ALLEGANY COUNTY
SOLID WASTE MANAGEMENT PLAN

Please Note: Some formatting issues are noted in this PDF version. This document is presently under revision and will be replaced upon receipt of the new document.

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EXECUTIVE SUMMARY

ALLEGANY COUNTY SOLID WASTE MANAGEMENT PLAN

Executive Summary

Allegany County has prepared this Comprehensive Solid Waste Management Plan to comply with the State's Solid Waste Management Act of 1988, as well as to document current and proposed strategies for managing the County's solid waste stream. The planning period is ten years and the plan will be updated by the Department of Public Works as specified by the New York State Department of Environmental Conservation.

This study presents an evaluation of Allegany County's existing system and an assessment of opportunities for enhancement. The framework is the state's policy on Solid Waste Management and the methods used in this County to achieve these policy goals.

Allegany County assumed responsibility for solid waste management throughout the County in the early 80's when smaller municipal landfills were being forced to close because they were in substandard condition or at the end of their useful lives. The County transfer station system was established in 1983 (seven stations) and was originally to supply solid waste to the Cattaraugus County WTE facility. The County then began the process of developing its own landfill, in 1985, to avoid reliance on private landfills for management of bulky waste and residuals. The County landfill began operation in 1987 and is now the backbone of the solid waste system. The transfer stations and landfill function as an integrally related system and support the operation of the recycling program which began in 1989.

An important component of the County system is the 1991 Solid Waste Law, which provides the mechanism for enforcement of source separation and also a legal framework for the operation of a solid waste disposal network. This law establishes the method by which the County controls disposal of solid waste and the recyclables handling program. The law was written so that the County could regulate the use of its facilities while maintaining compliance with State regulations and policies. Flow control is not part of the County system, but all solid waste and recyclables entering County facilities must meet the regulations in the County law. The County's control begins at the County facilities. Residents, commercial haulers and businesses are free to handle their disposal requirements as they wish, but if their waste is destined for a County facility, it must conform to our regulations.

The County Board of Legislators established Allegany County as the planning unit for solid waste management in 1989. All municipalities are members of the unit and participants in the Plan.

A. Principle Findings

1.Waste Quantities and Population

Approximately 32,000 tons of waste per year are generated in Allegany County. This is predominantly residential and commercial. Industrial waste comprises a small percentage of the total waste stream since Allegany County is mainly rural with an agricultural based economy. The population has been declining since 1980 and currently is around 50,000. Economic development has been slow in the past decade but recently, some major accomplishments have had a positive influence on the County's economic outlook. The Ceramic Corridor, the retention of Acme Electric in Cuba and the Wellsville Airport access road are among the latter.

2. Solid Waste Management Facilities

Allegany County has at the present time few privately owned facilities. There is a container redemption facility in Cuba and a C&D landfill in Wellsville. The Hylands Ash Monofill is seeking a permit to construct in the Town of Angelica.

The County owns and operates seven transfer stations and a sanitary landfill. Long term disposal capacity at the landfill is sufficient for the next 20 years. The possibility of expansion on the existing site will be explored within the next seven years.

There currently is no economic or environmental justification to pursue energy recovery incineration (County Owned) as a disposal alternative to landfilling non-recyclables.

The County's long-term disposal strategy will be to effectively maximize the life of the County Landfill and to operate its facilities and recycling program as efficiently as possible.

3. County Recycling Program

The County Recycling Program began as a voluntary program in 1989 and became mandatory in 1991. The marketing has always been handled by the Public Works Department and in the early stages of development, local intermediate processors handled all items (Crown Y and Railroad Valley). The types of materials separated have remained the same since the program's inception. The methods of handling them and the markets have undergone many changes. These are outlined in the CRA. The system is and will continue to be a transfer station based operation. Recently the County Landfill added a staging area as a storage/transfer point for some recyclable items.

B. Future Actions and Proposed Strategies

As stated earlier, the County will continue to own and operate its solid waste facilities. The transfer stations are not planned to undergo any drastic changes. Different equipment may be installed and some minor physical alterations may occur but the basic operation will not change.

The landfill will be expanded laterally to fill the permitted "footprint" and expansion on the existing property will be investigated. The County will look for ways to improve the efficiency and cost-effectiveness of the operation.

Composting of yard waste and sewage sludge will be explored and the plan would be to use an area on the County's landfill property.

The County is not planning a C&D facility at this time, but would look to yard waste management strategies as a way to handle the wood component. The Solid Waste regulations allow for limited amounts of C&D to be disposed of in the County Landfill and this will continue.

The recycling program will be enhanced slowly as current methods and practices are improved and efficiency is increased. Additional items will be brought on-line when economically feasible. More local markets and end-users will be pursued and possibly promoted.

INTRODUCTION and DESCRIPTION OF ACTION

Introduction and Description of Action

This document constitutes a detailed Solid Waste Management Plan for Allegany County. The plan presents an evaluation of the current status of solid waste management and handling practices in the County and serves as a guide for future solid waste management planning and implementation.

This plan has been prepared in accordance with the Solid Waste Management Act of 1988. It has also been prepared in conformance with the goals and objectives of the New York State Solid Waste Management Plan and the requirements of 6 NYCRR Part 360 - the New York State rules and regulations which govern the design and operation of solid waste management facilities in New York State.

By reviewing and accepting this plan, and by adopting its various recommendations, the County is endorsing the same four solid waste methodologies that are set forth in the State's Solid Waste Management Policy. More specifically, this plan follows the New York State Solid Waste Management Plan and the Solid Waste Management Act of 1988, which formally establishes a solid waste hierarchy concerning the preferred methods of solid waste handling in New York State. In descending order of preference these methods are:

- First, to reduce the amount of waste generated;
- Second, to reuse material for the purpose for which it was originally intended or to recycle that which cannot be reused;
- Third, to recover, in an environmentally acceptable manner, energy from solid waste that cannot be economically and technically reused or recycled.
- Fourth, to dispose of solid waste that is not being reused, recycled, or from which energy is not being recovered by land burial or other methods approved by the New York State Department of Environmental Conservation.

The subsequent sections of this document summarize the alternatives open to Allegany County in achieving these policy goals. A brief characterization of past and present waste management practices is provided. At the completion of this document, final overall program recommendations will be made for solid waste management in the County for the next 10 years. A listing of previous County Comprehensive studies and other reports used as a basis for the development of this plan are on page iii.

Background:

The following background discussion is a description of past solid waste management planning and practices in Allegany County. It is based on the report compiled in 1990 titled "**The History of Solid Waste in Allegany County**." The full report is included as Appendix SWMP-2.

Allegany County did not attempt to manage solid waste until the late 1960's, at which time the County Planning Board was designated the Refuse Agency. Also, at that time a Planning Consultant was hired to research the solid waste problem. The problem being to

bring the many small town and village landfills that were nearing capacity and of substandard condition together; and further consider a large, single County owned and operated system. In 1968 the County considered for a short period of time (and again in 1973) a burn plant, but the idea never materialized.

Throughout 1969 potential landfill sites were investigated and in 1970 the Solid Waste Committee was created to study a joint effort with Steuben County for land disposal. In 1972 the study was completed and a single, county owned and operated landfill was recommeded. The Planning Board was designated as the implementing agency for that study. Throughout the mid 1970's many towns and villages petitioned the County both in support and opposition to the study. Another committee, the Solid Waste Advisory Committee was formed to help implement the plan and recommended public input.

In 1973 a Solid Waste Disposal Engineer was hired to do a surveillance of potential sites. A pilot transfer station was set up in the Town of Willing and EQBA funds were applied for.

In 1974 a consolidated solid waste disposal summary report was filed by the new committee which basically supported the previous report. Again many towns and villages wrote in support and in opposition to this new report. More public meetings were held to determine the public majority, which eventually supported the idea.

In 1975, a potential site was investigated with soil borings. Later that year a resolution was put forward electing the single landfill system of solid waste disposal in the County of Allegany, the resolution was defeated. Throughout the rest of 1975 the towns and villages requested the County to look at other options, either a single landfill at another site or a multi-location system. The jurisdiction of solid waste was now assigned to the Planning and Historical Committee.

In 1978, the Office of Administrative Assistant was created and assigned as one of its responsibilites, the implementation of any environmental programs. At that time, Allegany County was asked (and later accepted) to participate in the proposed Cuba Cheese Refuse to Energy Project. 1979 brought engineer services for a transfer station system to supply the Cuba Cheese Refuse to Energy Project. The project was funded in 1980 and positions were created for a Solid Waste Department, and in 1981 the Department of Public Works was established.

In 1982, a Final Environmental Impact Statement was approved and construction for the transfer station system was started. The County was awarded $500,000 EQBA funds for the project which was finished in 1983.

Throughout 1983 a DEIS was prepared for a landfill site. In 1985 the landfill property was purchased with soils investigation, preliminary plans, and specifications were completed. Excavation and the construction of a one acre liner test patch was done to prove the landfill design.

Throughout 1986 construction of the County landfill on County Route 48 in the Town of Angelica was ongoing. In 1987 the leachate plan

was completed in June and on September 23rd disposal in the new facility commenced.

Actually the first recycling started in 1984 by separating scrap metal at the transfer stations. Planning of a full scale recycling program did not begin until 1988 when the position of Recycling Coordinator was created. State grant money was applied for and received to start a recycling education program. On July 1, 1989 the official recycling program began on a voluntary basis, and in accordance with state law, the program became mandatory by September 1992.

In February of 1990 the County decided, by resolution, not to continue to supply the Cattaraugus County Incinerator with waste to burn and further not to bury the ash in the County landfill. The County now buries all it's own non-recyclable garbage.

In January of 1991 the County Solid Waste Law was passed requiring by law mandatory recycling and a permit system, and in March of 1991 the County approved the engineering services for a Materials Recovery Facility, the services were rendered but the facility was tabled.

(Information on 1992 and 1993 will be added with the first yearly update after approval of plan.)

Allegany County is not facing a solid waste crisis at this time, like many other New York State municipalities. We are fortunate to posses a solid waste system consisting of long-term landfill space, transfer stations, and a recyclables storage transfer area. The County foresees no future "problems" associated with the management of the waste stream other than the usual issues associated with repermitting facilities or permitting potential expansions of existing facilities. The ability of the County to continue to afford to comply is the only other real concern.

The solid waste planning efforts undertaken by the County since 1966 are documented in the following reports:

- !1972: Steuben-Allegany County Solid Waste Study
- !1974: Consolidated Solid Waste Disposal Report
- !1981: Draft Environmental Impact Statement for Transfer Station System
- !1982: Final Environmental Impact Statement for Transfer Station System
- !1984: Draft Environmental Impact Statement for County Landfill
- !1984: Final Environmental Impact Statement for County Landfill
- !1990: Solid Waste History Report
- !1991: Allegany County Comprehensive Recycling Analysis

A copy of each of these reports and various other documents on solid waste management are kept on file in the Clerk of the Board Office.

Objectives:

The primary objective of the Allegany County Solid Waste Management Plan is the adoption of a long-term strategy for solid waste management disposal which conforms with all State requirements and goals.

The focus of Allegany County's Solid Waste Management Plan is based on:

- an evaluation of the existing County system in order to measure it against new state requirements for solid waste management; and
- the assessment of opportunities to enhance the system and prolong the useful life of the County Landfill.

The preparation of the plan is necessary to provide Allegany County a road map for managing the County's solid waste through the 1990's and beyond.

To begin with, State policy requires that quantities of waste shall be reduced, and every effort made to remove and recycle materials prior to their entering the waste stream. The County's plan describes current efforts in this regard, and outlines methods by which this component of the plan can be enhanced. Existing markets are identified and methods for collecting, processing, and sale of these materials are discussed.

Construction of new solid waste management facilities or expansion of existing ones requires permitting from New York State Department of Environmental Conservation. These permits, issued under Part 360 Regulations, are required in Allegany County on a regular basis as new cells at the County Landfill are developed. The Solid Waste Management Act of 1988 stipulates that applications after April 1, 1991 for these construction permits will not be considered complete until the County has developed a solid waste management plan.

The most general of these objectives is keeping solid waste management costs at a minimum while maintaining the fullest possible protection of the environment. The cost issue is important for a number of reasons. Over the last two decades, the County has assumed from the towns and villages in Allegany County the responsibility of managing solid waste. One of the assurances the County has given its municipalities in this process has continued to be that, solid waste management costs be kept as low as possible. The County has an obligation to do everything in its power to fulfill these assurances.

Allegany County has a shrinking population base and a struggling economy. The key to stabilizing both the population and the economy lies in a twofold economic development effort: attract new businesses to the area and see that conditions in the County are such that existing businesses can survive, prosper, and continue to provide job opportunities. A sound solid waste management program is important to the realization of the economic development efforts: The cost for solid waste disposal is one of the costs of doing business that is being increasingly scrutinized in deliberation about locating in an area or moving out of it. Not

only is the cost at any one moment of time important, but its predictability over a number of years also is critical.

The other side of the equation is important too: the fullest possible protection of the environment is important in maintaining a safe, attractive place for the county's residents to live.

The maintenance of existing solid waste management facilities is becoming increasingly more expensive with each passing year. It is important that Allegany County make future waste management decisions based on both economic and environmental concerns.

Since landfills will always be required for portions of the County's waste stream that cannot be diverted, reused, recycled, or composted, the plan addresses the need for continued land burial facilities.

It will be a continued objective of this plan to maintain public contact and support throughout the implementation of the various plan components.

Finally, Allegany County has developed carefully over the past decade a sound approach to solid waste management. The basis of that sound approach is the land-disposal facility known as the Allegany County Sanitary Landfill. Accordingly, one of the chief purposes of the plan is to encourage and initiate activities, programs, and attitudes that will serve to expand the longevity and viability of the existing waste disposal facility.

SECTION A - O

SECTION A:

360-15.9(a)(1-3) Description of the planning unit

Allegany County was designated as the planning unit for Solid Waste Management on behalf of all towns and villages in the County by the Board of Legislators in June of 1989. The original intent of the resolution was for the purpose of applying for State funding to finance the development of a Comprehensive Solid Waste Management Plan for the entire County. The County had actually assumed the role of "planning unit" well before the official resolution of the Board when municipal landfills were forced to close by new DEC and Health Dept. regulations. The task of the County lawmakers and related agencies was to assist the municipalities with Solid Waste Management problems. Since assuming responsibilities for solid waste management planning, the County has undertaken the following: a survey of municipalities to identify those interested in participating in a multi-municipal solid waste disposal facility, the identification of potential sites for a County landfill and preliminary research into a county-wide system of transfer stations. Since 1989, the County has developed a recycling program and implemented long range planning for the County landfill.

The planning unit covers Allegany County, an area of 670,000 acres. It is bounded on the north by Livingston and Wyoming counties, on the west by Cattaraugus County, on the east by Steuben County and on the south by the Commonwealth of Pennsylvania (see Appendix SWMP-3 for map). The County has a declining population, currently estimated at 50,470 (1990 census) with an average density of 48 people per square mile. There are 29 townships and 11 incorporated villages included in the planning unit.

360-15.9(a)(4) Significant circumstances

The six largest population centers are Wellsville (population 8,085), followed by Alfred (5,690), Cuba (3,391), Bolivar (2,355), Friendship (2,180) and Andover (1,950). (See appendix SWMP-4 for a complete list of municipalities.)

The County is rural with 200 active dairy farms and another 600 small part time farms; 46,256 acres of state forest land; and 2,100 acres of county forest. Seasonal residents come throughout the year for the lakes, hunting and fishing. In summer, Cuba and Rushford lakes attract many visitors. There are 3,000 seasonal dwellings in the County. About 400 are situated on Cuba Lake and 700 near Rushford Lake.

Wellsville is the largest population center. The county transfer station serving the Wellsville area takes in 34% of the solid waste and recyclables generated by county residents, businesses and industries.

Large industries include manufacturing of steam turbines and generators; utility and industrial air preheaters and related equipment; and voltage regulators, transformers and related equipment. The County is the home of Alfred University, Alfred State College and Houghton College. Other significant industries include dairy products, wood and wood products, high technology

ceramics, paving, oil and gas, other manufacturing concerns, and handcrafts.

SECTION B:

360-15.9(b) Characterization of the County's solid waste

Factors such as population density and land use affect the composition of the solid waste stream, the methods of collection, and the effectiveness of recycling programs. Sparsely populated rural areas tend to generate primarily residential wastes, with commercial and industrial wastes constituting only a small portion of the total waste stream.

Because of low population densities and large areas of unimproved land, yard wastes, and construction and demolition debris frequently remain on site in rural areas. Residents of rural areas generally deliver their waste to one of the seven transfer stations for disposal, although private haulers also may serve rural households.

Village and hamlet locations, on the other hand, tend to generate larger volumes of yard wastes, such as grass clippings and brush, in addition to household wastes. In the past, yard wastes were generally bagged and disposed of in landfills. The County landfill no longer accepts yard wastes. Some municipalities continue to pick up leaves and have made arrangements with local farmers to compost them.

Most urban areas tend to generate residential, commercial, and industrial wastes. Some municipalities provide collection service to residents and businesses (sometimes under contract with a private hauler). In other areas, business is responsible for disposing of their own wastes. Urban areas, which may have residential areas with small lots and many large, mature trees, also generate large volumes of leaves rather than grass clippings and brush.

The County produces solid waste that can be categorized as residential, commercial or industrial.

In the County, the largest category of waste is residential. The Allegany County Comprehensive Recycling Analysis is included as appendix SWMP-1. The CRA, Section 1, gives a year-by-year projection of the County's generated waste stream, including quantity and type.

Construction and demolition debris generated by County residents is generally the result of demolition of existing structures, new construction of buildings, land clearing, and seasonal or storm-related cleanups. Waste water treatment plant sludge is generated by seven municipal treatment facilities within the county (Alfred, Belmont, Bolivar, Cuba, Friendship, Houghton and Wellsville). In addition, the sludge generated by the City of Olean waste water treatment plant is accepted at the County Landfill in exchange for treatment of the landfill's leachate.

Solid Waste collection in Allegany County

Solid Waste collection in Allegany County is accomplished by three major methods. The first and most prevalent is individual hauling of solid waste to County facilities. A large percentage of County residents and businesses do not have public or private waste collection services and therefore they become their own hauler. The Department of Public Works has sold 11,400 permits as of 3/93 for use of our facilities and this number represents over 50% of household & businesses in the County.

The second most frequent method of collection which is employed is the use of commercial private waste haulers. Those haulers service households, businesses, institutions and some are involved in contractual relationships with municipalities. There are about 18 commercial haulers who have curbside collection operations. These haulers also pick up recyclables and most use our transfer station drop-off centers. About half market some recyclables independently of the County System.

Several towns and villages in the county provide waste collection services to the residents and businesses within their jurisdiction. Cuba Village, the Town of Friendship, and Village of Alfred all contract with commercial private haulers for curbside pick up.

The third method of collection which differs only slightly from the second is the curbside collection of waste by municipalities using their own personnel and equipment. The Villages of Belmont, Canaseraga and Wellsville fall into this category. Belmont and Wellsville use packer trucks for refuse. Belmont uses a dump truck for recyclables and collects one item per week. These are taken to County facilities. Wellsville uses a homemade recyclables vehicle and collects the following items on a weekly basis: (One group per week) All colors of glass, metal cans, plastic, news and cardboard. Wellsville markets clear glass independently and delivers cardboard to a County transfer station. The rest of the items are stored at their Highway Department facility in County owned containers and then handled by the County.

Wastes from out of the County

There are three sources of solid waste from outside the county: 1) Olean treatment plant sludge, 2) ceramic wastes from Olean-American Tile, and 3) residential waste from the Town of Ossian in Livingston County (about 150 tons/year). The waste accepted conforms to the County's disposal rules and regulations. For example, sources in Town of Ossian are required to sort for recycling. There are no plans to change any of these arrangements.

Foundry sand was accepted from Dresser-Rand in Olean. That practice has been discontinued. Currently, consideration is being given to accepting a different kind of solid waste (dense and low volume) from that facility.

Wastes and Recyclables sent out of the County

No waste disposed of at any County owned Solid Waste Management

Facility is then sent out of County for disposal. Recyclables that are collected may be sent to processors or direct markets outside the county, see appendix SWMP-1 (CRA Section 3) for available and potential markets.

Private concerns send some recyclables out of the County. For example, several school districts (as well as the County) have programs to collect office paper. That paper is accepted by a Steuben County firm, Hornellsville Recyclers, which then markets it.

Leachate from the landfill is currently sent to the City of Olean waste water treatment plant with the exception of one annual load which is sent to Amherst in order to maintain a backup disposal system with that plant. Some leachate is also sent to the City of Salamanca waste water treatment plant during peak flows.

Construction and Demolition Debris Landfill (C&D)

Allegany County permits disposal of one cubic yard of construction and demolition debris per hauler per day with specific prohibitions on size and materials. Unacceptable debris or volumes greater than one cubic yard can be taken to one private DEC-permitted C&D landfill, Southern Tier Kleen Fill in Wellsville.

The County transfer stations originally accepted C&D waste as well as yard waste with limitations only on length. When the County landfill became operational in 1987, it was soon apparent that landfill space was extremely expensive and its use should be optimized by diverting certain materials that need not be disposed of in a sanitary landfill. In 1988 the practice of accepting yard waste and C&D for disposal in the landfill was terminated. This decision was reevaluated in 1990 because no provisions were made to manage the residential or individual C&D waste stream, especially that which was generated from households. The firm Railroad Valley was permitted to accept C&D for processing but very quickly ran into trouble both financially and legally. Kleen-Fill, Inc. was established in the Town of Wellsville as a permitted C&D landfill and this facility mainly handled the waste from contractors and large demolition projects.

The County lawmakers made an allowance in the Solid Waste Law that permitted the disposal of one cubic yard of C&D per day for any hauler who is permitted to use County facilities. The objective was to provide a means of disposal for owners of households with small amounts of C&D. This would prevent or discourage illegal disposal along roadsides. Yard waste is still prohibited from all County Facilities.

Construction and demolition debris generation in Allegany County is a component of the residential/commercial waste stream. Based on reports from Kleen-Fill, Inc. and statistics from the County landfill and estimates of C&D generation from population figures, the amount of C&D generated in this County is about 5000 tons per year.

Kleen-Fill, Inc. began operation in early 1991 and has a 5 year Part 360 Solid Waste Management Facility Permit, renewable at the

end of five years if the permitted footprint is not filled to capacity. The site is 2.5 acres and has a design capacity of approximately 80,000 cubic yards. It currently has 90% of its available capacity remaining and based on 1992 disposal figures, the annual volume of waste disposed of at this facility would be approximately 4000 - 6000 yards. However, this site is underutilized and it is probable that the annual volume will increase as more economic development occurs in this area. The volume would most likely increase to 8000 yards per year. The site life can be estimated to be approximately 8 years. Once the capacity of this site is exhausted, another location would have to be found because the original footprint is the only suitable land for a C&D landfill on that particular property.

Allegany County Solid Waste Management Facilities accept a very limited amount of C&D material as a result of the County's Solid Waste Law. A hauler can dispose of only one cubic yard per day. This allowance in the law was established to give homeowners and small contractors a means of disposing of small quantities of C&D. All metal that is a component of C&D is separated for recycling. It is estimated that County facilities received about 1000 tons of C&D and 80% of this was landfilled. The rest was recycled as scrap metal.

To summarize C&D waste generation and capacity; the County's private C&D landfill has sufficient capacity to handle the County's disposal needs until the year 2000. County solid waste facilities will continue to accept 1000 - 1500 tons per year from individual haulers. There will be a need to develop new disposal capacity within the next ten years, either publicly or privately owned as Kleen-Fill, Inc. exhausts its available capacity. A new site which is privately owned must be capable of handling approximately 4,500 tons per year as the rate of generation in the County is likely to increase to 7000 tons per year by the year 2000. 500 - 1000 tons of this material should be recycled, about 1500 tons will be handled by County facilities and the rest will be disposed of on private properties.

Railroad Valley Recycling in Angelica ceased operations as a C&D processing facility in early 1992. It can no longer accept <u>any</u> waste material.

<u>Sludge</u>

Sludge from the County's seven waste water treatment plants (Alfred, Belmont, Bolivar, Houghton, Cuba, Friendship, Wellsville) and the City of Olean has been accepted for burial at the landfill since 1988. Annual landfilled totals are:

1988	3,136.77 tons
1989	3,373.22 tons
1990	3,682.65 tons
1991	3,131.93 tons
1992	3,196.18 tons

The sludge tonnage is included in the "industrial" category on the

waste stream analyses below.

Septage is the liquid and solid material pumped from septic tanks and cesspools. It is normally collected privately and disposed of either in a municipal wastewater facility or through landspreading on a private farm.

