
CURRENT PROJECTS

CHAPTER III

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Since the adoption of the June 21, 1984 DSWA Statewide Solid Waste Management Plan (and the original objectives identified), additional projects and programs have been developed to meet legislative and regulatory requirements. Each new program, as detailed below, discusses project scope, historical information, and current project status. Table III-2, page 47 follows with a listing, by project, of status and target dates.

A. NORTHERN DIVISION PROGRAMS

Pine Tree Corners Transfer Station & Recycling Center

Southern New Castle County below the Chesapeake and Delaware Canal (C&D) and northern Kent County represent a major area for land development and new housing. Among the needs for increased public services will be the need for solid waste management systems. The Northern Solid Waste Management Center-2, sanitary landfill, located at Cherry Island in Northern New Castle County fully provides disposal services for the entire County. However, it was determined the economics and logistics of solid waste collection services would be improved by the strategic location of a solid waste collection transfer station south of the C&D Canal.

To meet the needs of the public living in this geographic area, DSWA completed the design and construction and has begun operation of a solid waste transfer station. The transfer station is located at the NSWMC-3 (Pine Tree Corners) in Southern New Castle County on County Road 25, just west of U.S. Route 13 to serve this need. It is approximately 26 miles from Cherry Island. DSWA has contracted a "full service" contractor from the private sector to design, construct, and operate the Pine Tree Center. This facility also serves as a recycling center under the 'RECYCLE DELAWARE' Program.

The facility went into commercial operation on April 1, 1991. Currently, the amount of waste received is typically 60 tons per day, with a range from 40 to 90 tons per day, with a maximum receipt of 103 tons per day.

Key features of the transfer station consist of a scale house, two scales, and a transfer station building consisting of a four-bay tipping floor. Waste brought in by homeowners is placed in one of two bays having a live bottom floor, which is constructed slightly higher than the tipping floor. The remaining two bays are used for commercial-type operation where, after deposit on the tipping floor, an end-loader is used to push the waste into the hopper, which is equipped with a moving floor, that carries the waste to

a mechanical compactor unit. The compactor unit pushes the waste into a 91 cubic yard trailer until approximately 19 tons are loaded. After the trailer is full, the waste is hauled from the NSWMC Transfer Station at Pine Tree Corners to the DRP for processing. Unprocessable waste is transported to the Cherry Island Landfill for disposal.

Infectious Waste Disposal

DSWA was directed to investigate and, if deemed necessary, implement a Statewide Infectious Waste Management Program in accordance with House Bill No. 421, enacted by the 135th General Assembly and signed into law by the Governor on July 18, 1989.

DSWA conducted a questionnaire survey to determine the amount of infectious waste currently generated in the State of Delaware. Currently, infectious waste is either sent to various out-of-state medical waste disposal facilities, disposed of at several hospitals with on-site incinerators, or treated and landfilled.

Three (3) to four (4) tons per day of infectious waste is estimated to be currently generated in Delaware; however, this figure may be subject to wide variability due to changes in segregation practices instituted by hospitals and other large quantity generators. Approximately 70% of this waste is generated in New Castle County. DSWA anticipated siting a facility in New Castle County, Delaware.

DSWA conducted a comparative study of disposal technologies and presented the information to representatives of the large quantity infectious waste generators in Delaware. After discussion, DSWA and the representatives committed to using the best available combustion and control technologies.

DSWA's initial recommendation was the use of a rotary kiln with a scrubber and baghouse. DSWA conducted a competitive process to obtain the services of a full-service vendor to design, construct, acceptance test and operate the facility, which was expected to incinerate at most 2,300 tons of infectious waste per year.

DSWA provided the potential costs of the infectious waste incineration facility. All costs were to be paid by the medical facilities and other generators of infectious waste in the State which would utilize the facility.

Once all costs associated with incineration were provided, DSWA reviewed these costs with the medical community. It was found that proposed user fees would exceed four (4) times the current disposal fees paid. As a result, DSWA worked with the medical community to explore alternative methods of disposal. Such methods included autoclaving, shredding/chlorination, microwaving and current incineration capacities. DSWA and the Association of Delaware Hospitals (ADH) determined that a facility utilizing one of these methods should be sited at a current hospital. Due to a major portion of infectious waste in Delaware being generated at Christiana Medical Center, ADH and DSWA selected Christiana for the facility location. However, the Christiana Medical Center Board of Directors voted to turn down this proposal.

DSWA and the Association of Delaware Hospitals then determined that sufficient incineration capacity exists to manage Delaware's present and future needs. As a result, it has been determined that no action be taken at this time. DSWA will continue to monitor infectious waste disposal statewide on an ongoing basis.

