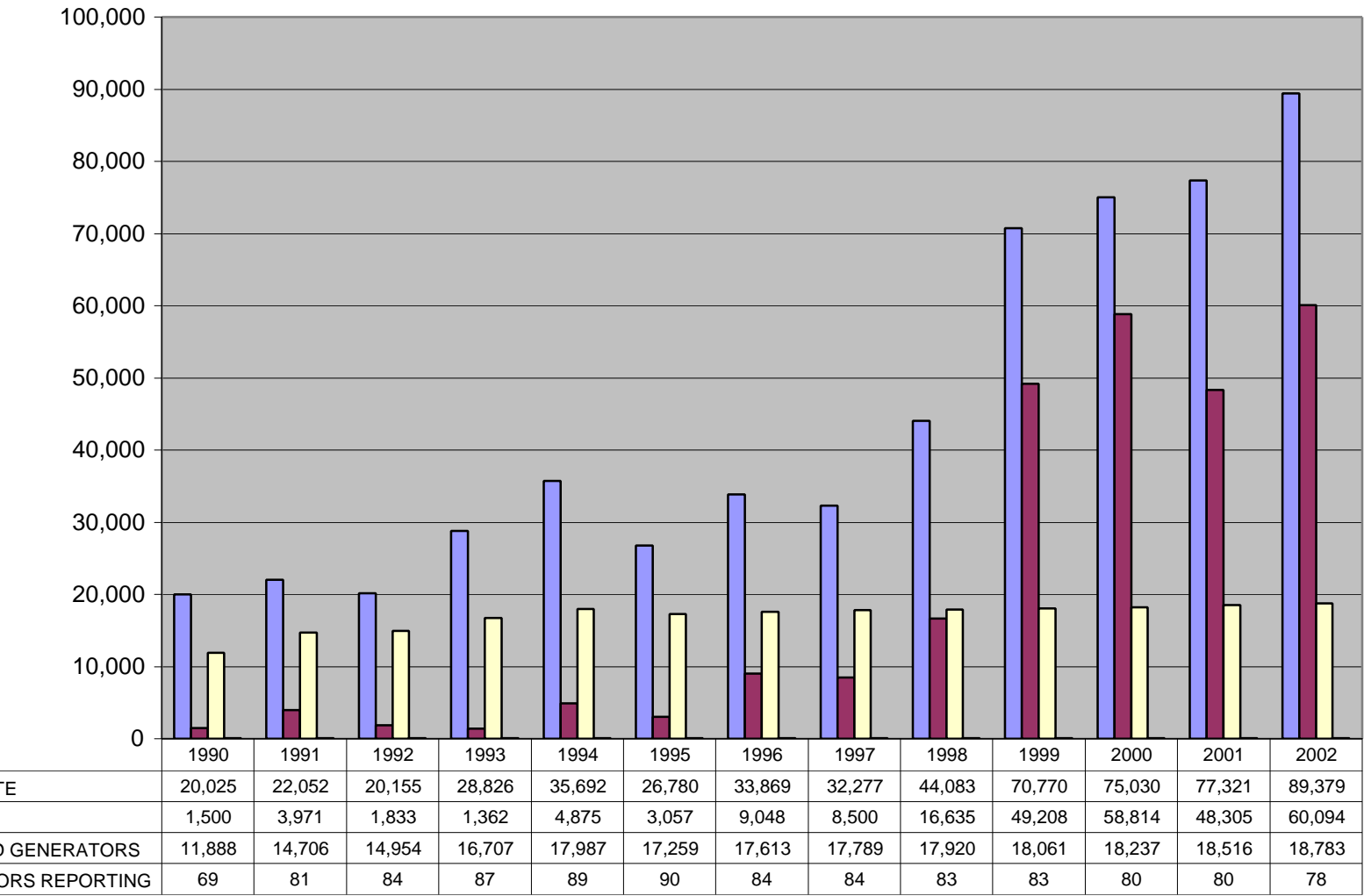
3 Microwave And Shredding	Waste is shredded and moistened with steam. The material is then microwaved in a treatment chamber and shredded, and Ground in a particulizer	HG-A250-S* and HGA-100-S*	SaniTec, Inc. 26 Fairfield Place West Caldwell, NJ 07006 (973) 227-8826
4 Steam Sterilization	RMW is steam sterilized. High vacuum treatment boils off and condenses liquid. RMW is dried and cooled to below 170°F (approved for treatment only. Processed medical waste must still be managed as RMW)	Tuttnauer Medical Waste Sterilizer Model#3648-144***	Tuttnauer USA CO., LTD. 33 Comac Loop, Equip-Park Ronkonkoma, NY 11779 (800) 624-5836

*The above medical waste disposal technologies are alternatives to incineration that have been authorized by NJDEP and the Department of Health and Senior Services to operate in New Jersey

** The use of product trade names or vendor names is for identification purposes only and authorization of these technologies does not constitute an endorsement of the vendor's product by the State of New Jersey

***This technology is approved for treatment only and therefore all medical waste processed must be managed as RMW in accordance with N.J.A.C. 7:26-3A. unless the sterilizer is used in conjunction with a shredder/grinder approved by NJDEP that destroys the waste.

Table J-2 REPORTED REGULATED MEDICAL WASTE GENERATION (RMW) 1990 TO 2002**



YEARS

Table J-3
2002 MANAGEMENT OF REGULATED MEDICAL WASTE (RMW)
GENERATED BY COUNTY*

	COUNTY	TREATED WASTE	UNTREATED WASTE	TOTAL TONS
	ATLANTIC	0.14	1,863.57	1,863.70
	BERGEN	265.95	6,286.21	6,552.16
	BURLINGTON	381.13	607.37	988.50
	CAMDEN	833.92	752.54	1,586.46
	CAPE MAY	0.55	906.07	906.62
	CUMBERLAND	2.65	2,035.33	2,037.99
	ESSEX	678.75	7,513.56	8,192.31
	GLOUCESTER	2.07	448.12	450.20
	HUDSON	8.26	9,098.42	9,106.67
	HUNTERDON	19.71	1,174.19	1,193.90
	MERCER	41.73	10,058.74	10,100.48
	MIDDLESEX	569.16	9,135.41	9,704.57
	MONMOUTH	5.64	9,680.52	9,686.15
	MORRIS	8.28	7,644.30	7,652.59
	OCEAN	1.17	2,386.05	2,387.22
	PASSAIC	65.61	7,816.58	7,882.19
	SALEM	0.21	200.74	200.96
	SOMERSET	103.08	3,107.85	3,210.93
	SUSSEX	0.23	195.85	196.08
	UNION	672.81	4,531.66	5,204.47
	WARREN	0.06	274.98	275.04
		3,661.11	85,718.07	89,379.18

*Data Represents 78% of registered generators that reported for 2002

The State of New Jersey, its agencies and employees assume no responsibility or liability to any person or entity for the use of this information. There are no representations or warranties, express or implied, of any kind with regard to this information, and any use of this information is made at the risk of the user.

Last Updated Tuesday, March 23, 2004

TABLE J4
2002 REGULATED MEDICAL WASTE (RMW)
GENERATED BY WASTE CLASS *

COUNTY	CLASS 1	CLASS 2	CLASS 3	CLASS 3S	CLASS 4	CLASS 5	CLASS 6	CLASS 7	TOTAL
ATLANTIC	9.89	97.68	555.01	1,111.96	88.98	0.00	0.00	0.19	1,863.70
BERGEN	634.56	535.83	1,281.55	2,937.04	1,148.11	12.49	0.07	2.52	6,552.16
BURLINGTON	28.87	123.00	705.02	10.15	117.49	3.84	0.00	0.13	988.50
CAMDEN	137.83	82.44	1,111.76	20.56	231.26	1.47	0.17	0.97	1,586.46
CAPE MAY	0.32	0.10	9.80	889.65	6.73	0.00	0.00	0.02	906.62
CUMBERLAND	3.97	2.14	103.19	1,860.07	68.59	0.00	0.00	0.03	2,037.99
ESSEX	143.78	93.06	1,555.92	6,006.81	342.71	25.76	14.73	9.54	8,192.31
GLOUCESTER	0.43	1.99	170.50	3.66	42.67	0.00	0.06	230.89	450.20
HUDSON	74.81	53.39	529.40	8,285.77	132.89	0.29	0.02	30.11	9,106.67
HUNTERDON	33.63	2.16	82.39	1,038.70	36.96	0.00	0.00	0.06	1,193.90
MERCER	245.27	73.20	349.17	9,238.97	148.96	44.10	0.02	0.79	10,100.48
MIDDLESEX	216.04	308.71	1,202.92	7,580.70	362.76	18.70	0.14	14.59	9,704.57
MONMOUTH	23.29	143.21	2,113.51	7,174.61	231.28	0.07	0.01	0.18	9,686.15
MORRIS	64.59	68.65	832.93	6,441.89	238.67	5.74	0.01	0.10	7,652.59
OCEAN	37.17	36.79	443.28	1,632.40	237.04	0.20	0.01	0.33	2,387.22
PASSAIC	26.01	7,071.08	616.72	40.99	127.19	0.00	0.00	0.19	7,882.19
SALEM	4.68	6.15	167.86	1.12	21.14	0.00	0.00	0.00	200.96
SOMERSET	219.50	30.85	478.50	2,361.54	101.10	15.00	0.00	4.43	3,210.93
SUSSEX	4.95	4.44	111.08	1.54	21.78	0.00	0.01	52.28	196.08
UNION	558.07	35.40	631.16	3,289.48	341.06	327.76	0.17	21.38	5,204.47
WARREN	2.33	5.94	66.03	166.70	33.33	0.68	0.04	0.00	275.04
	2,470.00	8,776.19	13,117.69	60,094.30	4,080.73	456.12	15.45	368.71	89,379.18

CLASS 1 – CULTURES & STOCKS	CLASS 4 - NEEDLES, SYRINGES & SHARPS
CLASS 2 – PATHOLOGICAL WASTES	CLASS 5 - ANIMAL WASTE
CLASS 3 - HUMAN BLOOD	CLASS 6 - ISOLATION WASTE
CLASS 3S – HUMAN BLOOD DISPOSED VIA SEWER	CLASS 7 - UNUSED SHARPS

*Data Represents 78% of registered generators that reported for 2002
The State of New Jersey, its agencies and employees assume no responsibility or liability to any person or entity for the use of this information. There are no representations or warranties, express or implied, of any kind with regard to this information, and any use of this information is made at the risk of the user.

TABLE J 5
2002 REGULATED MEDICAL WASTE (RMW)
GENERATED BY
STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES *

SIC#	DESCRIPTION	NUMBER	TOTAL TONS
0741	VETERINARY SERVICES FOR LI	18	3.34
0742	VETERINARY SERVICES	498	62.53
0752	ANIMAL SPECIALTY SERVICES	22	0.76
2821	PLASTICS MATERIAL SYNTHETI	2	0.01
2833	MEDICINALS & BOTANICALS	5	609.01
2834	PHARMACEUTICAL PREPARATION	20	175.24
2835	DIAGNOSTIC SUBSTANCES	3	0.31
2844	TOILET PREPARATIONS	3	0.65
3841	SURGICAL & MEDICAL INSTRUM	3	233.14
5171	PETROLEUM BULK STATIONS AN	1	0.01
5912	PHARMACIES	32	28.66
6321	ACCIDENT AND HEALTH INSURA	1	0.01
7032	CAMPS (YOUTH, SUMMER)	5	0.20
7261	FUNERAL SERVICES	428	2,230.61
7299	MISC PERSONAL SERVICES	40	0.23
7948	RACING, TRACK OPERATION	1	0.03
7996	AMUSEMENT PARKS	1	0.06
8011	DOCTORS OF MEDICINE	5,266	4,860.56
8021	DENTISTS OFFICES	3,542	113.56
8031	OSTEOPATHY OFFICES	418	24.25
8041	CHIROPRACTOR OFFICES	2	0.03
8043	PODIATRISTS OFFICES	516	5.28
8049	HEALTH PRACTITIONERS	205	1,865.02
8051	SKILLED NURSING CARE	253	138.34
8052	INTERMEDIATE CARE FACILITI	25	6.49
8059	NURSING AND PERSONAL CARE	140	6.49
8062	GENERAL MEDICAL & SURGICAL	108	18,454.26
8063	PSYCHIATRIC HOSPITALS	26	87.92
8069	SPECIALTY HOSPITALS	21	21.84
8071	MEDICAL LABORATORIES	246	1,421.38
8082	HOME HEALTH CARE SERVICES	112	195.46
8092	KIDNEY DIALYSIS CENTERS	64	57,202.15
8093	SPECIALTY OUTPATIENT FACIL	261	274.08
8099	HEALTH & ALLIED SERVICES	334	326.89
8211	ELEMENTARY & SECONDARY SCH	1,386	11.14
8221	COLLEGES, UNIVERSITIES & P	67	68.97
8361	RESIDENTIAL CARE FACILITIE	5	2.57

8422	ARBORETA AND BOTANICAL OR	4	0.05
8731	RESEARCH & DEVELOPMENT LAB	93	553.35
8733	NONCOMMERCIAL RESEARCH ORG	1	16.92
8734	COMMERCIAL TESTING LABS	40	305.40
9223	CORRECTIONAL FACILITIES	68	29.64
9229	PUBLIC SAFETY	7	0.92
9431	HEALTH DEPARTMENTS	108	29.24
9711	NATIONAL SECURITY (ARMED F	7	9.41
9999	MISCELLANEOUS	236	2.80
		14,644	89,379.18

*Data Represents 78% of registered generators that reported for 2002
The State of New Jersey, its agencies and employees assume no responsibility or liability to any person or entity for the use of this information. There are no representations or warranties, express or implied, of any kind with regard to this information, and any use of this information is made at the risk of the user.

Last Updated Tuesday, March 23, 2004

K. SEWAGE SLUDGE

INTRODUCTION

The Statewide Sludge Management Plan (SSMP) is a component of the Statewide Solid Waste Plan and is mandated under the Solid Waste Management Act (N.J.S.A. 13:1E-1 et seq.) and also satisfies the residual management planning mandate of the Water Quality Planning Act (N.J.S.A. 58:11A-1 et seq.). In addition, pursuant to the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.), the Department is responsible for regulating the management of residual generated by domestic and industrial treatment works in a manner that protects public health and the environment.

In 1983, the decision was made to delegate to the wastewater management program (which is currently within the Division of Water Quality) general administration of the SSMP and the overall programmatic responsibility for regulation of residual management (that is sewage sludge, domestic septage, potable water treatment plant sludge, food processing sludge, and other nonhazardous industrial sludge), however, certain specific responsibilities have been delegated to several other Departmental programs. For example, the regulation of air emissions associated with residual management facilities is the responsibility of the Air Quality Permitting Program under the authority of the Air Pollution Control Act (N.J.S.A. 26:2C-1 et seq.), and the regulation of landfill management of residual (where allowed) is the responsibility of the Division of Solid and Hazardous Waste under the authority of the New Jersey Solid Waste Management Act.