There are currently six permitted septage handlers in Allegany County and several wastewater treatment plants that accept septage. Land disposal is practiced by Empire Cheese and Friendship Dairies and a couple of septage haulers. The dairy waste is not true septage but results from water treatment at the respective facilities.

The current septage management practices in the County are expected to continue; and, the local treatment facilities plan to continue in the future with septage disposal. The Bolivar facility expects to resume septage treatment in the near future.

Incinerator ash

Ash from the Cuba incinerator was accepted at the landfill in 1988 and 1989. The ash tonnage is included in the "industrial" total on the waste stream analyses below. Annual burial totals are:

1988	15,220.93 tons
1989	14,648.19 tons

Yard and agricultural wastes

Neither of these wastes is accepted at the landfill. The County has provided information and workshops on municipal and household composting. A demonstration composting project is under consideration.

Waste oil

Waste oil is not accepted at the landfill. Information, including a DEC publication, is offered to the public explaining the State-mandated system for collection of oil through service stations.

Hazardous wastes

No commercial or industrial hazard wastes are accepted at the landfill.

Household hazardous wastes

The Department offers residents information, including a DEC flyer, on handling household hazardous wastes and using alternative products. A county-wide collection day is being researched to determine the cost, procedures and scheduling that would be involved.

Contaminated soil

The County has accepted for burial at the landfill 5,758.36 tons of clean-up debris since 1989. The soil is from underground tank closures and surface spills. The tonnage per year is:

1989	722.37
1990	448.23
1991	1,250.92
1992	3,336.84

The County is presently looking at alternatives to landfilling, such as bio-remediation.

Asbestos

The landfill has accepted less than 500 pounds of asbestos-contaminated material since 1989. The materials are handled in accordance with DEC regulations including double-bagging and labeling. The County will accept up to 100 pounds of tested asbestos material per project. Generators of greater amounts will be referred to a DEC-approved, private landfill.

Regulated medical wastes

The County landfill does not accept medical wastes. Generators of the waste currently make their own arrangements with private firms.

Allegany County solid waste stream breakdown

Following is a list of tables describing the waste stream breakdown starting in 1983. Each table shows a yearly tonnage of solid waste handled by the County in three categories; incinerated, landfilled, recycled, and further describes the source.

Table B-1
Allegany County Solid Waste Stream
1983

Source	Disposition		
	Incinerated	Landfilled	Recycled
Transfer stations and/or collections	12,334	10,091 (P)	-0-
TOTALS	12,224	10,091 (P)	-0-
Total tons of solid waste handled in 1983. . . . . **22,425**			

(P) = Patton's landfill, Alfred

Table B-2

Allegany County Solid Waste Stream
1984

Source	Disposition		
	Incinerated	Landfilled	Recycled
Transfer stations and/or collections	17,826.04	13,221.18 (P)	-0-
TOTALS	17,826.04	13,221.18 (P)	-0-
Total tons of solid waste handled in 1984 . . . . . 31,047.22			

(P) = Patton's landfill, Alfred

Table B-3
Allegany County Solid Waste Stream
1985

Source	Disposition		
	Incinerated	Landfilled	Recycled
Transfer stations and/or collections	16,777.52	14,494.17 (P)	-0-
Landfill and/or transfer station collection -large appliances	-0-	-0-	154.87
TOTALS	16,777.52	14,494.17 (P)	154.87
Total tons of solid waste handled in 1985 . . . . . 31,426.47			

(P) = Patton's landfill, Alfred

Table B-4
Allegany County Solid Waste Stream
1986

Source	Disposition		
	Incinerated	Landfilled	Recycled
Transfer stations and/or collections	18,207.56	12,279.98 (P) 1,315.58 (C)	-0-
Landfill and/or transfer station collection -large appliances	-0-	-0-	250
TOTALS	18,207.56	13,595.56	250
Total tons of solid waste handled in 1986 . . . . . 32,053.12			

(P) = Patton's landfill, Alfred
(C) = CID landfill, Chaffee

Table B-5
Allegany County Solid Waste Stream
1987

Source	Disposition		
	Incinerated	Landfilled	Recycled
Transfer stations and/or collections	18,688.27	812 (P) 5,405.48 (C) 4,996.41 (A)	-0-
Landfill and/or transfer station collection -large appliances	-0-	-0-	258.96
TOTALS	18,688.27	11,213.89	258.96
Total tons of solid waste handled in 1987 . . . . . 30,161.12			

(P) = Patton's landfill, Alfred
(C) = CID landfill, Chaffee
(A) = Allegany County Landfill, Angelica

Table B-6
Allegany County Solid Waste Stream
1988

Source	Disposition		
	Incinerated	Landfilled	Recycled
Transfer stations and/or collections	16,969.15	34,585.25 (A) (r: 8,407.07) (c: 2,597.16) (i: 23,581.02) (sludge: 3,136.77)	-0-
Landfill and/or transfer station collection - large appliances - scrap metal	-0-	-0-	 501.95 55.00
TOTALS	16,969.15	34,585.25	556.95
Total tons of solid waste handled in 1988 . . . . . 52,111.35			

(A) = Allegany County Landfill, Angelica
(r:) = residential
(c:) = commercial
(i:) = industrial

NOTE:521,944.44 gal. of liquid waste (landfill leachate) was hauled to the

City of Olean waste water treatment plant. The increase in total tons

of solid waste handled from 1987 to 1988 is attributed to several factors. In 1987 and 1988 solid waste handled referred to the amount of waste that was hauled from our transfer stations to the Cattaraugus County Waste-to-Energy Facility, the waste hauled to landfills, both private and County owned, and the amount separated for recycling and hauled to a private facility. The County Landfill began operations on September 30, 1987 and received 4996.41 tons of waste by years' end. The waste was non-burnable bulky waste that could not be incinerated. Ash from the WTE facility was landfilled in Cattaraugus County. In 1988, all of the ash was landfilled in Allegany County (15,220.93 tons) and the County landfill also began receiving sewage sludge from the City of Olean and the seven plants in Allegany (3137 tons), foundry sand from Friendship Foundry (4120.66 tons) and other industrial waste from County businesses. The industrial waste landfilled accounts for the increase in tonnage handled by Allegany County.

Table B-7
Allegany County Solid Waste Stream
1989

Source	Disposition		
	Incinerated	Landfilled	Recycled
Transfer stations and/or collections	14,492.15	39,801.13 (A) (r: 9,919.39) (c: 1,949.86) (i: 27,931.88)	-0-
Landfill and/or transfer station collections - tires - large appliances - scrap metal - cardboard - glass	-0-	-0-	 60.00 440.00 118.99 134.46 57.18
TOTALS	14,942.15	39,801.13	810.63
Total tons of solid waste handled in 1989 . . . . . 55,553.86			

(A) = Allegany County Landfill, Angelica
(r:) = residential
(c:) = commercial
(i:) = industrial

NOTE:1,266,639.75 gal. of liquid waste (landfill leachate) was hauled to the City of Olean waste water treatment plant.

Table B-8
Allegany County Solid Waste Stream
1990

Source	Disposition		
	Incinerated	Landfilled	Recycled
Transfer stations and/or collections	-0-	40,813.03 (A) (r: 24,414.81) (c: 2,186.25) (i: 14,211.97)	-0-
Landfill and/or transfer station collections - tires - large appliances - scrap metal - cardboard - glass - metal cans - newspapers - lead-acid batteries - plastic	-0-	-0-	 101.80 366.30 113.00 61.82 103.02 68.64 216.34 26.40 30.90
County office buildings - office paper	-0-	-0-	6.71
TOTALS	-0-	40,813,03	1,094.93
Total tons of solid waste handled in 1990 . . . . . 41,907.96			

(A) = Allegany County Landfill, Angelica
(r:) = residential
(c:) = commercial
(i:) = industrial

NOTE:1,099,168.64 gal. of liquid waste (landfill leachate) was hauled to the City of Olean waste water treatment plant.

Allegany County did not use the Cattaraugus County WTE facility in 1990 and therefore did not landfill the ash, which would account for a decrease in solid waste handled by about 14,000 tons per year.

In 1991 the decrease of about 8000 tons of waste from the 1990 totals can be attributed to several factors. In 1990, Allegany County landfilled foundry sand from two facilities; Friendship Foundry and Dresser-Rand. This totaled about 7000 tons. Both facilities ceased foundry operations and no sand was landfilled in 1991 and Olean tile began to recycle some of its waste, accounting for another 500 tons.

Table B-9
Allegany County Solid Waste Stream
1991

Source	Disposition		
	Incinerated	Landfilled	Recycled
Transfer stations and/or landfill collections	-0-	31,426.28 (A) (r: 20,646.73) (c: 1,926.5) (i: 8,853.05)	-0-
Landfill and/or transfer station collections	-0-	-0-	
- tires			131.85
- large appliances			296.91
- scrap metal			573.22
- cardboard			261.19
- glass			210.53
- metal cans			167.49
- newspapers			395.21
- lead-acid batteries			17.86
- plastic			89.16
- office paper			6.93
TOTALS	-0-	31,426.28	2,150.35
Total tons of solid waste handled in 1991 . . . . . 33,576.63			

(A) = Allegany County Landfill, Angelica
(r:) = residential
(c:) = commercial
(i:) = industrial

NOTE:880,592.35 gallons of landfill leachate were hauled for treatment at waste water plants -- 874,438.87 gallons to the City of Olean and 6,153.48 gallons to the Town of Amherst.

Table B-10
Allegany County Solid Waste Stream
1992

Source	Disposition		
	Incinerated	Landfilled	Recycled
Transfer stations and/or landfill collections	-0-	32,805.09 (A) (r: 19,516.71) (c: 1,564.69) (i: 11,723.69)	-0-
Landfill and/or transfer station collections	-0-	-0-	
- tires			62.27
- large appliances			291.06
- scrap metal			829.42
- cardboard			606.31
- glass			374.60
- metal cans			255.98
- newspapers			607.45
- lead-acid batteries			25.54
- plastic			140.05
- office paper			8.04
TOTALS	-0-	32,805.09	3,200.72
Total tons of solid waste handled in 1992 . . . . . 36,005.81			

(A) = Allegany County Landfill, Angelica
(r:) = residential
(c:) = commercial
(i:) = industrial

NOTE:1,592,509.78 gallons of landfill leachate were hauled for treatment at waste water treatment plants.

SECTION C:

360-15.9(c) Existing and Proposed Solid Waste Facilities

Currently operating County facilities include a landfill and seven transfer stations which are dispersed throughout the rural area.

An environmental impact statement for the seven transfer stations was approved in January 1982. They are operating under DEC transfer station permit numbers 02 T01 to 02 T07.

An environmental impact statement for the landfill was approved in November 1984. The landfill is operating under DEC sanitary landfill permit 90-86-0233. Operation at present is covered by a State Administrative Procedures Act permit.

Haulers, both individual and commercial, must buy a permit to use the facilities. The permit costs $10. Permit holders are entitled to deposit recyclables in the proper container or landfill-bound waste in the stationary compactor. The only additional charge for users is a fee for disposing of tires. See appendix CRA-25 for the list of accepted recyclables and transfer station schedules within Allegany County Local Law for Solid Waste Management and Resource Recovery.

The County has engaged in various planning efforts for more than a decade in an attempt to address its short and long term solid waste disposal needs. These efforts are documented in the following reports and are summarized below:

Final Working Report -- Solid Waste Transfer System, Allegany County, Edwards and Moncreiff, P.C., November 1980

Preliminary Report for County Landfill, Allegany County, Edwards and Moncreiff, P.C., July 1981

Final Environmental Impact Statement, Allegany County Transfer Station System, Wellsville Area Station, Terrestrial Environmental Specialists, Inc., 1982

Present Allegany County Solid Waste Facilities

Allegany County Sanitary Landfill, Angelica

Transfer Stations:

Station 1 -- Caneadea
Station 2 -- Canaseraga
Station 3 -- Cuba/Friendship
Station 4 -- Angelica
Station 5 -- Alfred
Station 6 -- Bolivar
Station 7 -- Wellsville

County Transfer Stations

The County's seven transfer stations began full operation in 1983. The transfer stations were designed to accept solid waste from municipal and private handlers, including packer trucks, and from private citizens in their personal vehicles. The refuse accepted was hauled by the County to the Cattaraugus County Incinerator at

Cuba where it was burned resulting in generation of energy (steam). Non-burnable waste was hauled to private landfills.

Previous to implementation of the transfer station system, plans only touched lightly on the matter of disposal of refuse. The County Legislators recognized that there was a need to address the following situations:

1. Where will the refuse be taken should the incinerator at Cuba be shut down?

2. The transfer stations would accept only limited amounts of bulky items, such as old refrigerators. Where would these items be taken?

3. There were numerous instances of bulky collections such as annual municipal trash pickups and large volumes of construction debris. The refuse in excess of predicted tonnage was both burnable and non-burnable. Would it be accepted at the transfer stations or be diverted to another disposal site?

4. Commercial and industrial refuse, while not representing a large volume, needed consideration.

These questions were eventually resolved with the opening of the landfill in 1987 and termination of the use of the incinerator in 1989.

When the department began a voluntary recycling program in 1989, all of the transfer station container rentals and hauling were contracted to a private intermediate processing facility, Railroad Valley Recycling. The County has gradually purchased its own containers and hauling vehicle.

County Landfill

In 1981, the Board of Legislators retained Edwards and Moncreiff, P.C., Engineers and surveyors to develop a county-wide landfill feasibility report. The results of this report are documented in Preliminary Report for County Landfill.

The report indicated that a sanitary landfill would be necessary. At that time there were two approved landfills in the County. One operated by the Village of Cuba on Jackson Hill Road in the Town of Cuba. The other was operated by LaVerne Patton and located off County Route 42 in the Town of Alfred. None of these landfills complied fully with 6 NYCRR Part 360 regulations. The preliminary report explored incinerator use and sending as much refuse as possible to the landfill.

These alternatives included: 1. Using the Cuba Village and Patton sites and 2. Constructing an entirely new county landfill with a useful life of 40 years.

Estimates indicated that a county-wide landfill would be the most economical method of solid waste disposal at a then-estimated cost of $13 per ton.

Land was purchased Feb. 27, 1984, and site preparation began in May 1985. Cell 1 opened Sept. 23, 1987. There will be a total of nine cells covering 23 acres.

The County landfill was designed to meet or exceed standards of the time. In 1992, there were currently four cells of 2.5 acres each. Daily cover consists of a minimum of six inches of soil. There are no unlined cells and all areas have a leachate collection system feeding into a 200,000-gallon basin that is annually emptied, cleaned and inspected. Groundwater is sampled four times a year at 15 locations.

The first cell, opened in 1987 and filled to capacity in February 1989, has a double clay liner. The second cell, filled in July 1991, was upgraded to a single composite liner of soil and 80 ml HDPE. Both cells have intermediate covers and will have gas venting when the final cover is constructed.

Cell 3, currently in use, has a double composite liner. The current estimate of the life span of the landfill is 24.6 years (see CRA, page 83). See appendix SWMP-5 for diagrams of the cells.

All loads arriving at the landfill are weighed and logged with records kept of the type of waste, origin and location of disposal.

County Intermediate Processing Facility (IPF)

The County has investigated the development of its own IPF in order to reduce dependency on the private sector. In June 1991, the County requested proposals for engineering services in relation to the design and construction of an IPF to be located at the landfill. A preliminary design is in hand.

Proposed to be constructed at the landfill, the facility would be low technology and labor intensive. Mechanical equipment would consist of one or two balers, a forklift or wheel loader and possibly a conveyor. The building would be designed to maximize efficiency in unloading, sorting, processing and storage of market-ready materials. Preliminary specifications and cost estimates are on appendix SWMP-6. **PLEASE NOTE:** The County has suspended its plans to develop an IPF due to economics and lack of material quantities.

Other solid waste management facilities

INACTIVE

There were 18 dumps in the county accepting tires, refuse, building and construction debris, industrial and/or hazardous wastes. All of the following are now inactive, see list appendix SWMP-7.

A. Patton's Busy Bee Landfill - this site was recently classified as a Class 11-A (significant threat to health) because it is the source of groundwater contamination for area drinking water supplies.

B. Wellsville Town Dump - this site has been in the RI-FS stage and plans are proceeding for the remedial phase.

C. Day Farm Dump - this site is still in the testing stage -- the types and extent of contamination are being investigated.

D. Railroad Valley Recycling Inc., State Route 19, Angelica, NY 14709 - Railroad Valley was an intermediate processing facility with a DEC recycling facility permit valid until 1995. It handled traditional recyclables and construction and demolition debris. They went out of business and ceased operation in 1992.

ACTIVE

Crown Y Ltd. Partnership, 122 E. Main St., Cuba, NY 14727 --

Crown Y was an intermediate processing facility which handled traditional recyclables and processed newspaper into animal bedding. Due to a severe fire in 1992, Crown Y has limited its recyclables handling and returned to container redemption. Crown Y was exempt from permitting as a beverage industry recycler.

However, Crown Y's application for a recycling facility permit may still be in the process.

C E Consulting and Marketing, 112 Park Avenue, Wellsville, NY 14895 --

C E currently serves as a consulting broker for industries in New York and Pennsylvania. A tiny percentage of their volume is waste generated in Allegany County. They are working on getting a building in the County and would then apply for a DEC recycling facility permit.

Jerge's Used Auto Parts, Transit Road, Belfast, NY 14711 --

Jerge's is a holding yard for scrapped large appliances and vehicles. It holds a DEC scrap collector's license and is a registered dismantler. The two-year permits are in the process of being renewed.

Southern Tier Kleen Fill Inc., Vorhees Hill Road, Wellsville, NY 14895 --

The facility accepts construction and demolition debris. It is operating under a DEC permit which expires Feb. 28, 1996. The operating life of the facility is limited by DEC regulations to five years.

PLEASE NOTE: A list of current recyclables markets is included in appendix CRA-13, which are used or are potential markets for the generated materials in Allegany County.

Solid Waste Management Facility Map Legend
(See map in appendix SWMP-3)

A.Allegany County Facilities (Descriptions correspond to numbers on map)

All County transfer stations have stationary compactors, hopper shelters and an office for the full-time operator. The compactors pack solid waste into County-owned roll-off ejection containers which are hauled by County trucks. Each recyclable item collected is stored in its own roll-off.

1.**Transfer Station #1**
This station serves the Northwestern part of the County and is the second largest station by volume.

2.**Transfer Station #2**
Located in the village of Canaseraga, this station has a small service area and is only open twice per week. It serves the town of Burns, and Grove and is the smallest station by volume.

3.**Transfer Station #3**
Located close to the center of the County, this station serves the Western part of the County.

4. **Transfer Station #4**
This station is a small volume station, located very close to the County Landfill.

5. **Transfer Station #5**
This is a high volume station in the Alfred-Almond area, originally sited there to serve the two-college community of Alfred. It has a large service area.

6. **Transfer Station #6**
The Bolivar station serves the Southwestern townships of the County.

7.**Transfer Station #7**

This station serves the largest population center and has the highest volume of solid waste and recyclables.

8. **County Landfill**

Opened on September 30, 1987, this facility is on a 322 acre parcel and the permitted disposal area is 23 acres. Currently, seven acres have been developed and an additional 5 are permitted for construction. The facility employs double-liner and leachate collection systems.

B. Private Facilities

9. **Kleen-fill**

This is a DEC permitted C&D landfill in the town of Wellsville.

10. **Crown-Y Recycling**

This facility is a returnable beverage container redemption center, and is working toward being an intermediate processing center again for a variety of recyclables, including glass and paper. It is located in Cuba, NY. The permit status is pending.

PROPOSED

Hyland Ash Monofill --

Discussions with DEC and County officials indicate that there is currently one proposed private solid waste management facility progressing through the permitting process. Hyland Facility Associates has purchased the Herdman farm, a 289-acre parcel of land located in the Town of Angelica.

Hyland has proposed a project to construct and operate an ash monofill. Plans call for two separate but contiguous cells over an area of 28.27 acres. About 62 additional acres would be used for support facilities including buildings, roads, leachate containment structures, borrow areas and sedimentation ponds. The estimated life of the landfill would be 19 years.

SECTION D:

360-15.9(d) Future Population, Waste Generation, Changes & Special Conditions

Allegany County's population has been declining. The estimates below are based on statistics prepared by DEC and NYS Department of Commerce. Their original figures have been modified using actual population changes and trends projected from several key local economic developments. The estimate includes an initial loss of population (currently occurring), stabilization as the new industries become established and, finally, a small growth in the population.

The data was modified because the figures from the Department of Commerce did not accurately reflect the population trends in the County. The last decade has shown a steady population decline and we estimate this trend will continue for the next few years. Recent developments in the area of economic development have the potential to cause a modest population growth and this is reflected in the figures. The net result over ten years is a 2% decline from the 1990 Census figures.

Table D-1 estimates the population and waste generation in the county will show from 1992 - 2001.

Table D-1
Estimated Populations and Waste Generation
in Allegany County

1992-2001

Year	Population	Tons/Year*
1992	49,259	31,465
1993	48,077	30,709
1994	46,923	29,972
1995	46,950	29,990
1996	46,975	30,000
1997	47,351	30,246
1998	47,730	30,488
1999	48,112	30,732
2000	48,497	30,978
2001	48,885	31,225

*Tons/year figure determined by multiplying the population by 3.5 pounds solid waste/person/day. The 3.5 rate is based on landfill tonnage and population records kept since 1983 and includes waste generated by commercial, industrial and residential sources.

Breakdowns of waste by stream component (organics, paper, glass, cardboard, textiles, metal cans and aluminum, plastic and other (sewage sludge, scrap metal, construction and demolition debris, large appliances, tires, lead-acid batteries and dry-cell batteries)) can be found in the CRA, pages 1-9.

Changes to the planning unit
No changes to the planning unit are anticipated in the near future.

Special conditions
There are no potential special conditions anticipated at this time.

Major Transportation Routes in Allegany County
(as indicated on County Map - appendix SWMP-3)

A.State Highways

1. **Route 17**

This is a four-lane, limited access highway that provides the County with a major East-West transportation route. This Southern Tier Expressway runs from Chautauqua County east to New York City and gives access to all major population centers in the State, either directly or indirectly.

2. **Route 19**

This road is one of the major North-South routes in the County and passes through the County Seat and Wellsville, the County's largest population center. It runs in to Pennsylvania to the South and Wyoming County to the North.

3. **Route 244**

This is another East-West route that runs from Belmont to the Alfred-Hornell area.

4. **Route 243**

This route connects Route 19 with the Southwestern part of the County, as well as providing access to Cattaraugus County and ultimately the Buffalo area.

5. **Route 305**

This road provides a Southwestern route from Route 19 at Belfast to Cuba and on to the Portville-Olean area of Cattaraugus County.

6. **Route 417**

This is another major East-West route that runs along the Southern portion of Allegany County linking Wellsville and Olean and providing access to Steuben County.

7. **Route 21**

This is a short, but vital road that provides a route to Hornell for towns in the Southeastern portion of the County. It also connects Alfred with these areas.

B. County Roads

1. **County Route 20**

This former state highway is the major East-West route in the County system, running through the center of the County.

2. **County Route 16**

A major North-South highway from Angelica to the Northeast portion of the County.

3. **County Route 15**

This is a major North-South route that is used mainly as an alternative to State Route 19 to get to the Rochester area.

4. **County Route 12**

This highly travelled road connects Wellsville and Alfred.

5. **County Route 3**

This connects State Route 19 with the Northwestern corner of the County and provides access to the Arcade area and is used as a way to travel to the Buffalo area.

6. **County Routes 9, 10 & 11**

These roads are connected and provide a major route that runs across the County from Almond to Bolivar.

7. **County Route 4**

This road is located in the northern portion of the County and connects County Route 15 and State Highway 19.

8. **County Routes 33 & 18**

These roads provide a route from State Route 417 South into Pennsylvania.

Table D-2 gives a breakdown of the solid waste stream per estimates from estimated populations in Table D-1.

Table D-2
ALLEGANY COUNTY SOLID WASTE STREAM BREAKDOWN

	1991		1995	2000
Municipal Solid Waste (Residential, Commercial, Institutional)	24,270	21,500	21,500	
Industrial Waste	1,720	1,500	1,300	
Sewage Sludge	1,250	1,200	1,200	
Construction & Demolition Debris	5,000	6,000	7,000	
Total	32,240	30,200	31,000	

SECTION E:

360-15.9(e) Projections of changes to the waste stream

It is hoped that the waste stream will have significantly lower percentages of items such as packaging and food wastes as the public becomes more educated and active in making choices while shopping or in choosing to implement home composting.

Another anticipated change is that, with the projected economic development of the County, commercial waste will rise from 6% (1989) to 10% (1997).

