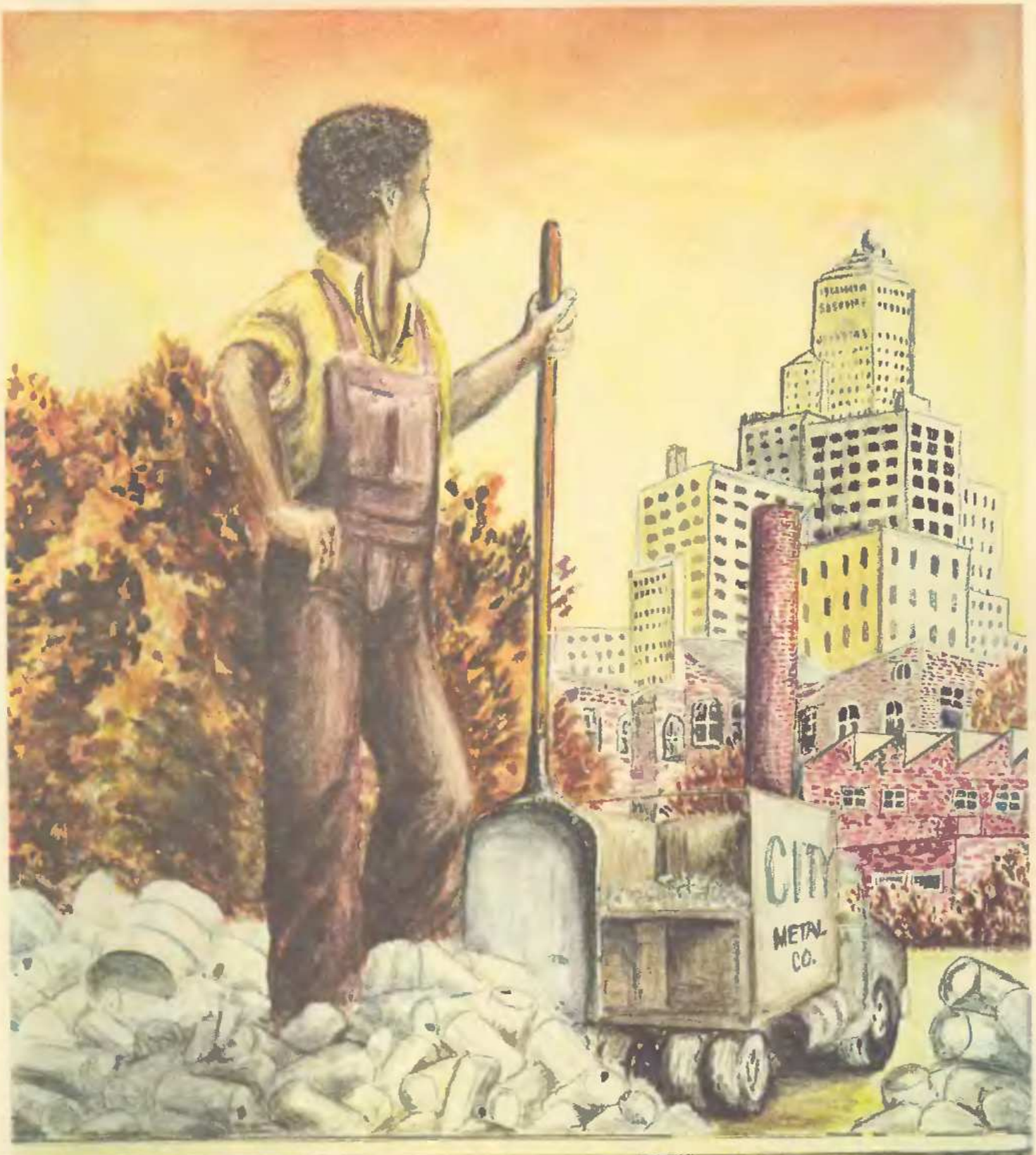

CITY *of* NEWARK

WASTE UTILIZATION STUDY

SUMMARY · PLAN *of* ACTION

CITY OF NEWARK
OFFICE OF RECYCLING

RECYCLING PLAN OF ACTION

HONORABLE KENNETH A. GIBSON, MAYOR

ALVIN L. ZACH, P.E., L.S., DIRECTOR
DEPARTMENT OF ENGINEERING

FRANK J. SUDOL
CHIEF OF PROGRAM PLANNING AND PROJECT EXECUTION
DEPARTMENT OF ENGINEERING

RICHARD T. ROZNOY, COORDINATOR
OFFICE OF RECYCLING

CITY HALL
NEWARK, NEW JERSEY 07102
JANUARY, 1986

CITY OF NEWARK

KENNETH A. GIBSON
Mayor

CITY COUNCIL

RALPH T. GRANT, JR.
President, Municipal Council

GEORGE BRANCH
Councilman - Central Ward

ANTHONY CARRINO
Councilman - North Ward

SHARPE JAMES
Councilman-At-Large

HENRY MARTINEZ
Councilman - East Ward

DONALD M. PAYNE
Councilman - South Ward

RONALD L. RICE
Councilman - West Ward

DONALD TUCKER
Councilman-At-Large

MARIE L. VILLANI
Councilwoman-At-Large

ELTON E. HILL, Business Administrator

ALVIN L. ZACH, P.E., Director, Department of Engineering

CITY OF NEWARK
OFFICE OF RECYCLING

PLAN OF ACTION

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CITY OF NEWARK
OFFICE OF RECYCLING

PLAN OF ACTION

EXECUTIVE SUMMARY

This Plan of Action is a practical guide to the implementation of comprehensive recycling in the City of Newark, New Jersey. In six chapters it describes a comprehensive program for recycling in the City. Information in this Plan of Action is derived from a thoroughly-researched Waste Utilization Study for the City of Newark, which is a separate document. The Waste Utilization Study documents the City's needs and various means of recycling as answers to those needs. An Executive Summary of the Waste Utilization Study is appended to this Plan of Action.

CONTENTS OF THE PLAN OF ACTION

CHAPTER ONE: INTRODUCTION

This chapter is an overview of the City's recycling needs and the impact recycling can have on the City's waste utilization needs. After a discussion of the use of recycling for economic redevelopment in the City, the role of the City's Office of Recycling is discussed. Included is the Office of Recycling's interaction with other official and de facto agencies and organizations in the City. The chapter concludes with a description of a two year "Recycling Work Program" which concludes at the end of calendar year 1987 and results in effective comprehensive recycling in the City of Newark.

CHAPTER TWO: PROGRAM STAFF AND WASTE UTILIZATION RESOURCE CENTER

Chapter Two includes a description of how the City of Newark Office of Recycling is designed to function, including personnel, equipment, and office needs. A budget for the Office of Recycling is at the end of the chapter. The Waste Utilization Resource Center is designed to be a focal point for recycling enterprise development in the City, and includes a meeting area and library.

CHAPTER THREE: NEIGHBORHOOD RECYCLING COLLECTION CENTER NETWORK

This chapter describes the network of neighborhood buy-back centers — at least one per City Ward, between six and nine such centers eventually. Already-existing community based organizations (or newly-formed groups) will operate the centers and assume full financial responsibility. The City Office of Recycling will provide logistical and consulting support. Contracts will be let between the City and the community based organization for

1. lease agreement for use of City-owned property, if in fact City-owned property is used; and
2. disbursement of funds from the City to the community based organization in a "Shared Savings Plan": the community based organization will receive 67% of the per-ton tipping fee saved by not landfilling the material which is recycled.

Budget projections for capitalization needs and the first two years of operations are included at the end of the chapter (first year aluminum only, at 15% recycling participation rate; second year aluminum, glass, paper, at 25% participation rate).

CHAPTER FOUR: EDUCATION AND PROMOTION

This chapter describes a multifaceted approach to educating the population of the City about recycling. It recognizes the need to approach different constituencies with individualized approaches, while maintaining a centralized and highly visible recycling ethic. Specific ideas are presented to promote recycling projects. Other concepts support the long-range development of recycling in the City.

CHAPTER FIVE: NEWARK'S COMPOSTING PROGRAM

This chapter details the operation of Newark's composting program, which began in November 1985 with composting of the annual autumn leaf fall. Included are references to past attempts and a discussion of development of the project possibly to include materials other than leaves.

CHAPTER SIX: MUNICIPAL OFFICE PAPER RECOVERY PROJECT

This chapter describes the recovery of high grade office paper — computer paper and white ledger — from City office buildings, beginning with City Hall early in 1986 and expanding to other City municipal buildings. Possible expansion to the private sector, with the Office of Recycling serving as facilitator, is discussed.

CONCLUSION

The Plan of Action concludes with an overview of the programs described and some statistical detail from the Waste Utilization Study demonstrating Newark's solid waste situation and the City's needs.

CITY OF NEWARK
OFFICE OF RECYCLING

SOLID WASTE UTILIZATION STUDY
PLAN OF ACTION

CHAPTER 1: INTRODUCTION

The Essex County Department of Planning and Economic Development, Division of Solid Waste Management has adopted an Integrated Resource Recovery approach to Solid Waste Management. This includes energy recovery, recycling, and composting. This approach represents the County's assessment of the best available technology to address the problems created by imminent landfill closure and increasing disposal costs.

The City of Newark by law and by choice is subject to participation in the County program. Included in that program is a requirement for the City to reduce its total waste stream by 15% (a 25% reduction of the municipal — non-commercial — waste stream), reducing the glass, paper, ferrous and non ferrous metals, and organic materials currently being disposed at the landfill. The City of Newark Waste Utilization Study was prepared to address this objective by investigating the opportunities to reduce the waste stream through local enterprise. This Plan of Action proceeds from the recommendations of that study. Incorporating resource conservation and human productivity, it pursues a course based on local self reliance, seeking to transform solid waste into a source of economic productivity.

SOLID WASTE MANAGEMENT AND ECONOMIC OPPORTUNITIES

The City of Newark has chosen to pursue a course of action to reduce its solid waste burden through waste utilization enterprises. There are direct incentives for the City to do so.

Landfill tipping fees, which are already expensive (see Table I, page 8), are scheduled to increase dramatically between 1985 and 2000. Less waste delivered to landfills or resource recovery facilities means the City will be able to pay less in tipping fees. Essex County's solid waste management policy is based on documentation that recycling can reduce capital investment and operating costs if used with a resource strategy. State solid waste management policy also includes recycling as an important strategy. The state has adopted a goal of recycling 25% of the waste stream by 1987. Various means of mandating state-wide recycling are being considered by the New Jersey State Legislature. Through the State of New Jersey Office of Recycling the City receives direct cash grants based on the amount of materials diverted from the waste stream through recycling.

The City's economy will also benefit with increased recycling. Already over 35 major reclamation industries are based in the City's East Ward, and legislative initiatives in New York and New Jersey concerning recycling and container deposit legislation are drawing others to locate here. Two factors make Newark one of the most attractive locations in the country for reclamation enterprises:

1. Access to transportation. The Port of Newark and intersecting highways and rail lines provide access to domestic and international markets.
2. Available labor. The task of reclamation is inherently labor-intensive, requiring a workforce of unskilled and semi-skilled laborers.

By investing in recycling and stimulating waste utilization enterprises, the City of Newark will realize even more benefits:

- Neighborhood-based job skill development for young people, people first entering the job market, and the unemployed;
- Local ownership of local businesses and the development of entrepreneurialism;
- Expansion of Newark's export economy by providing raw materials to overseas markets;
- Diversification of the local industrial economy through the introduction of advanced technologies needed for material processing.

The expanding reclamation industry and City involvement in waste utilization enterprises offers potential for a significant contribution toward Newark's economic needs.

THE ROLE OF THE CITY OF NEWARK

It is here recommended that the City of Newark formally and officially bring its resources to bear to achieve the combined goals of diverting 25% of the municipal waste stream (approximately equal to 15% of the total waste stream) through recycling, composting, and the stimulation of waste utilization enterprises.

In order to accomplish this the City must undertake a formal integrated resource recovery policy involving its agencies, the private sector and community agencies and organizations. The City should assume on-going coordination and facilitation of programs while encouraging the private and community sectors to develop independent recycling and waste utilization capability.