New Jersey has adopted a number of residual management regulations pursuant to its authority under the New Jersey Water Pollution Control Act. Specifically, the New Jersey Pollutant Discharge Elimination System (N.J.A.C. 7:14A), Subchapters 22 and 23, address the issuance of Treatment Works Approvals for all treatment works. Treatment works, as defined by the New Jersey Pollutant Discharge Elimination System (NJPDES), includes all structures associated with, among other things, residual processing, treatment and storage facilities. Further, New Jersey's Standards for the Use or Disposal of Residual under Subchapter 20 address issuance of permits for residual use or disposal, including residual land application operations and residual transfer stations. In addition, based upon the general conditions included in all NJPDES permits for all wastewater treatment plants, the Division of Water Quality (DWQ) is responsible for assuring that all treatment plants comply with applicable residual planning and management requirements. It should be noted, due to the multi-media nature of residual management, the Department promulgated the NJPDES Rules under multiple statutory authorities, including air,

water and solid waste. Thus, the NJPDES Rules, to some degree, reconcile under what circumstances the statutory and regulatory provisions of the three Acts apply.

Under the authority of the New Jersey Solid Waste Management Act, the Department has exempted certain solid waste management facilities and operations from solid waste registration requirements as detailed under the Solid Waste Management Rules (N.J.A.C. 7:26). The Department exempts from solid waste registration all operations that receive a NJPDES permit for the land application of nonhazardous solid waste, including wastewater and potable water treatment residual. In addition, under Solid Waste Rules, the Department has exempted all remaining types of sewage sludge management equipment and operations from solid waste permitting as long as they are otherwise permitted under the Air or Water Pollution Control Acts. This includes, but is not limited to, residual transfer stations, except those which co-process or co-dispose sewage sludge with municipal solid waste. Exempting these types of operations from solid waste registration served to eliminate duplicative regulation without compromising the Department's evaluation of the engineering design and anticipated environmental impact of the proposed facility. Exempted sewage sludge management equipment and operations are still required to comply with Treatment Works Approval requirements under the NJPDES Rules in lieu of a solid waste engineering design approval. Air quality permits are also required, where applicable.

The Department has also exempted the haulage of marketable residual products from solid waste registration. Marketable residual products are a stable product suitable for use as a soil amendment in agricultural practices and/or for potential distribution to the public, landscapers and other horticultural and nursery users. Marketable residual products that have received all necessary approvals for reuse are not subject to the solid waste transportation requirements outlined in Solid Waste Rules. However, the transportation of any residual for disposal or for further processing or conversion to a product would be considered a regulated solid waste transportation activity.

The DWQ is also responsible for the Sludge Quality Assurance Regulations (N.J.A.C. 7:14C). Under the Sludge Quality Assurance Regulations (SQAR), the DWQ monitors sludge quality, quantity and ultimate management methods by all domestic and industrial treatment works.

Twenty years ago, approximately 86% of the sewage sludge generated in New Jersey was going either to a New Jersey landfill or to the ocean for disposal. However, beginning in March 1985, under provisions of the New Jersey Solid Waste Management Act, New Jersey landfills were restricted from accepting sewage sludge for disposal. Then beginning in March 1991, under the New Jersey Ocean Dumping Elimination Act, New Jersey sewage sludge generators were no longer allowed to dispose of their sewage sludge in the ocean. Thus, by the end of 1991 out-of-State disposal of sewage sludge had increased to almost 60% of New Jersey's total sludge

production. These two statutory initiatives, occurring within a time period of six years, essentially eliminated the sewage sludge management alternative for 86% of New Jersey's sewage sludge production. This severely stressed New Jersey's sewage sludge management infrastructure. Figures K-1 and K-2 depict these changes in sewage sludge management from 1983 to 2003. Figure K-1 depicts the history of sewage sludge management in New Jersey during this time period for each management method. Figure K-2 focuses on the overall decreasing reliance on out-of-State disposal since 1991 as well as the shift from out-of-State disposal to out-of-State beneficial use alternatives.

PLANNING PROCESS

In 1978, in response to increased concerns over the effects ocean disposal of sewage sludge had on coastal water quality, the Legislature found the interests of the citizens of New Jersey would best be served through an integration of sewage sludge management with the regional solid waste planning and management process and thereby amended the New Jersey Solid Waste Management Act.

The 1978 amendments also included a provision (N.J.S.A. 13:1E-46) requiring that the Statewide Solid Waste Management Plan contain a sewage sludge management strategy, which shall provide for the maximum practical processing of all sewage sludge generated within the State, and for the processing or land disposal of any such sewage sludge generated. The Department was empowered to direct any Solid Waste Management District (1) to plan for the utilization of any existing "solid waste facility" or "recycling facility" for the land disposal or processing of sewage sludge, or (2) to develop a program, singly or with one or more other Districts, to provide for the land disposal or processing of sludge generated within such District or Districts. When adopted in 1987, the SSMP provided a formal framework to guide the Solid Waste Management Districts in sewage sludge management planning, or, as a second option, to delegate planning activities to a selected agency such as a domestic treatment works. The Solid Waste Management Districts have not, for the most part, integrated sewage sludge management planning into the District planning process. As a result, sewage sludge generators essentially have maintained sewage sludge planning and management responsibilities throughout the past twenty years. The legal requirement for every domestic treatment works to plan and provide for management of its sewage sludge production is part of every NJPDES operating permit. Upgrades, as well as expansions to the wastewater treatment facilities and construction of new facilities, have served as the leading mechanism for requiring the domestic treatment works to address changing sewage sludge management needs.

The overall mandate of the Legislature to provide for safe and effective management of sewage sludge is best fulfilled by requiring the individual domestic treatment works to retain the

responsibility to ensure proper management of their current and future sewage sludge productions.

As of 2003, about 6 percent of all sewage sludge generated in New Jersey is exported for out-of-State disposal. Thus, domestic treatment works have proven to be an efficient and effective entity for addressing sewage sludge management responsibilities. Only one District, Burlington County, has assumed sewage sludge planning responsibility and developed plans to integrate the long-term management of sewage sludge and solid waste, although some additional counties have played a limited role in sewage sludge planning. The current planning process has been successful and shall continue. The regional multi-County, cross-District nature of many domestic treatment works service areas further emphasizes the logic of continuing with domestic treatment works planning responsibility. Flexibility has been provided to integrate County governments into the planning process, where counties do desire to play a role. Any District which does decide to assume sewage sludge planning responsibility must incorporate as part of their plan all sewage sludge processing and manufacturing infrastructure existing at the point in time the decision to plan is made. This infrastructure shall, at a minimum, include any existing sewage sludge management contracts, permitted facilities and operations, sewage sludge and septage management plans, fully executed design contracts, and designs that have been authorized for funding. Existing permitted sewage sludge management facilities and operations are discussed further under the Existing Conditions section of this SSMP.

As discussed above, the domestic treatment works are the primary entity responsible for sewage sludge management planning. Therefore, in absence of a District Sewage Sludge Management Plan, any domestic treatment works with a permitted flow equal to or greater than 1.0 million gallons per day (mgd), or which seeks an expansion to 1.0 mgd or greater, must submit a generator sewage sludge management plan if the domestic treatment works is proposing to upgrade or expand wastewater treatment capacity. This requirement to plan is also applicable to any proposed new domestic treatment works with a permitted flow of 1.0 mgd or greater. The generator plan must include, at a minimum, the following information:

- ? A brief statement on the current amount of sewage sludge generated (in dry metric tons per year) for the last complete calendar year, and the sewage sludge management alternative(s) used over that year;
- ? A brief description of the domestic treatment works upgrade and/or expansion (including rerates) which is necessitating submission of a generator plan, and the purpose for the upgrade or expansion;
- ? The projected completion date for the proposed upgrade and/or expansion;

- ? A projection of the annual quantity and quality of sewage sludge generated (in dry metric tons) upon completion of the proposed upgrade and/or expansion as well as at 5-years and 10-years after the projected completion date;
- ? The projected sludge quantities must be accompanied by a mass balance, including wastewater flow projections, supporting derivation of the projections;
- ? A brief statement of the sewage sludge management strategy which will be followed, and the current and projected sludge management alternative(s) to be used over the 10-year planning period, including an available capacity analysis for the selected sewage sludge management alternative(s); and,
- ? An implementation strategy to denote the completion of any important milestones during the 10-year planning period, including the expiration date of any existing contract(s), where applicable, and an implementation schedule for renewal of subsequent contracts.

NEW JERSEY POLICY ON LAND BASED RESIDUAL MANAGEMENT

GENERAL POLICY STATEMENTS

1. New Jersey is a densely populated State with minimal land area available for commitment to waste disposal. Therefore, it is the Department's Policy to encourage beneficial use (such as the conversion of sewage sludge into products to be used as a fertilizer or soil conditioner) wherever possible.
2. It is the Department's Policy to prohibit the landfill disposal of sewage sludge, because landfilling is a land-intensive waste disposal mode which commits land areas for the foreseeable future. This alternative may be permitted only on a short-term basis under limited overriding circumstances as determined by the Department under the terms of an Administrative Consent Order.
3. It is the Department's policy that the use of marketable residual products or stabilized sewage sludge as a supplement to the final soil overlying the final landfill cap shall not be considered landfill disposal but shall be considered beneficial use. The use of stabilized sewage sludge or other marketable residual products can improve the productivity of the final soil cover of certain completed landfills, and thus aid in revegetation and ultimate reclamation efforts without creating environmental harm. Use of stabilized sewage sludge or other marketable residual products in final landfill

cover applications requires the approval of the Division of Solid and Hazardous Waste.

4. It is the Department's policy that the use of marketable residual products or stabilized sludge as daily or intermediate cover shall not be considered landfill disposal but shall be considered beneficial use. The use of appropriate approved stabilized sewage sludge or marketable residual products as daily cover can replace or reduce the need for virgin soils; thus, reducing the need for the land-intensive soil mining. Use of stabilized sewage sludge or marketable residual products in daily and intermediate landfill cover applications requires the approval of the Division of Solid and Hazardous Waste.
5. It is the Department's Policy that sewage sludge thermal reduction facilities are an integral and necessary part of the State's diversified sewage sludge management strategy. Dedicated sewage sludge thermal reduction facilities impart a vast volume reduction on the sewage sludge introduced into the facilities, do not require significant land commitment for disposal, operate in all seasons, safely manage one quarter of the State's sewage sludge production without nuisance, and are fully regulated by the Department's Air Pollution Control Program.

DOMESTIC RESIDUAL QUALITY

The SQAR were initially promulgated in October 1979. With the SQAR, the Department embarked on a major program of monitoring the quality and quantity of sewage sludge generated throughout the State by domestic treatment works. The SQAR have been in effect for nearly 25 years, and the information submitted by the treatment works under these regulations has been extremely useful to the Department in evaluating management plans as well as long term trends, and to the generators in developing appropriate management alternatives.

Since 1983, there has been a steady improvement in the overall quality of sewage sludge generated by New Jersey's domestic treatment works (see Table K-3). Only arsenic has shown an increase in median concentration since 1983. The increase in the arsenic concentration is believed to be related to improvements in drinking water quality. There are some areas of the state where arsenic is naturally occurring in the source water used for drinking water. As the standards for drinking water are strengthened, water purveyors must improve their level of treatment which often generates an additional residual for disposal. When this residual is discharged to a public sewer, an increase in the arsenic concentrations in the sewage sludge generated by the wastewater treatment plant can result. Beginning in 1994, selenium has shown an increase in median concentrations. However, the 2003 median concentration for selenium is

still well below Federal and State risk-based standards for land application (See Table K-4 of this SSMP).

Pursuant to the New Jersey Water Pollution Control Act, NJPDES permits require the permittee to limit concentrations of heavy metals, pesticides, organic chemicals and other contaminants in the sludge in conformance with the land-based sludge management criteria established pursuant to the Federal Clean Water Act Amendments of 1972, 33 U.S.C. 1251 et seq., or any regulations adopted pursuant thereto, including the Federal Standards for the Use or Disposal of Sewage Sludge. Any treatment works with sewage sludge that does not meet the standards for a use or disposal practice must clean up its influent (for example, by strengthening pretreatment or pollution prevention programs), improve the treatment of sewage sludge (for example, by reducing the densities of pathogenic organisms), or select another sewage sludge use or disposal method. All generators are required to maintain a sewage sludge quality compatible with their method of sewage sludge management and to report those instances where applicable sewage sludge quality criteria are exceeded, as outlined in the SQAR. Compliance with standards is determined by the quality of the sewage sludge or marketable residual product at the end of the sewage sludge treatment process, not the inflow to that process. However, it is the responsibility of both the sewage sludge management facility and the generator to assure that all sewage sludge sent or accepted for processing is compatible with the sewage sludge quality limitations imposed on the management facility.

Consistent with the Federal Standards for the Use or Disposal of Sewage Sludge (40 CFR Part 503), the Department will not accept the mixing of sewage sludges with non-process oriented materials (e.g. materials added solely for the purpose of dilution that do not aid in processing to achieve pathogen or vector attraction reduction) for the purpose of reducing pollutant concentrations. Furthermore, acceptance of customer sewage sludges for blending shall not be a defense for exceeding any sewage sludge quality limitation in the blended sewage sludge.

WASTE REDUCTION AND THE BENEFICIAL USE OF RESIDUAL

The Department strongly supports the beneficial use of sewage sludge and other residual suitable for beneficial use. Improving the productivity of land using the soil conditioning properties and nutrient content of sewage sludge has human health and environmental advantages beyond those that are directly associated with applying sewage sludge to the land. For example, secondary or related benefits of beneficially using sewage sludge include a decreased dependence on chemical fertilizers.

The organic and nutrient content of sewage sludge makes it a valuable resource to use both in improving marginal lands and as a supplement to fertilizers and soil conditioners. Due to its organic nature, sewage sludge is well suited to agronomic purposes and the Department

encourages its use as a soil amendment and in preference to inorganic fertilizers. With proper application, sewage sludge will: (1) increase soil organic matter content, which decreases nitrate nitrogen leaching due to ammonium fixation, decreases soil compaction, increases soil cation exchange capacity, increases plant available water in soil, increases the substrate for soil microbes, and enhances soil structure, thereby improving aeration and reduction/oxidation potential; (2) provide a source of slow release nitrogen thereby reducing the need for top or side dress applications; and (3) provide a source of both primary nutrients and of primary and secondary micro-nutrients (iron, molybdenum, copper, zinc, calcium, magnesium, manganese and sulfur), which will lower costs of fertilization and reduce the number of equipment passes over a given amount of agricultural land.

The beneficial uses of sewage sludge are not limited to the production of agricultural or horticultural commodities. Sewage sludge has been and continues to be used to fertilize highway median strips and cloverleaf exchanges by the New Jersey Department of Transportation. In addition, sewage sludge is currently used to successfully stabilize and re-vegetate areas destroyed by mining, dredging, and construction activities and also as a raw material for topsoil manufacturing operations.

POLICY ON INDUSTRIAL RESIDUAL

The primary focus of the DWQ has been on sewage sludge and sewage sludge management. Although the DWQ has historically dedicated fewer resources to non-hazardous industrial sludge management, the DWQ has applied increased oversight in this area in recent years. As previously stated, the DWQ is responsible for administering a regulatory program for the use and management of residual generated by industrial treatment works. Under the SQAR, the DWQ requires such facilities to report on the quantity and quality of non-hazardous residual generated. Generally, all residual management alternatives that are discussed in this SSMP as being available to sewage sludge generators are also available to non-hazardous industrial sludge generators, with restrictions or limitations as noted. One exception is that industrial non-hazardous residual generators that produce a dewatered sludge for disposal are not restricted from landfill disposal as regulated by the Division of Solid and Hazardous Waste.