A minor change is that large appliances are expected to be an increasingly smaller percentage of the waste stream. The volume has been dropping yearly and is expected to drop more then level out as the backlog of unusable items is depleted through disposal.

SECTION F:

360-15.9(f) Comprehensive Recycling Analysis

Revenues, if any, gained from sales of recyclables usually do not directly cover the costs of collection and processing. Instead, the gain is realized indirectly through avoided costs of burying the same materials. For this reason, viable markets include users of recyclables that will accept products from the County without reimbursement as well as those that charge to accept recyclables, in addition to paying markets.

Markets for recyclables are very volatile. Market research which identifies buyers, prices paid or charged, and processing requirements can become outdated in only a few months. Prices and processing requirements provided by brokers are subject to market fluctuations and should be used for short-term planning purposes only.

As municipalities across the State increase their recycling efforts, the supply of recyclables may exceed demand. As a result of excess supply, prices fall. The newspaper market, for example, experienced an over-supply in 1989 that resulted in a steep drop in prices. The same market trend is occurring in other materials targeted for recycling. However, with the creation of new markets, the demand may increase in the future, leading to an increase and stabilization of prices paid for recyclables.

The Allegany County Comprehensive Recycling Analysis is attached as Appendix SWMP-1. The CRA will be updated by the Department of Public Works, and a complete updated copy to the NYS DEC by September 1996.

SECTION G:

360-15.9(g) Evaluation of Various Technologies

Listed below are discussions of waste reduction, recycling, composting, waste-to-energy, land burial and waste exportation as appropriate technologies for solid waste management. Each method includes (A) a description of the technology and (B) a technology evaluation.

The implementation of a solid waste management plan that integrates various components of the waste management hierarchy will have a variety of environmental, social and economic impacts. Most impacts cannot be adequately assessed until a specific technology has been selected and a specific site for a waste management facility has been chosen.

Overall, implementation of the Plan will have far reaching positive impacts. By establishing a clear course of action, the County will remove uncertainty from decision making. Businesses will be able to plan for future needs, residents will have a clear understanding of long range waste disposal costs and its impacts on their taxes, and municipal officials will have the appropriate knowledge for planning future growth and development.

Adverse impacts will result from the actual construction and operation of associated waste management facilities. The impacts may span a wide range of resources including land use, aesthetics, ground and surface waters, wetlands, flood plains, historic and archaeological, open space, agricultural and others. While this Plan points out the expected areas of impacts, it will remain the role of a site specific SEQR review, either by means of an Environmental Assessment Form or Environmental Impact Statement, to assess project specific impacts and mitigation measures.

Many of these adverse impacts can be partially, or even fully, mitigated by use of careful siting procedures and by use of the best available design technology.

Siting considerations, including those specified in various sections of 6 NYCRR Part 360 or federal Resource Conservation and Recovery Act regulations, will either prevent a facility from being located on a site that would result in significant
impacts (such as landfills over aquifers) or will insure that potential impacts (such as the presence of archaeological resources) are considered in the selection process.

Design features, such as a landfill with a double liner and leachate collection system, provide an inherent mitigation of potential impacts resulting from operation of a facility. Design considerations can aid in reducing effects such as those associated with ground and surface water, air quality, noise, odor, traffic flow, and aesthetics.

The Technology Evaluation For Waste Reduction can be found on pages 28-33 in the CRA, which is included as part of this document, as appendix SWMP-1. In the CRA, on pages 33-61, the Technology Evaluation for Collection Systems, Reuse and Recycling can be found. The Composting Technology Evaluation is in the CRA on pages 61-69.

Septage management, sewage sludge management, and yard waste management are consolidated into the composting section which is addressed in the CRA on pages 61 through 69 and 75 through 81.

WASTE TO ENERGY EVALUATION

There are numerous WTE Technologies in varying stages of development which can be evaluated as solid waste management options. They can be grouped into combustion and non-combustion technologies.

The combustion group includes modular mass burn, RDF and fluidized bed facilities. The waste is combusted at high temperatures and the heat is recovered by a boiler. Key features include waste storage and handling, waste feeding, combustion, steam and electricity generation, air pollution control and ash residue handling.

The non-combustion group includes pyrolysis and biogasification. Pyrolysis uses heat in an oxygen free atmosphere to decompose organic waste physically and chemically into a gas or liquid energy product. Biogasification is a process by which organic matter is decomposed, anaerobically and without the addition of heat, to generate methane gas. A discussion of the six types of WTE technologies will follow.

Table G-1 is a list of proposed and operating waste-to-energy facilities in New York State.

Table G-1
Status of Waste-To-Energy in New York State
(As of March 1990)

MUNICIPALITY	DESIGN CAPACITY (Tons per day)	STATUS AS OF 10/89
A. Long Island:		
Glen Cove (C)	250	Operational
Hempstead (T)	2,319	Operational
Long Beach (C)	200	Operational
North Hempstead (T)	990	In Permitting
Oyster Bay (T)	1,080	In Permitting
Babylon (T)	750	Operational
Islip (T)	400	Operational
Islip (T)	400	Under Planning
Huntington (T)	750	Under Construction
Brookhaven (T)	600	Under Planning
SUBTOTAL CAPACITY:	7,739	
B. New York City:		
Brooklyn Navy Yard (Brooklyn)	3,000	In Permitting
Arthur Kill (Staten Island)	3,000	Under Planning
Barritto Point (Bronx)	2,000	Under Planning
Sherman Creek (Manhatten)	1,200	Under Planning
Mespeth (Queens)	1,200	Under Planning
SUBTOTAL CAPACITY:	10,400	
C. UPSTATE NEW YORK:		
Westchester County	2,250	Operational
Dutchess County	400	Operational
Albany (C)	600	Operational
Albany (Am. Ref-Fuel)	1,500	Under Planning
Montgomery/Fulton/ Ostego/Schoharie Counties	400	Under Planning
Washington/Warren Counties	400	Under Construction
Oneida County	200	Operational
Herkimer/Oneida Counties	400	Under Planning
St. Lawrence County	250	In Permitting
Oswego County	200	Operational
Broome County	570	In Permitting
Onondaga County	990	In Permitting
Cattaraugus/Allegany County	108	Operational
Niagara Falls (C) (Occidental Energy Corp.)	2,200	Operational

SUBTOTAL CAPACITY:	10,468	
TOTAL STATE CAPACITY:	28,607	

SOURCE: NYS Department of Environmental Conservation
Division of Solid Waste
State Solid Waste Management Plan, 1989/90 Update

I. Mass Burn

A. Technology Description

1. Description

In mass burn, the most common waste-to-energy technology, combustion of solid waste occurs with minimal preprocessing of the waste at the facility. In a typical mass burn facility, the refuse collection vehicle is weighed as it enters the site and then proceeds to the tipping area where it dumps the refuse into a bunker or storage pit. The refuse bunkers are enclosed and include travelling overhead cranes that feed refuse to the mass burn furnace via a waste hopper and waste delivery chute. The overhead cranes also are used to thoroughly fluff and mix the refuse to loosen it and improve its firing quality. The refuse is combusted as it travels through the furnace on grates. Energy is recovered as steam and bottom ash is removed from the combustion chamber.

2. System Design

Mass burn facilities use grate systems to mix and agitate waste as it travels through the furnace. Agitation also aerates the waste, promoting thorough combustion of the refuse. Commonly used grate systems include reciprocating grates, reverse reciprocating grates, rocking grates, cascade grates and drum grates. Figure G-1 illustrate these different types of grates. (See appendix SWMP-8)

The air required for combustion is supplied by fans or blowers through openings in the furnace from below the grates (under-fire air) and above the grates (over-fire air). Under-fire air initiates combustion and supplies oxygen to the refuse burning on the grates. Over-fire air mixes with volatile gases given off as the refuse burns and causes ignition and combustion of the gases. Residual or bottom ash is removed from the furnace bottom by a conveyor and cooled by spraying or quenching with water. In most cases, fly ash, composed of the particles suspended in the gas stream and removed by air pollution control equipment, is combined with the bottom ash.

There are three major types of mass burn furnaces - the water wall, refractory and rotary kiln. Figures G-2, G-3 and G-4 illustrate these typical furnace designs. (See appendix SWMP-8)

In a waterwall furnace, energy is recovered by a closely-spaced steel tube furnace lining which forms a continuous wall around the combustion chamber. In a refractory furnace, energy is recovered by a convection-type waste heat boiler installed at a point after the combustion chamber. Of the two, the waterwall furnace is more efficient and economical and heat recovery rates range from 65 to 70 percent. Compared with a 60 percent heat recovery efficiency for refractory-lined furnaces.

The rotary kiln furnace is a modification of the refractory lined furnace. Refuse is fed to a primary combustion chamber where it is pre-dried and ignited. Burning is completed in a refractory-lined rotating furnace. The rotating action of the furnace mixes the refuse, allowing better combustion and causes the materials to move through the furnace. The expected heat recovery rate from a rotary kiln furnace is comparable to a waterwall furnace - about 65 to 70 percent.

The quantity of energy recovered in a waste-to-energy facility is related to the type of furnace employed. On average, approximately 500 to 600 kilowatt hours (kwh) of electricity is generated per ton of refuse; steam is produced at an average rate of approximately three to four pounds per pound of solid waste. In both cases, these averages represent net energy output after internal uses to run the facility.

B. Technology Evaluation

1. Applicability/Capacity

A mass burn facility can handle most solid wastes. In general, no preprocessing (sizing, shredding or separation) of waste is needed, other than the removal of bulky or potentially hazardous materials. A mass burn facility can reduce the waste stream by 90 percent in volume and 70 to 75 percent in weight.

Commercially available mass burn units range in size from 100 to 1000 tons per day (TPD). Typical designs consist of multiple furnaces to achieve total burn capacity and provide both reliability and flexibility. The Part 360 Regulations requires three units per facility to ensure availability. The largest facility allowed by law is 3000 TPD. The mass burn technology is utilized for larger facilities, usually in excess of 400 TPD. Most mass burn facilities are field erected, but prefabrication of major components is possible.

A mass burn facility can be designed for co-generation of steam and electricity. Mass burn furnaces, especially the refractory-lined type, have been used for co-disposal of municipal solid waste and sewage treatment sludges.

2. Reliability/Experience

Mass burn technology has been in use in some form or other since the 1930's. It is proven and reliable with extensive design, construction and operating experience. More than 300 facilities currently are in operation in the U.S., Europe, Japan and South America.

The most advanced of the mass burn furnaces is the waterwall furnace which employs advanced stoker design, combustion control, uniform air flow and state-of-the-art air pollution control equipment and operating methods. An on-line reliability rate of up to 90% has been reported for waterwall furnaces. A number of qualified vendors are licensed to market mass burn technology in the United States.

3. System cost

The capital cost for mass burn facilities ranges from $100,000 to $135,000 per ton per day of design capacity. Estimated operation costs range from $25 to $35 per ton and tend to increase as plant size decreases. Estimated revenues from the sale of electricity are $30 per ton, assuming six cents per kilowatt hour (Kwh) and 500 Kwh per ton of waste.

II. Modular Combustion

A. Technology Description

1. Description

Modular combustion systems are small-scale, waste-to-energy facilities comprised of multiple pre-designed and factory manufactured modular combustion units that are assembled on site. Modular systems are available in two designs - modular waterwall or modular starved (or controlled) air refractory units.

2. System Design

In modular facilities, refuse is dumped on the tipping floor and loaded into the feed hopper with a front-end loader or bull-dozer. Typically, waste is fed to the furnace intermittently with a horizontal hydraulic ram. Some modular systems have grates similar to those employed in field-erected installations. Figure G-5 illustrates a typical modular waste-to-energy system. (See appendix SWMP-8)

Modular waterwall furnaces are controlled-air, fully oxidizing furnaces. These furnaces have good combustion efficiency with respect to ash residue quality, since there is greater reduction in the organic or volatile matter of the ash with a modular furnace. However, because of the low-cost design of the feeding and mixing mechanisms, combustion efficiency is lower than mass burn waterwall furnaces. The thermal efficiency of this system is approximately 50 to 60 percent. Electrical generation rate for modular facilities is approximately 400 to 450 Kwh per ton of waste burned, after internal use. Steam production ranges from two to three pounds per pound of solid waste, after internal use.

In a modular starved-air system, there are two combustion chambers. In the primary chamber, partial pyrolysis of the refuse occurs under starved-air conditions, reducing the peak combustion rate and producing incompletely burned residues. In the secondary chamber, the partially pyrolized products are burned with excess air and an auxiliary fuel burner. The thermal efficiency of this system is approximately 50 to 60 percent.

B. Technology Evaluation

1. Applicability/Capacity

Modular waste-to-energy facilities currently in operation range in size from 50 to 400 tons per day (TPD). Individual modular units range in size from 25 to 120 TPD. Modular systems can handle most waste streams without preprocessing except for removal of large bulky items. However, modular facilities usually are not cost competitive with mass burn facilities or facilities greater than 400 TPD.

The construction time for modular systems is 12 to 18 months compared with 18 to 36 months for field-erected mass burn systems. The waste reduction capability of modular systems is approximately 85-90 percent by volume and 50-60 percent by weight.

The option to use multiple units with variable sizes allows flexibility in the design and operation of modular systems.

2. Reliability/Experience

A number of modular systems have been in operation since the 1970's. However, not all of these systems accept mixed municipal waste and many were designed for homogeneous industrial wastes. The simple design of modular systems is more suitable for smaller energy and steam generating systems. On-line reliability of modular furnaces is slightly less than for

mass burn furnaces. Available data indicate that the operation life of a modular incinerator is shorter than a mass burn incinerator.

3. System Cost

Capital costs of a modular waste-to-energy facility are significantly lower than for a mass burn facility. However, operation and maintenance costs are higher. Estimates for capital costs range from $75,000 to $90,000 per ton per day of design capacity and for operating costs, $30 to $40 per ton. Estimated revenues from the sale of electricity are $24 per ton, assuming six cents per kilowatt hour (Kwh), and 500 per ton of waste. Additional cost considerations are discussed in section VIII.B of this chapter.

III. Refuse-Derived Fuel (RDF) Facilities

A. Technology Description

1. Description

Refuse-derived fuel (RDF) is a fuel product or fuel supplement derived from processing municipal solid waste. RFD preparation involves size segregation and reduction and may include materials recovery. This preprocessing (sorting and refining) of waste enhances its fuel value and also creates the opportunity for recycling materials such as glass and ferrous metals. Materials recovery also results in fewer boiler operating problems and a reduction in the volume of incinerator residue that must be landfilled.

The technology used for burning solid fuels such as coal and wood is well developed and generally applicable to RDF-based facilities. However, coal and wood are very homogeneous and easily combustible. RDF is heterogeneous and therefore difficult to burn, necessitating careful design of an RDF furnace.

a. Types of RDF

RDF is characterized by: (1) wide range of material density; (2) wide range of particle size; (3) wide range of time required for combustion; (4) variable moisture content; and (5) presence of heavy inert materials, such as glass, sand, dirt, metals, etc.

Currently, three general types of RDF are being produced on a commercial basis: coarse, fluff and densified. These RDF's differ in the degree of material processing they undergo. Mechanical processing of removal of organics and metals, and screening to remove inorganic particles. Fluff RDF involves additional stages of shredding, separation and screening to produce a higher fuel value. Densified RDF is produced by compacting RDF into pellets, briquettes or cubettes.

2. System Design

There are two major components of RDF-based systems: the RDF processing system and the RDF-based furnace. Design criteria for both components must be considered when evaluating waste-to-energy alternatives. In general, approximately 0.5 to 0.7 pounds of RDF can be produced from each pound of solid waste.

a. RDF Processing Systems

Four basic processes are involved in the production of RDF; size reduction, separation, materials recovery and densification. Figure G-6 illustrate two processing facilities utilized for the production of RDF. (See appendix SWMP-8) A number of proprietary processes are available for preparing RDF.

In many RDF systems, size reduction is the first step in the production process. The waste is reduced in size and broken up for subsequent separation. Flail mills and hammermill shredders are commonly used for size reduction.

In the separation step, trommels, disc-screens, vibrating screens and air classifiers can be used to separate non-combustibles. The remaining fraction is a product called the light fraction that is rich in combustible materials. This light fraction, or RDF, can be used directly or undergo further processing.

In the materials recovery step, the heavy fraction, ferrous metals, nonferrous metals and glass, can be further separated by magnetic separation, screening and air classification.

Densification is the fourth step in some RDF processing. RDF is usually densified if it is to be stored for extended periods or transported to an industrial user. Densified RDF is produced by condensing the light fraction into pellets, cubettes or briquettes.

b. RDF Combustion Systems

RDF can be used for energy production by co-firing with fossil fuel in industrial or utility boilers, or as the sole or primary fuel in a dedicated RDF boiler. The latter approach has become more common since it allows for the design of a furnace that can handle the difficulties associated with the burning of RDF.

RDF can be burned in grate burning systems, suspension-fired systems, fluidized bed systems or a combination thereof. Grate burning systems (and the combustion process) are similar to mass burn and modular systems where the waste is combusted as it travels through the furnace. In suspension-fired furnaces, the fuel is burned in suspension; there is no burn-out grate for completion of combustion or for removal. To ensure complete combustion, only high quality "fluff" RDF fuel can be used in this type of furnace. In fluidized bed systems, RDF is mixed in the furnace with an inert material (sand) and circulated until complete burnout is achieved.

B. Technology Evaluation

1. Applicability/Capacity

RDF production processes incoming refuse and separates the organic fraction from the inorganic fraction and metals. The organic fraction is used as a fuel; the inorganic fraction and metals can be processed for materials recovery. Hence, an RDF system can enhance the recyclables recovery program of a municipality. However, the materials recovered are not as clean or as easily marketed as source-separated material.

The capacity of an RDF facility will depend on its two components: the furnace and the RDF production

facility. Typically, the design capacity of RDF facilities is between 600 and 2000 tons per day (TPD). An RDF plant below 600 TPD capacity is not economical compared with a mass burn facility because of the high costs associated with the front-end processing requirements of an RDF facility.

An overall volume reduction of 90 to 92 percent can be expected from an RDF facility with a corresponding weight reduction of 80 - 85 percent. These reductions will depend on two major factors: the composition of the raw municipal waste and the materials recovery that takes place during fuel processing.

An RDF boiler is approximately 10% more efficient than a mass burn waterwall furnace because RDF is more homogeneous than raw municipal waste and inert materials have been removed prior to burning.

The energy requirements for the entire RDF system are greater than any other combustion process. Even so, after internal usage, approximately 500 - 525 Kwh of electricity can be generated per ton of combusted RDF. Steam availability is two to three pounds per pound of combusted RDF.

2. Reliability/Experience

Commercial RDF facilities were started in the 1970's when the energy crisis emphasized the need for energy conservation and materials recovery. Many of the first-generation RDF incinerators were unsuccessful for both technological and economic reasons.

In many cases, the RDF fuel did not meet specifications and this deficiency led to boiler corrosion, slagging, incomplete combustion and excessive emission of particulates and other air pollutants. Experience has indicated that RDF incinerators are more reliable when only RDF is burned instead of mixing RDF with other fuels. Recent generations of RDF facilities have overcome these difficulties and are operating successfully.

3. System Cost

The capital and operating costs on a ton-per-day basis of an RDF waste-to-energy system are closely comparable to other types of waste-to-energy systems. RDF furnaces can be smaller because a significant portion of the waste stream that is burned in the RDF furnace has been removed in the RDF fuel production process. But any savings from smaller furnace size are offset by the costs associated with the RDF production process.

Capital costs for the RDF waste-to-energy system range from $110,000 to $140,000 per ton per day of design capacity. Estimated operating costs of an RDF system range from $30 to $40 per ton. These operating costs can be offset by the sale of electricity or steam and by the sale of materials recovered in the RDF production process.

IV. Fluidized Bed Combustion

Use of the fluidized bed technology for the disposal of mixed municipal waste is still considered to be in the emerging stages, and data on long-term reliability and operating experience are limited.

A. Technology Description

1. Description

The fluidized bed furnace is a cylindrical refractory-lined shell with a bed of sand. The bed of sand is expanded by air pressure during operation to mix the waste with the sand and air. Solid waste must be processed into RDF prior to combustion in a fluidized bed furnace.

2. System Design

The fluidized bed furnace, as shown in Figure G-7, is a very simple design with no interior moving parts. (See appendix SWMP-8) The air-blowing fan is its major moving component.

Preheated air is introduced under pressure and flows through a bed of sand supported by girds and plates. This air flow under pressure fluidizes the sand bed and expands it 30 to 40 percent in volume. Coarse, fluff or densified RDF is introduced into the sand bed where it mixes with the sand and air and is combusted. Because of the complete mixing that occurs in the furnace, excess air requirements are minimal. Complete combustion is possible by controlling retention time of the waste in the furnace. Careful control of air pressure prevents waste from floating above the combustion zone. The energy recovery unit may be integral with or separate from the combustion chamber.

B. Technology Evaluation

1. Applicability/Capacity

Fluidized bed combustion systems have been used extensively for sewage sludge disposal. Municipal waste must be processed into an RDF-type fuel in order to be used in a fluidized bed furnace.

2. Reliability/Experience

Fluidized bed combustion facilities for burning municipal waste to recover energy exist in Japan. A facility in Duluth, Minnesota burns a combination of shredded waste and sewage sludge. No facilities utilizing this technology exist in New York State.

While the use of fluidized bed furnaces for sludge incineration is common, the technology is still being refined for municipal solid waste applications and limited operational data is available to predict long term reliability and costs.

3. System Cost

Preliminary capital costs can be estimated by multiplying the design tonnage per day times $200,000 per ton. Operating costs are estimated at $45 per ton. Estimates include the RDF processing system. Additional cost considerations are discussed in section VII.B of this chapter.

V. Biogasification

The biogasification technology is still in its developmental stages and cannot be considered a proven technology for disposal of mixed municipal solid waste.

A. Technology Description

1. Description

Biogasification is a biological process in which organic matter is decomposed by anaerobic organisms (organisms that grow in the absence of air), producing methane gas as a major by-product. The three basic steps involved in the process are:

a. Pre-processing -- organic material is separated from the waste stream, shredded and mixed into a slurry;

b. Decomposition -- the slurry is placed in anaerobic digesters for a 5 to 30 day period (14 days is typical) for generation of methane gas; and

c. Treatment -- methane gas is refined to market specifications.

2. System Design

Many varieties of design exist for biogasification systems. The key component of any commercial biogasification system is one or several continuously stirred digesters with pre- and post-digester processing. The stirring improves contact of the biological organisms with the waste, provides thorough mixing of the tank contents and breaks up scum.

In a typical facility, the solid waste is delivered to a receiving area and processed to remove the non-organic material and reduce particle size of the remaining organic material. After processing, the organic material goes into a pre-mix tank, where the waste is mixed with primary sludge, nutrients and steam. The slurry from the pre-mix tank is fed into digesters for anaerobic decomposition. Methane gas produced during the digestion process is refined into a useable product. The solid residue from the process is an organic material that can be dewatered and may have potential for use as fuel in a dedicated boiler.

B. Technology Evaluation

1. Applicability/Capacity

A facility based on biogasification can be sized to meet the capacity needs of a planning unit. However, only the organic fraction of the waste stream can be processed by biogasification. In general, about 50 percent of the waste stream is organic matter. However, this depends on the characteristics of the planning unit, and, especially the amount of yard waste entering the waste stream. Only about 50 percent of organic solid waste fed into the digester is converted to gas. The remainder requires further processing or disposal.

Furthermore, the system requires large quantities of water for processing and generates large quantities of liquid and solid waste which must be further treated or disposed. This system also generates a filter cake with high heavy metal concentration.

Plant material, though organic in nature, is not readily biodegradable and thus not suitable for biogasification without preprocessing. On the other hand, sewage sludges are readily biodegradable.

Markets exist for gas produced by the biogasification process.

2. Reliability/Experience

A 100 TPD demonstration project in Pompano Beach, Florida has operated successfully since 1978 and is the only large-scale system operating in this country. More research and development is needed before the biogasification process can be considered a reliable solid waste management alternative. Further-more, gas production is reduced at temperature below 50°F, therefore making it a less desirable technology in colder climates.

3. System Cost

Substantial capital investment is required for a biogasification facility. Cost information is not available to estimate planning and development costs for this type of facility.

VI. Pyrolysis

The technological and economic feasibility and operational reliability of the pyrolysis technology has not been proven on a commercial basis for disposal of mixed municipal waste.

A. Technology Description

1. Description

Pyrolysis uses heat in an oxygen-deficient or oxygen-free environment to decompose municipal solid waste. The products of pyrolysis include combustible gas or liquid hydrocarbons, such as hydrogen, methane, and carbon-monoxide, which can be burned immediately to produce steam, or stored for later use or sale. Pyrolysis also produces solids, including carbon-rich residue and non-combustible materials such as glass and metals.