The following actions are recommended:

1. **Municipal Council Resolution.** Integrated resource recovery should become the official solid waste management policy of the City of Newark. Such a policy should be encompassed in a Municipal Council Resolution accepting the City's Waste Utilization Study and Plan of Action as official policy of the City of Newark, and formally establishing the goals of the Office of Recycling. The City should establish an advisory committee with formal status as a blue ribbon City of Newark Waste Utilization Board (see below). Also, the resolution should affirm the authority under the Director of Engineering to establish the City of Newark Recycling Program as the City's official waste utilization program designated to meet the stated goals.

2. **Blue Ribbon Waste Utilization Board.** An advisory board consisting of representatives from local government agencies (Essex County, State of New Jersey, Port Authority of New York-New Jersey), waste haulers, end-users of recycled materials (mills and other markets), local colleges and universities, and community organizations should be established to provide information, review plans and advise City staff responsible for waste utilization programs. Members should be solicited based on their experience in and knowledge of waste utilization and recycling, and a sincere desire to assist the City in implementing such plans.

3. **Institutional Adjustments.**

A. Inter-agency coordination must be established among the following agencies according to the recommendations made in various chapters of the Waste Utilization Study. This coordination will take the form of personal meetings, memoranda, and agreements as needed between the Director of Engineering and the respective agency or organization:

Office of the Mayor
Municipal Council Members
Office of the City Business Administrator
City Public Information Office
City Office of Planning and Grantsmanship
City Office of Community Clearance
City Division of Sanitation
City Office of Environmental Services
Newark Collaboration Group
Newark Economic Development Corporation
Newark Board of Education
County Office of Recycling
County Divison of Solid Waste
State Office of Recycling
Port Authority of New York/New Jersey
Love Newark ... Keep it Clean
Newark Museum
Newark Public Library

B. The City's Office of Recycling and Department of Engineering in conjunction with the Legal Department must review City ordinances and recommend necessary changes to the Municipal Council as specified in Chapter Six of the Waste Utilization Study.

C. The city should establish a Resource Center within the Department of Engineering/Office of Environmental Services with full staff and logistical support as the base for the Newark Recycling Programs. The mission of this Center will be to coordinate City-initiated ventures; direct education programs and promotions; manage public sector/private enterprise relationships; and provide technical assistance.

D. The City's staff should aggressively address the targets of opportunity for enterprise development in the recycling and waste utilization arena. Staff should assist in the development of implementation plans for City-sponsored ventures and assist the private sector in the development of business plans to attract investment for private ventures. The staff should focus its attention on those priority programs (composting, Neighborhood Collection Centers, office paper recovery program, education program) and related activities for immediate development. These programs would allow the City to meet its waste diversion goals by 1987.

Detailed schedules for development of these programs are presented in the following sections of this Plan of Action. Following is a general timetable for a 1985-1987 Work Program for the implementation of certain goals.

The 1985-1987 RECYCLING WORK PROGRAM

The Work Program planned for July 1985 through at least December 1987 is divided into three phases with a duration of 30 months:

Phase I: first 12 months
Phase II: 13th through 24th months
Phase III: 25th month and beyond

At the end of this period the City of Newark should have reached its goal of 25% municipal waste stream (or approximately 15% of the total waste stream) diversion through recycling, have a trained staff and fully operational resource center, and have a structured technical assistance and outreach program to facilitate further recycling and economic development through waste utilization enterprises located in the City.

WORK PROGRAM, PHASE ONE: NOVEMBER 1985 – OCTOBER 1986

In Phase I of the Work Program the City is to establish the systems needed to meet the diversion of 25% of the city's municipal waste stream. This goal is to be accomplished by establishing the management structure and team which will give the City the capability to meet the stated diversion goals.

In this phase the City will

1. Select and train the Recycling Coordinator's staff and establish the Resource Center.
2. Establish the Advisory Committee and stabilize its operation.
3. Begin to establish the Neighborhood Recycling Collection Center network with one or two centers.
4. Establish Newark's composting program.
5. Establish the Office Paper Recycling Program in City office buildings.
6. Prepare, distribute, and assist in implementing the Education Program.
7. Implement the City's already-approved policy on procurement of recycled materials.

After the first two Neighborhood Recycling Collection Centers are operational the City will evaluate the results to determine if original projections were accurate or if significant revisions are necessary. This information will then be used to guide the establishment of other NRCC's. When fully operational the NRCC network and the compost program will be capable of allowing the City to meet its 25% diversion goal. Implementation plans for the staff and resource center, education program, collection center network, office paper recovery program, and composting are a part of the Plan of Action. Information on previous Municipal Council action approving the procurement of recycled materials is included in the Waste Utilization Study.

WORK PROGRAM, PHASE TWO: NOVEMBER 1986 – OCTOBER 1987

In Phase II of the Work Program the City will identify and research the feasibility of waste utilization enterprise ventures which can be made applicable to Newark. This will enable the City to surpass its 25% diversion goal and contribute to economic development and employment opportunities in the City.

The Recycling Coordinator's staff will seek to ascertain what scale of technologies and range of enterprises have been operating, how implementation was accomplished and how to locate these entities in Newark. It will accomplish this task by conducting a technical conference to examine urban recycling and economic development through waste utilization, and by working with recycling-related industries to encourage their expansion and location in Newark.

Experts on materials technologies, overseas exporting, the establishment of businesses, financing, and other concerns who have already established enterprises will be invited to make site-specific proposals for Newark and appear at panel discussions or private discussions with appropriate government officials. The conferences will be a source of detailed information for the City as well as an opportunity for the experts and entrepreneurs to demonstrate their systems and attract local investors and joint venture partners.

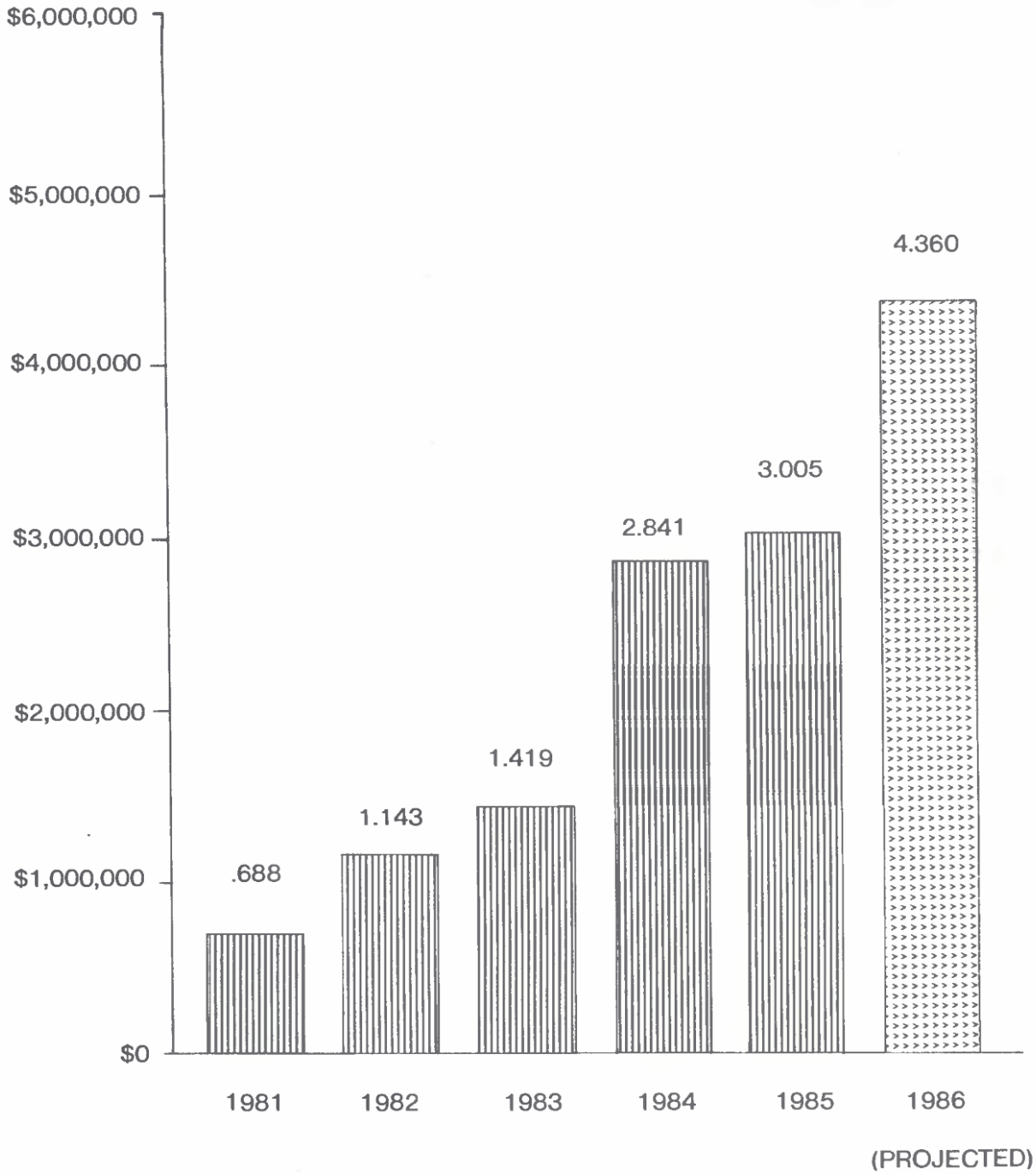
WORK PROGRAM, PHASE THREE: NOVEMBER 1987 AND BEYOND

Phase III of the Work Program is the long range program in which the City will evaluate progress to date, amend the Plan of Action as necessary, and facilitate the implementation of new waste utilization enterprises identified under Phase II through technical assistance. At the end of this phase of the Work Program the City's recycling and waste utilization program should be fully operational to the extent that the staff, advisory board, the public, private and community participants in the solid waste management system are actively cooperating to achieve the highest rates of waste diversion and economic development.

This phase will include an assessment of progress toward accomplishing the diversion goal through the Neighborhood Recycling Collection Center Network and the compost program, reassessment of overall goals given progress to date, and development of revised objectives. In addition, the staff will provide technical assistance during Phase III to interested entrepreneurs who want to bring investment capital to the City. This aid will be in the form of assistance with locating suitable sites for facility development, introductions to local banks and investment sources, and introduction to City financial and legal agents. The staff may engage consultants to accomplish some aspects of the technical assistance program, and various other items of work as needed to implement the Plan of Action.

TABLE I:

CITY OF NEWARK SOLID WASTE DISPOSAL COSTS



CHAPTER 2: PROGRAM STAFF AND WASTE UTILIZATION RESOURCE CENTER

Mission: To provide for the administration, guidance, and continuing development of the City of Newark's Recycling Program by providing staff and facilities adequate to implement the program, including personnel, office facilities, a library, document collection, and meeting location suitable for the coordination of program activities.

Personnel: In order to adequately perform the tasks necessary to implement a comprehensive recycling program in the City of Newark the City's Waste Utilization Study recommends that the recycling staff should be three full-time recycling professionals (a Coordinator and two Recycling Specialists), a secretarial assistant, and two student interns to serve as research assistants.

The Recycling Coordinator, under the direction of the Chief of Planning and Project Execution, will direct the recycling staff and be responsible for the overall development and administration of the City's Recycling Program as outlined in the City's Waste Utilization Study and Plan of Action.

The qualifications for this position should be a B.A. or B.S degree in Environmental Studies, Business Management or Social Work, or an equivalency, and two years experience with demonstrated personnel management and program development skills, preferably in the area of recycling. Candidates must have public speaking and well developed writing skills. An organizing background, particularly in an urban setting, is an advantage, as is an ability to speak Spanish or Portugese in addition to English.

While the Recycling Coordinator will have overall responsibility for the direction of the City's recycling program as well as direct involvement with specific projects, the two Recycling Specialists will have on-the-spot responsibilities for planning, implementing, and operating specific programs such as the Neighborhood Recycling Collection Centers, the Composting Project, Office Paper Recovery Program, the Education and Promotion Program, and other projects as they develop. The scope of work for these programs is described in the implementation plans in subsequent chapters of the Plan of Action and in the Waste Utilization Study.