Where other nonhazardous residual meets the pollutant limits and pathogen requirements specified in the NJPDES Rules, the Department will consider land application programs for these materials. In these cases the following additional requirements apply: a benefit to the soil or cover vegetation from the land application of the residual must be demonstrated; the impacts of the residual on soil fertility, soil physical properties and plant growth must be understood; and the land application of the residual must have been successfully tested or demonstrated.

The successful implementation of land application for residual other than sewage sludge requires an understanding of the impacts of the residual on soil fertility as well as its impact on soil physical properties. The physical characteristics of soil that determine whether it can support vegetative growth include cohesion, aggregation, strength and texture. These parameters directly affect the hydraulic properties of soil such as moisture-holding capacity, infiltration, permeability and drainage. Any adverse impact on these hydraulic soil characteristics from land-applied residual can ultimately degrade groundwater quality in addition to affecting crop growth. Therefore, as part of the application for residual other than sewage sludge, the applicant must document that the land application program has been developed to the extent that full-scale use will not degrade soil physical properties.

The Department also requires that the land application of a particular residual be successfully tested or demonstrated in a field application or pilot program as required by the NJPDES Rules (N.J.A.C. 7:14A-20.7(a)4). Once this has been accomplished, the Department may permit its application on an experimental basis. The Department's intent is to develop additional residual land application programs, through closely controlled applications, to evaluate their usefulness on a large scale (much the way the land application program was originally developed for sewage sludge). Ultimately, a sufficient database will have to be collected from the field application or pilot program in order for the Department to determine the adequacy or appropriateness of a larger scale program. Two examples of a residual which have been approved for land application in this manner are food processing residual and water treatment plant residual.

POLICY ON DOMESTIC SEPTAGE

It is the Department's position that the use of domestic treatment works is the most environmentally sound and controllable method of septage management and is the Department's preferred septage management method. Pursuant to the NJPDES Rules, land application alternatives for domestic septage (a sub-category of sewage sludge) will only be approved on a case-by-case basis where no reasonable alternative exists. Requirements specifically applicable to land application of domestic septage include: certification of domestic origin; analyses for selected chemical parameters; compliance with the pollutant limits applicable to sewage sludge in the Federal Standards for the Use or Disposal of Sewage Sludge; compliance, at a minimum, with the Class B pathogen reduction standards and one of the vector attraction reduction standards applicable to sewage sludge; screening of septage to remove foreign materials; and, application of domestic septage at no more than the agronomic rate appropriate for crops grown based on actual analyses rather than a standardized formula.

Although not excluded by these rules, the Department has not, to date, issued any permit authorizing the land application of septage under the NJPDES Rules and does not envision doing so in the future.

POLICY ON PROHIBITION ON USE AS CLEAN FILL

The use of sewage sludge or soil blends made with sewage sludge for clean fill is prohibited. This prohibition is often misunderstood since existing Department regulations, consistent with the Federal Standards for the Use or Disposal of Sewage Sludge, state that the land application subpart does not apply to a material derived from Exceptional Quality (EQ) residual that is applied to the land in bulk or that is sold or given away in a bag or other container in order to be applied to the land. To be considered EQ, a residual must meet both the ceiling concentrations in 40 CFR 503.13(b)1 and the pollutant concentrations in 40 CFR 503.13(b)3, the Class A pathogen reduction requirements in 40 CFR 503.32(a), and one of the vector attraction reduction options in 40 CFR 503.33(b) 1 through 8. The key to this exemption is that the material derived from sewage sludge must be **applied to the land** as defined in the NJPDES Rules. In other words, the sewage sludge must be used as a fertilizer or soil conditioner and applied at an agronomic rate. If a material derived from sewage sludge is used as fill then it is not being used as a fertilizer or soil conditioner and would be subject to regulation under the Federal Standards for the Use or Disposal of Sewage Sludge and the NJPDES Rules as surface disposal. Therefore, placing an EQ residual or a topsoil blend made from EQ residual at depths below any reasonable root zone would be considered surface disposal which is prohibited under the NJPDES rules.

POLICY ON IMPORTATION OF OUT-OF-STATE SLUDGE

Out-of-State generators may bring residual into New Jersey to be prepared at a NJPDES permitted operation, or other Department approved residual management operation. However, the out-of-State residual generator must comply with all applicable New Jersey regulations regarding residual management, including, but not limited to, the Sludge Quality Assurance Regulations and the NJPDES Rules. As the first step, any out-of-State residual generator transporting residual into New Jersey for any purpose must comply with the SQAR. The SQAR requires that out-of-State generators notify the Department in writing prior to the transport of residual into the State and that this notification be accompanied by a complete set of analyses as required to be reported under the regulations. Thereafter, the out-of-State domestic or industrial treatment works must report as if it was a New Jersey generator.

Specific to the land application of residual, residual can either be prepared out-of-State into products and brought into New Jersey or they can be brought into New Jersey to be prepared. In order for the Department to ensure that all residual land application activities are conducted in a

manner consistent with Department rules, the Department must first be aware of the activity. Therefore, any person who prepares residual out-of-State to be applied to the land in New Jersey must first notify the Department of their intentions and submit copies of those permits and approvals issued by the permitting authority for the State in which the residual was prepared. This requirement is necessary for the Department to ensure that the residual to be applied will satisfy the requirements of both the Department's rules and the New Jersey Water Pollution Control Act. This notice requirement is applicable to any person who prepares residual (including EQ residual) out-of-State and who desires to apply such residual in New Jersey. This requirement is also applicable to residual sold or given away in a bag or other container and to bulk residual. Upon receipt of the notification, the Department will notify the out-of-State preparer of the applicable requirements which must be met. Two such products the Department has approved are compost generated by the City of Philadelphia and Milorganite (a heat dried product) prepared by the City of Milwaukee, Wisconsin.

POLICY ON STORAGE OF RESIDUAL

Storage alone is not a method of ultimate management. Storage is a mechanism which is incorporated in an overall residual management program which adds flexibility and improves the efficiency of the program. Storage capacity can serve as a component of a contingency plan for periods when selected management modes are closed for repairs, or due to inclement weather provided the stored residual can be ultimately managed in an acceptable manner when normal operations resume.

Storage can have many forms. It can consist of tanker trailers, frac tanks, slurry tanks, surface impoundments, bunkers, or sheds. Storage can be located at the treatment plant site, at the residual management site, or located in consideration of transportation and/or development and population density factors. Although many treatment plant components have included some storage capacity in the design (for example, digesters, thickeners, and drying beds), these components are primarily intended for treatment or processing and are not considered to be storage installations. Storage beyond the structural, permitted capacity of any treatment or processing component will be subject to enforcement action.

Storage in permanent storage installations is only acceptable to address short term management requirements. Storage is intended to provide residual management flexibility during periods of inclement weather, and to serve as a contingency plan if regular management is temporarily interrupted. Accordingly, all residual must be removed from storage installations for ultimate management.

Storage is only appropriate as a component of a contingency alternative when it can be demonstrated that the ultimate residual management alternative has the capacity to manage daily

residual generation concurrently with management of backlogged stored residual which have accumulated during the contingency management period.

Generally, the storage of residual for more than six months constitutes surface disposal (see the subsection on surface disposal under Management Modes below). It is possible for residual to be stored for periods longer than six months in permitted, approved storage installations provided that the person who prepares the residual demonstrates why the site is not a surface disposal site. The demonstration must explain why residual must remain for a period longer than six months prior to final use or disposal, discuss the approximate time period during which the residual shall be used or disposed, and provide documentation of ultimate management arrangements. Said demonstration must be in writing, kept on file by the person who prepares residual and submitted to the Department upon request.

EXISTING CONDITIONS

Over the past 20 years tremendous changes have taken place in the regulation and management of residual Statewide. The primary emphasis of sludge management policy has shifted away from reliance on end-of-the-pipe disposal management strategies to adequate sludge treatment and processing as necessary to ensure beneficial use. As shown in Table K-3, there generally has been a steady improvement in sludge quality since 1983. In addition, when current sludge quality (using 2003 medians) is compared to the Federal "high quality" Standards for the Use or Disposal of Sewage Sludge, and to the Rutgers Cooperative Extension's more stringent suggested limits, it is apparent that nearly all New Jersey sludges are much cleaner than these standards (see Table K-4). This demonstrates that most "biosolids" being produced by New Jersey generators are low in pollutants and suitable for beneficial use.

In New Jersey, domestic treatment works currently generate about 233,300 dry metric tons of sewage sludge per year. The implementation of the New Jersey Water Pollution Control Act has resulted in greater levels of treatment of and pollutant removal from wastewater before discharge to surface or ground waters, and the generation of larger quantities of residual as a by-product of this treatment.

Table K-5 presents a summary of County and State sludge production and management modes for calendar year 2003. An inventory by County of each domestic treatment works NJPDES permit number, their existing and design wastewater flow, the volume of sludge, and the management mode utilized for their sludge production is maintained and available on the Department's website. Figure K-6 summarizes the percent of the total sludge production by management method for calendar year 2003. (See the Management Modes - Land Application section of this SSMP for a discussion on Class A and Class B beneficial use alternatives.)

For the calendar year 2003, about 6 percent of the State's total sewage sludge production was disposed out-of-State. In addition, almost 67 percent of the State's sewage sludge production was beneficially used either in-State or out-of-State. However, the percentage of sewage sludge beneficially used in-State has been falling due to increased program enforcement and to the pressures on available land on which to apply sewage sludge products. New Jersey is the most densely populated State in the nation, which creates additional challenges for biosolids preparers to find and develop appropriate markets for their products. Therefore, although it is the Department's stated policy to encourage beneficial use alternatives, it must be recognized, due to these pressures, that a policy that also encourages diversity in management alternatives is necessary. It is for these reasons that the Department's General Policy Statement on the land-based management of sewage sludge incorporates various alternatives as discussed earlier in the SSMP. See the Management Modes - Land Application Section for a further discussion on pressures to sustain land application in New Jersey.

Table K-7 is a County by County list of all existing permitted residual management facilities and operations. Please note, transfer stations are not considered ultimate management operations, but are included on Table K-7 as part of the existing infrastructure that could be utilized by generators prior to ultimate management. The facilities and operations on this list are to be considered a part of the existing management infrastructure which must be used to the maximum possible extent to resolve immediate and long-term sludge management needs. However, it is important that planners and sludge generators not interpret this list as restrictive, but rather, as a starting point.

Table K-8 summarizes information obtained from domestic treatment works for the 2003 calendar reporting year, and summarizes the number of treatment works and sewage sludge production by the SQAR category. (The SQAR categories are defined as a footnote to Table K-3.)

As reflected in Table K-8, in New Jersey, there is a large disparity in the quantities of sewage sludge produced by various generators. There are 341 domestic treatment works in New Jersey. Of these, 45 domestic treatment works, or less than 15 percent of the total number of domestic treatment works, produce more than 89 percent of all of the sewage sludge generated. As is clear from the data presented in Table K-8, there are a small number of large quantity generators and a significant number of very small quantity generators. In fact, just eight domestic treatment works generated about 64 percent of New Jersey's total sewage sludge production for calendar year 2003 (see Table K-9).

MANAGEMENT MODES

OVERVIEW

The Bureau of Pretreatment and Residual (BPR) within the DWQ regulates the discharge of contaminants to domestic treatment works, regulates the management of residual associated with domestic and industrial treatment works, and oversees the implementation of approved pretreatment programs. The BPR also issues NJPDES permits for discharge of contaminants to domestic treatment works that do not have an approved pretreatment program and for various types of residual management operations in conformance with the New Jersey Water Pollution Control Act and the NJPDES Rules.

Regardless of the management method selected, industrial pretreatment plays an integral part in protecting and enhancing sewage sludge quality. Although not all indirect users require individual NJPDES permits, all must comply with at least minimum regulatory requirements under the NJPDES Rules (N.J.A.C. 7:14A-21). When this type of discharge meets one or more specific criteria, the discharger becomes a significant indirect user (SIU), and requires a permit. These criteria include discharging from specific operations, discharging high strength or high volume wastewaters, being subject to Federal Categorical Pretreatment Standards and failure to comply with regulatory requirements.

Regulating SIUs is particularly important because the wastewater they produce often has a higher pollutant loading than the normal domestic sewage generated by residential uses. As a result, improperly pretreated wastewater from an SIU may upset the biological processes of a domestic treatment works, which may ultimately pollute the receiving waterbody, and it may contaminate the sewage sludge to a level where it is unsuitable for a particular management method or methods. To protect the domestic treatment works from potential problems, each local agency must, in accordance with the NJPDES Rules, develop local limits or demonstrate that such limits are not necessary. Local limit development and/or evaluation takes into consideration site-specific conditions. Among the factors that local agencies will consider include compliance with NJPDES permit limits; sludge quality criteria; protection against domestic treatment works upset and interference; and, worker health and safety.

In New Jersey, SIUs are regulated by delegated local agencies in some areas of the State and directly by the Department in the remaining areas. The Department may grant "delegated" status to a local agency which demonstrates to the department that it has the legal authority, procedures, and resources to adequately administer an SIU permitting program, as required under the Federal Pretreatment Regulations (40 CFR 403). Such a program requires both setting appropriate discharge limits for SIUs and enforcing those limits to ensure compliance. Once a

pretreatment program has been delegated to a local agency, SIU permits are no longer issued by the Department in that service area. SIU permits issued by the DLA are considered NJPDES permits.

In New Jersey, there are 24 delegated local agencies (DLAs). These DLAs currently regulate 1,007 industrial users.

The first step in preparing an application for any permit for residual use or disposal is to prepare an Environmental Assessment. Residual land application sites are exempt from having to obtain a permit and an Environmental Assessment. The controls imposed on the processing of the residual in order to meet the land application requirements, combined with any applicable general requirements or management practices that may be required, are adequate to protect public health and the environment at the point where application to the land occurs. Therefore, the preparation and submittal of an Environmental Assessment is only required for:

- ? any location where a residual will be prepared to be applied to the land;
- ? any location where a residual was placed on a surface disposal site;
- ? a residual transfer station;
- ? a sewage sludge incinerator; or
- ? as otherwise determined necessary by the Department in accordance with the procedures outlined in the NJPDES Rules (specifically, N.J.A.C. 7:14A-20.5).

The Department shall waive this requirement if no additional infrastructure or capacity is proposed. For example, if a domestic treatment works already operates anaerobic digesters and is applying for a permit to land apply the sewage sludge from the existing digesters, an environmental assessment is not required.

The requirements of an Environmental Assessment are more fully discussed in the Department's Technical Manual for Residual Management which is available on the Department's website at www.state.nj.us/dep/dwg.

LAND APPLICATION

Residual have been land applied and researched as long as wastewater treatment plants have worked to protect the quality of the waters of the State. However, the regulation of land application on a statewide level is a relatively recent occurrence. The regulation of land application Statewide began with the application of Federal guidelines developed in the 1970's. By 1987, the Department adopted its first comprehensive standards in the Statewide Sludge Management Plan. The Federal Standards for the Use or Disposal of Sewage Sludge were

promulgated in 1993 by the USEPA and New Jersey followed with similar, but more restrictive regulations in 1997.

In 2001, the Rutgers Cooperative Extension issued guidelines solely for use by Rutgers Cooperative Extension faculty and staff with knowledge of standard agronomic and horticultural practices, including soil-environment interactions and plant growth requirements. These guidelines added to the information base upon which the Department makes decisions and are available at <http://www.rce.rutgers.edu/pubs/pdfs/e228.pdf>.