The products of pyrolysis depend on many factors. The most important of these are the type of carbonaceous solids in the waste, the operating temperatures, the heating rate and the type of equipment used. Temperatures below 1000°F and slow heating favor production of char and oxygenated gases. Temperatures above 1500°F and rapid heating favor production of flammable gases.

2. System Design

The application of pyrolysis for municipal solid waste is relatively new and can be traced back to about 1968. The major components of a typical system are storage facilities for municipal solid waste, a feed system, a front-end-RDF system, a pyrolytic reactor, a product cleaning or treating system, a product collection and storage system and a solid, liquid and gaseous by-product and residue removal system.

Various types of pyrolysis systems have been marketed. Figure G-9 shows a schematic for pyrolysis reactors. (See appendix SWMP-8)

B. Technology Evaluation

1. Applicability/Capacity

There are no commercial, full scale, successfully operating pyrolysis systems. Conceptually, a facility can be designed to meet the capacity needs of the planning unit.

2. Reliability/Experience

Pyrolysis has been used for many years for coal gasification and to produce methanol, acetic acids and turpentine from wood. However, more research and development are required to make this technology a viable alternative for municipal solid waste management. Currently, no full scale municipal solid waste pyrolysis facility exists in the U.S.

3. System Cost

Preliminary estimates of capital costs for pyrolysis facilities are approximately $150,000 per ton per day of capacity. Operating costs range from $35 to $45 per ton.

VII. Technology Selection

A. Size and Capacity Considerations

Local governments can integrate recycling and waste-to-energy through careful solid waste management planning to ensure that integrated solid waste management projects can manage the current waste stream and accommodate changes to it. Planners must consider the relationship of facility processing capability, waste flow projections and guarantees for delivery of solid waste over the life of the facility. Forecasting these and any other changes to the waste quantity and quality is essential for planning successful programs.

If a waste-to-energy facility is financed with revenue bonds, the long-term economic viability of the project depends on a guarantee for the life of the facility of a definite amount of solid waste for which the facility will be paid by the municipality at a certain tipping fee per ton delivered. The municipality's guarantee of solid waste ensures that the facility will be able to produce for sale a certain amount of energy. In effect, guaranteeing the input solid waste and the output energy of a waste-to-energy facility guarantees the facility's long-term financial viability.

The key to success is proper sizing of a waste-to-energy facility to assure a long-term supply of waste without interfering with recycling activities. Facility sizing must take many factors into consideration, including sufficient capacity to maintain facility availability at all times. Bypassing solid waste would result in a decrease of available landfill space, if space is even available, and would incur a significant cost for the cost for the community.

The fact that the waste-to-energy facility has capacity beyond that required to process the solid waste remaining after reuse/recycling does not, in and of itself, represent a conflict with recycling/reuse programs. Excess capacity in a larger facility does not equate to a commitment to burn additional wastes, including recyclables, especially in light of permit conditions that require maximum recycling/reuse programs regardless of the size of the facility. A larger facility may, indeed, be advisable from an engineering and solid waste management perspective.

Overall, facility size must be sufficient for normal facility operation and maintenance, as well as, for outages resulting from equipment malfunction. In addition, the facility must be sized to accommodate seasonal peaks in the amount of solid wastes that generally occur during spring cleaning, tourist seasons and after holiday weekends. In some cases, the fluctuation in the amount of solid waste from peak to low periods can approach 40 percent. The facility can be designed with an incineration unit as a standby or back-up to increase overall facility availability. This redundant capacity may be needed at facilities where bypassing of solid waste is difficult because of limited

landfill space or because the landfill is distant from the facility.

Municipalities can also factor future needs of the community into the plans for the configuration and size of the facility. For example, the facility can be sized to include surrounding areas that do not participate initially or to account for changes in area population growth and waste generation rates. Socio-economic considerations such as changes in employment patterns, economic growth or individual "throw-away" attitudes also can be considered in determining facility size.

6 NYCRR Part 360-3.2(a)(6)(i) requires the applicant for a waste-to-energy facility to "...submit a table or graph showing the projected quantities delivered per month during the first year of operation and the background data and assumptions used to produce this table or graph..." In addition, the Part 360 application for a permit to construct a solid waste management facility must describe seasonal solid waste variations and projections for future quantities of solid waste to be processed. Departmental review of all data and assumptions is undertaken to assure validity.

As part of a permit application, 6 NYCRR Part 360-1.9(f) requires the development of a comprehensive recycling analysis and implementation of a recyclables recovery program. Section 360-1.11(h) specifies that a recyclables recovery program must be included as part of the permit conditions for a solid waste management facility. By inclusion in the permit application process, the quantity of solid waste reduced and recycled is made a consideration in sizing.

The facility design capacity represents the maximum capacity of the facility to process solid waste. The facility design capacity <u>does not</u> represent a contractually-obligated amount of solid waste to be delivered to the facility. Therefore, as long as the "put or pay" contractual obligation of a municipality to provide solid waste to a WTE facility accommodates the waste reduction and recycling program developed by the municipality and approved by the Department, a balance is struck between the size of a waste-to-energy facility and waste reduction/recycling programs.

B. <u>Cost Considerations</u>

Previous sections in this chapter provided relative cost ranges for the various technologies. The unit capital costs include the cost for system engineering, design, permitting, site work, building, combustion, energy production, air pollution and ancillary equipment, start-up and testing, insurance and contingencies. Additional legal, financial and administrative costs must be added to the unit capital costs to estimate the total project cost. In general, these additional costs can be estimated at 33 percent of the unit capital costs.

The unit operating and management (O&M) costs include labor, maintenance, materials, supplies and utilities. The capital and O&M costs do not include the costs for bypass and residue disposal, which are discussed in Chapter 4, and the annual debt service for the total project cost. As an example, the average annual debt service for a facility with a unit capital cost of $100,000 per ton per day of design capacity would be approximately $37 per ton assuming an interest rate of 8 percent over 20 years.

Actual capital and O&M costs will depend on procurement procedures, project financing and other factors specific to the planning unit. Therefore, both capital and O&M costs must be determined by the planning unit using cost information specifically applicable to the planning unit. In addition, the economics associated with waste-to-energy facilities depend heavily on the sale of recovered energy to help offset projected costs. Table G-2 provided a detailed list of factors to consider.

TABLE G-2

GENERAL WASTE-TO-ENERGY COST FACTORS

Pre-development:

Site Selection
Environmental Assessments
Permit Application (includes Engineering/Legal Fees)
Land Acquisition/Lease

Site Preparation and Construction:

Site Preparation
Construction Labor
Construction Management
Structures (Materials and Equipment)
Start-up
Acceptance Testing
Insurance During Construction
Financing costs (Capitalized Interest, Bonding, etc.)
Miscellaneous (Sales and Use Taxes, etc.)

Facility Operation and Maintenance:

Administrative Personnel
Equipment (Labor, Contracts, Supplies, Spare Parts)
Facility and Building (Labor, Contracts, Supplies, Spare Parts)
Fuel and Chemicals
Testing and Monitoring
Contract Services
- Reporting Requirements
- Legal
- Management
- Equipment Rental

Host Fees
Residue/Bypass Hauling, Treatment, And Disposal*
Major Equipment Replacement (Replacement Year and Replacement Cost)
Equipment Rentals or Leases
Insurance

Closure/Post Closure: (if any)

Revenues:

Recovered Energy (Steam and/or Electricity)
Tipping Fees

SOURCE: NYSDEC DIVISION OF SOLID WASTE TAGM: SW-89-5001, April 5, 1989
NYS SOLID WASTE MANAGEMENT POLICY GUIDANCE

Although there is great interest and promise in these technologies, they are in development. The costs, performance, and environmental impacts are only vaguely understood.

Waste-to-energy -- Impact Analysis

Waste-to-energy plants offer a solution to waste disposal with the positive effect of providing a source of energy which doesn't use limited fossil fuels. However, there is a great deal of public controversy surrounding the development of these plants due to concerns about air emissions and disposal of ash. Furthermore, the economics of developing a successful waste-to-energy facility favor a regional facility in order to assure the quantities of waste needed to keep the facility operating efficiently.

Airborne contaminants may be released to the atmosphere in gaseous or particulate forms. Public concern about the environmental effects of waste-to-energy facilities most often focuses on potential impacts from these air emissions. The most recent advances in scientific knowledge have focused attention on organic compound and trace metal emissions from refuse combustion facilities.

In particular, these are dioxin and furan emissions. This focus has been on both mass burning facilities and those combusting refuse-derived fuel.

In response to the concern regarding dioxin and furan emissions, a substantial amount of research has been conducted and is in progress. Their origin, formation and destruction during combustion, rate of capture by control devices, and effect on public health are being investigated.

One of the key tools in judging the effects of these emissions is risk assessment. This technique provides a worst case estimate of future health impacts resulting from the operation of a refuse combustion facility. This is based upon a number of conservative assumptions including:

1.The facility would emit the maximum projected amount of pollutants,

2.Weather conditions would match the worst of several previous years, resulting in maximum annual concentrations,

3.The entire county population would be exposed to the maximum concentrations,

4.The maximum exposure would continue day and night for 70 years,

5.All the dispersed pollutants would be respirable,

6.75% of what is inhaled would be retained,

7.100% of what is retained would be absorbed, and

8.Toxic and carcinogenic effects can result from a single exposure to one molecule of the pollutant under study.

Waste-to-energy projects incorporating refuse combustion use risk assessment to provide permit application review agencies, elected officials, and the public with information concerning the impact of various trace metals and organic compounds found in air emissions. This is a required part of permit applications in New York.

The conclusion of risk assessments at other waste-to-energy facilities was that the emitted amounts of the pollutants studied were too small to conclude that there would be any discernable impact on public health over a short or long timeframe.

In addition, the U.S. Environmental Protection Agency conducted its own risk assessment on five operating mass burning facilities and reached similar conclusions.

Criticisms have been directed at the technique of risk assessment itself and the assumptions used in the risk assessments. However, risk assessment is a widely accepted and used technique that accommodates a lack of absolute certainty on many factors by utilizing worst case assumptions.

A primary assumption of risk assessments receiving attention and criticism has been the expected stack emissions of the pollutants under study. Stack emission rates of pollutants have been shown to vary over a wide range. Critics have said that the highest rates measured from mass burning facilities should be used in any risk assessment. The risk assessments have generally used emissions from facilities of similar design and operation to those being proposed. This is in recognition of the important effect which furnace and boiler design, waste characteristics, and mode of operation have on pollutant emissions.

Overall, the emissions from well designed and operated refuse-derived fuel facilities and as-received municipal solid waste mass burning systems would be expected to be approximately the same. Both systems should be able to consistently meet regulatory standards.

Basic construction practices and state-of-the-art pollution control equipment would be incorporated into the design of any waste-to-energy facility to deter potential air quality impacts and to comply with federal and state air quality emission guidelines. As a part of the design and permitting process, the facility would be subjected to detailed air quality modelling including a possible requirement for up to one year of ambient air quality monitoring. After construction it would have to pass strict emissions tests before being certified for operation.

The impacts from fugitive dust and vehicle exhaust associated with the construction of the facility could be reduced through proper construction measures. Proper maintenance of the equipment, roadways, and work areas would be the basis of minimizing any short term construction related impacts. Fugitive dust from the handling and disposal of ash into a landfill area can also produce impacts. Some mitigation measures to reduce ash dust impacts include covering the transportation vehicles, using daily cover material to reduce ash exposure to wind and ash quenching.

Water quality -- The construction and operation of a waste-to-energy facility should not result in any significant impacts to the existing water quality of a site. Some short term impacts may result from the construction of the facility. These impacts are considered typical of all construction projects and are easily mitigated through basic precautions. A typical impact is an increase in soil erosion and sedimentation from the clearing, grubbing, and earthwork at the site.

Erosion - Can be controlled with the placement of hay bales or by constructing swales to deter and direct runoff. Sedimentation ponds can be constructed to collect runoff thus allowing for settlement of sediments in the water. If water wells are used to provide process and/or cooling water to the facility, there could be a lowering of the groundwater table. Increasing impervious surfaces may cause a decrease in infiltration of precipitation to the groundwater. However, depending upon the type of facility and the site, treatment of these water resources may be done on-site, possible allowing for regeneration of the groundwater table.

Ash -- Another matter receiving attention in connection with mass burning systems is that of residue (ash) characteristics. Ash from combusted refuse has elevated concentrations of heavy metals relative to uncombusted refuse. Approximately ten percent of the ash is collected from the particulate device which is usually a high efficiency electrostatic precipitator. The microscopic fly ash particles have higher surface area-to-volume ratios than larger particles. Therefore, fly ash contains the highest concentrations of these materials. This is offset by the high buffering capacity of mixed bottom and fly ash which resists the release of pollutants into the environment.

This has been recognized by the State in the 6 NYCRR Part 360 regulations as they relate to the land burial of

ash. Built with a proper liner, cap, and groundwater monitoring system, an ash residue landfill should not impose an impact to the water quality at the site.

In general, the construction and operation of a waste-to-energy facility, including the landfill, should not pose a significant impact upon the existing groundwater quality. The actual extent of any long term impacts would be evaluated on the basis of the facility type and the specific site.

Traffic -- Short and long term traffic impacts would result from the construction and operation of a waste-to-energy facility. Traffic propagated by the construction of a proposed facility would be minimal and would most likely be absorbed into the local traffic stream. Vehicles transporting waste materials would affect the local community but a properly sited facility would be reached by primary transportation routes where traffic related impacts would be minimal. Actual traffic patterns and their impacts should be evaluated in greater detail when a candidate site had been selected.

Noise -- A waste-to-energy facility is the source of various sound producing equipment. Noise levels at the facility would vary in intensity and duration during the various construction and operation phases. Noise levels would fluctuate during the different construction phases of the facility as various equipment was used. The greatest levels of noise would be generated during the clearing and excavation process of the site by earth moving equipment. During the actual erection and finishing phases of the facility, noise levels would vary with the type of construction. In order to minimize the impacts from noise, proper maintenance of machinery, adequate mufflers, and active work hours between 7 a.m. and 5 p.m. would have to be maintained.

Since a waste-to-energy facility operates continuously, noise levels at the site perimeters are important impacts that need to be considered. Actual noise levels escaping to adjacent properties are dependent upon the facility type and the site characteristics. Most often the process operations are enclosed within the facility structure, thus noise levels can be contained and reduced. Major sources of noise are from the refuse trucks, refuse handling combustion process, electrical generation, air pollution control equipment, and the cooling and residue handling systems.

Aesthetics -- A waste-to-energy facility is an industrial operation that would have many of the same aesthetic impacts that can be associated with such facilities. Stacks for discharging emissions, which must often be very high to meet air quality standards and to assure proper dispersal, would be visible from a distance. Other features of the facility, such as roadways, retention ponds, and structures, may be screened in order to present a pleasant appearance.

Historical and archaeological sites -- Construction of a waste-to-energy facility could have an adverse impact on historic or archaeological resources. During a facility siting process, however, known historic and archaeological sites would be taken into consideration. While such consideration would not necessarily mean that such sites would not be affected, it would reduce the potential for impact. Undocumented resources would be identified during site specific impact analysis.

Biological communities -- Impacts upon biological communities are to be expected whenever a site is developed. Impacts associated with the construction and operation of a facility include a permanent loss of habitat, displacement of resident populations of wildlife, and disturbance to nearby populations from the noise and other development activities. Impacts to aquatic communities should be minimal since the operation of a facility should not adversely impact water quality.

Odors and vectors -- Odors are always a factor which must be addressed when large volumes of waste are being handled. The potential for odor generation at a waste-to-energy facility comes primarily from the storage and combustion of the refuse. Refuse containing organic material that is sorted for extended periods of time at sufficient temperatures and moisture content would generate significant odor. To mitigate any potential for odor

impacts at a facility, the refuse must be handled properly and processed quickly. By drawing air through the combustion chamber, a negative pressure can be created in the storage area so that odors would not escape to the outside. Also, to keep odors from accumulating, basic good housekeeping practices would be established. In order to keep odors from being emitted from the combustion process, temperatures greater than 1,400 degrees must be maintained.

Vectors, such as insects and rodents, can be controlled with the proper operation of a facility. Should vectors pose a significant problem for a facility, insecticide or rodenticide could be applied.

Economic values -- During the construction of the facility, building material suppliers and the local construction crafts would be involved and benefitted. A permanent work force would be needed to operate the facility which would be recruited from the local community. The facility would benefit the County by providing a source of waste disposal with a reduction of land space needed for land burial.

Adverse impacts -- Airborne contaminants may be released to the atmosphere in gaseous or particulate forms. Soil erosion and sedimentation would result from earthwork activities. Short term traffic increases would occur during construction of the facility and long term traffic increases during operation are probable. A loss of habitat and a disturbance to resident wildlife populations are other expected impacts from development and operation of a facility. There would also be visual impacts resulting from the stack, building, and other features of the facility.

Mitigation measures -- Proper siting procedures that consider the potential adverse effects on air quality, traffic and other areas provides an important means of reducing impacts. The use of the best available technology for controlling plant emissions would reduce the potential impacts to air quality. Soil erosion techniques, such as the placement of hay bales or the construction of swales and ponds to deter, direct, and contain runoff, would mitigate impacts created by required earthwork during construction. Transportation routes would be a factor in site selection. Potential impacts and mitigation would be identified during the analysis of candidate areas. Landscaping would mitigate some of the aesthetic impacts of the facility.

Growth-inducing impacts -- The availability of energy in the form of the steam or electricity generated at a waste-to-energy facility could be used to encourage the development of an industrial park in the vicinity of the facility. Such development could induce further growth of employment and thereby increased demand for housing, police, schools, and other community services.

Irreversible and irretrievable commitment of resources -- The construction and operation of a waste-to-energy facility would require the commitment of manufactured and natural resources. The greatest amount of resource commitment would come during the construction phase of the facility. Resources such as fuel oil, gasoline, electricity, concrete, steel, stone and other miscellaneous building materials would be consumed or made irretrievable for future use. Energy output from manual labor would be irreversible. Money invested for the construction and maintenance of the facility would be irreversibly committed.

A commitment of resources for the operation of the facility would be required. However, electricity produced by the facility would be used to operate the machinery and lighting. Excess electricity could be sold back to the local public utility under the Public Utilities Regulatory Policy Act (PURPA). Manual labor would be required to maintain the facility and fossil fuels would be consumed for refuse handling and delivery to the facility.

Use and conservation of energy -- Ultimately the operation of a waste-to-energy facility would result in the net production of energy. Even though the over-the-road miles traveled to a single facility would be greater than those required to travel to numerous sites, the quantity of equipment and their total hours of operation for refuse handling and compaction needed at one waste-to-energy facility would compensate for those required to operate many solid waste management facilities. The greatest benefit of a waste-to-energy facility in terms of

energy use would result from the sale of recovered energy to the local utility.

LANDFILL EVALUATION

Landfill (A) -- Description

Once relied upon as the accepted method of waste disposal, land burial has been reduced to the bottom of the list of the State's preferred waste management alternatives. While waste reduction, re-use, recycling, and waste-to-energy technologies can and should be pursued as part of a solid waste management plan, adequate landfill capacity will still be required to handle the residuals from the waste stream which cannot be handled by other methods.

Recognizing the need for landfill capacity as part of an integrated solid waste management system, the County has constructed a state-of-the-art landfill in the Town of Angelica. In recent history, the term "sanitary landfill" referred to the disposal of solid waste into the ground and the regular application of cover soil to control odors and aesthetic impacts. This limited operation was regarded as state-of-the-art technology and met the general requirements of state solid waste management regulations.

As the environmental impacts of these facilities became more apparent throughout the 1970's, technological developments in the field of solid waste disposal were born of necessity. A greater concern for the protection of groundwater resources resulted in the concept of landfill liners and leachate collection systems. Monitoring programs were initiated at many landfill sites to detect contaminant releases to groundwater. In many cases, immediate facility closure and site remediation became necessary.

Landfill -- Expansion Option

Landfill expansion can be in the form of vertical expansion, where additional lifts of solid waste are placed above the existing landfill footprint, or a lateral expansion, where additional site acreage is used for landfill purposes. Evaluation of either alternative requires consideration of several factors including regulatory, environmental, economic, and operational concerns. By strict interpretation, the "expansion" of an existing landfill facility could not occur unless the facility is currently permitted for a certain capacity or maximum grades. In the context of this Plan, the term "expansion" is intended to be synonymous with "continued operation."

A vertical landfill expansion involves the continued filling operation over the existing landfill limits to higher final elevations. This type of expansion is usually undertaken at sites that have exhausted their ability to expand laterally and are relatively shallow in depth. Vertical expansions have several distinct advantages. The most apparent benefit is that new land resources need not be committed for disposal purposes.

Potential impacts to groundwater are mitigated by restricting the landfill surface area exposed to precipitation and consequent leachate generation. In some cases, a vertical expansion can actually reduce leachate generation by providing greater surface slope which in turn increases surface runoff and decreases infiltration. Many shallow-sloped sites suffer from ponding and poor drainage which results from landfill subsidence. The additional thickness of solid waste also provides absorptive capacity.

Since leachate generation is a direct function of area, landfills with a greater volume to area ratio generally experience less leachate generation as percolating moisture is able to soak into drier portions of the solid waste. This advantage can only be realized if the waste stream buried is well below field capacity or saturation point.

Economic benefits from a vertical expansion can also be realized through the avoidance of development costs -- construction, permitting, etc. -- typically associated with lateral expansion. Vertical expansions provide greater use per acre and can also help to densify underlying waste layers as the landfill settles, thereby attaining

maximum tonnage per cubic yard of available air space.

Disadvantages of vertical expansions include operation and maintenance difficulties experienced in reaching higher elevations of the fill area. Waste hauling vehicles may have problems reaching active working faces over steeper roads, especially during adverse weather conditions. Upper areas can also be more susceptible to higher winds and litter problems. While runoff may be promoted, erosion can occur during intense storm events before a sound vegetative cover is established.

Visual aesthetics can be the biggest concern with vertical expansions. Areas which are not well screened from view can have a negative impact on nearby residents or passers-by. The lateral expansion of a landfill requires the use of new land area for disposal purposes. Lateral expansions could involve the development of new disposal area on the same property but not necessarily directly adjacent to existing fill area. Expansion which takes place contiguous to existing landfill areas in which new waste is placed over the sideslopes of existing waste is called piggy-backing.

In many ways lateral landfill expansion is similar to new landfill development in that regulatory requirements for permitting are essentially the same. One advantage of lateral expansion is that, properly designed and constructed in accordance with current regulatory standards, it provides greater protection to the environment. Any new area developed must include a liner system, leachate collection and removal system, and facilities required for a permit. At sites which are already filled to maximum elevations, lateral expansion represents the only viable method of continued operation, provided that adequate land resources area available.

Disadvantages of lateral expansion include the economic impact of developing new landfill area in accordance with current regulation. The cost per cubic yard for design, permitting, and construction of new, lined cells would be substantially greater than that for a vertical expansion. Along with the increased cost would be the time required for implementation of this extensive process. New cells could take many months to prepare before the expanded capacity could be utilized.

Using new land resources for a landfill would be considered a greater environmental impact than the continued operation over areas which have already received waste. Lateral expansion precludes the potential use of a property for other development, or for preservation.

Landfill -- Reclamation Option

Landfill reclamation, sometimes called "landfill recycling" or "landfill mining" is an emerging practice that may provide expanded disposal capability at existing sites, or alternatively reduce closure areas and cost. Certain of the technical aspects may be applicable to practice at newly constructed sites.

There are several generic approaches currently being considered; two philosophies are now most dominant. One approach involves excavating raw solid waste and then immediately screening the material to produce reusable cover soil and recyclable products such as metal, plastics, paper, fuel for waste-to-energy plants and other potential recyclables. The non-usable residue is then placed back into the landfill. In some cases the residue is intended to be composted for future handling. The Naples, Florida (Collier County) project is reportedly practicing the procedure while developing proprietary technology known as "BCMR" (bury, compost, mine, reclaim). This approach is being marketed by a firm known as "Landfill Reclamation and Rehabilitation, Inc." No other practicing sites are known at this time.

Landfill -- Stabilization Option

Another approach involves stabilizing the raw solid waste by aerobically decomposing the organics prior to screening. The stabilized material is then screened to recover soil, metal, plastics, and other residues. Paper is

not present in the end product. This technology, known as "in-place stabilization" is being performed locally as part of a landfill cap repair at the Albany landfill. Advantages of this method include elimination of blowing litter, reduction of odor problems, and elimination of the need for a combustion facility or markets for low grade or contaminated paper. There is no need to re-excavate in the future.

Although there is great interest and promise in these technologies, they are in development. The costs, performance, and environmental impacts are only vaguely understood.