The qualifications for the positions of Recycling Specialist should stress experience which matches the tasks assigned, including some experience in recycling, good organizing skills, concise writing ability, effective public speaking, and demonstrated problem solving ability. While education beyond high school is important, candidates with two years of college credit should merit serious consideration if they demonstrate experience in the areas described.

The skills and talents needed in recycling are not incorporated as standardized curriculum in colleges and universities. Recycling requires a high degree of common sense to attempt methods which are untried and occasionally unpopular. Such attributes do not necessarily accompany a college education.

The position of Secretarial Assistant is an existing Civil Service and City title. The secretarial assistant handles the day-to-day activities of the office and serves as the librarian. The responsibilities for this position will include upholding a professional atmosphere and appearance in all interactions with other agencies and the public, in addition to maintaining a well-organized office.

Two students from area colleges will be recruited as Research Assistants. Their responsibilities will include the troubleshooting of situations which need assistance (helping with on-site compost processing, painting office paper collection boxes, etc.) gathering information on local and national developments in recycling, and generally assisting the recycling staff wherever needed. The qualifications for these two internships will be demonstrated writing and research skills and prior voluntary involvement in recycling or environmental activities.

RECYCLING PROFESSIONALS: SALARY CONSIDERATIONS

During spring of 1985 there were nine positions open for recycling coordinators in counties and municipalities in New Jersey. Some proposals for mandatory recycling before the New Jersey state legislature would require every municipality to appoint a coordinator to direct mandatory recycling programs. While not every municipality will hire a coordinator, many will do so in order to bring escalating disposal costs under control. As other large cities in other states come to terms with their disposal problems experienced staff will be aggressively recruited. Competitive salaries must be offered to attract and keep competent staff.

The City through its Department of Engineering is providing for a Recycling Coordinator with funding support received from the New Jersey Office of Recycling. Two Senior Environmental Specialists have also been assigned to the project with funds from the City of Newark. At some time in the future a change in title, to Recycling Specialist, with an appropriate job description, may be necessary for these two positions.

The increased responsibilities placed on the Recycling Coordinator for staff management justify a salary level commensurate with the title of Supervising Environmental Specialist. The recommended positions of Recycling Specialist (currently Senior Environmental Specialist) will have responsibilities justifying a salary commensurate with that of Principal Environmental Specialist.

The creation of the new position, the revisions in job descriptions, and the upgraded salaries should be accomplished early in the Work Program. A full staff with clearly defined responsibilities will be essential to accomplishing the diversified task of implementing comprehensive recycling in the City of Newark.

WASTE UTILIZATION RESOURCE CENTER

The Waste Utilization Resource Center will be the office for the Recycling staff and the City's Office of Recycling, and a clearing house for general information about recycling in the City. It will be a combination of offices, meeting rooms, and a library/resource center where documents and information will be stored. The Center will be available to City agencies and employees, private citizens, business people, and others interacting with recycling activities.

The library will centralize information on waste utilization in the City and elsewhere, beginning with data on the technologies described in Chapter Five of the City of Newark Waste Utilization Study. This facility will be essential for the collection of documentation on developments in the recycling field from around the world. The information will then be used to enhance the City's program and as a reference for private entrepreneurs seeking the development of waste utilization enterprises in the City. The task of data collection will be designed by the staff and performed by interns on a continuing basis.

Office Space and Location Needs:

Eventually the City of Newark Office of Recycling should be situated in an office with approximately 1150 square feet divided into at least three spaces, allocated as follows:

Secretary, Interns		15' x 20'
Recycling Coordinator and Specialists		20' x 25'
Conference/Library		15' x 20'
Total space	1150 square feet	

The location of this office space is unclear given present office assignments in City Hall, but general City staff reductions make it possible to reorganize Room 406 (currently Drafting and Design) in the Engineering Department to accommodate these needs. The office should be located on the fourth floor of City Hall, in the Engineering Department.

Program Computerization:

The essence of the Recycling staff's work will be gathering and accessing information for use in program documentation, design, evaluation, education, and promotion. The most efficient method for manipulating information is by computer. The increasing availability of information and access to other recycling professionals via telecommunications further justifies designing the work of the recycling staff around the computer. Currently all documents and correspondence produced for the Recycling Program are available as computer files, on Engineering's TRS-80 computer system, which is equipped for telecommunications multi-user (xenix) and single user, both on hard and floppy disks.

Research into prudent user oriented computerization suggests the creation of a network of terminals connected to the computer system for use by each of the recycling professionals and secretary, and shared use by the research interns. This system would be hardwired and would be capable of sharing information with existing equipment and other equipment which will become a part of the system. All information would be stored on floppy disks by each user and on a hard disk main file managed by the secretary. This provides the best combination of individual user convenience, central information storage, and duplicate storage for safety in the event of lost data.

The recommended equipment is:

A TRS-80, Model 16-B terminal with two 35-meg hard disk units and modem to serve as the central workstation for data storage, mathematical projections, and graphic presentation. This unit will be operated by the secretary.

Three TRS-80 or Tandy DT-100 user terminals for use by the Recycling Coordinator and two Recycling Specialists, to be connected to the central workstation.

Communication Needs:

The Office of Recycling should have at least three telephone lines assigned, one of which will be for the Recycling Resource Center. All telephones should have the capability to transfer calls between any of the professional staff, secretary, or interns, or to have staff members call each other on an intercom line.

Implementation Tasks

1. Hire staff under available titles.
2. Adjust budget and hire secretarial assistant as soon as possible.
3. Develop program management and master plan for the City of Newark Recycling Program.
4. Designate, design, and equip office facilities.
5. Compose and submit necessary documentation to create positions of Recycling Specialists and Research Assistants.

CITY OF NEWARK OFFICE OF RECYCLING BUDGET

SECTION ONE: FUNDS FROM GRANTS (NEW JERSEY STATE OFFICE OF RECYCLING AND OTHER SOURCES):

NOTE: CUMULATIVE — NOT ANNUAL — EXCEPT SALARIES, WAGES, BENEFITS

I.	Personnel Salaries and Wages, Annual	
	Recycling Coordinator, Secretarial Assistant, Research Assistants	$51,752.00
II.	Fringe Benefits, Annual (Coordinator and Secretary only)	
	Worker's Compensation	$ 161.00
	FICA	3,207.00
	Medical/Dental/Prescription	3,552.00
	Unemployment Compensation	300.00
	SUBTOTAL, FRINGE BENEFITS, ANNUAL	$ 7,220.00
III.	Services by Contract or Agreement	
	Purchased services, for completion of planning process	$20,492.00
	Conference fees	1,500.00
	Travel expenses	2,250.00
	Per diem expenses	2,250.00
	Audit fee	1,000.00
	SUBTOTAL, SERVICES BY CONTRACT	$27,492.00
IV.	Office Materials and Supplies	
	Books and periodicals	$ 1,000.00
	Office supplies	4,000.00
	Photographic and artistic	2,000.00
	Printing and reproduction	15,969.00
	SUBTOTAL, OFFICE MATERIALS AND SUPPLIES	$22,969.00

V.	Equipment	
	Two additional computer terminals and connecting equipment	$ 4,400.00
	Computer tables	300.00
	Graphic printer and supplies	1,500.00
	Floppy disks	400.00
	Typewriter	1,000.00
	Telephones	1,500.00
	Composting shredder	32,820.00
	General Equipment and Machinery	3,568.00
	SUBTOTAL, EQUIPMENT	$45,088.00
	SUBTOTAL, RECYCLING PROGRAM BUDGET, SECTION ONE (NON-CITY FUNDS)	**$154,521.00**

CITY OF NEWARK OFFICE OF RECYCLING BUDGET

SECTION TWO: FUNDS FROM CITY OF NEWARK

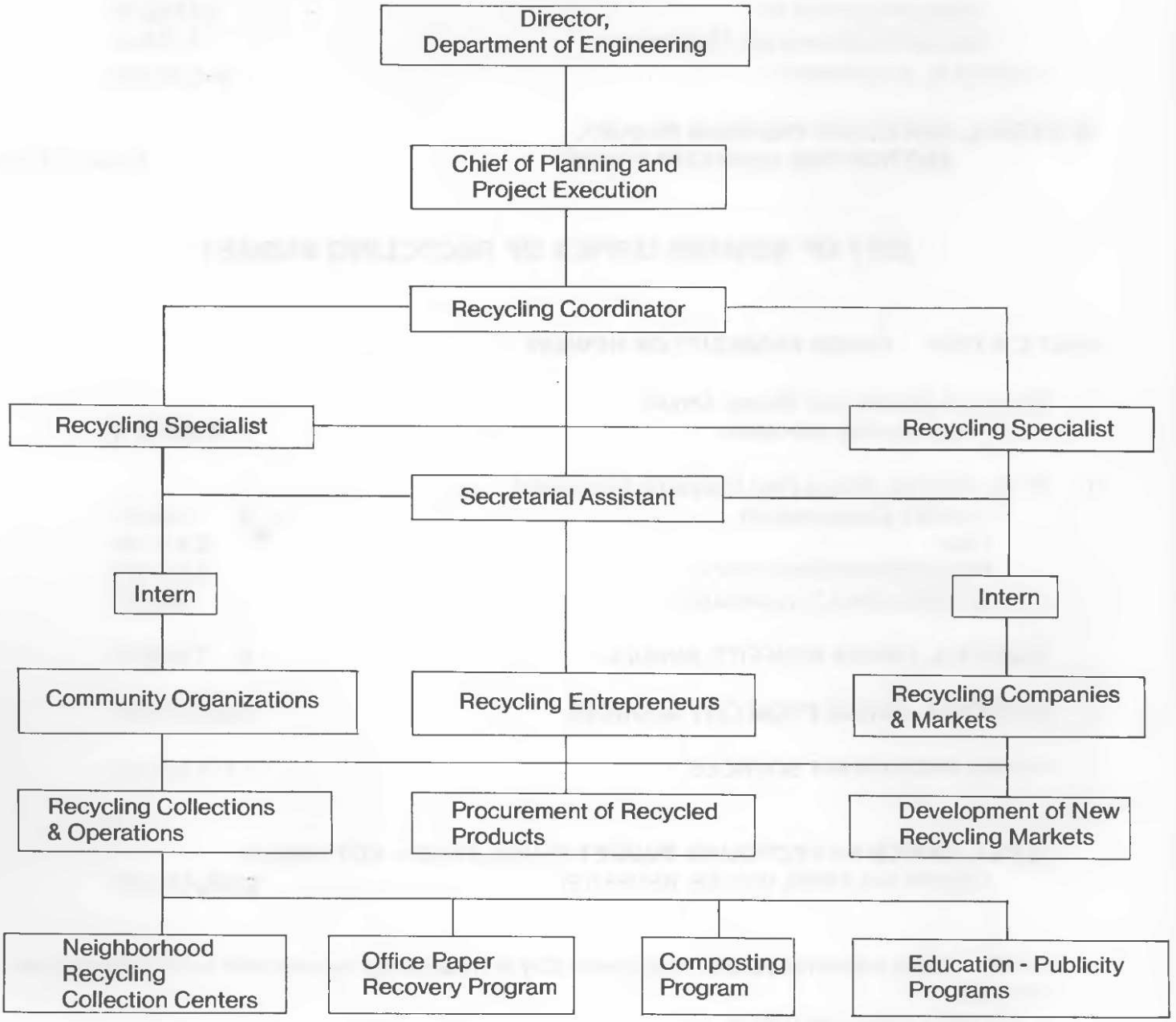
I.	Personnel Salaries and Wages, Annual	
	Two Recycling Specialists	$ 46,582.00
II.	Fringe Benefits, Annual (Two Recycling Specialists)	
	Worker's Compensation	$ 168.00
	FICA	3,331.00
	Medical/Dental/Prescription	3,544.00
	Unemployment Compensation	300.00
	SUBTOTAL, FRINGE BENEFITS, ANNUAL	$ 7,343.00
	SUBTOTAL, FUNDS FROM CITY SOURCES	**$53,925.00**
	FUNDS FROM GRANT SOURCES	$154,521.00
	TOTAL, OFFICE OF RECYCLING BUDGET (CUMULATIVE — NOT ANNUAL, EXCEPT SALARIES, WAGES, BENEFITS)	**$208,446.00**

NOTE: Other indirect expenses absorbed by City of Newark and not pro-rated herein include such items as:

- City office space and utilities
- pre-existing telephone lines and equipment
- stationery
- pre-existing office equipment
- City support services (motor pool, publicity, etc.)

