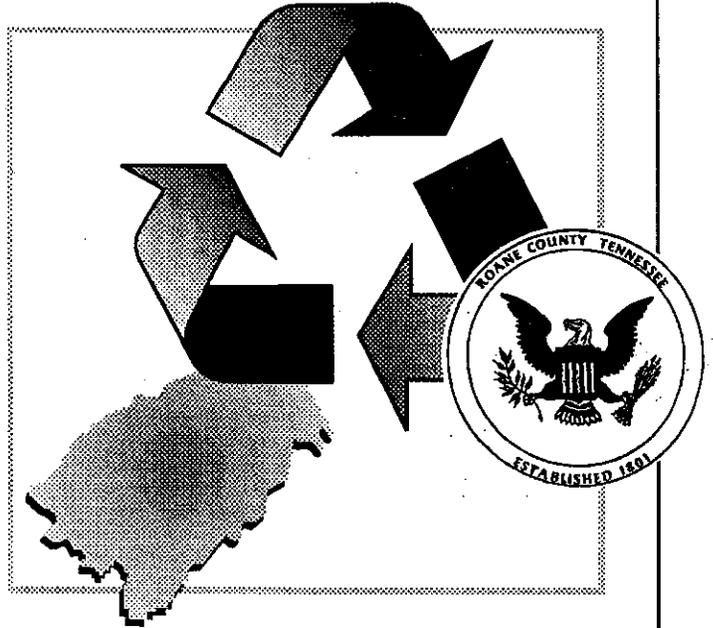


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MUNICIPAL SOLID WASTE REGIONAL PLAN



Prepared for
Roane County Regional Solid Waste Board

Prepared by
CHM HILL

April 1994



Preface

This 10-Year Solid Waste Plan is organized to correspond exactly with the organization of *Guidelines for Preparation of a Municipal Solid Waste Regional Plan*, July 1992. The chapters and subheadings are presented in the same order as the guidelines, and the required tables are included at the end of each chapter. Additional tables are included in text and are distinguished by a different numbering system.

The 10-year budgets are created on the county's fiscal years, which run from July 1 to June 30. For consistency and ease in integrating the budgets and schedules, the 10-year schedules are also developed on a fiscal year basis.



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Acronyms

BFI	Browning-Ferris Industries
C&D	construction and demolition
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIS	Center for Industrial Services
DDI	Dunn Diversified Industries, Inc.
DOE	Department of Energy
DOT	Department of Transportation
EPA	Environmental Protection Agency
ETDD	East Tennessee Development District
FY	fiscal year
HDPE	high-density polyethylene
HHW	household hazardous waste
MRF	Materials Recovery Facility
MWP	Mixed Waste Processing
NPV	net-present-value
ORNL	Oak Ridge National Laboratory
PET	polyethylene terephthalate
PSA	public service announcement
RCCS	Roane Clean Community System
RCRA	Resource Conservation and Recovery Act
RFB	Request for Bid
RFP	Request for Proposal
RM CET	Recycled Materials Cooperative of East Tennessee
SARA	Superfund Amendments and Reauthorization Act
T.C.A.	Tennessee Code Annotated
TDEC	Tennessee Department of Environment and Conservation
tpd	tons per day
tpy	tons per year
TVA	Tennessee Valley Authority
UT	The University of Tennessee
WMI	Waste Management, Inc.

Executive Summary

1.0 Region Description and Rationale for Its Formation

The Roane County Solid Waste Planning Region is a single county region that includes three municipalities: Kingston, Harriman, and Rockwood. Portions of the cities of Oak Ridge and Oliver Springs are in Roane County, however, they are not part of this region. The total area of the county is 361 square miles, consisting of parallel, gently rolling northeast/southwest trending hills and valleys. The prominent physiographic features are the Appalachian Valley and Ridge Physiographic Province, which comprise most of the county. Other physiographic features include the Tennessee Valley Authority (TVA) lakes, the Tennessee River, and Clinch and Emory Rivers. The dominant land uses outside the municipalities are rural, agricultural, and recreational.

Roane County formed a single-county region when neighboring counties showed little interest in forming a multi-county region; none were at the point where they were ready to form such a region. A public hearing was held on September 8, 1992, after which Roane County was made a separate solid waste region. However, the resolution was drafted so that it could be revised in the future if necessary.