Landfill -- Multiple Landfills Option

The concept of multiple landfills might be considered as an alternative but the merits are quickly lost on the basis of economics. Multiple landfills would provide the likely advantage of minimizing haul distances to one central facility. However, the additional costs of development, operating and maintaining two or more facilities outweigh any potential savings in transfer costs.

Landfill (B) -- sizing

The landfill site is about 319 acres with 30 originally set aside for the landfill. This amount was reduced by 25 percent after the 1988 change in DEC regulations which doubled the size of the buffer zone.

Landfill (C) -- cost

The capital costs of the landfill and transfer stations were:

Transfer Stations	$2,152,628.00	
Estimated Debt Service	40,400.00	$2,193,028.00
Landfill	1,841,744.00	
Estimated Debt Service	1,493,552.67	3,335,296.67
		5,528,324.67

The annual operating cost of the system the first year (1983) was $454,400. By 1991, the cost rose to $1,346,212.68. The projected cost for 1992 is $1,455,000.

Construction of cells 5 and 6 is scheduled to begin in 1993 and is expected to cost $4.2 million.

Landfill (D) -- Impact Analysis

The facility was built and constructed in accordance with applicable regulations and accepted engineering practice. The factors listed below were considered in the planning process before construction. The landfill will provide for waste disposal for at least the next 24 years while minimizing negative environmental impacts.

Zoning and Land Use

6 NYCRR Part 360-2.12(e)(1) and 2.12(e)(3) require that the siting process consider an area's growth patterns and proximity to incompatible developments. No changes were required for the County facility.

Aquifers and hydrology

6 NYCRR Part 360-2.12(c)(1) prohibits the construction of a new landfill or the lateral expansion of an existing landfill over a primary water supply aquifer, principal aquifers, or within public water supply wellhead areas.

Surface hydrological characteristics were considered and evaluated in the design process.

Wetlands

According to 6 NYCRR Part 360-1.14(c)(4), no new landfill may be constructed or operated within the boundary of a designated wetland. The wetland on the site was less than five acres and classified as a wet meadow under DEC Freshwater Wetlands guidelines. It was not considered to be of significant ecological importance and thus was not subject to protective regulations.

Noise

The perception of noise impacts is relative to existing noise levels at and around the landfill site. A landfill located in a rural area has a greater effect on adjacent noise levels than one located in an urban area. During construction, noise sources include earth moving vehicles, dump trucks, and other construction equipment. During operation, the noise sources include landfill compaction equipment, bulldozers, packer trucks, and other vehicles delivering waste. Added traffic on roadways servicing the landfill site also have an impact on noise levels.

Land contiguous with the property is occupied by forest except adjacent to County Route 48. The nearest occupied home is about 500 feet southwest of the property line while the next nearest is 1,500 feet to the south.

Odor

Perhaps one of the major fears of residents residing near a landfill is that the facility will emit strong and pungent odors that will permeate the surroundings and result in a loss of property values. In fact, modern landfill design and management techniques will significantly reduce the generation of odors from decomposing waste through use of daily cover, methane and other gas collection systems, and leachate control.

Traffic

The construction and operation of a county-wide landfill increases the traffic, particularly truck traffic, on roads that service the facility. It would be difficult to conceive of a landfill site that would have less impact on travel or road usage. In addition, the central location of the site within the county produces nearly optimal hauling distances.

Airport proximity

Construction and operation of a landfill will have no effect on airport flight operations because according to NYCRR Part 360-2.12(e)(3), a landfill may not be constructed within 5,000 feet of an airport serving propeller driven aircraft and 10,000 feet of an airport serving turbo-jet driven aircraft. In order to minimize the chance of a bird and aircraft collision, landfills must be located outside of these designated radiuses. No nearby airports were identified.

Topography

As stated in 6 NYCRR Part 360-2.12(d)(5), consideration must be given to the effects natural topography will have upon the construction and operation of a proposed landfill. The site is on the side of a hill. Upon observation from the road, it appears very steep. After examination from the top of the property, it was apparent that the property had excellent potential if developed properly. A ravine begins in the north central section of the site. It did not present any problems for development.

Archaeological and historic sites

The County's history and prehistory have left archaeological sites and historic buildings on the landscape. The construction of a landfill could have a significant impact on such sites. No significant historic and archaeological sites were identified.

Soils

The construction and operation of a landfill will have a direct impact upon the soils of a site. Normal landfill operations require that excess on-site soils be stockpiled and used for daily cover material.

According to 6 NYCRR Part 360-2.12(d)(1,2), soils located at a site should be of low permeability and at least 10 feet thick between the landfill liner and bedrock. This criterion was designed to mitigate any potential groundwater contamination in case of liner and leachate control system failure.

Also to be considered is the increase in dust generation and the increase in soil erosion at a site. Typical construction practices such as the spraying of roads with water to control dust were used. Drainage swales and sedimentation ponds were constructed to direct and collect runoff water. These actions to mitigate the impact of on-site runoff were implemented during the construction stages of the landfill.

Aesthetics

Because a regional landfill will involve the disruption of large areas of ground, there is a distinct probability that there will be significant aesthetic impacts. Measures to reduce the visual impacts of a landfill were implemented during the early phases of construction. The working face of the landfill is positioned perpendicular to the prevailing winds to avoid debris from being blown around the site. Any windblown debris scattered around the perimeter of the landfill is collected weekly.

There was an impact on aesthetics through the use of the site for a landfill. The area is visible from State Routes 17 and 19 and from County Route 20. It is not visible from County Route 48. This impact can be mitigated by selective plantings.

Vectors

Proper landfill construction and maintenance procedures can deter the impacts associated with vectors. The active face of the landfill is covered with clean fill on a daily basis to minimize the potential of odor and debris spreading to adjacent properties. If the landfill exhibits the need for any additional support to mitigate the impacts from vectors, the County Health Department will be called and, if necessary, a licensed exterminator can be contracted.

Wildlife

According to 6 NYCRR Part 360-.1.14(c)(3), no solid waste management facility may be constructed or operated in any manner which causes or contributes to the destruction of any endangered or threatened wildlife or the wildlife's habitat. During the site selection process, locations of any critical habitats or endangered wildlife were identified according to the New York State Natural Heritage Data Base and DEC consultation. The site was evaluated and recognized as not being located in a critical habitat or wildlife zone.

Residential proximity

According to 6 NYCRR Part 360-2.12(e)(1), consideration must be given to a landfill's proximity to residential

communities. The landfill site is not in close proximity to a residential area. Other environmental impacts, such as noise, odor, air quality, traffic, and aesthetics would have a greater impact if the landfill was located near residential areas.

Adverse impacts

The construction and operation of a solid waste management facility will have unavoidable adverse impacts. During the construction of the facility, there are obvious short term negative impacts such as increased soil erosion, increased air emissions and increases in water runoff. Many of these short term negative impacts have been reduced with basic construction practices.

The commitment of land to the construction and operation of a landfill is an unavoidable impact. Even though only a percentage of a landfill site would actually be used for landfill purposes, many other types of development are restricted on the entire parcel. If the land has potential for development after closure, land reclamation procedures should be enacted during the initial design phases of the project. For example, grading of the site to provide gently rolling slopes could be useful for parks and recreation uses. Land reclamation could greatly mitigate the impact of commitment of land.

The positive long term effects of safe waste disposal must be weighed against negative short term effects. All impacts upon the local environment were identified in accordance with 6 NYCRR Part 360 and SEQR regulations in general during the site selection process.

Mitigation measures

Most adverse impacts associated with landfill construction and operation can be mitigated by careful site selection and design in accordance with appropriate regulations. In order to properly plan, construct, and operate a solid waste management facility, the mitigation measures for the adverse impacts must be addressed.

Most short term and some long term impacts can be mitigated using basic construction practices such as maintaining adequate mufflers on equipment to minimize noise, maintaining dust control by spraying dirt roadways with water, creating swales and collection pools to deter runoff and collect sediment from erosion, creating berms, landscaping the site to screen visual impacts, and capping active areas on a daily basis to control odor and debris.

To mitigate the impact of an increase in noise levels associated with the construction and operation of a landfill only basic construction practices will need to be implemented. All vehicles on the premises will maintain adequate mufflers and operate only during the normal working hours of 7:00 a.m. to 5:00 p.m. With consideration of other criteria regarding the siting of a landfill in proximity to incompatible structures, noise impacts were further diminished by siting the landfill away from areas such as schools and hospitals which are sensitive to noise.

Simple, effective measures were incorporated during the construction and operation of the landfill to mitigate possible impacts caused by odor generation. Cover material is stockpiled on site and spread over the active areas on a daily basis. If a considerable odor problem is foreseen, an active odor control system can be installed during the construction of the landfill.

The possible impacts brought upon a community by the increased amount of traffic caused by the construction and operation of a landfill were addressed during the siting process. In consideration of 6 NYCRR Part-2.12(e)(2), favorable routes available for trucks bringing construction materials, then refuse, to a landfill, were evaluated from USGS topographic, NYSDOT, and County maps. Favorable routes are those that are adequately designed to handle heavy payload trucks; offer direct, safe corridors from waste stream sources to

the landfill; are regularly maintained during winter months; and offer little impact on residential communities.

The latest land reclamation technologies were incorporated into the site design to offset the permanent commitment of land. In order to alleviate the cost associated with planning and engineering a landfill, the possibility of obtaining State and Federal grants should be investigated. Tipping fees can be regulated to offset the costs of the construction and maintenance of the landfill.

Together with the proper siting, financing, and operating procedure, the negative impacts associated with land burial have been reduced. Other measures to offset the impacts of land burial will be addressed in accordance with 6 NYCRR Part 360 and SEQR regulations.

Irreversible and irretrievable commitment of resources

The planning, construction and operation of a landfill will require the irreversible and irretrievable commitment of natural and manufactured resources. The commitment of land space to a landfill is irretrievable. The physical and biological effects of installing and operating a landfill facility will probably be irreversible. The commitment of materials used for construction of the facility will be irretrievable.

The cost of managing and operating the facility will be irretrievable. The expenditure of energy resources and labor during the construction and operation would be irreversible and irretrievable.

Growth-including aspects

No significant growth inducing impacts were anticipated from the construction and operation of the county-wide landfill.

The labor force required to construct the landfill was provided from the local community. The people and equipment to operate and maintain the facility will come from the community.

Commercial establishments may view the reliable and adequate disposal of waste as a benefit to their operation. This could give rise to expansion of industry and increased employment.

These growth inducing impacts would be expected to be of minimal significance and generally beneficial to the local community.

Use and conservation of energy

The construction and operation of the landfill should result in the conservation of energy and funds. A localized facility eliminates the need for the out-of-County transfer of waste, thus reducing the quantity of truck fuel consumed and any other over-the-road expenses.

SECTION H:

360-15.9(h) Selection of a Waste Management System

Prior to 1983, solid waste was handled by private or municipal landfills, dumps and incinerators (see appendix SWMP-7). Cattaraugus County built an incinerator in Cuba to be used for its county's waste. The incinerator was designed to convert waste to steam energy.

Allegany County decided to join in the waste-to-energy plan and set up the transfer station system to efficiently provide fuel to the incinerator. The County also decided to build its own landfill for non-burnable refuse. The

primary rationale was that the two private facilities being used were not acceptable long-term solutions. Patton's landfill in Alfred could not be upgraded to meet DEC's 1988 regulations and CID in Chaffee was too far away.

The landfill opened in 1987. Voluntary recycling was implemented in 1989. Since then, many factors were considered in further developing the County's solid waste management plan.

Among them was New York State's hierarchy of solid waste management methods and the State's solid waste management goals through the year 1997 were factors in selecting a waste management system.

Waste reduction is at the top of the State's hierarchy of solid waste management methods. The State SWMP sets forth a reduction goal of eight to 10 percent by 1997. Successful waste reduction strategies will necessitate adjustments in business practices and fundamental attitude changes among the population.

Benefits from waste reduction include avoided disposal costs, protection of the environment and conservation of natural resources. Potential adverse impacts include the costs of program planning and development, public education and implementation of changes in business practices.

Chosen waste reduction alternatives are discussed in the CRA pages 81-84. Chosen composting alternatives are discussed in the CRA pages 75-81.

Recycling and re-use comprise the second method in the State's hierarchy. The Solid Waste Act mandates the enactment of local laws or ordinances by September 1, 1992, requiring the source separation and segregation of recyclable, re-usable or other components for which economic markets for alternate uses exist, and enactment of local recycling programs by 1992. The State SWMP has set a combined waste reduction/recycling goal of 50% statewide by 1997. This figure will vary from locality to locality depending on the comparative costs for recycling wastes versus other methods of disposal, the reliability of markets for recycled materials, public participation, and the commitment of local officials. In addition, state legislation providing economic incentives for recycling will be needed. Chosen recycling alternatives are discussed in the CRA pages 69-75.

Waste-to-energy facilities are identified as an acceptable method of reducing the solid waste stream, though less preferable than source reduction of recycling. Based on available information, DEC has concluded that a properly designed and operated facility should not produce air emissions that will significantly or unacceptably increase risks to human health and the environment.

Landfills are at the bottom of the State's hierarchy of solid waste management methods. Assuming the State's goals are realized by 1997, the only wastes requiring burial will be ash residue from waste-to-energy facilities and specialty incinerators; nonrecyclable and unburnable construction and demolition debris; some sewage sludge; some non-burnable, non-hazardous industrial waste; municipal waste from some suburban and rural areas; and wastes from waste-to-energy facilities that are shut down for repairs. The State anticipates the need for approximately one hundred large landfills to accommodate these wastes.

Solid Waste Incineration and Sewage Sludge Management

The State SWMP sets forth goals in connection with solid waste incineration and sewage sludge management. The State SWMP calls for phasing out municipal incinerators having little or no energy recovery over the next ten years. New incinerators will be constructed only for wastes that cannot be handled by one of the above methods, such as infectious wastes and contaminated sewage sludges. Regarding non-contaminated sewage sludge, the SWMP calls for reusing and recycling as much as possible through composting and landspreading.

The key implementation issues evaluated in this section include the following:

- Ownership/operation
- Procurement
- Waste flow control
- Financing

Ownership and Operation of Solid Waste Facilities

Solid waste facilities may be either publicly or privately owned. Either option has distinct advantages and disadvantages. While the County has made a commitment to provide solid waste management services previously handled at a local level, the factors involved with ownership arrangements for specific facilities were considered.

The County owns the seven transfer stations and the landfill but other facilities might be more appropriately owned privately or by some alternative arrangement. The following sections explore public and private ownership arrangements and the factors associated with each.

Public ownership

One of the primary objectives in developing a county-wide landfill system is the consolidation of overall responsibility at the County level while retaining the benefits of public ownership. Landfill ownership by the County will provide for better control of the overall solid waste management program allowing landfill operation to be coordinated with other major County activities such as recycling. Public control over this integrated system will afford the County a better opportunity of meeting its own goals, as established in this Plan.

In general, public ownership of solid waste facilities has several advantages. Publicly owned facilities tend to be managed from a service-oriented perspective as opposed to private facilities which function as a profit-oriented business. Tipping fees at a public landfill, for example, should be a direct function of the actual costs for developing, operating, and maintaining the facility. In contrast, fees at a private facility could escalate to whatever the "market" might dictate through a supply and demand pricing structure. Public facilities also offer an alternative of being financed through the general tax base as well as through direct user fees.

Public ownership also allows for greater community involvement in the project, which will become an economic asset to be shared by all County residents. As with the case of a public transportation system, taxpayers will see their tax dollars put to work in the form of a needed public service. They will also have a greater opportunity to participate in all stages of the project including development, operation, and future uses.

Public ownership of solid waste facilities imposes additional responsibility on government, which can be a disadvantage of this form of ownership. Public officials involved in solid waste projects can face intense political pressures from opposition groups. Public ownership also places additional burdens on the public works department and administrative systems of a municipality. Risks associated with a solid waste project, including financial, environmental, and political, are assumed by the municipality instead of being transferred to the private sector.

The County is responsible for the operation of the transfer stations and the landfill and for keeping them in compliance with regulatory requirements. The County is liable for closure and post-closure monitoring and maintenance tasks for a period of 30 years.

Private ownership

Private ownership of solid waste facilities can transfer responsibility and risk associated with solid waste management away from the public. It can also offer a prime economic opportunity for the private sector. Many

private companies have prospered in the waste management business, partly because of the tax benefits that were available prior to Tax Reform Act of 1986. Recognizing the need for the solid waste facilities and the potential for profits created by this demand, several firms were able to grow rapidly and began to command large portions of the waste market.

One of the primary advantages of private ownership of facilities is the available resources which can be provided by large established waste companies. There are many full-service solid waste management vendors with successfully operating waste disposal facilities. These vendors possess not only the required capital and financing capability, but also the technology and experience derived from their involvement in all facets of the business. These companies are able to assume the risks associated with project development, thereby relieving the burden on municipalities. In areas where municipalities face many other public service obligations, the private sector can provide needed waste management and disposal services.

Economic benefits of private ownership also come in the form of minimized "up-front" costs. Private companies can handle initial development costs including those for design, permitting, and construction. The cost to the general public does not generally begin until operations are underway. In contrast, development by a municipality requires the public to share the initial cost associated with the siting, design, permitting, and construction of the facility.

Some of the disadvantages associated with private ownership have emerged as result of federal tax legislation. While privately owned facilities had been able to benefit from investment tax credits, tax exempt industrial development bonds, and accelerated depreciation, these benefits have been reduced by tax reform efforts.

The most apparent disadvantage of private facility ownership would be the limited control by the municipality and general public over the facility during all stages. Although a private organization is likely to cater to the needs and concerns of the public in order to gain acceptance for a proposed facility, residents being serviced by a private facility become dependent on that facility and the company that controls it. A private company may seek increased fees due to general company hardship, may accept waste from non-county sources, or may have serious financial problems that affect the operation of the facility. Local residents would have little, if any, control over these situations. In addition, the asset value of the facility is not shared with the public. Solid waste facilities can become a significant economic asset to a community from which all residents should benefit.

Waste Flow Control

Depending upon the final integration of waste management techniques, control of the waste flow may play a crucial role in the success or failure of the Plan. Flow control refers to the ability of the County to control the quantity of waste or recyclables that enter the waste management system. For waste-to-energy systems, flow control is a critical variable because the efficiency of the plant and its ability to meet projected energy production goals is contingent upon a reliable flow of "fuel". Often, lending agencies will require that a municipality enact specific legislation or become party to a contractual agreement that guarantees a minimum tonnage per year or other period of time.

Even without a waste-to-energy facility, however, flow control can play an important role. For example, if the County desires to take advantage of economies of scale in developing its recycling program, it may wish to enact county-wide legislation that requires that all recyclable materials be handled through the County operated facilities. This may conflict with the desires of private waste haulers who may intend to develop their own markets for these recycled materials. If financing of waste management facilities is tied to user fees, then flow control will again be an important factor because rates will be determined on the basis of project waste flow.

Flow control maybe affected by three general methods:

- By contract -- The contractual method involves a voluntary agreement between a facility operator (public or private) and those responsible for waste hauling. The contract would specify a guaranteed quantity of waste, a tipping fee, and provisions for escalation of the tipping fee over the term of the contract. In addition, the contract should include provisions for the owner of the facility to accept a specified amount of waste or recyclables. The contract method has the advantage of guaranteeing that a set amount of waste will be delivered to the facility. Contract negotiations, however, may be lengthy and costly.

- By law -- Enacting ordinances to require waste flow towards a specific facility may be an appropriate way to meet waste flow goals. Such legislation must be carefully drafted to be consistent with State waste management goals and to avoid potential problems with legal challenges.

- By market factors -- It may be possible to attain an adequate level of flow control simply by setting tipping fees at a low enough level to encourage use of the facility. The approach may require public subsidy of these low fees through use of general funds or through taxing, but has the advantage of reducing the need for enforcing contracts or laws.

FINANCING

General Discussion

A variety of options are available to the County for financing the development of solid waste management facilities and equipment purchases. Publicly owned facilities will most often be financed from public sources such as general obligation and municipal revenue bonds. Privately owned facilities may receive funds from industrial development bonds, private equity investments, and other traditional sources. State or federal programs may provide grants or low interest loans for use in purchasing equipment.

The determination of an appropriate financing structure requires an analysis of the probable costs of service under all alternatives, the applicable legal restrictions imposed under current laws, and the willingness of the County to accept certain risks and offer certain guarantees.

At one end of the financing structure spectrum, a project may be municipally controlled and financed with either general obligation or tax exempt revenue debt. At the opposite end of the spectrum, the project could theoretically be financed entirely by a private sponsor's equity. In reality, projects involving materials recovery and waste-to-energy facilities are often financed through a structure that blends these two extremes and involves some combination of municipal, project, or private debt and equity from the private sector. Most landfills are financed exclusively with municipal debt. Within this general framework, integrated solid waste management facilities implementation and structuring may involve a sharing of risks between the public and private participants. The allocation of project control and the shifting of project risk bears directly upon the cost of services. A discussion of the various sources of financing follows.

General Obligation Bonds

General obligation bonds are a common method used by municipalities to finance public improvement projects. General obligation bonds obligate the issuing municipality to use the full faith and credit of its taxing powers to ensure timely payments of project debt service. Such bonds tend to bear a lower interest rate than other forms of debt due to the unconditional nature of the municipality's obligation. The issuing municipality's general credit rating affects the marketability and interest rates of general obligation bonds.

General obligation bond financing also has certain disadvantages. In particular, general obligation bond financing may affect the issuing municipality's constitutional debt limit and therefore inhibit the community's capacity to finance other public improvement projects.

Municipal Revenue Bonds

Municipal revenue bonds are tax-exempt obligations with the debt service paid solely from the revenues derived from operating the facilities acquired or constructed with the proceeds of the bonds. Such bonds differ from general obligation bonds in that they are not secured by a pledge of the issuer's taxing power.

Municipal revenue bonds do not require voter approval and the issuing municipality's statutory debt limitations do not apply to such bonds. Determination of the interest rate is a complex process that involves the review of the project's economic and technical feasibility by a rating agency. Because of the potential of unforeseen revenue shortfalls, these bond issues normally require the capitalization of a debt service reserve fund.

Industrial Development Bonds

Industrial Development Bonds (IDBs) represent a specific form of municipal revenue bond. IDBs are tax-exempt, long-term bonds issued by a public benefit corporation acting on behalf of the municipal entity to foster industrial or economic development. This type of financing instrument has been used extensively for solid waste disposal facilities.

The use of IDBs to finance a project results in the project either being leased or sold to a private corporation, or, in some instances the bond proceeds are loaned to a private corporation. Although IDBs have been successfully used for solid waste disposal facility financing, the Federal Tax Reform Act of 1986 has significantly changed the use of such an instrument. For example, the act reduced the tax-exempt IDB allocation for privately owned waste-to-energy projects. Therefore, privately owned projects must now compete with all types of industrial development projects for a share of the State's allocation during the year. The allocation limit established in the act is set at $50 per capita or $150 million per state.

Another impact of the act on IDBs is the restriction on tax exempt financing of non-qualifying costs. In certain cases, non-qualifying equipment costs are limited to 5 percent of tax-exempt issuances. Thus, under this "95:5 rule", expenses for the construction or installation of equipment related to the sale of by-products from the facility are not tax-exempt. Examples of non-qualifying equipment include turbine-generator sets for a waste-to-energy facility and magnetic separation equipment for the recovery of ferrous metal in a materials recovery facility. Therefore, these portions of the facilities' expenses must now be financed with taxable debt or private equity.

Private Equity

Private equity is another financing source available for solid waste disposal facilities. Private equity involves capital contribution from the facility developer or third parties such as commercial banks, insurance companies, and private investors. This alternative is restricted to privately owned facilities.

The private equity contributed by investors allows the developer to own the facility for tax purposes. The owner's rate of return is generated from a share of the project energy and/or materials recovery revenue, any management fees, and the attainment of tax benefits as owner of the facility.

The Tax Reform Act of 1986 has significantly reduced the attractiveness of private equity as a financing source for solid waste disposal facilities. Examples of significant changes include the elimination of the 10 percent investment tax credit, doubling of the depreciation schedule for both real and personal property from 5 to 10 years, and the reduction of the use of tax-exempt debt for facilities.

County Costs

The annual cost to the County resulting from implementation of the Plan will equal operation and maintenance costs, plus a sinking fund for landfill final-phase closure and post-closure maintenance costs, plus debt service, less revenues (if any) from the sale of materials. The County can pay these costs from the existing general fund.

The advantage of using the general fund is that no new administrative systems or procedures would be required to raise the money for the Plan. There are several disadvantages to this approach:

! The County budget is ultimately balanced by the adjustment of real property taxes, which in 1992 will represent about 21.2 percent of general fund revenues. There is a basic inequity in supporting solid waste management costs with ad valorem taxes in that property owners pay in proportion to property values rather than in accordance with how much waste they generate.