CITY OF NEWARK
OFFICE OF RECYCLING

ORGANIZATION CHART



CHAPTER 3: NEIGHBORHOOD RECYCLING COLLECTION CENTER NETWORK

MISSION

To facilitate the collection of residentially-generated recyclables (glass, aluminum, plastic, bi-metal containers, newspapers, corrugated cardboard) through the development of a city-wide network of six to nine Neighborhood Recycling Collection Centers. The annual solid waste diversion goal is 12,339 tons, or 6 percent of Newark's total waste stream. This would be a monthly average of 110 tons per center for nine centers, or 170 tons per center for six centers.

DESCRIPTION AND STRUCTURE

A Neighborhood Recycling Collection Center (NRCC) is a walk-in or small vehicle drive up recycling operation to which people bring recyclable materials. Participants are paid for materials which are prepared according to market specification: glass sorted by color, aluminum beverage containers separated from steel or bi-metal containers, newspapers bundled together, etc.

The Neighborhood Recycling Collection Center Network comprises the primary collection system for residential recycling. Recognizing that the ultimate success of any recycling program rests on community participation, the objective is to integrate community involvement in planning, implementing, and developing a program which returns as much money to the community as possible.

The Network will be based on the following concepts:

I. **Management.** Newark's Recycling Collection Centers should be individually managed and operated by neighborhood or community organizations. The City of Newark Office of Recycling shall provide support as described below, but management and financial responsibilities, including financial liabilities, will rest with the community organizations.

II. **Development.** The Network's strategy for development builds on the experiences of the Chicago, Illinois Resource Center and Boulder, Colorado's Eco-Cycle, Inc. Both are private, non-profit organizations.

The following collection strategies are recommended:

A. Scavenger Enhancement. Low income, poor, and transient neighborhoods will make use of the existing scavenger community and the profit motive to stimulate the collection of materials. While municipal ordinances are recommended for source separation, under no circumstances should scavenging be prohibited.

   1. Special Scavenger Carts with a much greater capacity than (illegal) shopping carts should be available on loan from the Collection Center. The New Jersey Food Council has expressed an interest in considering a proposal to develop such a cart.

2. Higher prices for volume deliveries.

3. Scavenger collections from local businesses by arrangement through the Center.

B. Curbside Collection. Working class and more affluent neighborhoods may employ curbside collection which would involve city or private services. The participation of community organizations (churches, civic and neighborhood associations, youth and service clubs, etc.) would be encouraged, using recyclable materials as a means of raising funds for the organizations.

C. Special Promotions.

1. The "Gold Can". At neighborhood festivals and anti-litter campaigns, a specially marked aluminum can valued at $100 or more and placed in litter would create interest and assist in the cleanup of a considerable amount of litter. The collection and proper disposal of a bag of litter should be required along with the collection of a specified minimum of recycled materials.

2. Fund Raising Drives. Local churches, schools or clubs can sponsor recyclable collection drives which can operate at least two different ways:

   a. People bring material to the Center in the name of the organization, and the organization receives credit toward the value of the materials; or,

   b. the organization arranges for a container at its own location (church, club, school, etc.), and its members drop off recyclables when using the facility; collected materials are then brought to the Recycling Collection Center.

3. Pickup Service. The sponsoring organization of the center could purchase a vehicle to arrange their own contracted collection of materials from restaurants, bars, businesses, apartment complexes, and offices.

III. **Neighborhood Advisory Committee.** Methods of recycling and operating a Center which are efficient, economical, and socially acceptable will vary according to each neighborhood. Recognizing this, Neighborhood Advisory Committees should be organized to perform two major roles:

A. Assist with design and implementation of community education programs, using educational materials and technical assistance provided through the City of Newark Office of Recycling.

Education and Promotions activities currently being investigated include a Grand Opening Ceremony, annual Recycling Days/Week/Month, buttons, t-shirts, poster and special containers for home storage of materials.

B. Investigate, review, and recommend best collection methods for implementation in their neighborhoods.

IV. **The Role of the City of Newark.** The City's role in the development of the Collection Center Network will be in five areas:

1. City Services. The City can provide the following support:

   — locating and securing sites
   — identifying and advising on the procurement of necessary equipment
   — advisory assistance for operations
   — development of markets for recycled materials
   — transportation of materials to markets
   — trash collection.

Currently the City has provisions to allow for the sale of City-owned property and buildings for public use. The City has already been facilitating the connections between community organizations and offers of assistance from industry. To the extent that additional equipment and transportation to the market is required, the City, through contract, can arrange for purchase and lease of needed equipment using City personnel for delivery of materials to the market. In this role the City can also act as a partner in securing contracts for the sale of materials to markets.

2. Program Management. The City can assist with and facilitate management training and the development of management systems to keep a record of customers and document the materials collected. This will assist the community organizations in establishing adequate business and accounting procedures.

3. Contracts between City of Newark and Community Based Organizations. Although the Community Based Organization (CBO) will have full responsibility for all financial management of the recycling center, and although the City will assume no financial liability for debts incurred by the CBO, the City Office of Recycling and Department of Engineering will monitor the operation of the Centers by means of the following agreements:

   a. Solid Waste Diversion Grants: A "Shared Savings" Program. Each ton recycled through a Collection Center will save the City of Newark at least $50 per ton: approximately $35.00 in collection and transportation cost and approximately $16.00 in tipping fees. (These figures are based on 1985 prices; projections to the year 2000 show dramatic escalation in expenses for trash disposal.) It is recommended that the City provide a direct payment to the Collection Centers under a service contract in an amount equal to 67% of the waste disposal (tipping) fee. The remaining 33% should accrue in a fund reserved for the City of Newark Office of Recycling to finance the City's administrative costs after outside sources have ended. The funds for this "Shared Savings" program would be drawn from the Division of Sanitation waste disposal budget, and action from the City of Newark Municipal Council would be necessary to establish the fund. By meeting the waste diversion goal set for each center, as much as $18,926.00 for each center (or $113,556.00 for six centers) would be available annually, and $37,473.00 (with six centers operating) would be available for annual administrative costs.

   b. Contract for Use of City-Owned Property. Such property shall be leased to the CBO at preferred rates with provisions for annual review. Renewal shall be contingent upon the CBO operating the Center in a responsible manner in regard to finances and other considerations, and for the purposes of recycling only.

4. Education Program. A major element in the success of the Collection Centers will be a continuing education and promotion program. Industries' supporting centers will provide assistance, as will the City's corporate community. Also, the City's Recycling Coordinator will work closely with the neighborhood advisory committees to plan special events, school programs, mailings, and other promotional activities.

5. Institutionalization. As solid waste costs continue to rise, the Collection Centers will become a very important part of managing the City's waste. Provisions must be made for long range planning and ordinances which protect and enhance the operation of the centers. Many of these provisions have been detailed in Chapter Six of the City of Newark's Waste Utilization Study; additional provisions should be anticipated as the centers become operational.

RECYCLING COLLECTION CENTER SPECIFICATIONS

Area and Building Structure Requirements: Approximately a two-acre fenced-in site paved with concrete — an unused gasoline service station with two bays and at least 5,000 square feet of space is ideal.

Access: Easy access for neighborhood walk-ups and small vehicle (up to 1/2 ton truck) traffic; tractor-trailor and/or roll-off containers for storage.

Equipment:

1. Flattener/Blower (mechanically separates bi-metal from aluminum cans).
2. Scale for weighing materials.
3. Bills of lading for reporting tonnages collected for City use in Municipal Tonnage Grant program and for other accounting purposes.
4. Secure equipment (check register, calculator, storage area) for calculating payback process.
5. a. 21 fifty-five gallon drums and pallets for glass storage and transport to trucks; or if space allows,

   b. 3 roll-off boxes for glass, with gas motor operated conveyor on wheels, for transfer of glass to roll-off boxes.
6. One enclosed and secured tractor-trailor (27' or 40') with approximately 60 cubic yards capacity.
7. Sorting tables for glass (by color) and aluminum (pre-screening).
8. Hoppers (2 or 3) for temporary materials storage and transfer.
9. Trash receptacles for discards.

Services Provided by City:

1. Trash collection of refuse from the recycling centers.
2. Facilitating contracts and markets for the recycled materials.
3. Shared Savings Program, based on number of tons recycled. This is a source of funds from cost avoidance which would otherwise be paid to the landfill in the form of tipping fees. Needs formal approval from City of Newark Municipal Council.

NEIGHBORHOOD ECONOMIC DEVELOPMENT AND OPPORTUNITY

1. Approximately $312,000.00 is currently available to citizens of the City who would bring glass, newspaper and aluminum to six centers each year. This amount is based on only 25% recycling participation rate. An annual total of $26,400.00 will flow into one Neighborhood Center from the redemption of aluminum cans alone.

2. Experience of centers in other locations (Chicago, Philadelphia, New York City) is that 70% of their collection is from individuals ; 30% are from trash haulers and other commercial sources. Of the 70% brought in by individuals, 50% of this amount is from a regularly-returning clientele of 15 to 20 people.

3. After capital costs are paid all centers should be self- supporting within 9 to 18 months of opening. The combination of funds from recyclable materials and an allotment from the City, through the Shared Savings plan, is designed to cover operational expenses, including at least one full-time staff position (see projected budget).

Capital Needs

ALCOA and Container Recovery Corporation (CRC — a subsidary of Anheuser-Busch) provide an attractive package of aid to comunity organizations to start up and operate collection centers. The items of support are:

NEEDS	ALCOA	CRC
Flattener/blower	X	X
Storage Trailer/Transportation	X	X
Start-up Bank	X	
School Educational Material	X	X
Management Training	X	X
Scale	X	X
Guaranteed Price Spread		X

1. CRC guarantee a $.07 spread above the market price for aluminum, regardless of the market price; ALCOA guarantees a reasonable base price.

2. ALCOA and CRC provide assistance in publicity either through newspaper ads or purchased space in publications.

CITY OF NEWARK
OFFICE OF RECYCLING
NEIGHBORHOOD RECYCLING COLLECTION CENTER

PROJECTED ANNUAL INCOME, ONE CENTER, ALUMINUM ONLY
FIRST YEAR OF OPERATIONS, 15% PARTICIPATION RATE

I. **Income from recycled material.** Based on 15% participation rate — 9,900 people per center, of a population base of 66,000 people per ward:

Volume of aluminum collected, in tons (8 lbs. per capita per yr.)	39.6
Market price, as sold by center ($540/ton)	$21,384.00
Street price, paid out by center ($400/ton)	15,840.00
Profit/Sub-total	$5,544.00
*Market bonuses for accumulated weight	0

*Bonuses vary according to the particular aluminum market used. Container Recovery Corporation (CRC) pays quarterly bonuses on quantities received: $.01 per pound over 15,000 pounds (seven and a half tons) per quarter, thereafter an additional $.005 (half cent) every 15,000 pound increment per quarter. Alcoa provides a price differential designed to create a working margin of profitability.

II. **Income from Proposed "Shared Savings" Plan.** Since the City pays approximately $16.00 per ton in "tipping fees" at the landfill site, the Neighborhood Recycling Collection Center would be awarded 67% ($10.72 per ton at 1985 rate; projected to increase substantially in the following ten years) from the proposed "Shared Savings" Plan under contractual arrangements with the City of Newark.