This evolution of land application regulation has occurred for various reasons in New Jersey. Changes in State law eliminated the options of landfill disposal in 1985 and ocean disposal in 1991. Residual generators have tried with varying degrees of failure and success to develop marketable residual products such as pellets, composts and liming agents. New Jersey is the most densely populated State in the Nation, and by 1984 the State's population density had grown to over 1,000 people per square mile. The demand for housing has led to the steady development of agricultural land and has pushed the number of homes adjoining active agricultural land to all time highs. One way of illustrating the pressure exerted on those who would land apply residual in New Jersey is shown in Table K-10.

New Jersey's "Standards for the Use or Disposal of Residual" found in the NJPDES Rules provide six different programs for land application based on the level of quality, pathogen reduction, and vector attraction reduction achieved. These programs are described in more detail in the Department's Technical Manual for Residual Management.

All sites that prepare (i.e. generate or process) residual to meet a regulatory standard for land application must obtain a NJPDES permit. NJPDES permits to prepare residual contain conditions regulating the subsequent distribution of prepared residual. Once prepared, residual must be land applied in conformance with either Scenario 1 or 2 discussed below:

Scenario 1 - Exceptional Quality (EQ) residual: EQ residual meet pollutant, pathogen reduction and vector attraction reduction criteria such that the risks of land applying them are commensurate with other types of fertilizers or soil amendments. Therefore, the Department has determined that product literature, labeling and the application of common agronomic practices are adequate to protect human health and the environment. Under this scenario, Department approvals for the residual land application site are not required; however, the Department will propose as part of the readoption of the New Jersey Pollutant Discharge Elimination System, rule changes that would necessitate Department site approval or general permits for certain large operations such as Topsoil Blending Facilities. Nevertheless, the permittee (preparer) is strictly responsible for overseeing distribution, especially of bulk quantities, of EQ residual in a manner that conforms to the agronomic practices dictated in a NJPDES permit.

To be considered EQ, a residual must meet the following requirements from the Federal Standards for the Use or Disposal of Sewage Sludge: both the ceiling concentrations in 40 CFR 503.13(b)1 and the pollutant concentrations in 40 CFR 503.13(b)3, the Class A pathogen reduction requirements in 40 CFR 503.32(a), and one of the vector attraction reduction options in 40 CFR 503.33(b) 1 through 8.

Applicants for Exceptional Quality residual land application permits must demonstrate a program based on agronomic rate; must address product maturity and nuisance potential; must develop Department approved instructional literature and package labeling; and must obtain appropriate licensing from the New Jersey Department of Agriculture when the residual will be sold, offered for sale, or intended for sale as a fertilizer, soil conditioner, or agricultural liming agent. Preparers of EQ marketable residual product must stress agronomic rate; consider residual quality beyond the standards of pollutant concentration (for example, characteristics which might cause a nuisance upon distribution), pathogen reduction and vector attraction reduction; implement a strong program of user information and education; and adhere to the standards established in agricultural products law.

Instructional literature and an oversight and marketing program must be created by the product manufacturer based on the mode of marketing conforming to the Department's Technical Manual for Residual Management. The Department's Technical Manual for Residual Management has been created to provide a set of guidelines to all producers and all customers on appropriate uses of residual and residual products. The Department requires that information found in the Technical Manual for Residual Management along with any specific requirements of the preparer's permit to be the absolute minimum which must be provided for in instructional literature, and in an oversight and marketing program.

Most New Jersey generators which prepare a sewage sludge for land application do so under scenario 1. As shown in Figure K-11, about 24 percent of the State's total sludge production is processed in-State for beneficial use. This is about a 19 percent decrease since in-State beneficial use reached its peak in the year 2000. During this same time period out-of-State options, primarily beneficial use management methods, increased by about the same amount (see Figure K-2). This shift in management methods can be primarily attributed to action the Department has taken to address nuisance issues associated with some Class A products. Of the amount beneficially used in-State in the year 2003, over 57 percent was distributed under scenario 1. (Scenario 1 is represented by the Class A beneficial use alternative depicted in Figure K-11.)

Scenario 2 - Non-EQ residual: Non-EQ residual can only be applied to land that has been evaluated by the Department and approved by Letter of Land Application Management Approval (LLAMA). The LLAMA will detail site-specific restrictions applicable to non-EQ residual and to the site where application will occur. At the time of permit application, the applicant for a

NJPDES permit to prepare non-EQ residual must detail the geographic area of distribution and identify any specific land application sites known at that time. The Department will publish notice of the draft NJPDES permit to prepare residual within the geographic area identified by the applicant. The applicant must also provide a notification plan that ensures advance public notice of land application sites not identified at the time of application for the NJPDES permit. Notification must be provided (prior to submission of a LLAMA request to the Department) to all landowners and occupants adjacent to or abutting a proposed residual land application site. This requirement may be satisfied through public notice in a newspaper of local circulation. The Department also requires that a copy of all LLAMA applications be forwarded to the clerk of the municipality in which land application is proposed. The Department will not issue a LLAMA unless all the required public notices have been provided.

The application for a LLAMA shall include information necessary to determine if the proposed residual land application site is appropriate for land application. These requirements are discussed in detail in the Department's Technical Manual for Residual Management.

Less than 3 percent of the State's total sludge production, and less than 11 percent of the amount processed in-State for beneficial use is done so under scenario 2. (Scenario 2 is represented by the Class B beneficial use alternative depicted in Figure K-11). The remaining 32 percent processed in-State for beneficial use is used for landfill daily cover.

New Jersey's residual land application program parallels but is in some ways more stringent than the requirements of the Federal Standards for the Use or Disposal of Sewage Sludge. Based upon factors that include New Jersey's high population density, limited agronomic land base, guidance from Rutgers University on the agricultural and horticultural use of sewage sludge, and the Department's experience in regulating the activity Statewide, New Jersey's program is more restrictive than the Federal rules in the following areas:

- ? Individual site review and approval (Letter of Land Application Management Approval) is required for each Class B residual land application site and, if determined necessary based on the characteristics of a specific residual, may be required for Exceptional Quality residual land application sites;
- ? Agronomic Rate applies to Exceptional Quality materials;
- ? Agronomic Rate is based on any nutrient (including Phosphorous – see the section entitled “Looking Ahead”, later in this SSMP);
- ? Management practices, including nutrient management planning and the requirement to obtain Agricultural Conservation Plans, are required for the land application of

Non-EQ residual and for certain bulk applications of any residual product, including Exception Quality;

- ? Additional requirements can be added by the Department in a permit based on the nature of the residual to be land applied;
- ? Additional processing steps may be required of processes generating products which create nuisances;
- ? Pollutants other than those limited by USEPA may be restricted;
- ? Foreign materials (for example, aeration piping or *Phragmites* rhizomes) must be removed from products prior to their distribution for land application;
- ? Programs for the land application of septage must include all requirements applicable to sewage sludge. As a result, all septage is, in actuality, processed at wastewater treatment plants – no land application permits have been granted. (See discussion on Department's Policy on Domestic Septage under New Jersey Policy on Land Based Sludge Management section of this SSMP); and
- ? Minimum quarterly monitoring and reporting.

The Department is committed to maintaining a program that is protective of the citizens, and the resources of New Jersey and continues to refine its program by supporting and reviewing ongoing research, and by continuing a long-standing collaboration with the environmental agencies responsible for residual management regulation in all 50 States. In addition, as compared to its Federal and most State counterparts, New Jersey has committed a greater number of staff hours to the permitting, oversight and enforcement of the land application program.

Policy on Agricultural Conservation Plans: Appropriate management practices should be instituted to ensure the safe agricultural use of all fertilizers and soil conditioners - whether in the form of residual, other organic amendments, or chemically based fertilizers. Therefore, the Department requires Agricultural Conservation Plans for all Non-EQ and certain EQ agricultural and horticultural applications. Runoff and erosion controls are essential to sound land management. Overland flow increases the potential for contamination of surface waters. Erosion decreases soil productivity and increases sediment loads in streams. Soil conservation practices are designed to slow down velocity of water that flows over the soil surface. Sometimes runoff is inevitable, even from well-protected fields. This is especially true during high-intensity storms and when the soil is frozen. It is for these reasons that the Department has determined that the

requirement for an Agricultural Conservation Plan is appropriate except under certain circumstances for EQ residual.

The benefits of requiring Conservation Plans include decreased nutrient and soil loss from agricultural and horticultural land which has been identified as a significant contributor of nonpoint source pollution in many parts of the country. This approach is consistent with the Department's direction and the nationwide trends to address total nutrient management planning.

INCINERATION

Sewage sludge incineration can reduce sewage sludge volume by combustion. The extent of reduction can range to as high as 90 percent of the input sewage sludge (to a sterile ash) through combustion (dependent on the mineral content of the sewage sludge). In addition, sewage sludge incinerators do not require significant land commitment for disposal, operate in all seasons, safely manage almost one-quarter of the State's sewage sludge production without nuisance, and are fully regulated by the Department's Air Pollution Control Program. Based on the above, the Department fully recognizes the role of sewage sludge thermal reduction facilities as an important part of a diversified sewage sludge management strategy.

All thermal reduction facilities require permits from the Air Quality Permitting Program to control air pollution emissions to the atmosphere. Solid Waste Facility permits are not required for sewage sludge-only incinerators. Treatment Works Approvals from the Division of Water Quality are required for all sewage sludge handling and processing equipment (for example, dewatering equipment, storage tanks, and conveyors) prior to the point of incineration. In addition, for new or expanded sewage sludge incinerators, an environmental assessment is required. The review of an Environmental Assessment for a sewage sludge incinerator is a joint effort between the Division of Water Quality and the Air Quality Permitting Program. The Air Quality Permitting Program is responsible for review of potential air impacts, and the Division of Water Quality is responsible for all other aspects consistent with the NJPDES Rules.

The purpose of air pollution control apparatus requirements are to mitigate possible environmental impacts. The air pollution control equipment of a sewage sludge incinerator may include a scrubber which creates a scrubber liquor that needs to be discharged. In most cases scrubber water is returned to the head of the domestic treatment works where it is introduced at a design rate that does not affect the ability of the treatment plant to meet effluent limitations. However, the domestic treatment works must be capable of handling the increase in flow and loading in order to avoid plant upset.

The issuance of air emission permits and associated approvals of emission control devices is predicated on the applicant's disclosure of the quantity and quality of material to undergo

incineration and the ability of the emission control devices to achieve air emission standards, while processing the disclosed quantity and quality of material. In order for a sewage sludge incinerator to accept customers, it must be determined that the quantity and quality of the customer residual do not violate the criteria on which the emission permit was based. This determination is made by the Air Quality Regulation Program on a case-by-case basis for each customer source and each specific incineration facility.

Sewage sludge incineration facilities may, however, accept customer sludges without the Department's case-by-case determination, if the emission permit issued to the sewage sludge incinerator so provides. Permits to accept customer residual without Department case-by-case determinations generally require that the emissions be evaluated while the incinerator is operating at maximum design capacity and processing worst case quality residual. Where emission standards can be met under these worst case conditions, approval to burn customer residual may be included in the emission permit.

In addition to the air emissions and scrubber discharges created by sewage sludge incinerators, these facilities also create a solid product that must be managed. In many cases, this solid product is an ash which is landfilled. However, sewage sludge incinerator ash is not required to be disposed in a landfill. Some ashes are suitable for landfill interim or daily cover, or for other uses as approved by the Division of Solid and Hazardous Waste. Sewage sludge incinerator operators are encouraged to develop and seek approval for alternative uses for ash that are consistent with the resource recovery, reuse and recycling goals of the Solid Waste Management Act.

SURFACE DISPOSAL OR LANDFILLING OF RESIDUAL

The State of New Jersey restricts, but does not prohibit, the co-disposal of sewage sludge in a municipal solid waste landfill consistent with the mandates on sewage sludge under the New Jersey Solid Waste Management Act. However, the NJPDES Rules prohibit the surface disposal (or monofilling) of sewage sludge. Since the New Jersey Solid Waste Management Act does not contain similar restrictions on the landfiling (defined as storage for periods of greater than six months) of industrial residual, landfiling of industrial residual is allowed provided the landfill is fully permitted and authorized in accordance with the New Jersey Solid Waste Management Rules.

Nevertheless, all domestic or industrial wastewater or sludge impoundments and lagoons must be designed, maintained and operated to provide for periodic residual removal. This requirement ensures the treatment units do not become surface disposal sites. Where the person who prepares the sewage sludge can explain why the material is being held for longer than six months and can

supply documentation of ultimate management, the site would not be considered a surface disposal site.

Landfilling or surface disposal as a mode of waste disposal requires extensive and long-term commitment of land. This mode of sludge disposal must be considered a method of last resort in New Jersey which is the most densely populated State in the Country and has limited land available to be committed for waste disposal. Therefore, the Department restricts the landfilling of sewage sludge to those instances where overriding circumstances, including emergencies, exist. Such circumstances include but are not limited to: (1) influent quality problems at the treatment plant which could render sludge unsuitable for reuse or resource recovery, or (2) unforeseen upsets or operational problems at an approved management site where the generator can prove to the Department's satisfaction that no other suitable alternative exists. Landfilling of sewage sludge under these circumstances will be permitted only as long as the overriding circumstances exist. In addition, the Department will only consider proposals for the temporary landfilling of sewage sludge at approved landfills with a liner and leachate collection system.

Generally, under New Jersey Solid Waste Management Rules, surface disposal sites for industrial residual would be classified as "sanitary landfills." Therefore, permitting for the surface disposal of nonhazardous industrial residual (other than sewage sludge) is accomplished through the New Jersey Solid Waste Management Rules (although a ground water monitoring component is issued under the NJPDES Rules). However, it should be noted that there are several active and inactive nonhazardous industrial residual lagoons and wastewater impoundments that have many years of residual build-up. These lagoons and impoundments have primarily received discharge to groundwater permits under the NJPDES Rules; thus, the NJPDES Rules may provide the most effective and efficient means for closure and/or management of the residual generated. Therefore, the closure of these types of facilities will be conducted through the NJPDES Rules as opposed to the New Jersey Solid Waste Management Rules.

REED BEDS

The Reed Bed system of residual management combines the action of conventional drying beds with the effects of aquatic plants upon water-bearing substrates. While conventional drying beds are used to drain 20-25 percent of water content from sewage sludge, the resultant residue must be hauled away for further treatment. By having the drying beds built in a specific manner, the beds can be planted with reeds, and further desiccation of the residual is accomplished through the plants' voracious demand for water. To satisfy this demand, the plants extend their root systems continually into the residual deposits. The extended root system causes the establishment of a rich microflora that feeds upon the organic content of the residual. Aerobic

conditions needed by the microflora are created through the root action of the plants. Eventually substantial portions of the residual solids are converted into carbon dioxide and water with a corresponding volume reduction. These drying beds can be operated for over five years before the remaining residues have to be removed.

The Department issued a NJPDES General Permit incorporating the process and monitoring requirements for Phragmites Reed Beds in December 2002. The Reed Bed General Permit provides a streamlined process for applying for and seeking authorization to operate this type of residual treatment system. In order to qualify for coverage under the general permit a domestic treatment works must limit loadings to the Reed Beds based on the type of sewage sludge (for example, anaerobically or aerobically digested) and the total solids of the sewage sludge discharged. The maximum total solids allowed under the general permit are 3 percent for aerobic sludges and 7 percent for anaerobic sludges. Persons seeking authorization under the general permit shall submit to the Department a written request for authorization as detailed in the general permit.