Refuse Derived Fuel (RDF) Processing (Short Term)

With the cessation of operation of the EGF, DSWA sought an interim means of using that RDF fuel which it had previously been delivering to the EGF. Accordingly, DSWA entered into a Process Service Agreement dated September 17, 1991 with Delaware Resource Management, Inc., a wholly owned subsidiary of the Westinghouse Electric Corporation. Among the principal terms of this agreement, as amended, are the following:

1. DSWA is obligated to make available a minimum of 176,000 tons per year of Acceptable Waste. In the event that DSWA does not make such tonnage available, it will be required to pay the applicable processing fee on the difference between 176,000 tons and the tonnage made available for the contract year.
2. Upon sixty days' notice, DSWA may request an increase of the Acceptable Waste up to a maximum of 300,000 tons per year.
3. DSWA paid a processing fee (including transportation) of \$66.00 per ton of acceptable waste for the first fiscal year; \$66.00 per ton for the second fiscal year; and \$66.00 per ton for the third fiscal year.

4. For any succeeding year, the processing fee shall be the amount from the prior year escalated in accordance with the escalation factor.
5. DSWA has the right to deliver up to 275 tons per month of small vehicle tires and shall pay a processing fee for such tires as set forth in the Westinghouse Agreement.
6. The initial term of the Agreement was three years. DSWA exercised its option to extend the Agreement for an additional period not exceeding two years. Therefore, the maximum term of the Agreement is now five years.
7. The term of the Agreement may be further extended upon mutual agreement by both parties.

This agreement has been amended as required to reflect DSWA disposal requirements.

B. SOUTHERN DIVISION PROGRAMS

Leachate Treatment Systems

Leachate generated at the CSWMC and SSWMC is recycled back into landfill cells to promote biodegradation of the solid waste. Excess leachate is currently hauled by tank trucks from the CSWMC and SSWMC to DuPont's Chambers Works Treatment Plant in Deepwater, New Jersey. This method of treatment and disposal is currently costing \$0.08 a gallon for disposal and \$0.04 per gallon for trucking.

Leachate Evaporation and Incineration

As part of DSWA's ongoing Research and Development, DSWA considered the installation of a leachate evaporation/incineration system to process a portion of the leachate. The general concept of the project is to apply a thermal process to evaporate and/or incinerate the leachate using landfill gas as the primary fuel for the facility in order to reduce the volume of auxiliary fuel needed for system stability. Approximately 11 to 12 million British thermal units ("BTU's") per hour of landfill gas are produced with the current volume of disposed refuse. DSWA estimates that approximately 15,000 gallons of leachate per day could be treated with the estimated amount of gas recovered. The proposed technology consisted of two primary units: a PR Concentrator for the

evaporation of the aqueous fraction of the leachate, followed by a Therminator for the incineration (combustion) of the remaining vapor and gases.

The T-Thermal Therminator was designed to destroy all organic compounds in the Concentrator vapor flow stream. The initial stage would result in the heat exchanger reaching a temperature of 400 degrees F. After leaving the heat exchanger, the gas is further heated to the required incineration temperature of 1,400 degrees F. A pilot plant test was conducted in January, 1992. After review of the results of the pilot plant test DSWA determined that the pilot plant test was a technical success. However, the economic result of the program was not as cost effective as current disposal practices. Therefore, DSWA has put any full-size project on hold, until economics would justify this option.

C. STATEWIDE PROGRAMS

Statewide Management and Statewide Fee Schedule System

In order to continue to provide an environmentally sound means of waste disposal for the State, DSWA has developed a long range plan which includes changing to a statewide system and the implementation of a Capital Improvement Program (CIP). DSWA decided to adopt a Statewide system to:

1. eliminate intrastate boundaries for solid waste flow control so that haulers can utilize the closest solid waste management center, thereby creating an equal basis for service provisions;
2. increase the flexibility of operating the system;
3. operate components of the system on a statewide basis;
4. eliminate user fee differentials; and,
5. create a stronger credit structure for DSWA's future financing of the Capital Improvement Program.

Landfill Gas Control Systems for NSWMC-1&2, CSWMC-1, and SSWMC-1

DSWA has in operation two (2) landfill gas recovery and flaring systems at the Pigeon Point and Cherry Island Landfills. DSWA has contracts with private companies for the development, financing, operation and maintenance of these systems. In addition, the contractor is responsible for developing a third party contract for the sale of the gas. DSWA's landfill located in Kent County (CSWMC-1) has in operation a gas recovery and flaring system. DSWA is developing a landfill gas recovery and flaring system for the SSWMC to be in operation by the summer of 1994. The design and construction funds are part of DSWA's 1992 bond issue, and the operating costs will become a part of DSWA's operating budget.

D. 'RECYCLE DELAWARE' PROGRAM

DSWA has implemented a statewide recycling program in accordance with Senate Bill No. 424, enacted by the General Assembly and signed into law by the Governor on July 24, 1990. DSWA has established a voluntary program that provides the opportunity for source separated recycling to every person in the State. Delawareans can drop off their recyclable materials at 'RECYCLE DELAWARE' Centers, as well as safely dispose of household batteries and used motor oil. The first Center was dedicated at the Southern Solid Waste Management Center on November 28, 1990.