Shared Savings Award, 39.6 tons	**$424.51**
TOTAL INCOME, SALE OF RECYCLED ALUMINUM AND SHARED SAVINGS PLAN,	**$5,968.51**

CITY OF NEWARK
OFFICE OF RECYCLING
NEIGHBORHOOD RECYCLING COLLECTION CENTER

PROJECTED ANNUAL INCOME, ONE CENTER, THREE MATERIALS, 25% RECYCLING PARTICIPATION RATE (SECOND YEAR)

I. Income/Payout From Recycled Materials

Recyclable Item	Pounds per Capita/yr.	Collected Tons/yr.	Avg. Price Per ton	Annual Income
Aluminum	8	66.0	$540	$36,640.00
Payout to the community			$400	(26,400.00)
Sub-total of aluminum income				$10,240.00
Glass	106	874.5	$25	$21,862.50
Payout to the community			$20	(17,490.00)
Sub-total of glass income				$4,372.50
Newsprint	100	825.0	$15	$12,375.00
Payout to the community			$10	(8,250.00)
Sub-total of newsprint income				$4,125.00
Bonus from mills for accumulated aluminum				$ 600.00
Annual Income from three recycled materials				**$19,337.50**

II. Income From Proposed "Shared Savings" Plan (Calculated at 67% of the present approximate landfill tipping fee of $16 per ton.)

	Annual Tons Collected	Shared Savings
Aluminum	66.0	$ 707.52
Glass	874.5	9,374.64
Newsprint	825.0	8,844.00

Annual Income, Shared Savings Plan, Three Recycled Materials: **$18,926.16**

TOTAL INCOME, SALE OF RECYCLABLES AND SHARED SAVINGS PLAN, THREE MATERIALS, 25% CITIZEN RECYCLING PARTICIPATION RATE $38,263.66

CITY OF NEWARK
OFFICE OF RECYCLING
NEIGHBORHOOD RECYCLING COLLECTION CENTER

Capital Equipment Needs for One Center

Equipment Start-up Expenses:

Glass Crusher		$700
Barrels (25)		125
Pallets (25)		100
Hand Truck		50
Basic tools & supplies		50
Work Gloves (6 pair)		20
Safety Goggles (6)		30
Twine (2 large rolls)		25
Plastic bags		25
Security (locks, keys, chains)		100
Fire extinguishers		200
First Aid Kits		50
Telephone Installation and Equipment		500
	Subtotal	$1,975

Contractual Expenses:

Electrical Power Modifications (220 volt/3 phase/ 34 amp)		$2,000
Electric wiring and lighting		500
Roofing		800
Heating and plumbing		1,200
Miscellaneous		500
	Subtotal	$5,000

Office Equipment:

Furniture		$250
File cabinet		75
Desk Supplies, stationery, checks		250
Calculator (portable with paper)		75
Miscellaneous		300
	Subtotal	$950

Total, Capital Equipment Needs $7,925

Equipment Supplied By Industry Sources:

The following equipment is provided by ALCOA and Container Recovery Corporation (CRC), a subsidiary of Anheuser-Busch.

1. Storage trailer and transportation
2. Aluminum separator/flattener/blower

3. Floor scale
4. Management training and bookkeeping material
5. Educational and promotional material

CITY OF NEWARK
OFFICE OF RECYCLING

NEIGHBORHOOD RECYCLING COLLECTION CENTER

Projected Annual Operational Expenses

Personnel:		
1 Full-time manager (including benefits)		$16,000
1 Part-time assistant (including benefits)		10,000
	Subtotal	$26,000
Utilities:		
Electric & Gas		$1,800
Telephone		1,200
	Subtotal	$3,000
Processing Equipment:		
Barrels (50)		$250
Pallets (50)		150
	Subtotal	$400
Safety Equipment:		
Fire extinguisher service		$150
First aid replacement supplies		50
Miscellaneous		100
	Subtotal	$300
Office Equipment:		
Stationery		$250
Miscellaneous office supplies		150
	Subtotal	$400
Transportation:		
Fuel		$5,000
Maintenance		1,000
	Subtotal	$6,000
Total Annual Operational Expense		**$36,100**

NOTES: Additional operational expenses to be determined for

A. Insurance (fire, theft, liability). Variables affecting will be size, location, limits of coverage, possibility of additional coverage based on already existing insurance for the community organization, etc.

B. Lease payments for site procurement and improvements. Variables include possibility of donated property, city-owned facility, purchased property, amount of repair needed, etc.

CITY OF NEWARK
OFFICE OF RECYCLING
NEIGHBORHOOD RECYCLING COLLECTION CENTER

BUDGET CONCLUSIONS

I. After Neighborhood Recycling Collection Center (NRCC) is fully operational (after the first year of operations), with 25% recycling participation rate for newspaper, aluminum, and glass, each NRCC will pay for itself and generate $78,140.00 back to the community each year through

A. Salaries to employees and support workers ($26,000), and

B. Money returned to citizens for recycled materials ($52,140).

II. Total funds necessary for capitalization include

A. First year of operations:	$36,100.00
B. Capital expenses:	7,925.00
SUBTOTAL	$44,025.00
INCOME, FIRST YEAR (ALUMINUM ONLY)	$5,969.00
TOTAL CAPITALIZATION NEEDS	$38,056.00

III. Specific operational expense, income, and capital needs will vary with each NRCC depending on

— amount of pre-existing facilities or equipment brought to establishment of the NRCC by sponsoring organization;
— amount of energy/publicity/information applied to achieve maximum recycling rates.

IV. Not included in budget projections are expenses for site acquisition/lease payments and insurance (fire/theft/liability), both of which will vary greatly. If outside financing cannot be obtained, both will be additional capital and operational expenses to be included in budget projections.

CITY OF NEWARK
OFFICE OF RECYCLING

SOLID WASTE UTILIZATION STUDY
PLAN OF ACTION

CHAPTER 4: EDUCATION AND PROMOTION

MISSION: To nurture a conservation ethic in Newark through a continuing recycling promotion and education campaign, including special promotions as appropriate.

BACKGROUND: A comprehensive promotion and education campaign for recycling and waste utilization must achieve three objectives:

1. Create support in the political and business community which enables the program to become implemented effectively;
2. enlist entrepreneurs and community organizations to actually set up recycling centers and other enterprises; and
3. when recycling programs are in place, encouraging participation in homes, schools, the work place, recreational areas — wherever people congregate and accumulate solid waste.

In order to replace the throw-away ethic with the recycling or conservation ethic, recycling programs must be consistent, visible, and effective. The promotion and education campaign will have three elements:

— city planning and concept promotion
— educational outreach and promotion campaign
— Neighborhood Advisory and City Blue Ribbon Committees.

I. CITY PLANNING AND CONCEPT PROMOTION:

This is a continuing process which involves educating elected officials, government workers, community and civic leaders, and prominent business people. Approaches taken will include field trips; special presentations; workshops, conferences and seminars; and individual discussions. The process of establishing Neighborhood Recycling Collection Centers (NRCC's) used two approaches in spring, 1985, when civic leaders from Newark visited an effective collection center in The Bronx, and a recycling professional from Chicago made a presentation regarding the viability of establishing neighborhood collection centers. These events led to the upgrading of the Orchard Street Recycling Center in Newark and prompted two community associations to explore the possibility of establishing NRCC's for their neighborhoods.

The conference of civic and business leaders suggested in Chapter One of this Plan of Action is a part of this process to introduce the waste utilization technologies which can best be accomplished in the private sector.

II. EDUCATIONAL OUTREACH AND PROMOTION:

A. Educational Outreach will be directed toward three sectors: schools, civic organizations, and the working communities.

1. School programs will be directed toward teachers and students, with the cooperation of the Board of Education and Superintendent of Education. Participating teachers will begin with the curriculum and a workshop for teachers offered by the Office of Recycling. It is proposed that a

teachers' "in-service" training or a workshop with college credit be offered at one of Newark's five colleges in cooperation with the Essex County Department of Planning and Economic Development, the Office of Recycling, and the Newark Board of Education. One of the objectives of the program should be the identification of motivated teachers who can form a nucleus of educators to involve their peers and formulate classroom strategies.

The student approach will stress direct involvement in the City's recycling activities, in-school recycling programs, and the formation of ecology and recycling clubs for extra-curricular activity. Sources of assistance in this regard include the Girl and Boy Scouts, Cooperative Extension Service (4-H, Urban Gardening Program), the Youth Environmental Society, and others.

2. Civic organizations. Over 250 civic organizations which function in the City of Newark are listed in Appendix Six of the Waste Utilization Study. These organizations should be contacted regarding ways in which they can best promote recycling, and efforts will be made to present slide shows, informative talks, organize recycling drives, or implement recycling at their agency.

3. Educating individuals in their work place will be more diversified, depending on the working situation. Corporations can be contacted for opportunities to hold recycling presentations for employees, and some corporations may be interested in initiating Office Paper Recovery Programs.

B. Promotion. An annual strategy should be developed for a series of promotional activities coinciding with other events in the City throughout each year. The choice of events and accompanying promotions would be developed with the assistance of the Neighborhood Advisory Committees (see below). A regular sequence of highly visible and effective activities would aid in developing recycling in the City. Some activities might include:

— **Quarterly mailings,** posted imprints promoting recycling; piggy-back mailings with utility and telephone bills.

— An annual, semi-annual or quarterly **newsletter** with information on recycling activity, promoting events for recycling.

— **Recycling Day(s)** held in neighborhoods at schools, churches, community civic organizations and local businesses. The event would be festive and entertaining, but always with a message about recycling. This event would be planned by the Neighborhood Advisory Committee with support from the City.

— **Fall and spring activities** in conjunction with the bi-annual cleanup campaign as conducted by the Clean City Program.

[For activities such as the above two items, **a special mobil recycling station** should be purchased for use at street festivals to divert recyclables from trash cans.]

— An **Annual Recycling Luncheon** honoring not only participants in the City program, but the City's salvage community, recognizing the many years of service they have provided.

In addition to these continuing activities, special promotions will be planned according to the occasion with media support to keep recycling in the news. Some special promotions might include:

— **Grand Opening and ribbon cutting** at openings of Neighborhood Recycling Collection Centers (NRCC's), the composting site and related events.

- **Visits by famous personalities** such as sport and music stars, to NRCC's and other recycling activities.

- **Recycling incentive promotions** such as the "Gold Can" which is placed among litter and is worth a considerable amount when redeemed at special fairs or other promotions and when brought in with twenty pounds of recyclable materials.

- **"Earn-a-ways"** (as opposed to "give-a-ways") allowing individuals who recycle great quantities of materials to win special large capacity push carts or other aids.

- **Awards** in the form of patches and certificates in the spirit of the Gold Broom Award offered by the "Love Newark-Keep it Clean" Campaign.

- **Corporate participation** in the form of posters and stickers for store windows, recycling-oriented place mats and shopping bags, etc.

- **Assorted items**, including buttons, T-shirts, bumper stickers, etc.

III. NEIGHBORHOOD ADVISORY AND CITY BLUE RIBBON ADVISORY COMMITTEES

The Neighborhood Advisory Committees will provide guidance to NRCC's and other recycling endeavors in the City's neighborhoods, suggesting and helping to implement local strategies to recover ever-increasing levels of recyclable materials from the waste stream. A major part of this task will be promotional and educationally orientated activities which should be supported to some extent by the City and local corporations.

The City Blue Ribbon Advisory Committee should be appointed as a city-wide committee to assist with promoting private involvement in waste utilization enterprises, the conference for urban recycling and economic development, annual awards luncheon and general promotions citywide. The City Recycling Coordinator will recruit citizens interested in serving on this committee.

IMPLEMENTATION RECOMMENDATIONS:

1. Assign one member of the recycling staff to pursue education and promotion activities exclusively.

2. Establish NRCC's in neighborhoods with interested and organized civic organizations which will operate them.

3. Establish Neighborhood Advisory Committees as NRCC's are established in the City's neighborhoods.

4. Establish the Blue Ribbon Advisory Committee.

5. Explore the possibility of a Conference on Urban Recycling and Economic Development sponsored by the New Jersey Department of Energy. While it should be planned to address Newark's needs, the theme has a national audience and should be planned on that scale so as to increase the opportunity to attract outside investors. Co-sponsorship with the County of Essex, the Association of New Jersey Recyclers, and the New Jersey Recycling Forum is also recommended. Allow 12 to 15 months for planning.