RESIDUAL TRANSFER STATIONS

Transfer stations are not a method of ultimate residual management. However, such transfer programs can produce significant transportation cost savings, and eliminate unnecessary truck traffic. In this way, trucks can be dispatched to collect septage and sludge from small generators, and fewer large trucks are needed to haul residual from the transfer station to ultimate management sites.

The New Jersey Water Pollution Control Act authorizes the Department to prepare, adopt, amend, repeal and enforce reasonable codes, rules and regulations which may include, but shall not be limited to, provisions concerning the storage of any liquid or solid pollutant in a manner designed to keep it from entering the waters of the State.

As previously discussed, under Solid Waste Rules, the Department has exempted all types of sewage sludge management equipment and operations from solid waste permitting, including residual transfer stations, except those which co-process or co-dispose sewage sludge with municipal solid waste.

Exempted sewage sludge management equipment and operations are still required to comply with Treatment Works Approval requirements under the NJPDES Rules in lieu of a solid waste engineering design approval. Air quality permits are also required, where applicable.

Operational and reporting requirements for residual transfer stations include procedures for routine inspection of structural integrity, spill control and emergency response. Submission requirements for the NJPDES permit include site information including, but not limited to,

topography, proximity to surface water, critical areas, proximity of neighboring development, roads and plot plans.

The Department has excluded from regulation as a residual transfer station those operations which transfer closed residual transport containers directly from vehicle to vehicle, including truck to train. Based on the operational history of such facilities, it is not necessary to control such activities through issuance of a NJPDES permit; however, requirements under the Solid Waste Rules do apply.

The Department has issued a NJPDES General Permit for residual transfer stations. This General Permit provides a streamlined process and limited monitoring for relatively small residual transfer stations (defined as having less than 50,000 gallons total storage capacity). In order to qualify for coverage under the general permit, a residual transfer station must limit storage capacity to less than 50,000 gallons, provide no treatment, and accept only liquid residual of domestic origin. Persons seeking authorization under the general permit shall submit to the Department a written request for authorization as detailed in the general permit.

LOOKING AHEAD

The use of biosolids has been one of the most extensively studied waste management practices in the United States. Some public uses have occurred in the United States for more than 80 years. Throughout this long history of use, biosolids have repeatedly been shown to be a valuable soil conditioning and fertilizing product. Despite the successes, questions continue to be raised with regards to the safety of biosolids use. While many of these questions have already been answered, this information is often published in academic journals and textbooks, and is not necessarily readily available to the public.

One common misconception is that testing for contaminants is limited to nine heavy metals. As previously discussed in this SSMP under the section on Residual Quality, the Department has a historic database on residuals quality, with data on over 125 parameters including many organic compounds, including certain pesticides. By far, most of the organic compounds have not been detected in biosolids, or have been detected in less than 5 percent of all samples. The Department will continue to monitor the quality of residual generated for these compounds, and will work with New Jersey Certified Laboratories to consistently improve levels of detection.

Extensive feeding studies with biosolids, composts, and crops grown on biosolids amended soils have been conducted. It has become generally accepted that only field data from the actual long-term use of sewage sludge can provide data appropriate for risk assessment and environmental regulation. Research using metal salts, massive single applications, pots of soil, and greenhouses

have been found to over-estimate risk. Field research to date supports the agronomic use of high-quality biosolids.

The Department re-evaluates its regulations on a regular basis to ensure they are still appropriate and protective. To that end, new research is conducted and used for making those determinations. In this regard, biosolids regulation is no different than drinking water standards, wastewater effluent standards, or any other regulatory program. What follows is a discussion of several areas the Department has identified as needing further study. The Department is committed to working on these issues.

NATIONAL RESEARCH COUNCIL RECOMMENDATIONS

The final report prepared by the National Research Council (NRC) entitled Biosolids Applied to Land: Advancing Standards and Practices, July 2002, was requested by the United States Environmental Protection Agency to help address questions and the requirement for periodic reassessment of the 40 CFR Part 503 rule. A final EPA response on how they plan to proceed in addressing the recommendations of the NRC report was published in the December 31, 2003 Federal Register.

As stated in the report Summary, the NRC's overarching findings were that "there is no documented scientific evidence that the Part 503 rule has failed to protect public health. However, additional scientific work is needed to update the science to (1) ensure chemical and pathogen standards are supported by current data and risk assessment, (2) demonstrate effective enforcement of rule, and (3) validate effectiveness of management practices (for example, setback distance to surface water)."

Specifically, the NRC recommends that "(1) improved risk-assessment methods which have been advanced over the past decade be used to update the scientific basis for standards for chemicals and pathogens, (2) a new national survey of chemicals and pathogens in sewage sludge be conducted, (3) a framework for an approach to implement human health investigations be established, and (4) increase resources devoted to EPA's biosolids program." Other key recommendations of the NRC report include:

- a. Additional "risk-management" practices should be considered: setbacks to residences or businesses, setbacks to private and public water supplies, limitations on holding or storage practices, slope restrictions, soil permeability and depth to groundwater or bedrock, and greater distance to surface water. (It should be noted that New Jersey already has more stringent management practices in place. These management practices are explained in detail in the Department's Technical Manual for Residual Management.)

- b. Alternatives need to be viewed holistically, that is, if all land application should cease, how would the overall risk be altered if additional landfills, surface disposal sites, and incinerators were constructed and operated to accommodate the additional volumes.
- c. Exemptions from nutrient management and site restrictions for land application of bulk EQ biosolids should be eliminated. (It should be noted that New Jersey already requires compliance with agronomic rate for EQ biosolids as well as additional site restrictions depending on the type of market outlet (for example, agricultural, topsoil blending, reclamation) used.)
- d. A revised multipathway risk assessment is recommended with particular attention paid to arsenic and indirect pathways for cadmium and mercury.
- e. It is important for EPA to continually think about the types of chemicals released into wastewaters and added during wastewater and sewage sludge treatment as part of its process for updating the Part 503 rule. Particular attention should be paid to those compounds that are organochlorines (persistent and biomagnification), and lipophilic (more likely to partition to sewage sludge).

In summary, the Federal Standards for the Use or Disposal of Sewage Sludge are over a decade old. It is prudent that the standards established be reevaluated against current risk-assessment practices and scientific knowledge. In general, the Department endorses the findings and recommendations made in the report prepared by the National Research Council. As demonstrated in this SSMP, in most cases the actual concentrations of the regulated contaminants in biosolids generated in New Jersey are well below the regulatory limits. Additionally, New Jersey has already adopted more stringent general requirements and management practices.

The Department remains committed to ensure that the land application of biosolids is conducted in a manner that is protective of public health and the environment. The Department is also committed in ensuring that stakeholders have a role and that their valid concerns are addressed. To this end, the Department was an active participant at the Biosolids Research Summit held during August 2003. The Department will remain active in assisting all stakeholders in moving forward to implement the ambitious research agenda that was identified during this summit.

PHOSPHORUS

Historically, residual application rates have been based on either the available nitrogen content of the residual correlated with the nitrogen requirement of the crop to be grown, or the liming equivalency of the residual correlated with the pH of the soil, whichever was more limiting. The

renewal of the NJPDES regulations in 1997 provided the opportunity for a change in the manner in which residual application rates could be calculated. Bulk residual (i.e., not bagged) was to be applied at a rate equal to or less than the agronomic rate. The agronomic rate is an application rate calculated using the most limiting nutrient needed by the crop to be grown, or the liming rate to neutralize soil acidity if more limiting than the nutrient application rate.

In residuals, the phosphorus content is approximately twice that of the available nitrogen content, and crops typically remove much less phosphorus than nitrogen (concentration of a plant leaf is about 2 percent nitrogen and 0.25 percent phosphorus, NRCS Agricultural Waste Management Field Handbook). Therefore, the most controlling factor in determining application rate is usually phosphorus, and land-applying residual at the nitrogen requirement of the crop can result in phosphorus application rates in excess of what the crop can remove. Phosphorus is readily adsorbed to soil particles so this excess phosphorus accumulates in the soil, with the potential to cause a problem in surface water if run-off is not controlled.

The Department has historically required soil fertility test results be obtained from each agricultural and horticultural field prior to distribution of Class B marketable residual products (and annually thereafter) and is moving to require the same level of testing for distribution of Class A bulk marketable residual products. The results of the soil fertility test are used to project if, or how much residual is required for optimum crop growth. Soil fertility test results are not a direct measurement of the total plant available nutrient content of a soil but rather an index of soil nutrient availability that is correlated with plant response. The results (in lbs/acre) from different soil test extraction methods are based on different indices and are therefore not comparable. The Department currently limits the soil fertility test extraction method to the Mehlich-3 method, which is recommended by Rutgers Cooperative Extension as the most appropriate for New Jersey soils.

The phosphorus soil fertility test results and distance of the edge of a field to surface water will determine the method to calculate residual application rates. If a field has a soil test phosphorus level below 200 ppm (400 lbs/acre) and has a minimum 200-foot buffer to surface water, the nitrogen or liming requirement will continue to be utilized to calculate residual application rates. If a field has either a soil test phosphorus level greater than 200 ppm or is closer than 200 feet to surface water, a Nutrient Management Plan (NMP) must be developed and implemented prior to residual application.

A NMP is a plan prepared by a certified nutrient management consultant to manage the amount, placement, timing, and application of animal waste, commercial fertilizer, biosolids, or other plant nutrients to prevent pollution transport of bioavailable nutrients (i.e. phosphorus and nitrogen) and to maintain field productivity. A NMP for residual must contain a Phosphorus Index (PI) component. The PI is a field evaluation tool that evaluates the relative risk of surface

water impacts from the phosphorus contained in land applied residual, determines where residual application can occur, and if the residual application rate will be nitrogen or phosphorus based.

ODOR

The stability of biosolids is a concern in both residential and non-residential areas. Biosolids are increasingly being beneficially used and applied to rural and residential areas as soil conditioners and fertilizers. The control of odors associated with biosolids is extremely important because of the public's increased proximity to biosolids and negative reaction to these odorants.

To help better understand the causes of odor generation in biosolids, and to help develop solutions to reduce odors in residual products, the Department entered into a joint research project with the Pennsylvania Department of Environmental Protection and the Pennsylvania State University. This research project focused on the analysis and identification of odorous compounds released from biosolids. Air sampling and analysis with a standardized method for gas chromatography and mass spectrometry has been used to identify the malodorous compounds released from sewage sludge. Odorous emissions from biosolids processes have been quantified and reported. An odor index has been developed and documented to allow comparison of the odorous emissions from different types of stabilization processes and products. The effect of treatment technique on biosolids status (Class A, B or unclassified), pH, and odorous emissions has been evaluated. Tests have been conducted to monitor the stability characteristics prior to treatment, immediately after the prescribed treatment period, and for a period of 60 days thereafter. As discussed below, all applicants for a NJPDES permit for land application are required to demonstrate the characteristics of the marketable residual product to be produced with regards to the potential to create odors. This research project has provided biosolids managers with a new tool to address and reduce biosolids odors. The Department will consider rule changes to require use of the odor index on new proposals, and on existing products that have been documented to be a nuisance.

As previously discussed in this SSMP, the National Research Council released a report entitled Biosolids Applied to Land: Advancing Standards and Practices at the request of the USEPA. The NRC report recognized that additional studies are needed to identify odorants typically released from biosolids. The NRC report also recognized that there is a need to determine the range of likely air concentrations near biosolids application sites, and that particular attention should be paid to the degree to which effective biosolids treatment reduces odorant concentrations and impacts.

In addition to ongoing research, the Department has already implemented regulatory requirements to address residual products that may, or have been found to, create a nuisance. The Department has found that certain residual products have the potential to create a nuisance. The

Department has exercised its authority under the NJPDES Rules (specifically, N.J.A.C. 7:14A-20.5(a)iii) to require site specific approvals or other product specific restrictions in order to control odors. As a result, the Department requires information that new residual products will meet marketable residual product standards and that the product will not exhibit nuisance characteristics.

For example, it has been the Department's experience with the distribution of marketable residual products that there is a relationship between the maturity of the product and its potential to create an odor and a nuisance upon distribution. The Department typically requires a 30-day curing period following the active phase of the sewage sludge composting process. During this 30-day period, further decomposition, stabilization and degassing take place, which help to make the compost more marketable.

Excessive moisture, excessive temperature and excessive dustiness are undesirable in a material that has otherwise met all Federal and State criteria for pathogen and vector attraction reduction. The proper maintenance and handling of marketable residual products subsequent to achievement of the Federal criteria will reduce nuisance characteristics and the related release of undesirable odors. Thus, it is important for an applicant to demonstrate a thorough understanding of the proposed system, and to provide a written proposal to optimize the characteristics of the marketable residual product produced, including temperature, pH, and total solids to reduce the potential for the creation of odor. The NJPDES Rules allow for the denial of applications for new permits and for permit renewals to operate systems of technologies known to create nuisance products.

The Department requires the production and land application of a particular residual to be successfully tested or demonstrated in a pilot program. Once this has been accomplished, the Department may permit the process on an experimental basis. The applicant is required to prove that the experimental system reliably produces the intended marketable residual product, that this product has viable field applications, and that these field applications represent a viable market that can be reached without introducing air contaminants (including odors) to the public. The Department's intent is to develop additional residual land application programs, through closely controlled applications, to evaluate their usefulness on a large scale. Ultimately, a sufficient database will have to be collected from the pilot program in order for the Department to determine the adequacy or appropriateness of a larger scale program.

MERCURY

Mercury concentrations reported in sewage sludge represent total mercury. It is likely that much of the mercury present in wastewater discharges is present in the divalent (Hg^{++}) form, since other forms are not as soluble. There could be some mercury that is associated with suspended

solids in the effluent. Mercury species in air emissions from incinerated sludge may be similar to those from other combustion sources. Limited estimates of the species of mercury emitted from combustion sources suggest that elemental mercury, oxidized gaseous species, such as HgCl_2 , and species bound to particulates are present.

The median mercury concentration in sewage sludge has dropped over 50% in the past 19 years (see Table K-1). Although data are not readily available to pinpoint all reasons for this decline, the following actions have apparently played a significant role:

- a. The Industrial Pretreatment Program has reduced the amount of mercury and other pollutants allowed to be discharged from permitted industries to domestic treatment works.
- b. The Pollution Prevention Program has provided industries with incentives to reduce the amounts of regulated waste produced through process changes and/or substitution.
- c. Mercury has been removed from household products (e.g., latex paint) that often found their way into domestic treatment works collection/treatment systems.
- d. More stringent clean up and spill reporting procedures for mercury spills/breakage for sources ranging from schools to research facilities have been implemented.
- e. Other products and/or technologies have gradually been substituted for historically mercury based products, e.g., electronic thermometers, blood pressure measuring instruments, etc.

The New Jersey Mercury Task Force completed their recommendations for reducing mercury impacts to the environment in November 2001, and the three volume Mercury Task Force Report was released to the public during January 2002. Included in the Mercury Task Force report were the following source reduction and pollution prevention recommendations:

- a. Phase out use of mercury-containing amalgam for dental fillings coupled with drain traps until phase out is complete.
- b. Develop a public education program among identified cultural/ethnic groups to reduce use of mercury in ceremonial and/or cultural practices.
- c. Increase public awareness programs to all medical practitioners, medical institutions, research facilities, educational facilities/institutions and testing laboratories, stressing the proper clean-up of breakage and spills as well as proper handling methods.
- d. Phase out use of mercury in other products that could find their way into wastewater; thus, subsequently the sewage sludge generated.