2.0 Regional Needs

The existing solid waste system in operation in the region has definite strengths that will be key components in enabling the region to meet its future solid waste management needs. These strengths include the following:

- A county-wide network of convenience centers
- Solid waste education programs already established by the Roane Clean Community System (RCCS)
- Suitable land at the landfill site for potential construction of a central transfer system
- Suitable land at the landfill site for construction of a Class IV Landfill
- High level of community interest in improving solid waste management in Roane County

The regional needs are summarized as follows:

- Better coordination between the Solid Waste Board, County Commission, and implementing bodies

- Public information and education programs
- Waste reduction and recycling
- Illegal dumping
- Household hazardous waste (HHW) disposal program
- Management of problem wastes
- Lack of a Class IV Landfill

Meeting these needs in the next 10 years is considered feasible.

3.0 Regional Goals and Objectives

Regional goals and objectives are developed for the waste reduction, collection and transportation, recycling, disposal, public education, and HHW portions of the plan. The regional goals and objectives of each of these components are described below.

3.1 Waste Reduction

The short-term (present through December 31, 1995) goal of the region is to achieve the 25 percent waste reduction goal mandated in Tennessee Code Annotated (T.C.A.) 68-211-861(a). The objectives to reach this goal include the following:

- Hiring a Solid Waste Coordinator to implement the new programs
- Scheduling the University of Tennessee (UT) Center for Industrial Services (CIS) Waste Reduction Seminar for industries in the region
- Increasing residential, commercial, and industrial recycling
- Increasing public awareness through more education programs
- Adding drop-off recycling to existing convenience centers in a phased approach
- Obtaining a permit for and constructing a Class IV Landfill for brush and demolition waste
- Start recycling at municipal office buildings

The long-term goal (1995 to 2003) is to achieve a 0.5 percent waste reduction each year after 1995, for a total reduction of 29 percent by the year 2003. The objectives to meet this goal include increased recycling and increased public education.

3.2 Collection

The collection goals and objectives are as follows:

- Conduct a survey to determine how far people are willing to drive to a convenience center and what operating hours they would prefer
- Investigate the feasibility of partial or complete county curbside pickup and recycling to replace the convenience center system
- Investigate the feasibility of consolidating the number of convenience centers from 14 to 8
- Provide recycling capabilities at some of the convenience centers
- Upgrade all remaining convenience centers to meet the new design standards
- Consider the feasibility of county-supplied boxes for private homeowners to dispose of their construction and demolition (C&D) wastes.
- Investigate mechanisms to control out-of-county solid waste taken to Roane County convenience centers.

These goals will be realized over several years.

3.3 Recycling

The regional goal of the recycling program is to begin implementing recycling programs and build community support to expand the recycling opportunities and participation in the region. Objectives to reach that goal include the following:

- Increase public awareness of recycling through education and promotion programs, with special emphasis on adult education programs
- Provide for public input into recycling plans and programs
- Fund a Solid Waste Coordinator position to implement the proposed programs
- Design and implement county-wide opportunities for recycling for residences, commercial establishments, industries, and institutions

- Enhance cooperation between private recycling enterprise and local government to facilitate a viable recycling industry
- Design a county-wide waste reduction and recycling program that is compatible with regional recycling systems
- Foster cooperation between county and participating municipalities to achieve plan goals

3.4 Disposal

The overriding goal of the Roane County Region's disposal plan is to provide solid waste disposal capacity that can meet existing and projected demands in an environmentally sound, reliable, and economical manner. Several objectives are specified to meet this goal:

- Provide for immediate capacity to resolve the current capacity crisis
- Identify a long-term, least-cost disposal solution that serves Roane County in an environmentally responsible manner
- Aggressively implement waste reduction programs to decrease the amount of waste requiring disposal

The region must provide for immediate capacity prior to landfill closure in March 1995. To meet this objective, this plan recommends the following course of action:

- Institute flow control of county wastes as soon as possible to assure that wastes generated within the county are managed by the region's solid waste management system.
- Immediately construct a Class IV Landfill at the existing landfill site and divert maximum Class IV wastes to avoid using Class I disposal areas.
- Use the existing landfill to capacity.
- Implement short-term export (3 to 5 years) of Class I wastes to an out-of-county location. This entails finalizing a transport and disposal contract and transferring the solid waste out of the county using a transfer system consisting of either a single transfer station adjacent to the existing Class I Landfill or satellite transfer stations developed at the convenience centers that have compactors. Phasing of transfer is possible; however, minimum cost would be achieved from a central transfer point such as the landfill site that achieves compacted loads in high-volume trailers.