In 1992, an estimated 10 percent of real property taxes will be spent on operating costs for the County's solid waste management system. For example, if a resident's property tax bill is $1,000, then $100 will go to solid waste management operating costs. See Public Works 1992 Spending Chart in appendix SWMP-9.

! The costs of constructing and operating a solid waste disposal facility have been borne at the County level. These costs would have a significant impact on the general fund and would compete with the costs of other vital County services within the County's constitutional taxing limitations.

The alternative would involve generating a dedicated revenue stream through the imposition of user fees to support a separate solid waste management fund. This would be analogous to the water and sewer rates charged by many municipalities to pay for the cost of providing those services. Users of County waste management facilities would pay a per ton, or lacking weigh scales, a per load, per bag or per cubic yard fee for such use. It may not be advisable to impose such fees at recycling facilities, as it may deter participation in the recycling program. However, it should be considered a solid waste management facility.

The advantages and disadvantages of the user fee approach are essentially a "mirror image" of those for the general fund approach. The primary disadvantage of the user fee system is that it would require a new billing and accounting system to administer the program. The main advantages are as follows:

! There is greater potential for establishing an equitable relationship between the amount of waste generated and the amount paid for disposal. Waste haulers would charge disposal costs directly through to waste generators. Since most residential customers are charged a flat fee for pickup, there would be less "cause and effect" impact felt at that level. However, since many commercial, institutional, and industrial customers are charged on a "per load" or "per container" basis, they would pay for disposal in proportion to the waste they generate. This also establishes a direct economic incentive for these customers to reduce and recycle their waste.

! The cost of solid waste disposal would be removed from the real property tax levy, and would not compete with other services provided for by the general fund.

! Waste generators at tax-exempt properties would pay their fair share of disposal costs.

Implementation alternatives

Solid waste disposal was previously handled at the township level or privately. The County initiated a transfer station/landfill program and subsequent recycling program to provide a major service to all of its residents. While the County does not propose to universally assume all solid waste management responsibility within its bounds, it has created a unified, county-wide approach toward a viable solid waste solution.

In deciding not to pursue a waste-to-energy facility as the primary solid waste management, the County weighed the history of the existing plant. In 1990, Cattaraugus County decided to send ash from the Cuba incinerator to another disposal site thus no longer needing municipal solid waste from Allegany County. In 1991, Cattaraugus County declined to upgrade the facility and began the process of decommissioning the plant.

Allegany County does not have the funds to purchase and upgrade the plant. The two counties are currently involved in a controversy over the incinerator's real property taxes owed to Allegany County by Cattaraugus County. This situation precludes any discussion on maintaining operation of the plant.

Waste exportation is financially out of reach.

THE PLAN

Allegany County will continue to maintain the transfer station and landfill system. Clear bags for refuse disposal will be required by June 1, 1992. This regulation will make the County's separation regulations easier to enforce. Limited compacting of selected recyclable items will begin in 1992 at key transfer stations.

This practice of using our existing stationary compactors at three transfer stations to compact cardboard and plastic into ejection containers (not co-mingled) is easier to handle these items and less labor and capitol intensive. The Friendship and Angelica transfer stations are used on days they are closed to the public for cardboard and plastic. Loads are hauled in by our own trucks from other stations; businesses and commercial haulers can bring in their recyclables. The Wellsville station has a compactor dedicated to card-board and operates 5 days a week.

The proposed vertical expansion of the landfill will not be implemented, a lateral expansion is planned in the construction of Cell 5 and 6.

The County will continue to monitor its waste stream. In 1993, a reporting system for business, industry and haulers will be implemented. Different components will be evaluated and alternative methods for handling will be examined.

In September 1993, the County will begin look at the feasibility of charging a fee for contaminated soil. Funds will be allocated in 1995 to investigate alternatives (primarily bio-remediation and vapor extraction) and to encourage the private sector, possibly by assisting in treatment at a site other than the landfill.

By September 1995, the County will encourage development of private concerns which will develop a non-burial method to handle contaminated soil (generally from petroleum products) which presently is accepted for burial in the landfill without a fee.

The County will support more private handling of construction and demolition debris. The Public Works Department will investigate in 1993 the feasability of implementing a a tipping fee system, including a "pay per bag" for all county facilities.

As a rural area with a higher-than-average percentage of organics in the waste stream, the County will emphasize composting. A demonstration project is slated to be implemented in 1993.

The County's commitment to recycling will be maintained and expanded as new components will be added. Other paper (magazines, glossy inserts, bulk mail as well as office paper) will be added when feasible. Junked vehicles in the County will be inventoried as the first step in recycling them, and helping to visually clean the County countryside.

The County Recycling Coordinator is and will continue to be responsible for evaluating components of the waste stream, searching out recycling markets and developing implementation plans.

The Plan elements above are generally in keeping with the State's hierarchy of solid waste management methods with the exception of using waste-to-energy facilities.

In the County Plan, **reduction** has been encouraged through the recycling program and educational efforts, both in-house and with a contractor. Another strategy for waste reduction is to find an alternative to land burial of contaminated soil.

The County will monitor state and federal legislative developments aimed at reducing solid waste and will endorse them as is appropriate.

The Department of Public Works and the Recycling Coordinator serve as an informational resource and consultant to anyone (individuals, businesses, industries, schools, institutions, groups, agencies, etc.) who wants more information, implementation strategy ideas or to initiate a waste reduction program.

Recycling and re-use will be encouraged by the "clear bag" regulation. Clear bags make it easier for the transfer station operators to check refuse for recyclables as well as unacceptable refuse.

The County has implemented and will maintain an office paper recycling program in all county-owned buildings. The program accepts only white paper so departments have been encouraged to purchase only white paper products. The office paper program is in addition to an organized bin system for recycling the traditional commodities required by County law.

Through the Buildings & Grounds section of the Department of Public Works, county facilities are using products (mostly paper supplies) that have a percentage of recycled materials in them. County-wide mailing will continue to be printed on paper made from recycled products.

Recycling and re-use have been the focus of more than three years of educational programing (see page CRA page 95-100 for more information).

The Department of Public Works will continue to investigate and evaluate the recycling potential of components of the waste stream. One step in this process is the survey of business and industry.

SECTION I:

360-15.9(i) Implementation Timetable

Pre-plan Chronology

The chronology below was drawn from a complete history of solid waste in Allegany County which is included as appendix SWMP-2. The items below put the current situation and future plans in a historical context.

December 1966 -- The County Planning Board consultant reports on site requirements for a landfill. Solid waste is handled by private haulers, individual residents and municipalities using private and municipal dumps, incinerators and landfills.

January 1974 -- The Allegany-Steuben Counties' Comprehensive Solid Waste Planning Study is completed.

January 1980 -- Solid Waste Supervisor was hired and assigned to the Solid Waste System.

November 1980 -- The County approves a contract to supply solid waste as fuel for Cattaraugus County's incinerator in Cuba, Allegany County.

March 1983 -- Six transfer stations open. The seventh opens in June. All started shipping waste to the Cattaraugus County Incinerator and Patton's Landfill in Alfred.

1985 -- Land is purchased for a landfill site.

1986 -- Voluntary recycling of large appliances is begun at the landfill.

September, 1987 -- The first cell opens at the landfill.

October, 1988 -- A recycling coordinator position is created.

1989 -- The agreement with Cattaraugus County for Allegany County to supply waste and accept ash is terminated. Ash from incinerator is no longer sent to the landfill. Burnable wastes from the transfer stations are no longer sent to the incinerator; they are now buried at the landfill.

February 1989 -- Cell 1 at the landfill is filled to capacity and Cell 2 is opened.

1989 -- A recycling education program is initiated. Voluntary recycling of five traditional items; newspaper, cardboard, metal cans, plastic, glass: and two non-traditional items; tires and lead-acid batteries begins. Railroad Valley Recycling is contracted as the intermediate processor to handle recyclables for the county.

April 1991 -- The county's solid waste law is passed.

June, 1991 -- Source separation for recycling of five traditional and four non-traditional items becomes mandatory for all users of the County system. $10 permits are required for use of County solid waste facilities.

July 1991 -- Cell 2 at the landfill is filled to capacity and Cell 3 is opened.

October 1991 -- The preliminary design of an intermediate processing facility for recyclables is completed and reviewed (later tabled). Construction of cell 4 is completed.

September and October 1991 -- New contracts are signed with two intermediate processors. Crown Y will handle the western three transfer stations and Railroad Valley will handle the eastern four as well as the Village of Wellsville.

Implementation Schedule

June, 1992 -- Use of clear bags for landfill-bound refuse is required.

By the end of 1992 -- A reporting system for business, industry and haulers will be implemented in order to determine the volumes of landfill-bound solid waste, recyclables and items disposed of in other ways or out of the county. Limited processing operations of selected items begin at key transfer stations.

November 1993 -- Demonstration composting project researched. Support development of private composting projects.

January 1994 -- Cell 3 filled to capacity; Cell 4 opens.

June 1994 -- County will determine the feasibility of owning and operating an intermediate processing facility or upgrading current facilities for processing recyclables.

September 1995 -- Investigate and select an alternative method for handling contaminated soil (mobil incineration, on-site remediation, or an alternative). Support development of private construction and demolition debris facilities.

August 1996 -- Cell 4 filled to capacity; cell 5 opens.

1997 -- Implement an alternative method to landfilling for handling sewage sludge (composting).

November, 2001 -- Cell 5 filled to capacity; cell 6 opens.

PLEASE NOTE: Additions to this implementation schedule can be found in the CRA on pages 91 and 92.

SECTION J:

360-15.9(j) Interim Management Plan

The interim management plan consists of continuing to do what has been implemented thus far and following the SWMP Implementation Schedule and the CRA Implementation Schedule (found on page CRA-91). The Implementation Schedule in both the CRA and SWMP are guidelines only. The county reserves the right to add, delete, or otherwise change project implementations put forth in either schedule.

SECTION K:

360-15.9(k) Administrative Structure

Table K-1
Staffing and Supervisory Structure
Allegany County Department of Public Works
---Solid Waste Management---

Allegany County Voters

Allegany County Board of Legislators

Allegany County Public Works Committee

Superintendent of Public Works[1]
Richard Young

Deputy Superintendent II[2]
John Mancuso

Landfill Supv. (1)[3]

Transfer System[4] Supv. (1)

Transfer station[6] operator (4)

Recycling Coordinator (1)[5]

1) Superintendent-of-Public-Works

Oversees the overall planning, budgeting and operation of the County Solid Waste Management System.

2) Deputy-Superintendent-II

Assists in planning for Solid Waste Management, prepares annual budget, oversees daily operation, manages compliance activities in regards to State and Federal Regulations.

3) Landfill-Supervisor

Manages daily landfill and transfer station operations, as well as special construction project using County personnel.

4) Transfer-Station-Supervisor

Manages daily transfer station operations, trucking of solid waste to the landfill and trucking recyclable to various locations.

5) Recycling-Coordinator

Responsible for implementing recycling education programs, researching and securing markets for recyclables, assisting in development of recyclables handling methods and maintain records of recyclables handled.

6) Transfer-Station-Operator

Operates County Transfer Stations; compacts solid waste into ejection containers, maintains collection areas for recyclables.

SECTION L:

360-15.9(l) Laws and Regulations

Several new laws and regulations are anticipated. A regulation requiring the use of clear bags for landfill-bound refuse was passed in early 1992. Also expected in 1993 are resolutions requiring:

a.)private haulers and industry to report quantities of recovered recyclables and their disposal location, and

b.)recycling of magazines and glossy inserts.

As an approved 10-year plan is implemented, legislation will have to be passed as specific objectives are set and procedures initiated. For example, if the county is to purchase and operate all the equipment associated with solid waste disposal through transfer stations, budgets must be approved for truck purchases. It is possible that additional townships or villages within the county may begin curbside pickups or implement other methods for managing solid waste. No problem is anticipated regarding conflicts with the County's resolutions.

SECTION M:

360-15.9(m) Cost Analysis of the Integrated System

The cost of Allegany County's solid waste Management system from its inception in 1983 through the end of 1991 can be divided into operating costs and capital costs. Operating costs cover the annual operation of the landfill and transfer stations. It also includes the cost to operate the recyclables handling program. Capital costs include land acquisition for facilities, construction costs, equipment costs and financing costs. Closure costs are included in annual operating expenses because a fund was established whereby money was set aside for every ton put into the landfill.

Annual operating costs for the entire solid waste system are financed through the annual line item budget entitled A8160.

In 1991 expenditures totaled $1,145,139. This does not include spending on equipment purchases. In 1992 the expenditures totaled $1,260,000. Recent spending has remained relatively consistent, even when considering 5% increases in force account costs. Above figures do not include amortized capital investments from 1983 - 1991.

Table M-1

The following is a cost analysis for operating the transfer station system including recycling program:

I. Transfer Station	1991	1995	2000
A.Capital Investment [amortized over 20 years] (Land, Buildings, Compactors, Containers and Financing)	$110,000	$110,000	$120,000
B.Administrative	$ 55,750	$ 62,000	$ 72,000
C.Force Account	$230,000	$253,000	$291,000
D.Equipment [amortized over ten years] (trucks, trailers, loaders, tractors, recycling containers)	$ 60,500	$ 60,500	$ 80,500
E.Insurance, Equipment repair and maintenance, supplies, fuel, recyclables handling, repair and maintenance of transfer station buildings and grounds, utilities	$188,500	$226,200	$272,000
TOTAL	$644,750	$712,000	$835,500

Table M-2

The following is a cost analysis for operating the County Landfill:

II. County Landfill	1991	1995	2000
A.Capital Investment [amortized over 20 years] (Land purchase, site development, cell construction, support facilities, financing)	$ 332,150	$ 482,150	$ 497,650

B. Administrative	$ 56,250	$ 59,065	$ 65,065
C. Force Account	$ 156,760	$ 165,000	$ 185,000
D.Equipment (Capitol expenditures amortized over 10 year period)	$ 86,880	$ 122,000	$ 130,000
E.Closure	$ 140,000	$ 250,000	$ 250,000
F.Environmental Monitoring	$ 38,000	$ 45,000	$ 55,000
G.Leachate	$ 45,000	$ 45,000	$ 50,000
H.Engineering Consultant	$ 120,000	$ 125,000	$ 130,000
I.Utilities	$ 7,000	$ 7,500	$ 8,000
J.Fuel	$ 39,000	$ 42,000	$ 50,000
K.Equipment Repair and Maintenance	$ 84,000	$ 90,000	$ 95,000
L.Equipment Rental	$ 15,000	$ 15,000	$ 20,000
M.Repair & Maintenance of Building and Grounds and Support Facilities	$ 20,000	$ 25,000	$ 30,000
N.Insurance	$ 2,400	$ 2,800	$ 3,500
O.Permit fees, Services supplies, Tools, Education	$ 40,700	$ 45,000	$ 50,000
P.Interdepartmental Labor	$ 2,500	$ 3,000	$ 5,000
TOTAL	$1,185,640	$1,523,515	$1,624,215

**REVENUE
1991 $ 465,050
1995 $ 400,000
2000 $ 410,000

** Revenues have decreased from the 1991 level because the amount of waste that was previously imported from Cattaraugus Counth has decreased substantially. The 1992 total revenue figure was $374,473. The projected increase from 1995 through 2000 is due to the recyclable program.

SECTION N:

360-15.9(n) Neighboring Jurisdictions

Participation of neighboring jurisdictions has been secured through conversations with counterparts in those counties. Cattaraugus, Chautauqua and Allegany counties, with coordination through Southern Tier West Regional Planning and Development Board, have been discussing a joint waste management project.

Recycling efforts have been discussed and joint efforts investigated through the New York State Association for Recycling and the more informal Region 9 cooperative marketing group. Discussions with neighboring counties will continue.

SECTION O:

360-15.9(o) Comments

This final Plan contains comments and views generated by concerned members of the public as well as governmental, environmental, commercial and industrial interests and people in neighboring jurisdictions.

Comments and views were solicited and compiled through the following outreach plan:

1. Distribute review copies of the draft Plan to the Allegany County Legislature, the 16 public libraries and the Town of Angelica. The review copies will be in place 30 days before the hearing. Notices of the locations of the copies will be posted at the transfer stations and the landfill.

2. Distribute a news release and publish a legal notice 30 days in advance announcing a public meeting for the purpose of review and comment on the Plan. The release will also include the locations of review copies of the draft Plan.

3. Mail review copies to the four border counties (Livingston, Wyoming, Cattaraugus and Steuben), Chautauqua County, Southern Tier West Regional Planning and Development Board and the U.S. Department of Agriculture (Soil Conservation Service, and Agriculture Stabilization and Conservation Service).

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SWMP - 1

Allegany County Comprehensive

Recycling Analysis

(Document is separately bound in 3 ring binder)

The History of Solid Waste in Allegany County

May 5, 1966: Resolution No. 39-66: Application to Farmers Home Administration for Federal Funds - designatio Allegany County Planning Board as County Water, Sewer Drainage and Refuse Agency.

December 29, 1966: At a special meeting of the Board of Supervisors, Chairman Smith turned the meeting ove Supervisor Kopler. Mr. Kopler stated that the Planning Board has made some studies of the sanitary landfill problem in county and asked Mr. Arthur Black, Planning Consultant, to elaborate on their findings. Mr. Black spoke of conditi which must be considered before a sanitary landfill can be satisfactorily established, such as, terrain, climate, nature of density of population, etc. He explained some of the pitfalls which municipalities might encounter in setting up a sani landfill and advised that they be extremely cautious; also, that they strive to keep the overall cost at a minimum. Mr. B advised that he planned to attend a meeting in Albany on January 6, 1967, with members of the New York State Pu Health Department and the Federal Government to learn of the possibility of the availability of Federal Funds to suppo demonstration project on refuse collection and disposal in Allegany County. He requested that municipalities write le immediately to the Planning Board supporting their interest in cooperative efforts in operating a sanitary landfill whicl might take to Albany to substantiate his request that this county be considered for a demonstration project. He also st that it is his understanding that if such a project were approved for this area the Federal Government would stand two-th of the cost of initiating the project and two-thirds of the cost of the operation for three years.

January 9, 1967: At the regular meeting of the Board of Supervisors, Mr. Black spoke on the problem of disposing solid waste. He outlined a meeting he had attended in Albany, New York, on January 6, for the purpose of learning of possibilities of securing available Federal funds for the installation and operation of a demonstration sanitary landfill pro for this county. Mr. Black introduced Mr. Berton Meade, District Sanitary Engineer of the State Department of Hea Mr. Meade explained in detail parts 19 and 190 of the Sanitary Code which have been assigned to the State Departn of Health for enforcement. He explained the position of the State Department of Health on the enforcement of provisions of the Sanitary Code pending the establishment of a demonstration project in this area. He outlined the neces requirements which must be met before a landfill can be established.

April 7, 1967: At the regular meeting of the Board of Supervisors, Mr. Arthur Black, Planning Consultant, was granted privilege of the floor. He informed the Board that the New York State Department of Health has announced that they enforce the temporary set of regulations which Mr. Berton Meade, District Sanitary Engineer, presented to the Board at January meeting, especially with regard to open burning at dumps. He suggested that municipalities enact ordinances w would give them control over open burning at dumps.

October 9, 1967: At the regular meeting of the Board of Supervisors, a letter received by the Allegany County Plann Board regarding the application for a Comprehensive Solid Waste Planning Grant for Allegany County from the New Y State Department of Health advising that both the Regional Health Office in Rochester and the District Health Office Hornell have recommended approval of the application and as soon as the necessary review can be made by the S Office the Planning Board will be advised of their findings.

December 20, 1967: Resolution No. 132-67: A contract was created between the County of Allegany and Arthur B to represent the Planning Committee as a Planning Consultant.

January 8, 1968: At the regular meeting of the Board of Supervisors, a letter from Mr. Berton E. Meade, District Sani Engineer, New York State Department of Health, advising that a number of new items have been added to the S Sanitary Code and that the Department of Health is presently taking definite action relating to various items in the field Water Pollution Control, Air Pollution Control and Refuse Disposal.

February 12, 1968: At the regular meeting of the Board of Supervisors, Mr. Patrick Brown, Sanitation Engineer, N York State Department of Health with the District Office in Hornell, New York, was granted the privilege of the floor. Brown brought the members up to date on the matters of refuse disposal, air pollution and water pollution, with spe emphasis on the enforcement phase of the program now in effect. He advised that persons or municipalities who do comply with the terms of the Sanitary Code may expect to be summoned before the State Health Department for heari

He further stated that violations were subject to fines. He emphasized that open burning, either major or minor in natur strictly prohibited in any incorporated area of the State. He stated that studies are being made of sources of pollution a determined effort is being made to alleviate these sources.

September 9, 1968: At the regular meeting of the Board of Supervisors, Chairman Smith introduced Mr. Da Benforado, Product Coordinator and Mr. Eugene Krumm, New Product Group Technical Expert, of Air Prehe Corporation. These gentlemen explained the operation of the Combustall Waste Incinerator being manufactured by the Preheater Corporation as it relates to solid waste disposal in residential areas. The problem of solid waste dispos confronting all municipalities and according to the laws of the State of New York, provisions for proper disposal of this t of waste must be made within the immediate future. These gentlemen stated that their product controlled effectively sm odor and flyash which are the main offenders and could meet the requirements of any code now in effect in the Un States or proposed in the near future. They invited the Supervisors to attend a test burning on Monday, September 1968 at 7:45 pm at the Andover Road Plant of the Air Preheater Corporation.

August 11, 1969: At the regular meeting of the Board of Supervisors, a letter from the Village of Angelica regard possible availability of county home farm land for use as a sanitary landfill for the Village and Town of Angelica.

October 13, 1969: At the regular meeting of the Board of Supervisors, Mr. William Heaney, Mayor of the Village Angelica, informed the Board that the Village of Angelica would like to purchase approximately 14 acres of the cou home farm land for a landfill project. Referred to the Planning Department.

November 10, 1969: At the regular meeting of the Board of Supervisors, Mr. Gary Petrichick, Planning Director, pas out a map showing the location of the county farm property desired by the Village of Angelica for a landfill. He repo that he had made a study of the proposal. His recommendations were as follows: (1) "That the site in question not be u for a sanitary landfill; Although it would appear that the County will have no immediate use for the land, its proximity to proposed Southern Tier Expressway (soon to be the major East-West arterial across New York State) would indicate need for a use more keeping with the desired image of Allegany County." (2) If the need for a landfill operation outwe the above recommendation, the "County should consider leasing instead of selling the land to give the County flexibility in future. (3) If the first recommendation is followed, steps should be taken to locate an alternate landfill site with emph placed on multi-town cooperation."

December 8, 1969: Resolution No. 138-69: Authorizing the Allegany County Planning Board to Apply and Contract a Solid Waste Disposal Study to the New York State Department of Health jointly with Steuben County.

March 9, 1970: Resolution No. 44-70: Amended Resolution No. 138-69 by providing for the creation of a Steub Allegany County Solid Waste Study Committee.

October 12, 1971: At the regular meeting of the Board of Legislators, a notice from the Joint Legislative Committee Environmental Conservation regarded a Seminar to be held on Recycling Solid Waste: Technology and Markets, referred to the Planning Committee.

January 10, 1972: At the regular meeting of the Board of Legislators, the receipt of the draft Steuben-Allegany Cou Solid Waste Study was noted and submitted by Day & Zimmermann Consulting Services. The draft is their analysis collection, haul, transfer treatment, and disposal of solid waste in Allegany County exclusive of Burns, West Almond Alfred which will be submitted January 14.

May 8, 1972: At the regular meeting of the Board of Legislators, Legislator Ryan brought the members up to date on activities of the Steuben-Allegany County Solid Waste Study Committee and their recommendations.

May 22, 1972: At the regular meeting of the Board of Legislators, a resolution from the Town of West Almond received regarding their objection to a sanitary landfill within the Town of West Almond.

June 12, 1972: Resolution No. 110-72: Resolution designating Planning Board as agency to promote the implementa

of Solid Waste Study.

October 23, 1972: Resolution No. 215-72: Resolution favoring passage of Environmental Quality Bond Act of 1 Proposition on November 7, 1972 ballot.

January 22, 1973: At the regular meeting of the Board of Legislators, Legislator Ryan spoke to the Board on the implementation steps of the Steuben and Allegany Counties Solid Waste Management Study. He stressed the importa of forming a Solid Waste Management Committee to be available to implement actions and carry out programs. A deta Pre-Implementation Procedure was distributed to each legislator and a copy is on file in the clerk's office.