- e. Develop a central clearinghouse to keep abreast of national and international developments that chronicle the elimination, substitution, or reduction of mercury in products or processes. Provide this information to appropriate in-State end users.

Nationally, there is a downward trend in the use of mercury in products, with many uses having been discontinued over the last two decades. It is believed that this trend will continue. Source reduction options such as those discussed above should ensure the continuation of the downward trend in the use of mercury in products, which should translate to a declining concentration of mercury in sludge.

Domestic treatment works are a passive recipient of mercury from residential, commercial, and industrial source activities. Sewage sludge typically contains mercury in the parts per million (mg/kg) range. Using existing authority, domestic treatment works can help reduce influent mercury by limiting concentrations in incoming wastewater streams through the establishment of technically based local pretreatment limits, which they can impose on non-domestic users to achieve compliance with applicable environmental endpoints.

Domestic treatment works, most of which are publicly owned, would be positively affected by programs that sought to limit the amount of mercury passing through and subsequently released, either in sludge, wastewater effluent, or air emissions. Many of New Jersey's domestic treatment works report concentrations of mercury in their sludge at or near the detection limit. In fact, the median concentration of mercury in New Jersey sewage sludge is 1.47 mg/kg (see Table K-3).

The Department intends to establish a workgroup to conduct surveys and studies to gather information on the causes of mercury discharges into wastewater treatment plants.

The Department is working with the sewerage authorities that operate sewage sludge incinerators to reduce permitted mercury concentrations in their Air Pollution Control Operating Permits to reflect reductions in mercury concentrations in sewage sludge. Depending upon the degree of success of ongoing and anticipated mercury reduction initiatives, the Department may develop rules to further restrict the mercury content of sewage sludge being incinerated or require add-on control for mercury emissions from sewage sludge incinerators.

RADIONUCLIDES

There are currently no Federal concentration limits for radionuclides in land-applied sewage sludge. Because New Jersey has elevated levels of naturally occurring radionuclides in groundwater, they may be present in sludge that is land-applied. The Department has adopted rules that establish remediation standards for radium and other radionuclides in soil (N.J.A.C.

7:28-12). In addition, the Department has recently adopted a more stringent standard for radionuclides in drinking water than the USEPA. This has resulted in community and non-community water systems being out of compliance with the radionuclide drinking water standards. Removing radium from drinking water could generate a concentrated waste stream that may be discharged to the sewage treatment plant. These recent developments have made it necessary to evaluate radionuclides in biosolids. The Department plans to work closely with biosolids and other residual generators to determine the impacts on residual quality from radium and other naturally occurring radionuclides.

In 1983-89, the US Geological Survey¹ conducted a study of the effects of geology, geochemistry, and land use on the distribution of naturally occurring radionuclides in ground water in the aquifer system in the Coastal Plain of New Jersey. They concluded that leaching of uranium and radium from the minerals of the Bridgeton Formation (predominantly gravel) is suspected to be a source of the radium in the ground water. The correlation of radium concentration with the concentrations of chemical constituents added to soil in agricultural areas indicates that leaching of radium may be enhanced by the chemical processes in ground water that are associated with the addition of agricultural chemicals to the geochemical system.

Public drinking water supplies depend upon ground water as their source of water in the Coastal Plain. The naturally occurring radionuclides in these drinking water supplies ultimately find their way to wastewater treatment facilities either via the sewer in those areas that are seweraged or by the haulage of domestic septage from non-sewered areas. Some of these drinking water supplies have radium levels that exceed the drinking water standard for radionuclides. In treating the drinking water to remove the radium, a wastewater is created, which contains the radium that is removed. If this wastewater is discharged to the sanitary sewer, the radium will become reconcentrated in the sewage sludge produced by the treatment plant. Considering the potential uncontrollable contribution of radionuclides to some wastewater treatment facilities, in order to protect sludge quality, the Department will have to focus much greater attention to reduce those discharges of radionuclides that can be considered controllable. For example, rather than treating the radium in groundwater, it might be possible to find an alternative water supply that is low in radium. If an alternate water supply is unavailable, other treatment options could be investigated that either do not have a discharge, or that have a less concentrated discharge. Although radionuclides in domestic septage in those areas of the State with high groundwater radionuclide

¹ Kozinski, J., Szabo, Z., Zapecza, O.S., and Barringer, T.H., 1995, *Natural Radioactivity in, and Inorganic Chemistry of, Ground Water in the Kirkwood-Cohansey Aquifer System, Southern New Jersey, 1983-89*, US Geological Survey Water-Resources Investigations Report 92-4144, West Trenton, NJ.

concentrations are largely uncontrollable, the Department would need to evaluate whether it could control which wastewater treatment facilities receive the domestic septage.

The Department has collected data, through a grant from the USEPA, on naturally occurring radionuclides in residual, especially biosolids to be land applied. In addition, radionuclides are being evaluated on a national level by the Interagency Steering Committee on Radiation Standards (ISCORS), Sewage Sludge Subcommittee, composed of representatives from the USEPA, Nuclear Regulatory Commission, Department of Energy, Department of Defense, State of New Jersey, the city of Cleveland and the County of Middlesex, New Jersey. A draft report was released in November 2003, and the final report to include guidance and recommendations for the management of sewage sludge with radionuclides is anticipated sometime during 2005. After sufficient data has been obtained, and after receipt of the final ISCORS report, the Department will determine if there is a need to propose amendments to the SQAR and/or the NJPDES Rules to incorporate monitoring requirements, and potentially numeric standards, for radionuclides.

DIOXINS

In December 1999, the United States Environmental Protection Agency proposed to amend the Federal Standards for the Use or Disposal of Sewage Sludge by adding a numeric concentration limit for dioxins in land-applied sewage sludge. Based on the initial risk assessment, the proposed limit would prohibit land application of sewage sludge that contains more than 300 parts per trillion toxic equivalents (TEQ) of dioxins. EPA proposed this limit to protect public health and the environment from unreasonable risks of exposure to dioxins.

On October 24, 2003 the USEPA announced their decision not to regulate dioxin in land-applied sewage sludge. After five years of study, the USEPA concluded that dioxin from biosolids does not pose a significant risk to human health or the environment. The USEPA instead will encourage proper biosolids handling and management.

Since the 1999 proposal, both the USEPA and the Association of Metropolitan Sewage Agencies (AMSA) have conducted surveys to update information on the concentrations of dioxins in sewage sludge. Samples from these surveys indicate biosolids from most domestic treatment works are below 100 ppt TEQ. However, these surveys also had “outliers”, with the highest concentrations of each survey at 718 and 3,590 ppt TEQ, respectively.

The Department felt it would be prudent to test biosolids that are land applied in New Jersey for dioxin. Therefore, the Department applied for a grant from the USEPA to collect data on the presence of dioxin compounds in New Jersey sewage sludges. Based on the results of these

analyses, the Department will recommend a course of action. The Department expects the sampling, analysis, and evaluation of the results to be finished by the summer of 2005.

Below is a list of important links where additional information on sewage sludge and biosolids can be obtained:

1. The New Jersey Department of Environmental Protection, Division of Water Quality's WebPage for Information on Residual: <http://www.state.nj.us/dep/dwq/sludge.htm>
2. The U.S. Environmental Protection Agency's Office of Wastewater Management WebPage on Biosolids: <http://www.epa.gov/owm/mtb/biosolids/index.htm>
3. The U.S. Environmental Protection Agency's Office of Water Science WebPage on Biosolids – See the NRC/NAS Report: Biosolids Applied to Land: Advancing Standards and Practices: <http://www.epa.gov/waterscience/biosolids/>
4. The U.S. Environmental Protection Agency's Office of the Inspector General WebPage. Visit the link to perform a search on 'biosolids' for relevant publications: <http://www.epa.gov/oigearth/>
5. See the March 28, 2002 Status Report on the Land Application of Biosolids (2002-S-000004): http://www.epa.gov/oig/reports/2002/BIOSOLIDS_FINAL_REPORT.pdf.
6. The Rutgers Cooperative Extension WebPage of Publications: <http://www.rce.rutgers.edu/pubs/>
7. The U.S. Department of Agriculture's Natural Resources Conservation Service WebPages (Links to Soils Information and the Electronic Field Office Technical Guide 'eFOTG'): <http://soils.usda.gov/> and <http://www.nrcs.usda.gov/technical/efotg/>
8. The National Biosolids Partnership's WebPage: <http://biosolids.org/>
9. The Mid-Atlantic Biosolids Association's WebPage: <http://biosolids.policy.net/maba/>
10. The Water Environment Federation's WebPage: <http://www.wef.org/>
11. The New Jersey Water Environment Association's WebPage: <http://www.njwea.org/>
12. The U.S. Environmental Protection Agency's WebPage on Analytical Method-846 for Solid Waste (SW-846): <http://www.epa.gov/epaoswer/hazwaste/test/main.htm>
13. The Interagency Steering Committee on Radiation Standards (ISCORS) WebPage - United States Environmental Protection Agency & United States Nuclear Regulatory Commission: <http://www.iscours.org/>

14. The Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health (NIOSH) WebPage – Visit the link to perform a search on 'biosolids' for relevant publications): <http://www.cdc.gov/niosh/homepage.html>
15. The National Academies' WebPage, a Publication on "The Science of Recycling Sewage Sludge": [http://www4.nationalacademies.org/onpi/oped.nsf/\(Op-EdByDocID\)/5ED2E11CD195F1C285256C2C00613208?OpenDocument](http://www4.nationalacademies.org/onpi/oped.nsf/(Op-EdByDocID)/5ED2E11CD195F1C285256C2C00613208?OpenDocument)
16. The New Jersey U.S. Geological Survey WebPage: <http://wwwnj.er.usgs.gov/>
17. The New Jersey Pinelands Commission WebPage: <http://www.state.nj.us/pinelands/>
18. The Pennsylvania Department of Environmental Protection's WebPage on Biosolids: <http://www.dep.state.pa.us/dep/biosolids/biosolids.htm>
19. The Pennsylvania Nutrient Management WebPage: <http://panutrientmgmt.cas.psu.edu/>
20. The Penn State University's College of Agricultural Sciences, Cooperative Extension WebPage: <http://www.extension.psu.edu/>
21. The New York State Department of Environmental Conservation's WebPage on Biosolids: <http://www.dec.state.ny.us/website/dshh/redrecy/orgwste.htm>
22. The Maryland Department of the Environment's WebPage on Sewage Sludge Utilization: <http://www.mde.state.md.us/permits/wastemanagementpermits/sewagesludge/>
23. The Delaware Department of Natural Resources and Environmental Control's WebPage: <http://www.dnrec.state.de.us/dnrec2000/>
24. The Virginia Department of Health's Biosolids WebPage: <http://www.biosolids.state.va.us>
25. The Virginia Cooperative Extension's WebPage – Visit the link to perform a search on 'biosolids' for relevant publications: <http://www.ext.vt.edu/>
26. See the Agricultural Land Application of Biosolids in Virginia: Risks and Concerns: <http://www.ext.vt.edu/pubs/compost/452-304/452-304.html>
27. The New England Interstate Water Pollution Control Commission's WebPage: <http://www.neiwpcc.org>
28. The New England Biosolids and Residual Association's WebPage: <http://www.nebiosolids.org/intro.html>
29. The Environmental Health Perspectives' WebPage, a Publication on "Biosolids": <http://ehpnet1.niehs.nih.gov/docs/1997/105-1/focusbeauty.html>