- Continue to review long-term disposal options, including in-county landfilling, waste export, in-vessel composting with a Class I cell, or other viable technologies.
- Select a long-term disposal option after the region conducts a thorough comparative technical and economic analysis of available options.

3.5 Public Information and Education

The regional goal for the public information program is, in a cost-effective manner, to expand the adult education opportunities, reach more businesses and industries about recycling and waste reduction, reach new businesses entering the area, and expand the education in the schools. This goal will be accomplished through the following objectives:

- Seek state grant money for the educational aspect of the solid waste plan as soon as it is approved
- Work closely with RCCS to expand on its existing educational programs
- Work closely with the school system to encourage solid waste curriculum at all grade levels
- Use the existing network of community clubs as an efficient means to reach citizens
- Take advantage of the offers from the local radios and newspaper to run public service announcements (PSAs) and feature articles on recycling and solid waste management
- Work closely with the State Planning Office and the Department of Education to take advantage of their education and training programs and materials
- Work closely with the Chamber of Commerce Beautification Committee, Leadership Roane, and other civic organizations in the community

3.6 Household Hazardous Waste (HHW)

The overall goal of the region is to have a well-advertised, well-utilized HHW collection program in place by the year 1995, and functional for the next 10 years so that the HHW generated in the county is disposed of in an environmentally sound manner. Objectives to reach that goal include selecting a temporary site, developing an education and promotional program, incorporating that program into the school system, and providing for long-term support.

4.0 System Elements Included in the Plan

The system elements included in the plan consist of source reduction (practices to reduce the amount or type of waste created), source diversion (methods to divert wastes from the Class I Landfill), recycling, collection and transportation, landfilling, and public education. It is anticipated that source diversion will divert the largest quantities of waste from the landfill, followed by recycling. An expanded public education program is anticipated to have a positive effect on all system elements.

Figure ES-1 (located at the end of this Executive Summary) shows the final configuration for the integrated solid waste management system. It shows locations of recycling centers, collection and transportation, the proposed transfer system, and the new Class IV Landfill.

Source reduction may be accomplished primarily through education to industries. It will be a major element of the public education program to ensure that residential source reduction will also occur. Source diversion is accomplished primarily through the materials sent to the Class IV Landfill.

Recycling is an integral part of the region's plan. Underserved residential areas will be provided with drop-off recycling centers at the convenience centers, schools, and areas in the municipalities. Collection of wood pallets will be established with industries. Materials that will continue to be recycled, or materials that are proposed to be recycled, include paper (including cardboard), aluminum, glass, polyethylene terephthalate (PET) and high-density polyethylene (HDPE) plastic, scrap metal, and pallets.

Collection and transportation is a strong element of the existing system with the county's extensive convenience center system. The region proposes to modify this system by reducing the number of convenience centers to eight, and providing for drop-off recycling at four and possibly all of the remaining eight convenience centers. These modifications should result in a more cost-efficient system by providing more services at the remaining convenience centers.

Public education and information is considered an important element of the plan. The Board strongly recommends hiring a full-time Solid Waste Coordinator in fiscal year (FY) 1994/1995. Much of this position's duties will center around program implementation, public education, and information.

5.0 Coordination of New Elements and Existing System

5.1 New Programs

The three main types of new programs proposed in this plan include recycling, expanded public education, and HHW collection.

The recycling program primarily will be implemented at the county convenience centers and at municipal drop-off recycling centers. Additionally, the existing capacities of the local aluminum processors will be more fully utilized. The region will support the recycling efforts of Dunn Diversified Industries, Inc. (DDI), and the county proposes to establish a materials recovery facility at the Industrial Park.