By September 5, 1991, there were 100 full 'RECYCLE DELAWARE' Centers in operation, with a number of satellite sites that accept glass only, as well as special locations for the collection of used motor oil only. In 1993, the Board of Directors authorized an expansion of the 'RECYCLE DELAWARE' program to 120 centers statewide. Currently there are 105 Centers statewide, with approximately 3 million pounds being collected each month.

The following materials are being collected for DSWA through the program contractor, BFI, Inc., and sold to markets for recycling or reuse:

- Clear Glass
- Brown Glass
- Green Glass
- Newspaper, Magazines, and Phone Books
- Plastic Bottles

Cans (Both Aluminum and Steel)
Household Batteries
Used Motor Oil (Pilot Program at Specific Sites Only)

Each 'RECYCLE DELAWARE' Center has a set of color-coded igloos that collect each commodity and display information on what should and should not be deposited. Some high volume centers have larger modified roll-off boxes for paper and plastic. An 800 Hotline number is posted to let residents know where they can call with questions and/or complaints.

Funding for this program is provided through a Statewide surcharge to the user fees. This surcharge is adjusted annually to reflect actual program costs.

**E. HOUSEHOLD HAZARDOUS WASTE COLLECTION
AND DISPOSAL PROGRAM**

DSWA has implemented a statewide recycling program in accordance with Senate Bill No. 424, enacted by the General Assembly and signed into law by the Governor on July 24, 1990. Section 6453 of this bill identifies household hazardous materials as part of the overall recyclable materials to be considered by this program.

In Fiscal Year 1992, DSWA began a series of pilot programs to collect household hazardous substances for the first series of tests. DSWA selected Clean Harbors of Kingston, Inc. to operate two pilot programs, one in Kent County and one in Sussex County. Each pilot program was in effect for a simultaneous six month period of time. The results will help to determine if either of the two pilot programs could be implemented for the statewide retrieval of household hazardous wastes.

The pilot program in Kent County utilized a mobile collection unit, which provided scheduled door to door pickups from residents in Kent County; the pilot program in Sussex County consisted of a staffed collection facility at DSWA's Southern Solid Waste Management Center, and residents of Sussex County were able to bring their household hazardous wastes to the collection facility during specific hours. The household hazardous wastes were transported by the contractor to DSWA facilities for short term storage and then to permitted treatment and disposal facilities for environmentally safe disposal.

For the second series of tests in Fiscal Year 1994, DSWA selected Rollins Environmental Services, Inc. to operate two pilot programs in New Castle County. Each program would be a one day staffed collection event at a publicly accessible location to provide the opportunity for residents to bring household hazardous waste to a designated collection point for either safe disposal or recycling.

DSWA has assessed the participation rate of each pilot program, as well as developed important information as to the characterization and volume of household hazardous wastes, and the disposal costs associated with each program. DSWA staff will make recommendations regarding a Statewide program. Table III-1 shows a comparison of the various program costs.

F. MANAGEMENT STAFF AND FACILITIES

Integral to DSWA's long range plans is the expansion of the Dover office to accommodate the required staff. The initial phase of this project was implemented in the summer of 1991 and was completed in June of 1992. Office requirements have been set as a result of reorganization approved by the Board in spring 1991, which shall provide for DSWA's staffing needs through 1996.

DSWA has acquired additional land to be used for landfill in each of the three (3) counties when contiguous land parcels have become available. DSWA's policy is to review purchases of additional contiguous parcels when they are placed on the market. In the event that integrated alternatives are not selected for solid waste management, then DSWA will be required to seek additional landfill space. In the case of the Cherry Island Landfill site, DSWA is constrained by access to different areas on the site by the dredging requirements of the U.S. Army Corps of Engineers. However, DSWA plans to request the Corps of Engineers make available certain portions of the Cherry Island site in accordance with DSWA's needs. Unfortunately, there appears to be no other land which is contiguous to the Cherry Island site available for use as landfill space. DSWA is investigating the availability of additional acreage of property contiguous to the Central and Southern Solid Waste Management Center located in Kent and Sussex Counties. DSWA is considering the purchase of these properties assuming satisfactory purchase prices can be negotiated and the properties could serve as future landfill space beyond the year 2000.