30. A Measurement Conversion WebPage: <http://www.convertit.com/Go/ConvertIt/>

31. A Topographic Map WebPage: <http://topozone.com/>

Figure K-1
New Jersey Sewage Sludge Management History

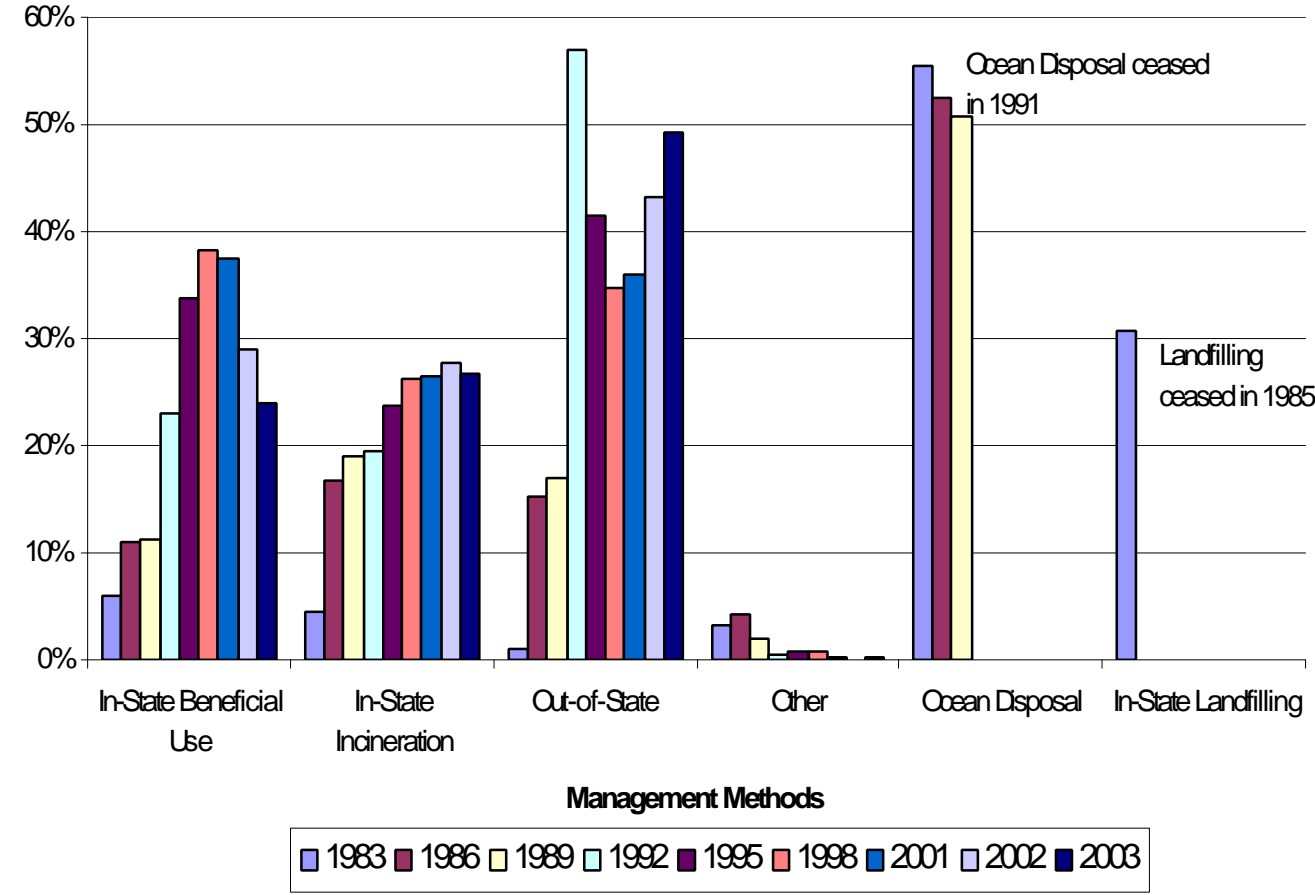


Figure K-2
Out-of-State Management of Sewage Sludge

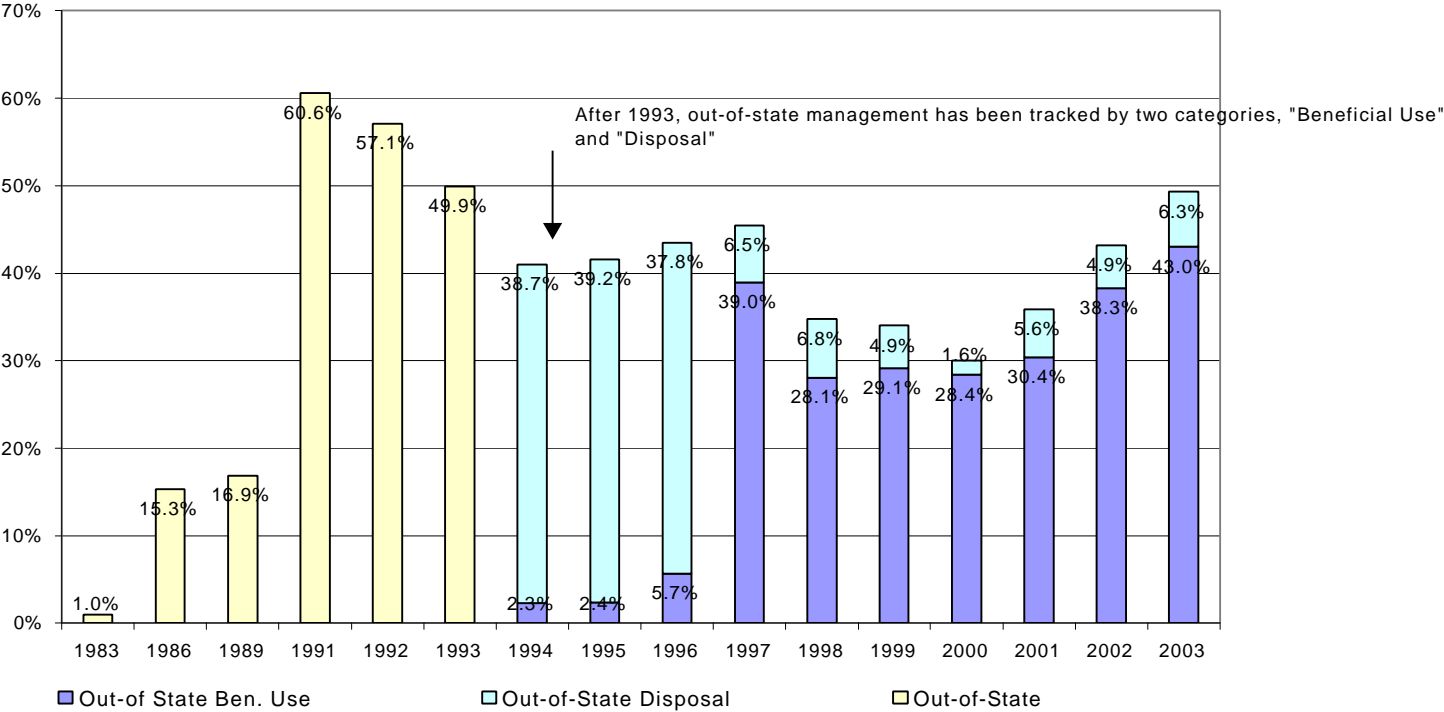


TABLE K-3 - New Jersey Median Sludge Quality (1983 - 2003)

PARAMETER: Year		CAT 1 ¹	CAT 2 ¹	CAT 3 ¹	CAT 4 ¹	CAT 5 ¹	Number of Samples	Percent of Samples w/ Detects (%)	STATEWIDE MEDIAN (mg/kg)
Arsenic:	1983	2.09	2	2.5	3.05	3.52	NA	NA	2.7
	1994	2.79	3.11	2.52	3.06	2.8	NA	NA	2.85
	1997	4.19	4.02	3.33	4.92	4.77	1183	61.4	4.33
	2001	4.31	3.59	3.9	4.695	NA	1003	43.0	4.4
	2002	6.66	5.63	4.38	4.96	NA	1060	56.0	5.0
	2003	5.08	4.35	4.14	5.03	NA	1077	49.1	4.86
Cadmium:	1983	7.38	2	10.1	9.9	11.45	NA	NA	9.4
	1994	6.6	4.9	4.9	5.68	6.53	NA	NA	5.63
	1997	3	3.85	3.3	3.36	5.4	1185	65.2	3.5
	2001	2.63	1.965	2.67	2.845	NA	1006	62.0	2.7
	2002	2.25	1.93	2.29	2.52	NA	1061	58.7	2.4
	2003	2.22	1.95	2.06	2.75	NA	1077	60.7	2.48
Chromium:	1983	33.6	29	88.83	115	600	NA	NA	93
	1994	27	23	27	39	88	NA	NA	39
	1997	19.7	25	20	29.6	42.4	1185	89.3	25.99
	2001	15.1	14.3	22.25	28.85	NA	1008	92.5	24.45
	2002	13.81	14.8	21.0	30.95	NA	1061	93.0	24.8
	2003	15.6	15.7	20.95	26.4	NA	1077	93.1	22.4
Copper:	1983	697	657	949	776	1170	NA	NA	825
	1994	594	679	658	667	819	NA	NA	679
	1997	524	669	662.8	621.5	832	1185	99.2	627.8
	2001	500	538	667	527	NA	1009	99.8	552
	2002	518.2	546.5	700	569.5	NA	1062	99.4	583.5
	2003	496	588	581.5	532	NA	1077	99.6	545
Lead:	1983	127	122	195	196	411	NA	NA	210
	1994	100	74	86	108	137	NA	NA	100
	1997	62	75.8	57.1	64.5	82	1186	84.8	65.22
	2001	40.18	25.25	44.2	53.8	NA	1009	93	48.5
	2002	38.5	27.7	46.9	58.85	NA	1061	91.3	52.2
	2003	30.2	26.8	36.8	54.4	NA	1077	92	43.7
Mercury:	1983	1.3	2.9	5	3.25	3.77	NA	NA	3.6

	1994	2.08	2.24	2.5	2.4	2.29	NA	NA	2.34
	1997	1.74	1.96	2.2	1.65	2.89	1185	78	1.93
	2001	1.04	1.23	1.88	1.74	NA	1007	91	1.66
	2002	1.1	1.22	1.88	1.95	NA	1062	90.2	1.8
	2003	0.79	1.19	1.47	1.62	NA	1077	88.3	1.47
Molybdenum:	1983	NA	NA	NA	NA	NA	NA	NA	NA
	1994	15.3	20	12.16	14.9	15.2	NA	NA	15.03
	1997	12.8	20.8	12	9.6	16.3	1183	60.5	12.6
	2001	18.7	8.52	11.55	10.86	NA	1007	62	11.1
	2002	16.5	8.71	12.6	11.33	NA	1059	67.3	11.5
	2003	14.05	8.35	12.1	11.0	NA	1076	64	11.0
Nickel:	1983	29.5	34	49.5	43.15	90	NA	NA	45.8
	1994	31	26	26	30	48	NA	NA	31
	1997	18	27.2	23.2	24.1	33	1185	86.5	23.41
	2001	15.2	12.2	18.9	21.35	NA	1009	92	18.7
	2002	15.9	12.7	19.2	22.1	NA	1061	92.0	19.3
	2003	16.3	13.2	17.45	22.5	NA	1077	91.4	19.05

PARAMETER: Year		CAT 1 ¹	CAT 2 ¹	CAT 3 ¹	CAT 4 ¹	CAT 5 ¹	Number of Samples	Percent of Samples w/ Detects (%)	STATEWIDE MEDIAN (mg/kg)
Selenium:	1983	NA	NA	NA	NA	NA	NA	NA	NA
	1994	2.38	2.7	2.4	1.74	1.3	NA	NA	2.07
	1997	4.8	4.83	3.08	5.74	5.78	1184	66.2	4.91
	2001	7.38	6.11	6.92	7.27	NA	1007	43	7.02
	2002	10.08	6.81	7.72	6.59	NA	1060	52	7.1
	2003	9.66	6.76	7.28	6.91	NA	1077	48.6	7.11
Zinc:	1983	803	825	1200	1010	2300	NA	NA	1110
	1994	904	684	738	846	999	NA	NA	826
	1997	674	666	740	936	1000	1185	98.9	809.89
	2001	745.6	574	785	901.5	NA	1007	99.8	832
	2002	836.25	629.5	737	1015	NA	1062	99.3	869.5
	2003	702	705	678	936	NA	1077	99.99	820

Notes for Table K-3:

¹ Denote the SQAR reporting category as follows:

Cat 1: domestic treatment works with a permitted flow less than 0.1 MGD.

Cat 2: domestic treatment works with a permitted flow of 0.1 to 0.999 MGD.

Cat 3: domestic treatment works with a permitted flow from 1.0 to 4.999 MGD.

Cat 4: domestic treatment works with a permitted flow equal to or greater than 5.0 MGD.

Cat 5: domestic treatment works with a flow to which more than 10 percent of the permitted daily flow or the permitted daily mass loading of BOD, COD or Suspended Solids is contributed by SIUs. (This category was deleted in the 1999 readoption of the SQAR.)

Notes: Due to large ranges reported for some parameters there is a considerable difference in magnitude between mean and median values. The true central tendency for the concentration is better represented by the median than by the mean value. For determining median concentrations, if analytical testing did not yield a pollutant concentration above the minimum detection level, **the pollutant concentration was assumed to be the minimum amount of pollutant that could be measured. Equating undetected data points to their minimum detection level is a conservative assumption since it tends to overestimate pollutant concentrations.** The percent of detected samples is indicated on the table.

TABLE K-4 - NEW JERSEY 2003 SLUDGE QUALITY

Parameter	Number of Samples	New Jersey Median (mg/kg)	New Jersey % Samples detected over High Quality	EPA / NJDEP "High Quality" (mg/kg)	Rutgers Cooperative Extension Suggested Limits (mg/kg)
Arsenic	1077	4.86	0.4%	41	41
Cadmium	1077	2.48	0.7%	39	21
Chromium	1077	22.4	NA	No limit	1200
Copper	1077	545	3.6%	1500	1500
Lead	1077	43.7	3.5%	300	300
Mercury	1077	1.47	0.9%	17	17
Molybdenum	1076	11.0	1.9%	75	18
Nickel	1077	19.05	0%	420	420
Selenium	1077	7.11	0%	100	28
Zinc	1077	820	7.3%	2800	2800

Table K-5: EXISTING SLUDGE PRODUCTION BY MANAGEMENT MODES (DMT/YR):
For the Calendar Year 2003

	OTHER	INCIN. (CUST.)	INCIN. (OWNER)	CLASS A BEN USE	CLASS B BEN USE	IN-STATE BEN USE LF COVER	OUT OF STATE BEN USE	OUT OF STATE DISPOSAL	COUNTY TOTAL
Atlantic	0.0	362.9	8790.9	184.1	0.0	0.0	0.0	0.0	9337.9
Bergen	0.0	299.8	2321.1	0.0	0.0	0.0	10109.1	0.0	12730.0
Burlington	38.0	966.0	0.0	8012.8	575	0.0	0	2087.9	11679.7
Camden	3.4	5583.7	0.0	831.0	2399.0	0.0	0.0	4764.4	13581.5
Cape May	0.7	0.9	0.0	4740.5	0.0	0.0	0.0	5.2	4747.3
Cumberland	0.0	955.6	0.0	0.0	1363.1	0.0	0.0	213.4	2532.1
Essex	0.0	412.0	0.0	0.0	0.0	7928.4	35228.8	5.2	43574.4
Gloucester	0.0	240.5	10466.6	0.0	192.1	0.0	0.0	0.0	10899.2
Hudson	0.0	1698.3	0.0	0.0	0.0	0.0	4460.2	0.0	6158.5
Hunterdon	0.0	1595.0	0.0	0.0	0.0	0.0	29.1	71.0	1695.1
Mercer	0.0	2899.2	7326.9	358.9	246.1	0.0	0.0	2715.8	13546.9
Middlesex	0.0	310.2	0.0	6600.3	0.0	10081.0	30189.5	1281.3	48462.3
Monmouth	309.1	2796.7	1975.1	0.3	433.2	0.0	2998.7	2572.0	11085.1
Morris	4.3	3266.3	3816.0	703.9	0.0	0.0	3120.4	313.8	11224.7
Ocean	0.0	1.1	0.0	9556.1	0.0	0.0	5.5	2.4	9565.1
Passaic	0.0	60.8	1365.5	0.0	0.0	0.0	1089.4	0.2	2515.9
Salem	0.0	203.5	0.0	0.0	529.2	0.0	0.0	12.1	744.8
Somerset	0.0	572.1	3884.0	0.0	0.0	0.0	215.3	649.8	5321.2
Sussex	0.0	9.1	0.0	939.8	0.0	0.0	168.6	0.0	1117.5
Union	0.0	0.5	0.0	0.0	0.0	0.0	11881.5	0.0	11882.0
Warren	0.0	16.9	0.0	0.0	0.0	0.0	867.9	48.7	933.5
TOTALS	355.5	22251.0	39946.1	31927.7	5737.7	18009.4	100364.0	14743.2	233334.5
%TOTAL	0.15%	9.54%	17.12%	13.68%	2.46%	7.72%	43.01%	6.32%	100.00%

Figure K-6
New Jersey Sewage Sludge Management

2003

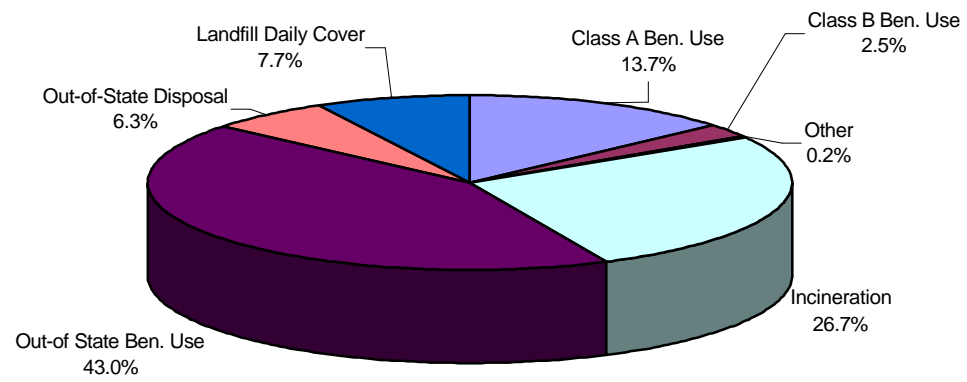


Table K-7 - Existing New Jersey Residual Management Operations

COUNTY	PERMITTEE	TYPE OF OPERATION
Atlantic	Atlantic Co. UA Buena Borough MUA ONYX Waste Services, Inc. - Tuckahoe Turf Farms	Incineration Class A Composting with Distribution Class B Lime Stabilization and Land Application
Bergen	Northwest Bergen Co. UA United Water Company	Incineration Water Treatment Plant Residual Land Application
Burlington	Beverly City SA Burlington County Mount Holly MUA New Lisbon Development Center Ocean Spray Cranberries Inc. Pemberton Township MUA	Reed Beds Class A Composting with Distribution Drying, On-site Dewatering Reed Beds Food Processing Residual Land Application Class B Aerobic and Anaerobic Digestion and land Application
Camden	Ancora Psychiatric Hospital Camden Co. MUA ¹ Pneumo Abex	Reed Beds Class A Composting with Distribution Industrial Treatment Works Residual Land Application
Cape May	Cape May Co. MUA Township of Lower MUA Woodbine Developmental Center	Class A Composting with Distribution Class A High Temperature/High pH Stabilization with Distribution Reed Beds
Cumberland	Cape May Foods Casa Di Bertacchi Corp. Clement Pappas & Co. Inc. Cumberland Co. UA Cumberland Dairy Inc.	Food Processing Residual Land Application Food Processing Residual Land Application Food Processing Residual Land Application Class B Anaerobic Digestion and Land Application Food Processing Residual Land Application