Public education programs will be coordinated with existing programs by working closely with the RCCS. Proposed school programs will also be coordinated with existing efforts.

The first Mobile Collection Event for the HHW program is scheduled for July 9, 1994. Education and promotion of the HHW program may be integrated with the existing environmental education program sponsored by RCCS.

5.2 New Services

The new recycling services will be offered at the convenience centers and at new city drop-off sites, and therefore will easily coordinate with the existing system.

One of the main responsibilities of the recommended new Solid Waste Coordinator position is to coordinate with the existing elements of the system, and integrate them with the proposed new elements.

5.3 New Facilities

The major new proposed facilities consist of a transfer system and a Class IV Landfill. Both of these facilities will probably be sited at the existing Class I Landfill site. The county is also planning to develop a materials recovery facility at the Industrial Park, which will be used for collection, processing (i.e., glass crushing and cardboard baling), and storage of recyclables. New drop-off recycling centers are also proposed for each of the municipalities.

6.0 Implementation Schedule

The proposed implementation schedule shown in Table ES-1 represents a compilation of the individual schedules for each element of the plan. The implementation schedule is provided in more detail for the first half of the planning period.

7.0 Estimated Ten-Year System Costs

The estimated 10-year system costs are provided in Table ES-2. These costs include new and replacement equipment and costs for the public education materials.

**Table ES-1
Overall Implementation Schedule for
Roane County Solid Waste Planning Region**

Fiscal Year	Task	Target Date
1993/1994	<ol style="list-style-type: none"> 1. Select temporary HHW collection site 2. Develop waste export capacity through contracts with private firms and the region 3. Submit Class IV Landfill permit application 4. Submit Annual Report 5. Submit recycling grant application for baler 6. Inventory industries for waste exchange listing 7. Poll industries and businesses for pallet exchange and reuse 8. Initiate design, permitting, and construction of transfer station 9. Finalize HHW advertising and distribution program 10. Schedule UT CIS Waste Reduction Seminar 11. Obtain state public education brochures and distribute 12. Implement institutional recycling program 13. Kickoff events for new recycling programs 14. Inventory industries for waste exchange listing 15. Poll industries and businesses for pallet exchange and reuse 16. Poll businesses for cardboard recycling interest 17. Purchase collection truck or contract with hauler 18. Purchase compactors, roll-offs, and open-top containers for 3 convenience centers 19. Train staff members at 3 convenience centers in new operations 20. Place PSAs 	<ol style="list-style-type: none"> 1. Done 2. ASAP 3. ASAP 4. 03/01/94 5. 03/25/94 6. 04/31/94 7. 04/31/94 8. 05/31/94 9. 06/15/94 10. 06/30/94 11. 06/30/94 12. 06/30/94 13. 06/30/94 14. 06/30/94 15. 06/30/94 16. 06/30/94 17. 06/30/94 18. 06/30/94 19. 06/30/94 20. Ongoing
1994/1995	<ol style="list-style-type: none"> 1. Seek grant for public education program implementation 2. Hire Solid Waste Coordinator 3. Apply for state grant for used oil collection center 4. Hold first HHW Collection Day 5. Hold RCCS Paint Swap at HHW Collection Day 6. Distribute RCCS recycling booklet 7. Incorporate HHW program into school curriculum 8. Conduct UT CIS Waste Reduction Seminar 9. Conduct convenience center survey 10. Complete RCCS Illegal Dump Slideshow 11. Submit recycling, problem waste and transportation and collection data for Annual Report 12. Complete waste and pallet exchange program implementation 13. Hold UT CIS Waste Reduction Seminar 14. Submit Annual Report 15. Add recycling to convenience centers and city drop-off centers 16. Implement backyard composting program 17. Find a showcase business for commercial recycling program 18. Apply for recycling grant for glass crusher 19. Disposal capacity is depleted. Begin full waste export 20. Hold second HHW collection day 21. Purchase compactors, roll-offs, and open-top containers for 4 convenience centers 22. Train staff members at 4 convenience centers in new operations 23. Phase out 3 convenience centers 24. Continue RCCS activities 25. Place PSAs 	<ol style="list-style-type: none"> 1. ASAP after plan approved 2. 07/01/94 3. 07/01/94 4. 07/09/94 5. 07/09/94 6. 07/31/94 7. 08/01/94 8. 09/30/94 9. 12/31/94 10. 12/31/94 11. 12/31/94 12. 12/31/94 13. 12/31/94 14. 12/31/94 15. 12/31/94 16. 12/31/94 17. 03/01/95 18. 03/25/95 19. 03/31/95 20. Spring 1995 21. 06/30/95 22. 06/30/95 23. 06/30/95 24. Ongoing 25. Ongoing