March 26, 1973: At the regular meeting of the Board of Legislators, Legislator Ryan began a presentation of recommendations of the Steuben and Allegany Counties Comprehensive Solid Waste Study by introducing var individuals connected with the study; Richard Daniel of the engineering firm of Day and Zimmerman; Gordon Eastwo Project Coordinator from the Department of Environmental Conservation; Jack Tygert, Sanitary Engineer and Che Janik, Solid Waste Engineer, both with Environmental Conservation Region 9, Buffalo and Mr. Daniel and Mr. Eastw gave detailed reports on the recommendations contained in the Solid Waste Study, a copy of which is on file in the Cler the Board's Office.

Resolution No. 49-73: Creation of Solid Waste Advisory Committee to implement Solid Waste Study Recommendati Resolution No. 50-73: Resolution appointing two Board members to the Solid Waste Advisory Committee.

April 9, 1973: At the regular meeting of the Board of Legislators, Legislator Shine informed the Board that the Preheater Corp. wished to give a demonstration to board members of their "Combustall" incinerator, to be held April 1973 at their plant in Wellsville. They would like the Board to consider this type of solid waste disposal in view of recent Solid Waste Study which recommended the landfill method of disposal. Legislator Ryan, Chairman of the S Waste Committee stated that the committee had not ruled out entirely the incinerator type of disposal, but considered for present needs of the area that the landfill was more reasonable.

April 23, 1973: At the regular meeting of the Board of Legislators, Legislator Shaner introduced Supervisor Jack Cooper of the Town of Bolivar, who presented a resolution signed by the Supervisors of the Towns of Bolivar, Gene and Wirt and the Mayors of the Villages of Bolivar and Richburg, advising the Board of Legislatures and the S Department of Health of their wish and intent to continue the operation of their present landfill and not participate in county-operated landfill proposal at this time.

May 23, 1973: At the regular meeting of the Board of Legislators, Legislator King read a letter which he had recei from the Town Clerk of the Town of Scio stating that the Town Board had voted unanimously against a multi-dis sanitary landfill and felt their present incinerator and landfill was more efficient and less costly to operate. They do not w to participate in the proposed county operated landfill at this time. Legislator Lackey presented a letter which he received from Mr. James E. Dunn, P.E. of Bolivar, New York, regarding the establishment of a county-wide solid w disposal program and urging the Board to proceed with the development of such a program. Chairman Hale referred thi the Solid Waste Advisory Committee.

Resolution No. 67-73: Authorizing Steuben-Allegany County Solid Waste Committee and Allegany County Solid W Advisory Committee to hold public information meeting.

Resolution No. 85-73: Approval of agreement with Donald MacFarquhar, P.E. for Solid Waste Disposal Engineer Services.

August 13, 1973: At the regular meeting of the Board of Legislators, Legislator Ryan announced that a Summary Re of the Comprehensive Solid Waste Planning Study for Allegany and Steuben Counties had been placed on each Legisla desk.

September 10, 1973: At the regular meeting of the Board of Legislators a report was distributed from Conrad Kruger his participation in a helicopter surveillance flight over fourteen of Allegany County's landfill sites, which was arranged by

Environmental Conservation Solid Waste Division. Existing conditions at each of the sites were examined to give overview of the operations. Mr. Kruger noted that almost all the landfills at the time they were visited were running an fairly good operation.

November 12, 1973: Resolution No. 176-73: The Solid Waste Advisory Committee recommended that a solid w pilot project be instituted in a part of the Town of Willing. This resolution transferred funds from contingent to capital f account for this solid waste pilot project. The project will consist of placing two solid waste containers on the Cou highway maintenance garage property for the use of residents within a two mile area.

November 26, 1973: Resolution No. 190-73: Resolution approving of solid waste collection agreement with Donal Dillie. See resolution 176-73.

December 21, 1973: Resolution No. 223-73: Extending completion date of agreement dated May 22, 1973 with Do A. MacFarquhar for solid waste disposal engineering services.

January 14, 1974: Resolution No. 16-74: Completion of Allegany-Steuben County's Comprehensive Solid Wa Planning Study by Day & Zimmerman, Inc.

January 28, 1974: Resolution No. 31-74: Authorizing Chairman of the Board to execute application to obtain State G under Environmental Quality Bond Act of 1972.

March 25, 1974: Resolution No. 59-74: Resolution to transfer contingent funds to pay for an additional container services to the solid waste pilot project in the Town of Willing, to a Capital Fund.

April 5, 1974: At the regular meeting of the Board of Legislators, Legislator Ryan reported on a meeting he attended w at Grossingers, in relation to solid waste disposal, and noted that almost without exception most communities favor landfill method of disposal over any other process.

April 22, 1974: Resolution No. 83-74: Approved the extended agreement with Donald E. Dillie for additional collec services for the solid waste pilot project in the Town of Willing.

October 15, 1974: Resolution No. 173-74: Approved an agreement with Donald A. MacFarquhar, P.E., fo additional Solid Waste Disposal Engineering Studies.

October 28, 1974: At the regular meeting of the Board of Legislators, the Allegany County Summary Report Consolidated Solid Waste Disposal was distributed. Legislator Lee Ryan, Chairman of the Solid Waste Advi Committee, was granted the privilege of the floor. Mr. Ryan gave a summary of the committee's activities over the months leading to the compilation of the report and introduced Don MacFarquhar, who had prepared the report. A giving views on the Solid Waste proposal were Jack Tygert, Senior Sanitary Engineer with Region 9 of the New York S Department of Environmental Conservation and County Sanitarian Conrad Kruger.

Resolution No. 191-74: Approval of option agreement with Frederick W. and Marlies Warner and transfer of Contin Funds to Solid Waste Disposal Project Account to cover consideration for option agreement.

December 5, 1974: At a special meeting of the Board of Legislators a resolution from the Town Board of Scio was r opposing the proposed county-wide landfill.

December 23, 1974: At the regular meeting of the Board of Legislators, a letter was read from the Town of Clarksv stating that the Town Board unanimously opposed the proposed county landfill. An additional letter was read from Town of Friendship stating that the Town Board went on record supporting the county solid waste and landfill proposal.

Resolution No. 230-74: Approval of option agreement with Harry and Hazel Hale and transfer Contingent Funds to S Waste Disposal Project Account to cover consideration for option agreement.

December 30, 1974: At a special meeting of the Board of Legislators, Legislator Ryan brought to the Board's attenti

series of meetings which will be held with town and village officials throughout the county in regards to the recent solid w proposal made by the Solid Waste Advisory Committee.

January 13, 1975: At the regular meeting of the Board of Legislators, a letter from Allan E. Raymond, P.E., Direc Bureau of Facility Design and Operation, N.Y.S. Department of Environmental Conservation, addressed to Donald MacFarquhar, P.E., commending him on the Allegany County Summary Report on Consolidated Solid Waste Dispo Another letter from the Town Clerk of Angelica, stating that by resolution the Town Board went on record as opposing proposed Allegany County Solid Waste Disposal Plan.

January 27, 1975: At the regular meeting of the Board of Legislators a letter from the Village of Bolivar regarding continues use of the present landfill facility utilized by the Towns of Alma, Wirt, Scio, Bolivar, Genesee and the Village Richburg and Bolivar. Another letter from Lou L. Burton, Chairman, Town of Amity Planning Board, stating the Boa opposition to the proposed county landfill at Belvidere.

Resolution No. 27-75: Authorizing Chairman to enter into and execute agreement with Parrat-Wolff,Inc., for soil boring at proposed landfill sites and fixing monetary limitation for such work.

February 10, 1975: At the regular meeting of the Board of Legislators, Legislator Ryan was granted the privilege of floor and introduced Mr. Donald Owens of the Soil Conservation Service, East Aurora, who gave a report on the result the test boring made at the Warner and Hale Properties in Belvidere, the site for the proposed county landfill. A letter f Alfred J. Tucker, Town of Caneadea Supervisor, stating that the Town Board adopted a resolution favoring participation of the town on the proposed county landfill. A letter from Gary S. Horowitz, Mayor, Village of Alfred sta that the Village Board is opposed to the proposed county landfill. A letter from Robert C. Kelley, Business Mana Alfred University, stating that the University is opposed to the system of a single county-owned landfill at this time. A l from Leonard Presutti, Mayor, Village of Belmont, stating that the Town Board of Trustees have voted in opposition to proposed county landfill. A letter from Richard Miess, Town of Amity Supervisor stating that the Town Board is oppo to the proposed county landfill. A letter from H. E. Finnemore, Town of Alma Supervisor, in opposition to the propo county landfill. Also Mr. Jack Tygert of the NYS DEC also addressed the Board and stated that although there is no s thing as the perfect site for a landfill, the site under consideration was as close to ideal as can be found in Allegany Cou He also referred to existing landfills in the county and said that very few meet all the requirements of the DEC. Mr. Campbell, Director of the Southern Tier West Regional Planning and Development Board told the Board that there w possibility that the county could obtain between $30,000 and $60,000 from the Appalachian Regional Commission for solid waste project, however, if revenue sharing funds were being considered for the project, he would have to investi further, since Appalachian funds are also federal funds.

Resolution No. 43-75: Authorizing Chairman to enter into and execute an agreement with Erdman, Athony, Associates Topographic Mapping and property survey services relating to the proposed county landfill sites and fixing mone limitations for such work.

February 24, 1975: At the regular meeting of the Board of Legislators, a resolution from the Town Board of the Tow Hume in support of the proposed county landfill. A letter addressed to former County Sanitarian, Conrad Kruger fr John L. Loeb, Jr., Chairman of the State of New York Council of Environmental Advisors, stating that Allegany County its public service organization have been selected to receive the "Keep New York State Clean" Gold Broom Award service to the community on behalf of a cleaner environment.

March 10, 1975: At the regular meeting of the Board of Legislators, a letter from Ernest Wadsworth, Supervisor, To of Cuba, stating that the Town Board approves the proposed county landfill at the Warner Site east of Friendship. A le from Margaret J. Watson, Town Clerk of West Almond, stating that the Town Board is opposed to the proposed cou landfill.

March 24, 1975: At the regular meeting of the Board of Legislators, a copy of the Landfill Site Investigation Re (Warner and Hale properties) prepared by Donald A. MacFarquhar, P.E., was placed on each legislator's desk. A le from Ronald F. Foley, owner of the Sanitary Disposal Company of Belfast, N.Y., expressing his support for the solid w disposal plan. A letter from M. A Vossler, Clerk-Treasurer of the Village of Cuba, N.Y., stating that the members of Cuba Village Board had voted unanimously to take part in the solid waste disposal program if and when the county dec

to go ahead with the project. Mr. David Dorrance, Allegany County Sanitarian, was granted the privilege of the floor spoke briefly in regard to the recent presentation of the Gold Broom Award to Allegany County from the Keep New Y State Clean Committee, for the best recycling project presented by a county in New York State. Mr. Dorrance accep the award on behalf of the County in a presentation held on March 7, 1975 in Rochester, N.Y. The project was the j car program developed by former County Sanitarian Conrad Kruger and former Assistant Planner Robert McNary. motion to adopt Resolution Intro. No. 72-75 (Resolution electing the single landfill system of solid waste disposal in County of Allegany; directing Ways, Means & Finance Committee to provide method of implementation by county fo and abolishing Solid Waste Advisory Committee after certain matters have been concluded) was made by Legislator R and seconded by Legislator Kopler. The motion was then made by Legislator Hasper, seconded by Legislator Shaner carried, that Resolution Intro. No. 72-75 be tabled until the next special or regular meeting of the Board, in order to give Board time to review the Landfill Site Investigation Report which had been distributed earlier.

March 27, 1975: At the regular meeting of the Board of Legislators, Legislator Ryan was granted the privilege of the f and spoke on the final phase of the Solid Waste Disposal Plan. Mr. Ryan then introduced Donald A. MacFarqu consulting engineer, who reported on the data which had been obtained in soil test boring and topographic mapping at Warner and Hale properties in Belvidere, the proposed landfill site. Several members of the Solid Waste Advis Committee spoke regarding the solid waste plan and Mr. Jack Tygert of the Department of Environmental Conserva congratulated the committee on the work they had done. Following further debate, a motion to adopt Resolution Intro. 72-75 1(Resolution electing the single landfill system of solid waste disposal in the County of Allegany; directing W Means & Finance Committee to provide method of implementation by county forces and abolishing Solid Waste Advis Committee after certain matters have been concluded), was made by Legislator Ryan and seconded by Legislator Kop The motion was defeated upon a roll call vote.

April 28, 1975: At the regular meeting of the Board of Legislators, a resolution of the Town Board of the Town of Hu requesting the Board of Legislators to reconsider a county landfill for all of Allegany County. A letter from the Town Cl Town of Friendship, stating that the Town Board supports further consideration by the Board of the plan for a county-v landfill. A letter from J. Michael Brace, Mayor, Village of Andover, requesting that the Board support the Solid W Proposal, as the Board's recent decisions not to proceed will create a financial handicap for the citizens of the Villag Andover.

May 27, 1975: Resolution No. 111-75: Resolution of intent to provide a system of Solid Waste Disposal for Alleg County; establishing special Solid Waste Committee of Board and abolishing Solid Waste Advisory Committee.

June 20, 1975: At the regular meeting of the Board of Legislators, the Clerk announced that Chairman H appointments to the Solid Waste Committee: Ryan (District V), Shelley (District II), Embser (District IV), Kramer (Dis III), and Kopler (District I).

July 28, 1975: At the regular meeting of the Board of Legislators, a letter addressed to Legislator Ryan from Lou Burton, Chairman of the Town of Amity Planning Board with petition attached containing 45 names of residents oppos the location of a landfill in the vicinity of Belvidere.

August 11, 1975: Legislator Ryan, Chairman of the Solid Waste Committee, reported to the Board on recent meetin the committee and its opinion that the single landfill system is considered the most practical and economical. In this reg another farm has been inspected by the committee as a possible landfill site. A soils investigation will be necessary be further consideration can be given and funds will be required to undertake this work. Following a lengthy debate, Chairman requested an expressing of intent from the Board as to whether it favored the single landfill concept of solid w disposal. Upon a roll call vote on this question, it was defeated. Following further discussion, a motion was made Legislator Ryan, seconded by Legislator Pfuntner and adopted upon a roll call vote, that the Solid Waste Commi investigate a multi-location solid waste disposal system.

October 27, 1975: At the regular meeting of the Board of Legislators, a letter from the Village of Cuba in regards county-wide landfill system was read.

November 10, 1975: Resolution No. 225-75: Abolishing Special Solid Waste Committee: assigning solid w jurisdiction to Planning & Historical Committee.

February 23, 1976: At the regular meeting of the Board of Legislators, a resolution from the Town Board of the Tow Hume requesting the Board of Legislators' reconsideration of a county-level solid waste disposal program. Referred to Planning & Historical Committee.

September 23, 1977: At the regular meeting of the Board of Legislators, a notice from the Department of Environme Conservation regarding a public meeting to be held in Buffalo on October 3, 1977 in regard to the proposed selectio boundaries appropriate for carrying out regional solid waste management planning under the Federal Reso Conservation and Recovery Act of 1976.

October 24, 1977: Resolution No. 193-77: Adoption of local law intro no. 10-77, print no. 1, to amend local number 4 of 1977, entitled "A local law pursuant to article 8 of the New York State Environmental Conservation L providing an Environmental Quality Review of actions which may have a significant effect on the environment and which proposed by an applicant", in relation of the definition of Designee and the procedure for submission of proposed act Designee shall mean the Planning and Historical Committee.

Resolution No. 194-77: Abolishing all positions in Planning Department.

May 8, 1978: At the regular meeting of the Board of Legislators, a letter from Ronald Hale, Supervisor, Town of Alf in regard to resource recovery and solid waste management was read. Chairman King stated he would respond to letter.

July 10, 1978: Resolution No. 139-78: Adoption of local law Intro No. 2-78, print no. 1, to create the Office Administrative Assistant. (Shall assist Board in the administration of environmental programs within the county of Alleg as part of job).

November 27, 1978: At the regular meeting of the Board of Legislators, Legislator Hitchcock requested the privileg the floor for William White, Chairman of the Cattaraugus County Refuse Department and Paul Dudden, Senior Manag Engineer with the firm of Barton, Brown, Clyde & Loguidice, who gave a slide presentation showing solid waste disp and resource recovery projects which are currently in operation at various locations in the country. Discussion was held questions raised on how Allegany County would participate in the proposed Cuba Cheese Refuse to Energy Pro currently under consideration by both Cattaraugus and Allegany Counties.

January 8, 1979: At the regular meeting of the Board of Legislators, a letter was distributed at the request of Legisl Hitchcock, Chairman of the Planning and Historical Committee from the consulting engineering firm of Barton, Bro Clyde & Loguidice, P.C. offering their services to assist the county in the implementation of a solid waste transfer station

February 25, 1980: Resolution No. 56-80: Establishment of capital fund project for Allegany County Solid W Program.

March 24, 1980: Resolution No. 87-80: Approval of Engineering Services proposed with Edwards and Moncreiff, in regard to County Solid Waste Program.

October 27, 1980: Resolution No. 202-80: Established a total authorization amount for county Solid Waste Prog ($1,250,000).

November 10, 1980: Resolution No. 235-80: Created a position of Solid Waste Supervisor.

Resolution No. 236-80: Approved a contract to supply solid waste with Cattaraugus County.

November 24, 1980: At the regular meeting of the Board of Legislators, Legislator Hitchcock requested the privileg the floor for Lee S. Edwards of the firm of Edwards and Moncreiff, Engineers and Surveyors, who reviewed the F Working Report for the Solid Waste Transfer System, prepared by his firm, a question and answer period followed.

Resolution No. 246-80: Amended the agreement with Edwards and Moncreiff, P.C. in regard to County Solid W Program.

Resolution No. 249-80: Approved Engineer's Final Working Report dated November 12, 1980 in relation to County S Waste System subject to legal implementation requirements.

June 8, 1981: Resolution No. 117-81: Approval of agreement with New York State Commissioner of Environme Conservation in relation to payment of Environmental Quality Bond Act funds for County Solid Waste Project.

June 22, 1981: Resolution No. 124-81: Authorization for firm of Edwards and Moncreiff, P.C. to under environmental engineering services relating to County Solid Waste Program and to subcontract for such services; authoriz cost of such services to be charged to Solid Waste Capital Fund.

July 13, 1981: Resolution No. 134-81: Agreement to pay for costs of Transfer Station System not aided by Federa State Governments.

July 27, 1981: At the regular meeting of the Board of Legislators, Legislator Hitchcock requested privilege of the floo Mr. Roy R. Pedersen from the firm of Edwards & Moncreiff, Engineers and Surveyors, who reviewed the Prelimin Report for Allegany County Landfill prepared by his firm. A copy of the report was distributed to each legislator at the 13th Board meeting. A question and answer period followed.

September 14, 1981: Resolution No. 150-81: A resolution setting date of public hearing on proposed local law establish a County Department of Public Works.

September 28, 1981: At the regular meeting of the Board of Legislators, Chairman King closed the regular session fo purpose of holding a public hearing on the establishment of a County Department of Public Works. No one desirin speak, the public hearing was declared closed.
Resolution No. 161-81: Adoption of Local Law Intro. No. 1 81, Print No. 1, establishing a County Department of Pu Works.

Resolution No. 162-81: Determination of completion of Draft Environmental Impact Statement for Allegany Co Transfer System; authorizing Clerk of Board to file notice of completion; fixing date for public hearing on D Environmental Impact Statement and on Direct action to establish Allegany County Transfer System; ratifying action Planning and Historical Committee acting as Designee under Resolution No. 62-77 for the Allegany County Solid W Transfer System action.

October 26, 1981: At the regular meeting of the Board of Legislators, Chairman King closed the regular session for purpose of holding a public hearing on the Draft Environmental Impact Statement in regards to the Allegany County Tran Station System. No one desiring to speak, the public hearing was declared closed and the meeting reconvene in reg session.

November 9, 1981: Resolution No. 192-81: A resolution requiring the construction of any resolution and directio County Board that is still in effect and contains titles of County Superintendent of Highways or Deputy Co Superintendent of Highways or name Allegany County Department of Highways to mean respectively Co Superintendent of Public Works and Allegany County Department of Public Works.

November 23, 1981: Resolution No. 208-81: Authorizing increase in authorized amount for environmental enginee services pursuant to Resolution No. 124-81.

EXECUTIVE SESSION - All resolutions were approval of option to purchase real estate in relation to County S Waste Program.

March 9, 1981:..... Resolution No. ES-1-81
.....Resolution No. ES-2-81
.....Resolution No. ES-3-81
.....Resolution No. ES-4-81
March 23, 1981:..... Resolution No. ES-5-81
April 27, 1981: .....Resolution No. ES-6-81
May 26, 1981:. .....Resolution No. ES-7-81
June 8, 1981:..... Resolution No. ES-8-81
June 22, 1981:..... Resolution No. ES-9-81
July 13, 1981:..... Resolution No. ES-10-81
August 10, 1981: ..... Resolution No. ES-11-81
..... Resolution No. ES-12-81
..... Resolution No. ES-13-81
November 9, 1981:..... .....Resolution No. ES-14-81
November 23, 1981:.....Resolution No. ES-15-81
.....Resolution No. ES-16-81

February 8, 1982: At the regular meeting of the Board of Legislators, the following statement was read by the Clerk regard to the Final EIS for Solid Waste Transfer Stations. "The Planning and Historical Committee reviewed the F Environmental Impact Statement for six of the seven proposed transfer stations on January 6, 1982. The EIS was fo satisfactory and complete in its analysis and conclusions of the proposed action. The EIS was accepted by the Planning Historical Committee as complete on January 6, 1982 and filed in accordance with the law."

June 28, 1982: Resolution No. 166-82: Increasing authorization amount for County Solid Waste Program. (Increased $400,559)

August 9, 1982: At the regular meeting of the Board of Legislators, a statement was read by the clerk regarding review of the Final Environmental Impact Statement by the Planning and Historical Committee for the proposed Wellsv area transfer station.

Resolution No. 178-82: approval of the action to continue with the development and operation of seven transfer sta sites under the county solid waste transfer station system; directing Public Works Department to implement mitigat measures.
Resolution No. 179-82: Award to L.C. Whitford Company, Inc. for concrete work and hopper shelter construction transfer station sites.

Resolution No. 180-82: Authorizing County Department of Public Works to let bids and award contracts for equipm machinery and Public Works in connection with the construction and operation of the Allegany County Solid Wa Transfer System.

August 23, 1982: At the regular meeting of the Board of Legislators, Legislator Kramer, Chairman of the Public Wo Committee requested privilege of the floor for Fred Kelley, Solid Waste Supervisor who gave a report on six of the se transfer station sites under construction at the present time. He is waiting for permits before construction at the present ti He is waiting for permits before construction can be started at the Wellsville site. This report is on file in the Clerk of Board.

October 25, 1982: At the regular meeting of the Board of Legislators, Legislator Kramer requested privilege of the f for Fred Kelley, Solid Waste Supervisor who gave a progress report on the construction of the transfer sites in the Cou

a copy of which is on file in the office of the Clerk of the Board.

November 8, 1982: Resolution No. 234-82: A resolution in connection with the real estate to be conveyed by the Vil of Wellsville to the County of Allegany to provide that fee title will only be reconveyed to the Village of Wellsville.

November 22, 1982: Resolution No. 243-83: Approval of agreement between Allegany County and Environme Consultants, Inc. in regard to a proposed Solid Waste Landfill of Allegany County.

December 27, 1982: Resolution No. 264-82: Creating four positions of Transfer Station Operator in County Pu Works Department.

1982 ANNUAL SOLID WASTE REPORT -- Construction commenced on the seven transfer stations that will be a of the Allegany County Solid Waste Collection and Disposal System. Costs associated with this construction for 1982 $1,263,987.69.

January 3, 1983: Resolution No. 9-83: Designating Planning & Historical Committee as designee under Resolution 62-77 for entire Allegany County Solid Waste System action.

February 28, 1983: Resolution No. 49-83: Approval of Resource Recovery Project supplemental contract v Cattaraugus County.

Resolution No. 52-83: Increase authorization amount for County Solid Waste Program.

March 14, 1983: Resolution No. 74-83: Establishing capital project for solid waste trucks.

April 11, 1983: Resolution No. 87-83: Approval of agreement between County Superintendent of Public Works Town Superintendent of Highways of the Town of Almond in relation to rehabilitation and maintenance of portion of Sa Hill Road for Solid Waste Transfer Station purposes.

May 23, 1983: Resolution No. 106-83: Increasing authorization amount for County Solid Waste Program.

June 13, 1983: Resolution No. 114-83: Creation of position of Assistant Solid Waste Supervisor in County Pu Works Department.