PUBLIC PROMOTION AND IDENTIFICATION

In order to gain widespread public identification and acceptance a special logo and title should be developed for the City's recycling program. These should be applicable to all types of recycling programs in the City, and should appear on all recycling vehicles, printed material, promotional items, and other information. Care should be taken to avoid reference to "Newark Recycling" because of past unsuccessful associations lingering from the company of a similar name. The proper combination will be eye-catching, clear, and simple; the choice should be made by the City's Blue Ribbon Recycling Advisory Committee, with assistance from Office of Recycling and Department of Engineering staff.

CHAPTER 5: NEWARK'S COMPOSTING PROGRAM

MISSION: To implement a continuing composting project for the City's organic solid waste, especially leaves from autumn collections; conduct on-going research into the organic element of Newark's waste stream; and identify, develop, and implement a series of localized composting projects. The priorities among those projects are:

1. Implement a leaf composting project for the City.
2. Identify, develop, and implement a series of projects for small scale on-site composting for back-yard residential and commercial use.
3. Establish research expertise regarding further expansion of composting possibilities.

BACKGROUND:

According to a 1980 Composition and Weight Study of Municipal Solid Waste done by the Port Authority of New York/New Jersey, 32% of Newark's waste stream is organic, the single largest component — one-third of the City's total waste stream. While the waste reduction strategy for organics is composting, organics take many forms, entering the waste stream from a variety of sources:

1. Leaf collections each autumn. These collections generate approximately 10,000 to 15,000 cubic yards of leaves suitable for composting each year. There is a considerable additional amount of yard waste each year — trees, branches, and street sweepings.

2. Residentially generated organic material (non-carnivorous kitchen scraps).

3. Commercially-generated organic waste — biodegradeable waste discarded by restaurants, commercial kitchens, food processing locations, groceries, etc.

   These are the sources from which one-third of the City's waste stream emanate. While research is needed to identify methods to collect and process the commercial organics, leaf composting and residential techniques are well developed and immediately available.

THE RUTHERFORD STREET COMPOSTING SITE

Building on experiences of earlier efforts, the City of Newark has located and secured a site, permits and funding from the New Jersey Office of Recycling in the amount of approximately $32,000 toward the establishment of a leaf composting project at a location owned by the Passaic Valley Sewerage Commission (PVSC) and leased by the City of Newark. The City holds a five year renewable lease for the approximately ten acre site, located adjacent to the PVSC's facilities at the east end of Rutherford Street in Newark. The details of a leaf composting operation include

— site preparation
— collection
— site management and procedures

— data acquisition
— marketing
— residential composting
— the impact of State Office of Recycling grant funds

COMPOSTING SITE PREPARATIONS. In May, 1985 the application for the state composting permit was submitted to the State Division of Waste Management, and supporting material was submitted to the Division of Water Resources for a Stream Encroachment Permit to secure final approval for the site (the site sits on a flood plain). The site has no permanent access to water, and special arrangements have been made to have the City Division of Sanitation provide adequate watering of the composted leaves.

LEAF COLLECTION. Newark's leaves are collected and disposed of in three ways:

1. The majority of leaves are allowed to fall or are raked into the gutter, where they are piled and picked up with front-end loaders. The leaves are loaded into open dump trucks, which carry them to the compost site.

2. When volumes insufficient for composting accumulate,the leaves are removed by the street-sweepers; these leaves are contaminated by street dirt, and are probably unsuitable for composting.

3. Some residents also put their leaves in plastic bags,which are removed by waste collection personnel, and landfilled. If these leaves are to become available for composting, an effort will have to be made to encourage the use of Kraft-paper bags or raking them into the gutter to be picked up by front end loaders.

When the composting program begins, the Division of Sanitation collects leaves from the streets of Newark in their customary manner and delivers them to the Rutherford Street site during November and December. The leaves are placed in windows by the loader operator-site manager.

Some leaves are picked up by street sweepers under contract with the City, rather than by Division of Sanitation workers. In the first full year of compost operations, these leaves will not be diverted. Once the compost project is operating, and more accurate data on volume becomes available, the leaves collected by contract street sweeping may be added to the project.

SITE MANAGEMENT AND PROCEDURES. It is Newark's intention to have a loader and a loader operator-site manager on the compost site full time during the eight to ten weeks of intensive leaf collection activity. The site manager would supervise the initial drop-off of leaves, would place them in windrows, and wet them. The site manager would also be responsible for data collection on the amount of leaves delivered. Presence of a site manager would also prevent dumping of any non-leaf materials or items.

Sizing and other specifications of the windrows will follow the recommendations of the "Leaf Composting Manual for New Jersey Municipalities", by Professors Peter Strom and Melvin Finstein of Rutgers University, New Brunswick. In addition a composting technical consultant or recycling staff member should be available at the project's inception to orient the operator and the staff, and for advice on various issues.

When the piles have been deposited, leaves will be allowed to compost. The piles will be combined in January, and the leaves will be turned once in the spring and once in the summer, either by the site manager or by another loader operator trained for this purpose. The partially composted material will be moved to curing piles in late summer, to allow for windrowing of the new leaf-fall.

The partially composted material will cure for five to seven months and will be shredded in the spring. After shredding, the composted material will be available to the landlord (PVSC) and to urban gardeners and other City residents.

DATA ACQUISITION. There are two major areas of uncertainty with the proposed leaf composting operation. There is no clear information as to leaf quantities. There is also no data regarding the metal or other content of the leaves, which could affect the usefulness of the finished compost.

Newark proposes to gather these two types of data as part of the frist year of composting operations, and to use the data to institutionalize the leaf-composting and compost-marketing processes.

Data on the quantity of leaves arriving at the compost site will be gathered by having the loader operator-site manager estimate deliveries of leaves as they arrive at the site, in cubic yards.

Data on metals content and chemical and biological characteristics of the composted material will be gathered by selected sampling of the curing piles. Testing by the Cook College Department of Environmental Science and New Jersey Agricultural Experiment Station at Rutgers University in New Brunswick will include analysis for nutrients, phosphates, nitrates, potassium, lead, and other metals. Such data will be matched with data from the Newark Urban Gardening Program on site characteristics to determine whether the compost will be suitable for urban gardening.

MARKETING OF FINISHED COMPOST. As a condition of the lease on the property PVSC has the right to use as much compost as they would like. There is no indication of what quantity they might be able to use.

The Newark Urban Gardening Program has indicated an interest in 90 cubic yards of compost for each of over 400 community gardens in the City, or 36,000 cubic yards of compost. Since the raw leaf volume is estimated at far less than this, and since leaves undergo considerable volume reduction during the composting process, markets exist for more than 100% of the finished product.

Compost would be offered for pickup at the site at specified supervised hours.

OFFICE OF RECYCLING SUPPORT

Whereas the city requested support from the State Office of Recycling for approximately $90,000 for purposes of site improvement, personnel costs, and a compost shredding machine, funds amounting to approximately $32,000 were granted only for site improvement and personnel expenses. Recent developments indicate that site improvement and supplemental personnel expenses will not be as necessary as previously thought, and that the best application of the funds will be toward purchase of a shredder, which will cost more than has been granted by the State Office of Recycling. Petition will be made to the State Office of Recycling to apply the granted funds toward purchase of a shredder, the remainder of the cost to come from City funds or other grant appropriations.

RESIDENTIAL COMPOSTING

Given the interest in gardening demonstrated by the success of the Newark Urban Gardening Program, it would not be unreasonable to expect a significant contribution to waste reduction by encouraging backyard and urban gardening composting of residential organic wastes: grass clippings; garden, tree and shrub trimmings; and kitchen non-meat wastes, as identified in the Waste Utilization Study, Chapter 5.2.7, "Composting Technologies". Additional investigation into these technologies and methods to involve the community should be performed and promoted in order to ascertain the possible effect residential recycling can have to increased composting at the City's facility.

CITY OF NEWARK
OFFICE OF RECYCLING

SOLID WASTE UTILIZATION STUDY
PLAN OF ACTION

CHAPTER 6: MUNICIPAL OFFICE PAPER RECOVERY PROJECT

MISSION: To implement an Office Paper Recovery Program for the City of Newark's municipal facilities, and to assist private enterprises with implementing similar programs in their businesses.

CONCEPT: Up to 70% of the waste in the City's office facilities is comprised of the most recyclable waste paper available — white ledger and computer printout. Currently as much as 250 tons of this material is disposed at the landfill each year at a cost to the City of more than $4,000 in disposal fees — not including transportation expenses. According to United States Environmental Protection Agency estimates, the reclamation value of that material ranges from $10,000 to $20,000 per year.

This recyclable material can be reclaimed through an Office Paper Recovery Program. Its success depends on the cooperation of everyone at each step in the operation:

- — office workers separate eligible waste at desks in specially-devised folders;
- — each person takes the materials from desks to specially-marked containers in each office;
- — maintenance crews empty the containers into hampers or bins during regular office clean-up;
- — the material is stored for pick up in a secure central holding area for each building;
- — a contracted waste paper dealer collects the paper, delivers it to markets, and pays the City for the paper.

This program is to be instituted in City Hall, with other buildings in the City complex to follow:

31 Green Street	Courthouse
22 Franklin Street	Police Department
828 Broad Street	Finance Department
110 William Street	Health and Welfare
32 Green Street	Administrative Building

PLANNING AND IMPLEMENTATION: The City of Newark experienced an unsuccessful office paper recovery program in 1978-79 under the direction of Newark Recycling Incorporated (NRI). It is important to recognize that that effort failed due to inadequate servicing and the lack of a regular education program, not a lack of employee enthusaism. An office-to-office survey in preparation for this document revealed an attitude of willingness and in some cases insistence on re-establishing the program.

In order to avoid the experience of the past effort, the specifications for the design and implementation of an Office Paper Recovery Program have been done by one of the professional firms available for such services. A member of the City's recycling staff has been assigned to monitor the program, solve problems as they occur, manage a continuing in-house education program, and organize promotional efforts. A successful program in municipal facilities will serve as a model for similar programs in Newark's other office buildings, and will also promote a recycling conservation ethic among employees.

Pre-Implementation Planning included

- — Survey number of workers and work stations in City Hall
- — Determine that sufficient amount of high-grade paper is available for recycling
- — Ascertain whether employees and support personnel have a positive attitude about the program
- — Identify liaisons within each office to serve as communication link between employees and recycling office
- — Design and produce necessary materials:
  - a. desk-top temporary storage file folders
  - b. informational flyers
  - c. posters to identify recycling sites
  - d. collection boxes for office recycling sites
- — Obtain support from Department of General Services for collection and storage of recycled papers
- — Design bid specifications for collection/marketing contract between City and private hauler
- — Conduct a walk-through tour of building to ascertain best sites for placement of boxes, meetings with liaisons, special needs of offices, etc.
- — Take and prepare photographic slides and other information for educational presentation
- — Obtain high-level political and public relations support, organize publicity for start-up
- — Set up multiple 30-minute educational sessions just prior to start-up; attendance mandatory for each City Hall employee.

Implementation will require close supervision of the program by the Office of Recycling staff to solve problems of a specific nature, ensure compliance and cooperation, and generally facilitate the program's operation. As the program evolves and problems are eliminated, planning and implementation can begin for similar programs in other municipal buildings as noted above.

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SOLID WASTE UTILIZATION STUDY
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CONCLUSION

Many of this nation's pioneering efforts toward implementing recycling in the last half of the twentieth century have been centered in communities which are suburban or rural. Many of the recycling efforts located in urban settings operate under self-imposed limitations: only certain geographic areas are served, only certain methods are employed as recycling strategies, only certain materials are recovered, etc. Comprehensive recycling is currently operational in very few urban settings.

As the largest city in the State of New Jersey, Newark is in the process of implementing just such a comprehensive recycling program. Recycling has always been a part of America's older, east-coast cities, and such operations, known in their earlier form as "salvage" operations, continue. The incorporation of the general population into comprehensive recycling strategies in an attempt to recycle municipally-generated waste is the element of a comprehensive program which has never been attempted on a wide scale in Newark.