Table ES-1
Overall Implementation Schedule for
Roane County Solid Waste Planning Region

Fiscal Year	Task	Target Date
1995/1996	<ol style="list-style-type: none"> 1. Evaluate all recycling programs to determine quantities reduced 2. Apply for recycling and education program grants 3. Apply for state grant for used oil collection center 4. Apply for state grant for glass crusher and collection bins 5. Have yard waste and demolition waste landfill permitted and operational 6. Submit recycling, problem waste and transportation and collection data for Annual Report 7. Have yard waste and demolition waste landfill permitted and operational 8. Submit Annual Report 9. Hold third HHW collection day 10. Phase out 3 convenience centers 11. Place PSAs 12. Continue RCCS activities 	<ol style="list-style-type: none"> 1. 07/01/95 2. 07/01/95 3. 07/01/95 4. 07/01/95 5. 12/31/95 6. 12/31/95 7. 12/31/95 8. 03/01/96 9. Spring 1996 10. 06/30/96 11. Ongoing 12. Ongoing
1996/1997	<ol style="list-style-type: none"> 1. Apply for state grant for collection bins or other recycling equipment 2. Submit recycling, problem waste and transportation and collection data for Annual Report 3. Establish Adult Education Program 4. Evaluate disposal options (regarding in-vessel composting) 5. Submit Annual Report 6. Hold fourth HHW collection day 7. Ongoing education 8. Place PSAs 	<ol style="list-style-type: none"> 1. 07/01/96 2. 12/31/96 3. 12/31/96 4. 12/31/96 5. 03/01/97 6. Spring 1997 7. Ongoing 8. Ongoing
1997/1998	<ol style="list-style-type: none"> 1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Hold fifth HHW collection day 4. Ongoing education 5. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/97 2. 03/01/98 3. Spring 1998 4. Ongoing 5. Ongoing
1998/1999	<ol style="list-style-type: none"> 1. Evaluate plastic recycling program to consider adding other types 2. Submit recycling, problem waste and transportation and collection data for Annual Report 3. Submit Annual Report 4. Hold sixth HHW collection day 5. Ongoing education 6. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/98 2. 12/31/98 3. 03/01/99 4. Spring 1999 5. Ongoing 6. Ongoing
1999/2000	<ol style="list-style-type: none"> 1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Hold seventh HHW collection day 4. Ongoing education 5. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/99 2. 03/01/00 3. Spring 2000 4. Ongoing 5. Ongoing
2000/2001	<ol style="list-style-type: none"> 1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Hold eighth HHW collection day 4. Ongoing education 5. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/00 2. 03/01/01 3. Spring 2001 4. Ongoing 5. Ongoing

**Table ES-1
Overall Implementation Schedule for
Roane County Solid Waste Planning Region**

Fiscal Year	Task	Target Date
2001/2002	1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Hold ninth HHW collection day 4. Ongoing education 5. Place PSAs	1. 12/31/01 2. 03/01/02 3. Spring 2002 4. Ongoing 5. Ongoing
2002/2003	1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Hold tenth HHW collection day 4. Ongoing education 5. Place PSAs	1. 12/31/02 2. 03/01/03 3. Spring 2003 4. Ongoing 5. Ongoing
2003 ^b	1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Place PSAs	1. 12/31/03 2. 03/01/04 3. Ongoing

^aOnly covers second half of base year

^bEnd of planning period is December 31, 2003, which is only half of this fiscal year.