August 22, 1983: At the regular meeting of the Board of Legislators, Chairman Hasper requested Peter Kosin Administrative Assistant to bring the Board up to date on the funding approved by the State for the County's Solid W Program. Mr. Kosinski noted that Allegany County had been awarded a $500,000 grant of Environmental Quality B Act funds based on the original estimated cost of this project at $1.1 million. As it is now estimated the cost will be $ million, it is recommended that the County apply for additional funds in the amount of $450,000. A motion was made Legislator Hitchcock, seconded by Legislator Frair and carried to request this funding for our Solid Waste project from New York State Department of Environmental Conservation.

September 12, 1983: Resolution No. 167-83: A resolution authorizing the purchase and/or construction of a Solid W Disposal and Transfer System to serve the County of Allegany, N.Y. at a total maximum estimated cost of $3,465,000, authorizing the issuance of $1,500,000 serial bonds of said county to pay costs thereof.

September 26, 1983: Resolution No. 167-83: Bond resolution dated September 26, 1983 a resolution authorizing purchase and/or construction of Solid Waste Transfer Stations and trucks for the operation thereof to serve the County Allegany, N.Y. at a total maximum estimated cost of $2,365,000, and authorizing the issuance of $400,000 serial bond said county to pay the cost thereof.

1983 ANNUAL SOLID WASTE REPORT -- Operations commenced in March of 1983, with the opening of transfer stations. The seventh station opened June 1, 1983. Operating costs are as follows:

Station.	per ton operating cost	st. operating cost
1) Caneadea	$20.38	$64,684.94
2) Canaseraga	$21.70	$53,828.81
3) Cuba/Friendship	$16.40	$64,896.88
4) Angelica	$19.61	$57,499.96
5) Alfred	$21.64.	$63,173.15
6) Bolivar	$19.41	$62,677.93
7) Wellsville	$18.41	$65,463.22
Average	$19.27	Total $432,224.89

The incinerator burned 24,668,000 lbs. or 12,334 tons of refuse for Allegany County in 1983. The Patton Landfill bu 20,182,000 lbs. of 10,091 tons. This was a total of 44,850,000 lbs. handled by the County in 1983, or an average 3,737,500 lbs. per month. Down time at the stations totaled 7 hours or one hour for each station for the year.

The construction of the transfer system was completed in 1983. Total expenditures were $935,024.31 in 1983. The t project cost was $2,185,145.88, which left a balance of $13,566.12 of the total original appropriation of $2,199,012.0

January 23, 1984: Resolution No. 25-84: A resolution authorizing the purchase of a track loader to be used conjunction with a Solid Waste Facility of the County of Allegany, N.Y. at a maximum estimated cost of $129,000, authorizing the issuance of $129,000 capital notes of said county to pay the cost thereof.

Resolution No. 26-84: A resolution authorizing the original improvement of a refuse disposal area designed for location sanitary landfill installation in and for the County of Allegany, N.Y. at a maximum estimated cost of $972,000, authorizing the issuance of $923,000 serial bonds of said county and the appropriation and expenditure of $49,(available current funds of said county to pay the cost thereof.

February 27, 1984: Resolution No. 65-84: Approval of agreement between Allegany County and Southern T Consulting in regards to a proposed Solid Waste Landfill in Allegany County.

June 25, 1984: Resolution No. 134-84: Authorizing County Public Works Department to sell recyclable solid w material.

September 24, 1984: At the regular meeting of the Board of Legislators, Legislator Cross, Chairman of the Planning Historical Committee requested privilege of the floor to announce that a draft copy of the Environmental Impact Statem prepared by Southern Tier Consultant, Dr. Gary Pierce, on the proposed Allegany County landfill, had been placed on e legislator's desk for their information.

December 10, 1984: Resolution No. 226-84: Approval of the action to continue with the development and operatio the proposed county owned landfill subject to acquisition of same; directing County Public Works Department to conti with such action and to implement mitigation measures subject to acquisition of landfill site; declaring certain findings relation to such action.

December 21, 1984: Resolution No. 254-84: Amendment of Resolution No. 65-84 entitled "approval of agreem between Allegany County and Southern Tier Consulting in regard to a proposed solid waste landfill in Allegany County increase agreement cost to county by one thousand dollars.

Resolution No. 255-84: Exercise of option to purchase real estate of Lorette Bauer, Mike M. Akrawi and Hermine Akrawi in relation to County Solid Waste Program.

Resolution No. 256-84: Exercise of option to purchase real estate of Janet Lang in relation to County Solid W Program.

EXECUTIVE SESSION--February 27, 1984: Resolution No. ES-1-84: Approval of option to purchase real estat Loretta Bauer, Mike M. Akrawi and Hermine R. Akrawi in relation to County Solid Waste Program.

May 14, 1984: Resolution No. ES-2-84: Approval of option to purchase real estate and mineral rights of Janet Lang relation to County Solid Waste Program.

1984 ANNUAL SOLID WASTE REPORT-- In 1984 the incinerator burned 35,652,080 lbs. or 17,826.04 tons of s waste from Allegany County. The Patton Landfill buried 26,442,360 lbs. or 13,221.18 tons of non-burnables in 19 This is a total of 62,094,440 lbs. or 31,047.22 tons handled by Allegany County. This is an average of 200,305 lbs. working day.

This is an operating cost of $22.69 per ton for 1984, compared to $19.27 per ton operating cost for 1983. The $3.42 ton increase is due to the incinerator tipping fee increase of $10.00 per ton for eight months of 1984.

The 62,094,440 lbs. total waste handled represents 3.27 lbs. of waste generated per person, per day, each day of the y This average is down from the 1983 average of 3.4 lbs. per day. This is due to the bottle bill and recycling efforts.

In 1984 the environmental review phase of this project was completed. The following is a list of the major expenditure 1984:

Engineering	$47,249.88
Soils investigation.....	39,077.10
Environmental work	26,902.40
Equipment purchase	130,932.29

The total money spent on this project in 1984 was $260,835.87 of the original appropriation of $1,100,000.00 to be used to complete the project.

June 24, 1985: Resolution No. 133-85: Creation of Landfill Supervisor and Landfill Operator positions in Public Works Department.

1985 ANNUAL SOLID WASTE REPORT -- In 1985 the landfill property was purchased with soils investigation and preliminary plans and specifications completed.

Excavation and the construction of a one acre liner test patch was completed. This test will be used to prove the landfill design.

Construction began on the landfill maintenance building. Costs related to the 1985 landfill project are as follows:

.....Engineering $56,235.58
.....Soils investigation.....$30,277.97
.....Construction ..... $587,541.27 * (includes building)

In 1985 the incinerator burned 33,555,040 lbs. of Allegany County waste. The total waste handled was 62,543,380 lbs. This was an average of 200,549 lbs. per working day, up slightly from the average of 1984 of 200,305 lbs. per working day.

The cost of disposing of this waste increased $2.60 per ton to $25.59 per ton. This was due to the $4,000 per month increase in the tipping fee at the Patton Landfill. This was a flat rate above the $16.30 per ton fee paid to the Patton Landfill.

The 62,543,380 lbs. total waste handled represents 3.29 lbs. generated per person, per day, each day of the year. This is a slight increase over 1984, but, well below the 3.46 lbs. per person in 1983. This is due to the effects of the bottle bill and County Recycling efforts. Also, 309,577 lbs. of white goods were recycled by the county this year.

January 13, 1986: Resolution No. 20-86: Granting consent to Cattaraugus County Industrial Development Agency to use its funds in respect of a project to expand that county's resource recovery facility at Town of Cuba.

January 27, 1986: Resolution No. 35-86: A resolution authorizing the issuance of an additional $595,000 serial bonds and the appropriation and expenditure of an additional $33,000 available current funds of the County of Allegany N.Y. to pay part of the cost of the original improvement of a refuse disposal area designed for location of a sanitary landfill installation in and for said county.

February 24, 1986: Resolution No. 64-86: Created position of Deputy Public Works Superintendent II and Transfer System Supervisor. (deleting titles of solid waste supervisor and assistant solid waste supervisor).

1986 ANNUAL SOLID WASTE REPORT -- In 1986, the incinerator burned 36,415,120 lbs. of Allegany County waste. The Patton Landfill buried 24,559,963 lbs. of waste. The total amount of waste handled was 63,606,243 lbs. for the year. This was an average of 203,866 lbs. per working day, up slightly from the average for 1985 of 200,459 lbs. per working day. The cost of disposing of this waste decreased from $25.29 to $25.05 per ton. This is due to efforts of the County employees to make the operation more efficient. Also recycling 500,000 lbs. of white goods aided to this reduction in per ton cost. It cost $.0125 per lb. to dispose of waste in 1986.

In 1986, the construction of the landfill was 85% completed. The landfill maintenance building was 95% completed. Solid waste operations moved into this building.

A total of $84,561.80 was spent on Engineering and Soils Work. A total of $452,204.01 was spent on Construction.

We spent $216,502.59 on force-account work of this construction total. We anticipated completing the landfill in 1986, but could not do so because of rainy weather throughout the construction season.

February 9, 1987: Resolution No. 33-87: Authorizing County Public Works Department to pay tipping fee of twenty dollars per ton to Cattaraugus County for disposal of solid waste at Cuba Resource Recovery Plant with provisions that no further increase in fee will be authorized unless new solid waste disposal contract provides for such increase; directing County Public Works Department to enter into negotiations with Cattaraugus County for new solid waste disposal contract and to present recommended contract for approval by December 31, 1987.

June 8, 1987: Resolution No. 115-87: Establishing a leachate treatment plan to be implemented after the County Landfill becomes operational; directing County Department of Public Works to recommend to county board a future leachate treatment plan after leachate treatment research project is completed and thereafter at times deemed appropriate by said county department of by the county board.

1987 ANNUAL SOLID WASTE REPORT -- In 1987 the Cattaraugus County Enercan Energy Service Facility incinerated 37,376,540 pounds of Allegany County waste. The Patton Landfill buried 1,624,000 pounds of Allegany County waste. The C.I.D. Landfill buried 10,810,960 pounds of Allegany County waste. Allegany County hauled 517,930 pounds of white goods to recycling operations. The new Allegany County Landfill buried 9,992,820 pounds of waste in 1987.

The total pounds of waste disposed of by Allegany County in 1987 amounted to 60,322,250. 1987 had 320 operating days. An average of 189,000 pounds of waste was hauled per day by Allegany County.

This averages 3.18 pounds of waste generated per person per day.

The cost of disposing of this waste increased from $25.05 per ton to $37.95 per ton. This substantial increase is due to increased tipping fees at both Cattaraugus County Incinerator and C.I.D. Landfill, Inc. Tipping fees increased from $14.50 per ton to $20.00 per ton at the incinerator and from $12.00 per ton to $20.00 and $30.00 per ton at C.I.D. Landfill, Inc.

In 1987 construction of the Landfill in Allegany County was completed. Disposal in the new Facility commenced September 23, 1987. The efforts of the County for the past five years became a reality.

A total of $66,909.67 was spent on Engineering and Soils work in 1987. A total of $143,927.37 was spent on construction. A total of $33,090.36 was spent of force account work of this construction. A total of $67,000.00 was spent on equipment purchase. A total of $1,926,285.60 was spent on the entire project.

January 4, 1988: Resolution No. 10-88: Approval of interim terms with Cattaraugus County regarding disposal of solid waste and ash; directing County Public Works Department to submit final contract to County Board within sixty days for approval.

February 24, 1988: Resolution No. 68-88: Amendment of Resolution No. 10-88 to increase duration of periods of provisions from sixty to one hundred twenty days.

May 9, 1988: Resolution No. 116-88: Amendment to Resolution No. 10-88 to increase duration periods of provisions from sixty to one hundred eighty days.

June 27, 1988: Resolution No. 153-88: Amendment of Resolution No. 10-88: to increase duration periods of provisions from one hundred eighty days to two hundred ten days.

Resolution No. 168-88: Excluding construction debris, demolition waste and other non-hazardous materials from Allegany County Landfill; authorizing County Superintendent of Public Works to adopt Rules, Regulations and orders to enforce such exclusion by July 22, 1988 or earlier under certain circumstances.

July 25, 1988: Resolution No. 181-88: Approval of "Contract between Allegany County and Cattaraugus County solid waste disposal-1988"; authorizing Board Chairman to execute contract.

October 11, 1988: Resolution No. 230-88: Authorizing the filing of an application for a State Grant in and for Local Resource Reuse and Recovery Program; appropriating funds and obligating county funds for program use.

October 24, 1988: Resolution No. 243-88: Creation of position of Recycling Coordinator in Public Works Department.

December 12, 1988: Resolution No. 277-88: Authorizing County Department of Public Works to obtain membership in National Recycling Coalition, Inc.

Resolution No. 297-88: Approval of "Contract between Allegany County and Cattaraugus County solid waste disposal-1989"; authorizing Board Chairman to execute contract.

1988 ANNUAL SOLID WASTE REPORT -- The Allegany County Solid Waste System spent a total of $1,963,359.36 in 1988. Some of the major factors contributing to this figure are as follows:

-Construction of a 2.63 acre cell with a combination clay-HDPE liner system.
-Purchase of a truck-tractor, 1-ton utility truck and a 1/2-ton pickup.

-Increased engineering costs (80% above the 1987 appropriation) due to the complexity of the liner system.
-Total amount of solid waste handled by the Department of Public Works increased from 30,161.12 tons in 1987 to 48,199.94 tons in 1988.

The tonnage that was handled by the Department of Public Works increased in 1988 primarily because of the industrial waste that was brought to the landfill. A breakdown of industrial waste is as follows:

Incinerator Ash	15,220.93
Friendship Foundry Sand	4,120.66
Sewage Sludge	3,136.77
Heritage Cutlery	50.36
CE Air Preheater	77.71

The County Landfill received a total of 34,585.25 tons in 1988. This is broken down in the following categories:

Industrial:	.....23,581.02
Residential:.....	..... 8,407.07
Commercial:.....	..... 2,597.16

Allegany County Employees transported a total of 23,657.89 tons of municipal solid waste. This amount includes 16,969.15 tons hauled to the Cattaraugus County Incinerator in Cuba and 5,968.64 hauled from County owned Transfer Stations to the County Landfill. A total of 501.95 tons of white goods were hauled to scrap yards for processing.

Scrap metal and small electrical appliances were removed from the waste stream beginning around August 1, 1988 and about 55 tons were sold to private individuals.

Revenues generated by the Solid Waste System came primarily from two sources: ash disposal at the County Landfill from Cattaraugus County amounted to $319,639.53; sewage sludge form the City of Olean amounted to $45,427.16.

The County Landfill generated 512,944.44 gallons of leachate which were hauled to the City of Olean waste treatment facility at a cost of $.27 per gallon.

The cost per ton to dispose of solid waste handled by the Department of Public Works in 1988 was $40.73. This amount was only slightly above the 1987 per ton cost of $38.00.

The position of Recycling Coordinator was created and filled. Also, a voluntary recycling program was set up to start in 1989 and a mandatory program to be implemented in 1990.

January 23, 1989: Resolution No. 44-89: Regulating the disposal of tires at Allegany County Transfer Stations and Landfill; establishing disposal fees for tires; authorizing County Superintendent of Public Works to adopt rules, regulations and orders.

February 14, 1989: Resolution No. 56-89: Determination of Public Emergency; approving and ratifying actions of Deputy Superintendent of Public Works I, Chairmen of Public Works Committee and Board in Authorizing the contracting of clay liner work without competitive bids; approving payment for clay liner work, all in relation to County Sanitary Landfill synthetic liner installation.

Resolution No. 74-89: Approval of agreement with Turbo-Products of Dresser-Rand, Inc., in relation

to disposal of sand at County Landfill; authorizing Board Chairman to execute agreement.

February 27, 1989: Resolution No. 78-89: A resolution authorizing the construction of a three year cell at the Allegany County Landfill site, including incidental improvements, in and for the County of Allegany, N.Y., at a maximum estimates cost of $2,500,000, and authorizing the issuance of $2,500,000 serial bonds of said county to pay the cost thereof.

March 27, 1989: Resolution No. 113-89: Authorizing County Department of Public Works to obtain membership in National Resource Recovery Association, an affiliate of the U.S. Conference of Mayors.

April 10, 1989: Resolution No. 123-89: Approving of Local Resource and Recovery Program Solid Waste Management Project State Grant contract; authorizing Chairman to execute contract.

May 8, 1989: Resolution No. 132-89: Regulating the disposal of white goods at Allegany County Transfer Station and Landfill; Authorizing County Superintendent of Public Works to adopt rules, regulations and orders.

June 26, 1989: Resolution No. 162-89: Designating the County of Allegany as a Planning Unit to apply for State Grant funds for development of a Comprehensive Solid Waste Management Plan; Authorizing Chairman of Board of Legislators to sign the grant application and certification.

August 14, 1989: Resolution No. 199-89: Approval of agreement with American Olean Tile Co., in relation to disposal of tile waste at County Landfill; authorizing Board Chairman to execute agreement.

December 11, 1989: Resolution No. 282-89: Approval of order on consent of New York State Department of Environmental Conservation regarding construction of containment facility for white goods and tires at County Landfill.

1989 ANNUAL SOLID WASTE REPORT -- The Allegany County 1989 Solid Waste program - the excavation of Cells 3 and 4 with the liner construction of Cell 3 half finished. The landfill took in 39,801 tons of solid waste in 1989. Allegany County also initiated a recycling program in June of 1989, which kept in excess of 800 tons of solid waste from entering the County Landfill.

January 8, 1990: Resolution No. 22-90: Approval of agreement with American Olean Tile Company, in relation to disposal of tile waste at County Landfill; authorizing Board Chairman to execute agreement.

Resolution No. 23-90: Approval of agreement with Turbo-Products Division of Dresser Rand, Inc., in relation to disposal of waste foundry sand at County Landfill; authorizing Board Chairman to execute agreement.

February 26, 1990: Resolution No. 93-90: Adjustment of 1990 County Budget. Allegany County will not use Cattaraugus County's incinerator at Cuba, New York in 1990, and that Cattaraugus County will not be disposing of ash in our County Landfill, and funds were budgeted for the payment of anticipated fees in connection with such incinerator use, and the anticipated receipt of fees from Cattaraugus County for such landfill use were budgeted as an anticipated revenue, and that the 1990 County Budget should be adjusted as follows: Appropriations Solid Waste-Contractual Expenses decrease $931,500, and A1990.4 Contingent-Contractual Expenses increase $301,500. Revenues Solid Waste-Fees/Catt. Co. decrease $630,000.

March 26, 1990: Resolution No. 103-90: J. Michael Kear is hereby appointed to the position of

Planner.

April 18, 1990: Resolution No. 126.90: Approval of Order on Consent No. 89-168 of New York State Department of Environmental Conservation; authorizing payment required by such Order and authorizing Chairman to execute such Order. The required payment of $1,500 shall be charged to Solid Waste Contractual Expenses Account.

May 29, 1990: Resolution No. 142-90: Appropriation of Recycling State Grant in aid to Solid Waste Contractual Expenses Account. A State grant in aid of $10,250 for recycling is hereby appropriated.

Resolution No. 143-90: Transfer of funds from Contingent Account to Solid Waste Contractual Expenses Account. (sum of $105,000 to pay anticipated solid waste disposal tipping fees.

July 23, 1990: Resolution No. 179-90: Approval of agreement with Town of Ossian, in relation to the use by the town of the Transfer Station at Canaseraga, New York and the County Landfill.

September 24, 1990: Resolution No. 222-90: Approval of amendment to Local Resource Reuse and Recovery Program Solid Waste Management Project State Grant contract; authorizing Chairman to execute contract amendment.

December 21, 1990: Resolution No. 303-90: Transfer of funds from Solid Waste Contractual Expenses Account to Capital Project Accounts for the construction of an addition to the County Landfill building for the installation of monitoring wells, and for other landfill purposes.

1990 Annual Report of the Cornell Cooperative Extension of Allegany County -- Enhancing the Environment: With an emphasis on the broad aspect of waste reduction, recycling and composting and their relationship to the overall issue of solid waste management, educational efforts included composting workshops for the general public and recycling workshops for elementary school teachers.

1990 ANNUAL SOLID WASTE REPORT (summary)

The Allegany County Solid Waste Program included the completion of cell three and the purchase of 90% of the materials required for cell four. The county landfilled 40,813.03 tons of solid waste and 1,094.93 tons of recyclable material were collected and removed from the waste stream.

Allegany County Municipalities

Township	1990 Population	Township	1990 Population
Alfred	5,690	Friendship	2,180
Allen	400	Genesee	1,669
Alma	829	Granger	504
Almond	1,632	Grove	479
Amity	2,242	Hume	1,954
Andover	1,950	Independence	1,024
Angelica	1,413	New Hudson	710
Belfast	1,497	Rushford	1,166
Birdsall	228	Scio	1,964
Bolivar	2,355	Ward	330
Burns	1,294	Wellsville	8,085
Caneadea	2,541	West Almond	277
Centerville	677	Willing	1,422
Clarksville	1,040	Wirt	1,133
Cuba	3,401	TOTAL	50,086

Incorporated Villages (11) and 1990 Population

Incorporated Village	1990 Population	Incorporated Village	1990 Population
Alfred	4,512	Canaseraga	679
Almond	517	Cuba	1,896
Andover	1,094	Fillmore	449
Angelica	937	Richburg	487
Belmont	1,001	Wellsville	5,223
Bolivar	1,259	TOTAL	18,054

Schematics of Cell 1 (1985-1987)

REFUSE

#2 Stone		12" Primary leachate collection layer
	24" Primary clay liner - precompacted clay	
Sch. 80 Collection pipe laterals	24" Secondary clay liner	Filter Fabric 12" Secondary leachate collection (a leak detection system to ensure the integrity of the primary liner)
	Subgrade 14% grade for positive drainage of leachate	

2 1/2% Grade	2 1/2% Grade
12" Primary leachate collection layer	
24" Primary clay liner	Leachate collection pipe filter fabric
12" Secondary leachate collection	Collection pipe
24" Secondary clay liner	

Subgrade

Underdrain carries groundwater to maintain in separation from the liner system	2' x 3' underdrain
	8" perforated 80 PVC underdrain collection pipe

SWMP-6

Allegany County
Intermediate Processing Facility
1991 Cost Estimates*

Floor Plan 1 (100' x 160')

Building shell (metal)	268,800
Foundation work	169,600
Electrical, mechanical	81,600
Structure slab	88,000
Approach slab	22,400
Sub total	630,400
10% contingency	63,040
Sub total	693,440
Engineering	21,500
Soils investigation	2,000
Disbursements	2,000
TOTAL Plan 1	718,940

Floor Plan 2 (70' x 160')

Building shell (metal)	188,160
Foundation work	118,720
Electrical, mechanical	72,000
Structure slab	61,600
Approach slab	15,680
Sub total	456,160
10% contingency	45,616
Sub total	501,776
Engineering	21,500
Soils investigation	2,000
Disbursements	2,000
TOTAL Plan 2	527,276

*Estimates do not include equipment such as bins, conveyor, balers, etc.

Inactive Landfill Sites in Allegany County

Patton's Busy Bee Landfill
County Road 42
Alfred NY 14802
(T,R,B&C,IW,HS)

Burns Town Dump
Route 70A
Canaseraga NY 14822
(T,R,B&C)

Andover Town Dump
Route 417
Andover NY 14804
(T,R,B&C)

Wellsville Town Dump
Duffy Hollow Road
Wellsville NY 14895
(T,R,B&C,IW,HS)

Amity Town Dump
Route 19
Belmont NY 14813
(T,R,B&C)

Scio Town Dump &
Incinerator
Davis Hill Road
Scio NY 14880
(T,R,B&C)

Bolivar Town Dump
County Road 33
Bolivar NY 14715
(T,R,B&C)

Angelica Village Dump
Joncy Road
Angelica NY 14709
(T,R,B&C)

Willing Town Dump
Hunt Hill Road
Wellsville NY 14895
(T,R,B&C)

Cuba Town Dump
Jackson Hill Road
Cuba NY 14727
(T,R,B&C)

New Hudson Town Dump
Hew Hudson Road
Black Creek NY 14714
(T,R,B&C)

Caneadea Town Dump
Sand Hill Road
Caneadea NY 14717
(T,R,B&C)

Friendship Town Dump
County Road 31
Friendship NY 14739
(T,R,B&C)

Friendship Town Dump
Blouvelt Road
Friendship NY 14739
(T,R,B&C)

Macler
Town of Friendship
Reed Road
Friendship NY 14739
(IW)

Macler
Town of Friendship
County Road 20
Friendship NY 14739
(IW)

Day Farm Dump
Route 417
Little Genesee NY 14754
(T,R,B&C,IW)

Gaynor Dump
East Valley
Alfred NY 14802
(T,R,B&C)

T = Tires
R = Refuse
B&C = Building & Construction
IW = Industrial Waste
HS = Hazardous Substances