Because of timing and the crisis situation which exists in the State of New Jersey regarding landfilling and the disposal of solid — and other — waste, the implementation of the plans contained in this report should proceed without delay. With support from the City of Newark Municipal Council and Mayor Kenneth A. Gibson, the State Department of Environmental Protection, the State Department of Energy, the State and Essex County Offices of Recycling, private enterprize and interested businesses, and private foundations and corporations, the City of Newark Office of Recycling is ready to work with all applicable departments and agencies to implement these plans.

REACHING NEWARK'S RECYCLING GOAL

A comprehensive program for the City of Newark is comprised of the following components:

A. **Neighborhood Recycling Collection Centers (NRCC's).** At least one in each of the City's five Wards, a total number between six and nine.

Benefits of Neighborhood Recycling Collection Centers are:

1. Income for citizens bringing recyclables to the center — between $15,480 and $52,740 annually per center;
2. Focus of economic development for the neighborhood and the organization operating the center;
3. Employment opportunity for operators of the center and people transporting materials;
4. Reduction of neighborhood litter;
5. Saving and re-use of natural resources;
6. Reduction of material brought to landfilling and accompanying expense — 12,339 tons per year or 6% of the waste stream (total for six centers).

B. **Municipal Leaf Composting Program.** Saving and processing of as much as 10,000 to 15,000 cubic yards of leaves collected each fall and recycled back to the Newark Urban Gardening Program as compost.

C. **Municipal Office Paper Recovery Program.** Computer paper and white office paper to be collected and sold to a contracted vendor in the City's office buildings. (Goal of 2,700 tons per year, or 1% of total waste stream.)

D. **School Recycling Drives.** High school seniors, juniors, ninth and eighth graders to collect aluminum cans and lunch serving trays, proceeds to return to the schools for use in special projects and needs.

E. **Curbside collections for special needs:**

1. Corrugated cardboard from commercial sources in Newark. (Goal of 10,879 tons per year or 4% of the waste stream).

2. Collection of newspaper in specified residential areas of the City. (Goal of 2,825 tons annually, or 25% of total newspaper available for municipal recycling.).

F. **Ongoing education and publicity** for recycling programs for schools, community organizations, the business community, potential recycling entrepreneurs, potential recycling markets, and the public relative to the existing program and recycling possibilities.

1982 Municipal Solid Waste Total: 161,264 tons (517 tons per day)
1982 Commercial/Industrial Solid Waste: 65,168 tons (209 TPD)

TOTAL, CITY SOLID WASTE (1982): 226,432 TPY / 726 TPD

Composition of City of Newark Waste, in Tons and Percentages

Newspaper	13,243.52	5%
Corrugated	36,262.24	16%
Glass	15,259.32	7%
Aluminum	2,341.64	1%
Ferrous	12,236.44	5%
Plastic	15,043.92	7%
Organics	72,096.48	32%
Wood	98,959.48	8%
Fines	92,934.25	6%
Misc.	27,994.36	12%

— Newspaper, corrugated, glass, aluminum, ferrous metals constitute 34% (65,483.16 tons annually) of solid waste in the City. These are the materials, along with the Leaf Composting Program, which are targeted for maximum immediate recovery.

— 82% of Newark's waste stream has the potential for diversion through recycling or composting.

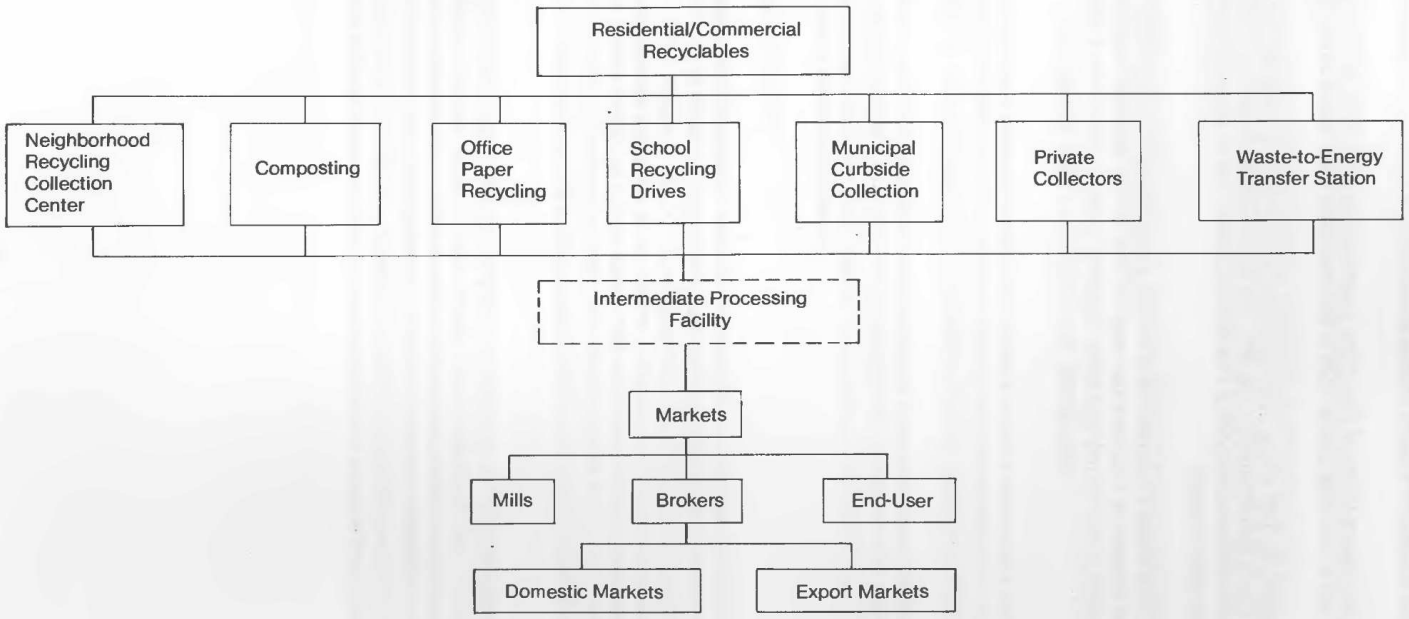
STATE, COUNTY AND CITY RECYCLING GOALS.

a) The New Jersey Office of Recycling supported by data outlined in their report "Recycling in the 80's," set a recycling goal of 25% of the municipal solid waste stream by 1985.

b) Supported by their study "The Integration of Energy and Material Recovery in the Essex County Solid Waste Management Program," the Essex County Division of Solid Waste Management has set an overall recycling goal of 15% for the County. This includes the combined municipal and commercial waste stream.

c) The City of Newark recycled 5% of its total potential solid waste in 1982. The recycling goal for the City of Newark is 116 tons per day, or 15% of the potential solid waste in Newark, which is equivalent to the County and State recycling goals — 25% of the Municipal Solid Waste Stream.

CITY OF NEWARK
RECYCLING SYSTEM



CITY OF NEWARK
OFFICE OF RECYCLING

WASTE UTILIZATION STUDY
EXECUTIVE SUMMARY

INTRODUCTION

The City of Newark Department of Engineering contracted with Self-Reliance, Inc. (SRI) of Washington, D.C. in 1983 to conduct a waste utilization study — an examination and analysis of waste products and practices and the opportunities to reduce those wastes while stimulating economic development activities. The study refers to resulting activities as "waste utilization" or "reclamation" enterprises. These involve the repair, reuse, remanufacture and recycling of products or materials. By analyzing opportunities for reduction of Newark's waste stream, this study is intended to catalyze new developments in recycling, guide the City through immediate recycling implementation, and provide a coherent and practical strategy for immediate, intermediate, and long-term development of more sophisticated and economically far-reaching waste utilization enterprises. The strategy emerges from historical conditions, institutional arrangements, currently available technology, financing arrangements, and the economic development and solid waste management priorities of people making decisions affecting those activities in the City of Newark.

EXECUTIVE SUMMARY

Three developments motivated this study: the increasing cost of waste disposal; state and county solid waste policy; and the availability of funding from the New Jersey Recycling Act. The three projects and activities that comprise the study include

1. The Waste Utilization Study
2. Preparation of a Plan of Action to implement the findings of the Waste Utilization Study;
3. Presentation of findings and results to the City of Newark Municipal Council.

The entire project was conducted over a 22 month period, from January, 1984 through October, 1985.

The intent of this study is to identify methods which will decrease Newark's waste stream through reclamation of materials and products. It is predicated on the desire to maintain or enhance the activities of the salvage sector and involve community organizations and other entrepreneurs recovering materials from the waste stream. This is possible because materials kept out of landfills have value when processed, and because landfilling will no longer be an option as the State of New Jersey closes them for environmental reasons. The planned waste-burning Energy Recovery Facility (ERF) to be located in the City of Newark has been downsized to allow for recycling: it is the position of the County of Essex, the Port Authority of New York and New Jersey, and the City of Newark that the plant's operation will be improved by removing recyclable materials prior to burning. Recycling and the development of similar waste utilization enterprises provide the opportunity for economic development while the costs of solid waste management are decreased. The potential benefits include business development, the creation of jobs, energy conservation, the conservation of natural resources, and environmental protection.

Other aims of the study are to increase the business community's understanding of the many benefits associated with recycling and waste utilization; to evaluate and recommend supportive institutional arrangements; and to promote a healthy environment for cooperative development of the public and private sector.

The Waste Utilization Study contains the following information:

(1) review of the history of waste utilization in Newark;
(2) review and diagnosis of institutional arrangements in Newark;
(3) discussion of waste utilization methods applicable to Newark;
(4) identification of possible individuals, corporations, civic organizations, and government agencies which should participate in such programs;
(5) outline of technical considerations and methods to enhance program development;
(6) recommendations for the City of Newark which consider the goals of the State of New Jersey and Essex County.

Following are summaries and key findings of each chapter.

CHAPTER 1: PHILOSOPHICAL ORIENTATION.

After presenting background information, Chapter One offers a discussion of Urban Self Reliance and three key concepts which form the nucleus of this document.

URBAN SELF-RELIANCE

American cities are dangerously dependent. Like developing nations, they spend billions of dollars to import energy, food, raw materials, and finished products. Money earned in cities flows out of their borders to absentee owners of land, buildings, factories, to non-resident employees, and to higher levels of government. Local resources are inefficiently used or managed. Valuable raw materials such as refuse are buried or burned at a net cost to the cities. The productive capacities of youth, elderly, and the unemployed are underutilized.

Cities and neighborhoods, even the poorest ones, have wealth. The goal of local self-reliance is to put this wealth to work and to keep the benefits in the cities. The self-reliant city extracts the maximum value from its raw materials, its technologies, its buildings, and its people. It emphasizes production and efficient use of resources over consumption. It relies on many locally-owned small businesses, rather than on a few factories owned by remote corporations. Its development plans and policies are integrated to promote self-reliance.

By using the products and wastes of one process as the raw materials for others, the self-reliant city is able to retain and harness the value added by each stage of processing or manufacturing. As an illustration, it costs about a penny to throw away an aluminum can. Recycled, aluminum cans are worth 20 to 30 percent more. Shredded, baled or otherwise packed, their value increases by 45 percent, and smelted into ingots, the value increases by more than 50 percent. Fabricated into storm-window frames, the value increases over one hundred percent. Each addition of value increases jobs and income.

Local self-reliance stimulates initiative and gives self-confidence to citizens. In the self-reliant city, citizenship means active participation. Citizens are not only consumers, but also producers of wealth and managers of a city's future.

KEY CONCEPTS OF CHAPTER ONE:

In seeking to develop waste utilization and recycling, the recycler must compete with two powerful forces: the disposal ethic and the virgin materials manufacturing industry. Reliance on our "quick-and-easy" disposal system acts as a disincentive to recycle. The recycler must first confront the garbage establishment and the century-old emphasis on mixed waste collection and disposal in order to have any materials with which to work. Secondly, the recycler must compete with the more powerful virgin materials industry.