TABLE III-1

**HOUSEHOLD HAZARDOUS WASTE COLLECTION PROGRAMS
PILOT TESTS COMPARISONS**

Collection Program Area and Program Type	New Castle County		Kent County		Sussex County		Statewide Totals
	One Day Drop Off	Door to Door Collection	Door to Door Collection	Daily Drop Off	Daily Drop Off	Daily Drop Off	
Total Households in County	173,560	42,106		74,253		289,919	
Households Participating	2,182	503		304		2,990	
Participation Rate	1.26%	1.19%		0.41%		1.03%	
Waste Collected (Pounds)	114,825	74,465	3	43,909	3	233,204	
Disposal Cost	\$250,793	\$299,751	3	\$256,469	3	\$807,018	
Average Pounds/Participant	\$52.62	\$148.04	3	\$144.44	3	\$77.99	
Average Cost/Pound	\$2.18	\$4.03	3	\$5.84	3	\$3.46	
Average Cost/Ton	\$4,368.26	\$8,050.79	3	\$11,681.84	3	\$6,921.13	
Average Cost/Participant	\$114.94	\$595.93	3	\$843.65	3	\$269.91	

NOTES:

1. Participants include 29 CESQG's (Small Quantity Generation Participants)
2. Includes the 29 CESQG's and Pentachlorophenol collected in Kent and Sussex Programs (Oil not included)
3. Includes household waste and oil

G. DSWA REGULATIONS REVISIONS

1. *Licensing & Facility Regulations*

Current regulations require that all solid waste collectors in the State of Delaware have a license issued from DSWA in order to collect, transport, and deliver solid waste to DSWA facilities within the State of Delaware. The regulations also have several operational requirements such as a Delaware Business License, telephone contact information, insurance requirements, conditions on collection vehicles, and have a bond or other surety, as well as penalties for violation. These regulations were first adopted on October 17, 1979 and have been subsequently amended July 30, 1987, June 2, 1988 and May 27, 1993. With the passage of new legislation giving DSWA direction to handle and manage additional types of waste, all DSWA regulations will be incorporated into one regulatory format by assigning specific sections of the regulations to each new program. DSWA does not charge any fees for the license.

2. *Recycling Regulations*

DSWA was directed to write and adopt "Recycling Regulations" in Section II of Senate Bill No. 424 (See Appendix "A", §6453), which states that "The Authority may, after notice and public hearing, adopt rules and regulations governing the composition, quality, quantity, and delivery of source separated recyclable materials to recycling centers." Recycling regulations were adopted by the Board of Directors on May 23, 1991 and provide conditions for the use of DSWA's Recycling Centers. These regulations are assigned as Article VI(A) of the "Delaware Solid Waste Authority Solid Waste Licensing and Disposal Regulations." The Regulations also require all non-DSWA operated recycling facilities to file an annual report on any and all recycling activities conducted, including quantity and types of materials recycled and a disposition of material recycled. These annual reports are due annually on June 30 of every year.

3. *Infectious Wastes*

House Bill No. 421 directed DSWA to implement a Statewide Infectious Waste Management Program. As part of HB 421 (See Appendix "A", §6431), DSWA was given power to adopt rules and regulations regarding the disposal of infectious waste under Section X. Section X states, "The Authority, after public notice and hearing, may adopt rules and regulations requiring such infectious waste generators to report not less often than annually on the quantity and types of infectious waste incinerated on site."

It is important to note that DSWA does not adopt regulations just because it has been authorized to do so. Since DSWA does not own or operate an Infectious Waste System at this time, there is no need to regulate the flow of the waste. However, in the future, if we are going to own and operate an Infectious Waste Disposal System, DSWA shall adopt regulations accordingly. DSWA will, when appropriate, consider workshops and public hearings to formalize and adopt the licensing portion of those regulations as stated above as the need arises. Once these workshops and public hearings have been held, regulations will be drafted for review and approval by the Board of Directors.

TABLE III-2

DSWA SOLID WASTE MANAGEMENT PLAN CURRENT PROJECTS

<u>PROJECT</u>	<u>STATUS</u>	<u>COMPLETION TARGET DATE</u>
Pine Tree Corners Transfer Station &	In Operation	Completed April 1991
Household Hazardous Substance Collection & Disposal Program	In Review	Operation start-up Nov. 1991, Test to end April 30, 1994
Infectious Waste	In Review	Pending Review
Leachate Incineration at CSWMC	Deferred	

Landfill Gas Control System for NSWMC-1	In Operation	December, 1987
Landfill Gas Control System for NSWMC-2	In Operation	November, 1990
Landfill Gas Control System for CSWMC-1	In Operation	January, 1991
Landfill Gas Control System for SSWMC-1	Under Construction	May, 1994
'RECYCLE DELAWARE' Program	In Operation	November, 1990
Continuation of EGF Facility	Negotiations Ongoing	Pending Negotiations
DSWA Regulations Revisions - Licensing & Facility Regulations, (Disposal) Recycling, Infectious Wastes	Completed	Last Revisions June, 1988, May, 1993
Statewide Management Fee Schedule System	Completed	July, 1992
Expansion of Management Facilities, Initial Phase	Completed	August, 1992