	F & S Produce Co. F & S Produce – Lebanon Rd. Landis SA Seabrook Brothers & Sons Inc. White Wave Processing	Food Processing Residual Land Application Food Processing Residual Land Application Class B Anaerobic Digestion and Land Application Food Processing Residual Land Application Food Processing Residual Land Application
Essex	Passaic Valley SC	Wet Air Oxidation (ZIMPRO), On-site Dewatering
Gloucester	Gloucester Co. UA Grasso Foods Inc. Missa Bay Plant #1 ² Missa Bay Plant #2 ² Violet Packing Co.	Incineration Food Processing Residual Land Application Food Processing Residual Land Application Food Processing Residual Land Application Food Processing Residual Land Application
Hudson	Spectraserv	Liquid and Dewatered Residual Transfer Station, On-site Dewatering
Hunterdon	Johanna Foods Inc. Russell Reid Salvation Army - Camp Tecumseh	Food Processing Residual Land Application Liquid Residual Transfer Station Reed Beds
Mercer	Stony Brook Regional SA	Incineration
Middlesex	Middlesex Co. UA Mr. John Portable Sanitation Service Nestle USA Inc. NJ Transfer - Park Management Old Bridge Board of Education ¹ Sayreville Boro Bordentown Ave. WTP WEB Hauling	Class A High Temperature/High pH Stabilization with Distribution Liquid Residual Transfer Station Food Processing Residual Land Application Liquid Residual Transfer Station Reed Beds Water Treatment Plant Residual Land Application Liquid Residual Transfer Station
Monmouth	Bayshore Regional SA	Incineration

	Marlboro Psychiatric Hospital ¹ New Jersey Water Supply – Manasquan New Jersey American Water Co. – Jumping Brook Sandy Hook Western Monmouth UA	Reed Beds Water Treatment Plant Residual Land Application Water Treatment Plant Residual Land Application Reed Beds Reed Beds
Morris	Musconetcong SA Parmalat Welsh Farms Inc. ¹ Pequannock, Lincoln Park, Fairfield SA Parsippany - Troy Hills Washington Twp. - Schooleys Mtn.	Class A Composting with Distribution Food Processing Residual Land Application Incineration Incineration Reed Beds
Ocean	Ocean Co. UA	Class A Pelletization/Heat Treatment with Distribution
Passaic	North Jersey District Water Supply Commission ² Township of Wayne	Water Treatment Plant Residual Land Application Incineration
Salem	Ash Lane Farms, Inc. B & B Poultry Co. Inc. English Sewerage Disposal, Inc.	Class B Lime Stabilization and Land Application Industrial Treatment Works Residual Land Application Liquid Residual Transfer Station
Somerset	Applied Wastewater Services Elizabethtown Water Co. North Princeton Developmental Center Somerset Raritan Valley RSA	Liquid Residual Transfer Station Water Treatment Plant Residual Land Application Reed Beds Incineration
Sussex	Sussex Co. MUA	Class A Composting with Distribution
Union	Joint Meeting of Essex and Union ¹	Class A Pelletization/Heat Treatment with Distribution
Warren	NONE	NONE

Out-of-State	Milwaukee Metropolitan Sewerage District	Class A Pelletization/Heat Treatment with Distribution
	Natural Soil Products ²	Class A Composting with Distribution
	Philadelphia Water Department	Class A Composting with Distribution

1 - Permitted but not presently active

2 - Application submitted but not presently permitted

TABLE K-8 - SEWAGE SLUDGE PRODUCTION BY THE SQAR CATEGORY
(dry metric tons for 2003)

SQAR CATEGORY	TOTAL NUMBER DTWs	SLUDGE PRODUCTION	PERCENT OF TOTAL
1	170	510.2	0.2%
2	70	3428.7	1.5%
3	56	21505.6	9.2%
4	45	207890.0	89.1%
TOTALS	341	233334.5	100.0

TABLE K-9 - Eight Largest Sewage Sludge Generators - 2003

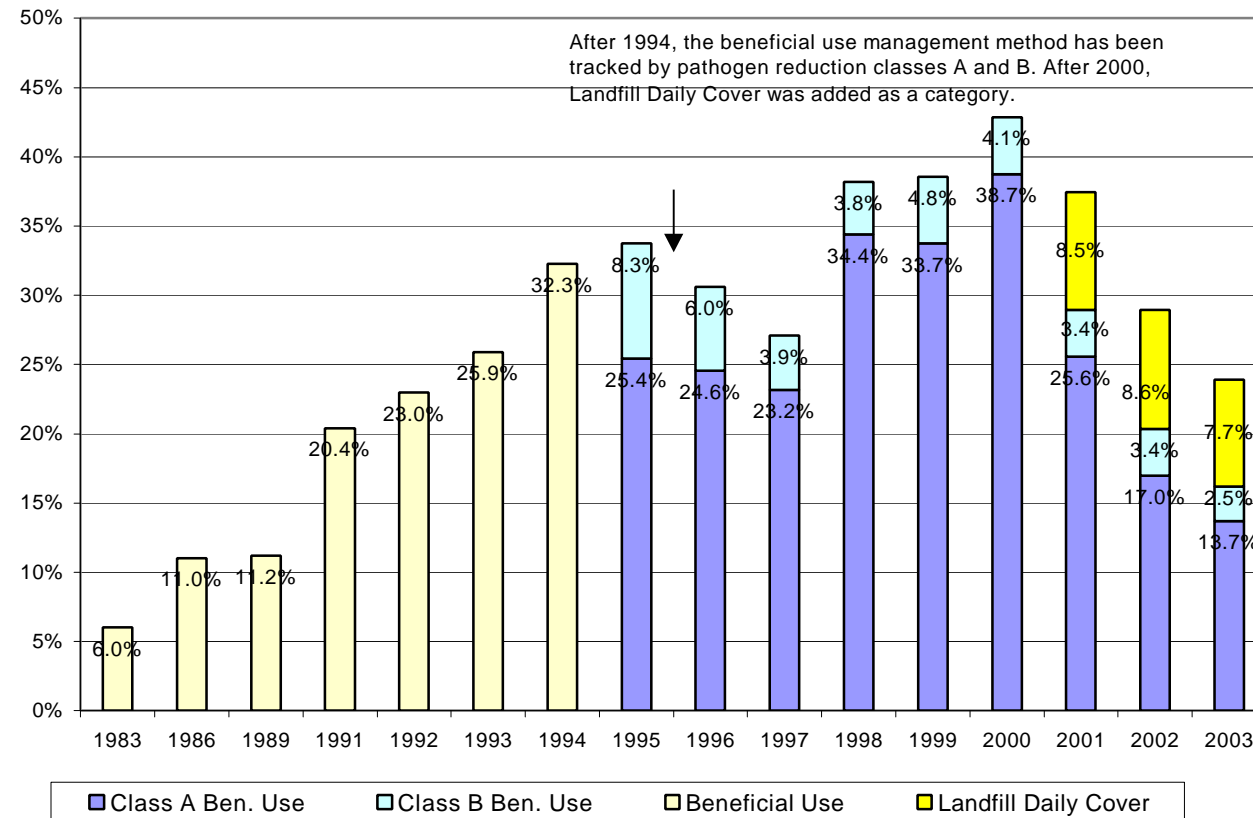
Domestic Treatment Works	Sewage Sludge Production Dry Metric Tons
Middlesex County Utilities Authority	45,135
Passaic Valley Sewerage Commission	42,278
Camden County Municipal Utilities Authority	13,402
Gloucester County Utilities Authority	10,467
Ocean County Utilities Authority (3 plants)	9,555
Joint Meeting Essex and Union Counties	9,363
Bergen County Utilities Authority	9,253
Atlantic County Utilities Authority	8,791

L. TABLE K-10: BIOSOLIDS PRESSURE CHART

State	Population ¹	Total Acreage	People per Acre	Annual Sewage Sludge Production ²	Agricultural Acreage ³	
Iowa	2,923,179	35,760,000	0.08	298,164	29,857,698	
Virginia	7,187,734	25,342,720	0.28	733,149	5,710,389	
Delaware	796,165	1,251,200	0.64	81,209	518,693	
Pennsylvania	12,287,150	28,684,800	0.43	1,253,289	5,784,500	
Maryland	5,375,156	6,256,000	0.86	548,266	1,820,869	
New York	19,011,378	30,223,360	0.63	1,939,160	5,767,304	
New Jersey	8,484,321	4,748,160	1.79	868,000	698,551	

1 – Year 2001 Estimated. Source: <http://quickfacts.census.gov/qfd/>
2 – Wet Metric Tons. New Jersey - dry metric tons reported to the Department and converted to wet metric tons at 25% total solids. Other States’ production estimated based on population and in comparison to NJ production. Septage treated as sewage sludge.
3 – Source: 1997 Census of Agriculture, Issued March 1999, USDA. Includes crop, pasture, range and other agricultural land. Excludes woodland.

Figure K-11
In-State Beneficial Use of Sewage Sludge



L. LEGISLATIVE INITIATIVES AND REGULATORY REFORM

Contained in this Statewide Solid Waste Management Plan are numerous proposed initiatives which would require new legislation or amendments/modifications to existing legislation and regulations in order to implement. The following is a brief listing and synopsis of the legislative/regulatory proposals contained within this Statewide Solid Waste Management Plan. This listing does not prioritize the legislative proposals. More detailed discussions of each of these proposals can be found in the appropriate sections of the Plan.

Mercury Legislation

The Department, in an initiative designed to reduce the toxicity of materials entering the waste stream, has worked in conjunction with the Northeast Waste Management Officials' Association (NEWMOA) on the development of model legislation that would reduce or eliminate non-essential uses of mercury in household, institutional and industrial products and processes. The model legislation provides a comprehensive framework to help states develop more consistent approaches to managing mercury-containing wastes.

Modifications to the Toxic Packaging Reduction Act

The Toxic Packaging Reduction Act was adopted in 1991. This Act requires manufactures of packaging and packaging materials to reduce the amounts of certain toxic substances added to packaging and packaging components. While this Act has been beneficial in the Department's reduction of toxic materials and source reduction efforts, amendments to the Act are needed to make it consistent with the updated and revised model legislation endorsed by the Council of State Governments.

Dedicated Funding Source for Recycling

The Department is seeking legislation for the State funding of recycling in New Jersey. There has been no dedicated source of funding for recycling in New Jersey since the expiration of the Recycling Tax in 1996. The recently enacted "Clean Communities and Recycling Grant Act" represents a significant step, since it includes some funding for recycling grants to municipalities and eligible counties, however, it does not fully address the funding needs of local recycling programs, nor does it provide any funding for a comprehensive state recycling program. In order to remedy this situation, the Department has advocated and continues to advocate the passage of legislation that would establish a stable and dedicated source of funding for recycling that does not rely on the fund generated by the "Clean Communities and Recycling Grant Act".

Beverage Container Legislation

The Department recommends the passage of legislation that would establish a system where a refundable deposit of an amount to be determined is placed on all brown and green glass used to package alcoholic beverages. In doing so, a significant portion of recyclable glass that currently has little, if any value in the marketplace would be managed outside municipal and county curbside collection programs. By establishing the proposed deposit system, the industries that created this market imbalance would be responsible for addressing this situation, not local recycling operations. Ultimately, the proposed system will lead to an increase in glass recycling rates due to the refundable deposits associated with this material and will eliminate the glass marketing problems inherent in today's recycling system.

Amendments to the Comprehensive Regulated Medical Waste Management Act

The Department will request the Legislature to amend the New Jersey's Comprehensive Regulated Medical Waste Management Act (CRMWMA) for inclusion of agents used or intended for use in terroristic incidents, including related home self-care wastes not normally regulated under the present CRMWMA law. At present the CRMWMA addresses both certain listed and characteristic medical wastes generated from the treatment, immunization or diagnosis of humans, certain research, biological production and animal wastes. Wastes contaminated with biological agents hazardous to human health outside medical or research arenas may not be covered by the CRMWMA. As an analogy, hazardous chemical wastes generated at site cleanups are managed under the authority of both State and Federal hazardous waste regulations based on the character of the waste not the source of waste generation, as is the case with medical wastes under the CRMWMA.

Air Emissions Legislation

Controlling air emissions should include controlling fine particle emissions from solid waste vehicles. The basic thrust of this program would require legislation to have solid waste fleet owners upgrade their vehicles by retrofitting necessary controls and developing a differential fee system that insures a level playing field. While new engine standards for on-road diesel powered vehicles have been developed nationally, effective 2007, it will be some time before new vehicles fully replace existing in-use ones, thus the need for an interim program.

Consumer Electronics Recycling

Legislation is recommended that would require manufacturers of consumer electronic equipment to develop and submit plans to the Department for the financing and implementation of collection and recycling programs of these products. The programs would need to achieve certain minimum recovery targets (expressed in pounds/per capita)

and recycling of recovered materials within a specified time frame. These targets would then rise incrementally over time.

Updating the Statewide Solid Waste Management Plan

The Department is recommending expanding the timeframe for updating the Statewide Solid Waste Management Plan. Currently, the Department is required pursuant to N.J.S.A. 13:1E-6 to update the Plan once every 2 years. This requirement has historically been unmet due to the procedural difficulties in updating the Plan. The Department is recommending expanding the timeframe for updating the Plan to once every 5 years.

Regulatory Reform

The solid waste regulations found at N.J.A.C. 7:25-1 et seq will sunset in 2007. Many of these regulations have been in place for a long number of years. It is the intent of the Department to look at all of the solid waste regulations during the re-adoption process for areas where regulatory reform may be appropriate. We will work with a variety of stakeholders during this process to determine if there are areas that are ripe for reform. As indicated in the solid waste utility section, that is an area that we have already targeted for reform, i.e. the planned alteration to how we deal with facility rate regulation. While the re-adoption is a regulatory process, we will also look at potential statutory reforms that would be appropriate given the state of solid waste management today.

Solid Waste Generator Regulations

The Department believes there is a need for development of solid waste generator regulations. Historically the solid waste program has begun the process of regulating solid waste at the transporter and facility level leaving the regulation of generators to the counties and municipalities. This results in inconsistent regulation among generators. The Department believes there is a need to hold some generators, particularly commercial entities responsible for the solid waste they generate.

Compost Facility Design Requirements

The Department is considering changes to the recycling rules including a reduction in the 1000-foot buffer requirement for the receipt and processing of grass clippings and food waste in outdoor operations where neighboring property owners agree to a lesser distance. Also being considered generally is addition of flexibility in other design requirements. One example is the requirement for an impervious surface for the composting of vegetative food waste where the Department is studying the possibility of allowing environmental monitoring in lieu of strict adherence to the pad design requirement.

Management of Sharps/Needle Disposal

The Department supports the enactment of legislation that would assist in the management of the collection and disposal of sharps/needles from home health care or less legal uses. Unauthorized and/or illegal disposal of sharps/needles has resulted in beach wash-ups causing the closure of New Jersey beaches. Proposed legislation allowing needle exchanges would reduce the possibility of illegal disposal and resultant negative environmental effects.