A. The Solid Waste Disposal Theory presents the current paradigm of solid waste management as having evolved from the concern of turn-of-the-century public health experts who realized that waste was the cause of disease and other problems. They successfully promoted increased frequency of waste pick ups, minimized human handling and eliminated disease through isolation of garbage and its encapsulation in landfills. While addressing immediate concerns, sanitation-based waste disposal created long range problems which have only been recognized recently.

As these problems occur and landfill options disappear, society finds it difficult to re-think this paradigm and develop viable alternatives. Mixed material collection is assumed. Increased costs have made waste disposal expenditures paramount in municipal budgets. Maintaining this system decreases the value of the disposed materials while the cost in labor to separate, collect and recycle becomes excessive. Consequently, only the most pure and uncontaminated wastes — that is, the most economical — are recovered, and the much larger balance (approximately 90% in Newark) are discarded.

B. The Virgin Materials Industry represents a powerful obstacle to recycling in its discrimination against secondary materials. The virgin materials industry is growing much faster than the secondary materials industry, and working from a broader base. The industry has huge capital and resource commitments to the consumption of raw materials, and is encouraged to continue this practice by federal capital gains and depletion allowances. The difference in profitability between secondary and primary materials is not great enough to attract capitalization to secondary materials capacity. Unlike most recycling industries, the virgin materials industry is vertically integrated, providing a powerful marketing tool and the ability to internalize costs. In addition, freight practices discriminate against the transportation by rail of secondary materials.

Thus, the recycler competes for materials under a system that reinforces sanitation over reclamation and favors the use of virgin materials over secondary materials. While overcoming these obstacles is a formidable task, the environmental and economic dilemma presented by the solid waste crisis is undeniable. Recycling was a prominent activity in the country through the 1940's. Institutional changes in recent years have resulted in reduced recycling levels. Significant change and improvement can be brought about through renewed and reoriented institutional development that supports recycling. Since no "quick fix" solution to disposal problems is available, recycling holds promise as one element of integrated waste management, and can contribute significantly to the solution of the waste disposal crisis.

C. The Hierarchy of Reclamation is another important concept presented, in which the goal is to maintain or retrieve the value of the original product while maximizing both waste diversion and economic benefits for the city of Newark. According to Dr. Robert T. Lund, there are four levels of reclamation. Each involves a different set of costs to recover the economic value retained in a product after it has been used. These stages are repair, reuse, remanufacture and recycling. Repair represents the first recourse in the event of product malfunction. Reuse through sale, barter or give-away retains product value at low additional costs. Remanufacturing of a product occurs when it is no longer practical to repair a product; this is the restoration of a worn out product to like-new conditions. When a product is disposed of, wears out, or becomes obsolete, recycling recovers the value of the material components, diverting this material from the landfills.

Waste utilization enterprises may fall into one or a number of reclamation levels. It is important to note that "higher" use options are generally more conserving of economically valuable and scarce resources; product value has more worth than elemental value — breaking down a product to its elementary components.

CHAPTER 2: HISTORY OF WASTE UTILIZATION.

Chapter Two reviews in general terms the history of waste utilization in the U.S., and looks specifically at those waste utilization ventures pursued by the City of Newark. The presence of the Port of Newark and the manufacturing character of the city have lead the survey team to a discussion of Newark as a hub for recycling, with local markets for virtually all recyclable materials. A sizable and well entrenched salvage industry is already in place, and market conditions are excellent for the development of other waste utilization industries.

The City's previous involvement in recycling has taken the form of support for private ventures which promised public benefits. Recycled material procurement policy, a composting project, and generous support of a major quasi-public recycling venture (Newark Recycling, Inc.) were the focus of the greatest amount of City effort. The City has also provided support in the past to two other waste utilization projects; the production of fireplace logs from leaves, and tire recycling; neither venture was successful. While all of these ventures eventually failed, they provide valuable learning experiences for renewed efforts.

In 1972 the Municipal Council passed a Recycled Materials Procurement Policy which has not been implemented. This was due in part to resistance from the primary materials industry, in the form of threats by the copy machine vendor who supplies paper for the machines and who claimed recycled paper would invalidate the warranty on the machines. (It was also true that recycled paper of the early 1970's posed flaking problems which have since been resolved.)

The Herbert Place Composting Project was a cooperative venture of the City of Newark and The Urban Gardening Program in the late 1970's. It was to be located on an empty lot, which unfortunately attracted illegal dumping. When the City was unable to resolve the dumping problem, the project was abandoned. An evaluation of the problems associated with the project led the City to secure a more suitable location for re-establishing a composting project.

Newark Recycling Inc. (NRI) was a non-profit corporation which evolved from a City-run program. Organized as an ex-offender training program, it moved into the collection of high grade papers as more ambitious attempts to do curbside collection and post-consumer recycling failed. Subsidies dwindled between 1980 and 1983, and the program suffered financial losses and went into debt. Recognizing the need to become a regular business, NRI reorganized to absolve the debt. Unfortunately, a devastating fire in 1983 interrupted these plans and the organization dissolved in bankruptcy the same year.

KEY CONCEPTS OF CHAPTER TWO:

The common lesson in each of these early ventures was the need to understand the realities of salvage practices and provide supporting institutional development.

CHAPTER 3: ANALYSIS OF WASTE MANAGEMENT INSTITUTIONS AFFECTING NEWARK.

Chapter Three reviews and analyzes the public and private sectors as they relate to solid waste management and reclamation. It identifies the State of New Jersey's Solid Waste Management Code (NJSA 13:1 et seq.) as the statutory context for Solid Waste Management and recycling initiatives by state and municipal government. Relevant City and County ordinances are examined as are the City's agencies and elected officials for the roles they play. Particular attention in this section is paid to identifying institutional barriers to the development of waste utilization and recycling enterprises.

Chapter Three also discusses the salvage sector, neighborhood and community organizations, and regional, County, and State agencies involved with recycling.

KEY CONCEPTS OF CHAPTER THREE:

- Title 13A of the Revised Ordinances of the City of Newark, "Administration and Regulation of Solid Waste", and Title 8, Chapter 8 of the Revised Ordinances of the City of Newark, "Junk Shops, Junk Goods and Metal Processing Facilities", contain provisions which conflict with the needs of recycling development; these provisions should be amended.

- Essex County Ordinance 00220 includes provisions which effectively ban recyclables from the Energy Recovery Facility by refusing wastes which contain "more than negligible amounts of recyclables." The policy also prohibits introduction of any measure to preclude or inhibit the expansion of recycling.

- In general, successful programs have been accomplished by informal networks of people at all levels in City government, whose efforts have been able to compensate for the lack of formal institutional structures.

CHAPTER 4: THE DYNAMICS OF SUPPLY AND DEMAND.

Chapter Four discusses the nature of supply and demand in relation to the dynamics of reclamation in general, and recycling in particular. Chapter Four explains that market demand is the key to viable recycling efforts, and classifies supply and demand as "existing" or "potential". The powerful influence of the virgin materials industry is also discussed, followed with a presentation of supply and demand profiles which examine materials and products present in Newark's waste stream, and identify markets for those derivatives.

KEY CONCEPTS OF CHAPTER FOUR:

- Based on data made available to the Survey Team, 32% of Newark's waste is organic, with potential supply value for composting; 34% is recyclable, 27% is burnable and 6.9% is inert fines.

- 3% to 7% of the waste stream is the annual leaf fall.

- Corrugated containers are the second largest category of recyclables — 16% of the waste stream.

- Markets are available in the area for the following materials meeting mill specifications:
  - Ledger and computer papers
  - Crankcase oil
  - Select post-industrial scrap
  - Corrugated
  - Newsprint
  - Aluminum used beverage containers
  - Ferrous and nonferrous scrap
  - Glass cullet (flint)

- Markets which will require development include:
  - Mixed paper
  - Food wastes
  - Glass cullet (colored)
  - Tires
  - Yard wastes
  - Compost
  - Plastics (including PET containers)
  - Magazines

CHAPTER 5: WASTE UTILIZATION ENTERPRISES.

Chapter 5 discusses the significance of collection and processing systems and proceeds to identify technological options and funding sources to implement Waste Utilization Enterprises.

KEY CONCEPTS OF CHAPTER FIVE — TECHNOLOGICAL OPTIONS AND FUNDING SOURCES:

- Multi Material Recovery:
  - Neighborhood Collection Centers
  - Curbside Collection
  - Intermediate Processing Centers
  - Dry Commercial Waste Recovery
- Mixed Waste Processing Systems:
  - Glass and Plastics
  - Glass Market Report
  - Glass Bottle Washing
  - Plastics
- Aluminum, Steel and Bi-Metal Container Recovery:
  - Reverse Vending Machines
  - Neighborhood Collection Centers
- Paper Collection and Processing Technologies:
  - Office Paper Recovery
  - Cellulose Insulation
  - Animal Bedding
  - Fuel from Cellulose
- Composting Technologies:
  - Leaf Mulch and Composting
  - Paunch Manure
  - Vermicomposting
  - Backyard and Garden Composting
- Automobile and Truck Tire Processing:
  - Crumb Rubber
  - Tire Shredding/Processing/Reuse
- Demolition Waste Recovery and Processing:
  - Building Materials Salvage
  - Recycled Concrete
  - Remanufacturing of Materials
- Energy-Related Technologies:
  - Processed Wood for Fuel
  - Steam and Energy Generation

Sources of possible financal support for enterprise development include:

1. City of Newark
2. Essex County
3. New Jersey Office of Recycling
4. New Jersey State Economic Development Administration
5. New Jersey Natural Resources Bond Act
6. New Jersey Private Industry Loan Program
7. Port Authority of New York/New Jersey
8. The Campaign for Human Development
9. Local de facto or ad hoc corporate support
10. Program-related private investment
11. Grants or loans from existing firms
12. Community Development Block Grants
13. Local sheltered workshops

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS.

Chapter Six reviews the first five chapters, and presents conclusions and recommendations. Chapter Six concludes that Newark is experiencing the best and worst of recycling times. The City has a history of promoting recycling and solid waste management; a sizable salvage industry exists; local and export markets are available for reclaimed materials; funding is available from a variety of sources. Past experience has been valuable; yet the City has been set back by several well-intentioned but poorly managed City-initiated or City-supported recycling and waste utilization efforts. These experiences and current market conditions point to the need for integrated planning and comprehensive approaches to broaden and sustain such activity. Recycling and solid waste management must be considered integral functions of all City decisions if the waste reduction and economic development opportunities of reclamation are to be realized.

KEY CONCEPTS OF CHAPTER SIX — RECOMMENDATIONS:

I. The City should adopt, as policy, the support of waste reduction and economic development through recycling and the development of waste utilization enterprises, facilitating this process through public/private partnership and private enterprise.

II. The City should form an ad hoc Blue Ribbon Recycling Committee to:

a) Assist in implementing the findings of this study.
b) Consider the recommendations for institutional change.
c) Help formulate the immediate, intermediate, and long term recycling goals of the City.

This Committee should act as a planning group for other waste utilization enterprises and as an advisory board to the City's Recycling Program Coordinators.

III. The following City agencies should coordinate existing functions to promote and enhance recycling development:

a) Department of Engineering
b) Office of Planning and Grantsmanship
c) Newark Economic Development Corporation
d) Newark Board of Education
e) Love Newark ... Keep it Clean
f) Newark Public Information Office

IV. The City of Newark Municipal Council shound enact changes in Title 13A and Title 8, Chapter 8, of the Revised Ordinances of the City of Newark.

V. City staff should maintain a legislative vigilance for State, County and regional decisions which will positively or negatively affect the City's recycling plans, policy, and programs.

VI. City staff should initiate activity to create the following enterprises in order to meet the State recycling goal of 25% recovery by 1987:

a) Recycling Collection Center Network.
b) City Composting Program.
c) Office Paper Recovery Program.

VII. The City should enforce procurement policies already in place for recycled paper and work to implement other policies for the procurement of recycled commodities, where appropriate, and for the recycling of commodities which are currently used (e.g., motor oil from City fleet vehicles).