Table ES-2

Projected 10-Year Budget and Funding Plan (a)
Comprehensive Solid Waste Management Plan (b)

	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Operating Revenues											
General Taxes (b)	\$2,772,163	\$3,103,767	\$2,820,176	\$2,824,961	\$2,838,251	\$2,837,782	\$3,032,093	\$2,837,359	\$2,838,029	\$2,837,779	\$2,837,292
Class IV Tipping Fee Revenues	0	31,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200
Industrial Tipping Fees	608,000	485,000	481,000	476,000	471,000	467,000	463,000	455,000	449,000	439,000	431,000
Tire Pre-Disposal Fees	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000
Salvage of Recycled Materials	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Total	\$3,399,363	\$3,639,167	\$3,351,576	\$3,351,361	\$3,359,651	\$3,355,182	\$3,545,493	\$3,342,759	\$3,337,429	\$3,327,179	\$3,318,692
Operating Expenditures											
Waste Diversion to Class IV	\$0	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860
Waste Collection and Transport	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333
Recycling	4,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
Disposal	1,633,030	1,510,440	1,505,684	1,500,969	1,496,459	1,491,990	1,487,726	1,479,567	1,474,237	1,463,987	1,455,500
Public Information	7,500	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Problem Wastes	545	545	545	2,545	2,545	2,545	2,545	2,545	2,545	2,545	2,545
Total	\$3,189,408	\$3,356,177	\$3,351,421	\$3,348,706	\$3,344,196	\$3,339,727	\$3,335,463	\$3,327,304	\$3,321,974	\$3,311,724	\$3,303,237
Net Operating Income (c)	209,955	282,990	155	2,655	15,455	15,455	210,030	15,455	15,455	15,455	15,455
Non-Operating Revenues											
State Grants	\$57,500	\$35,000	\$35,000	\$20,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$57,500	\$35,000	\$35,000	\$20,000	\$0						
Non-Operating Expenditures (d)											
Waste Diversion	\$0	\$145,400	\$0	\$0	\$0	\$0	\$145,400	\$0	\$0	\$0	\$0
Waste Collection and Transport	250,000	75,000	3,000	0	0	0	10,000	0	0	0	0
Recycling	0	72,635	6,000	0	0	0	39,175	0	0	0	0
Disposal	0	0	0	0	0	0	0	0	0	0	0
Public Information	0	0	0	0	0	0	0	0	0	0	0
Problem Wastes	0	0	0	0	0	0	0	0	0	0	0
Total	\$250,000	\$293,035	\$9,000	\$0	\$0	\$0	\$194,575	\$0	\$0	\$0	\$0
Net Non-Operating Income (e)	(\$192,500)	(\$258,035)	\$26,000	\$20,000	\$0	\$0	(\$194,575)	\$0	\$0	\$0	\$0
Net Income (f)	17,455	24,955	26,155	22,655	15,455						

SOURCE: Summarized from Tables 4-2, 5-2, 6-3, 8-3, 9-3, and 10-1.

a. All revenues and expenditures are shown in constant 1993 dollars. Cost projections are consistent with budgets developed under the new FY 1994 full cost accounting requirements.

b. While projections of revenues and costs are shown in detail to facilitate understanding, note that these projections are not intended to suggest that future operations can be forecast with the degree of precision that may be implied.

c. Property tax revenues fund the majority of all costs associated with collection and transportation. The revenues shown include money from various sources from the Cities and the County.

d. Net Operating Income is calculated as operating revenues less operating expenditures. The positive amounts in each year reflect generation of revenues sufficient to allow for capital acquisitions.

e. "Non-Operating Expenditures" is a category used to present expenditures on capital acquisition for the solid waste system, in contrast to the ongoing expenditures shown under "Operating Expenditures".

f. Net Non-Operating Income is calculated as Non-Operating Revenues less Non-Operating Expenditures. The negative amounts in some years indicate the funding of some capital acquisitions through the use of current operating revenues.

g. Net Income is calculated as the sum of Net Operating Income and Net Non-Operating Income.

8.0 Allocation of Responsibilities

The institutional structure that has been established to implement the plan consists of the Roane County Solid Waste Board and five implementing bodies—Roane County, the Solid Waste Authority, Kingston, Rockwood, and Harriman. The Board, as a planning body, will have responsibility for plan modifications, the five-year plan update, and annual reports.

The Board will also function in an oversight role to ensure that the major milestones and goals of the plan are being met.

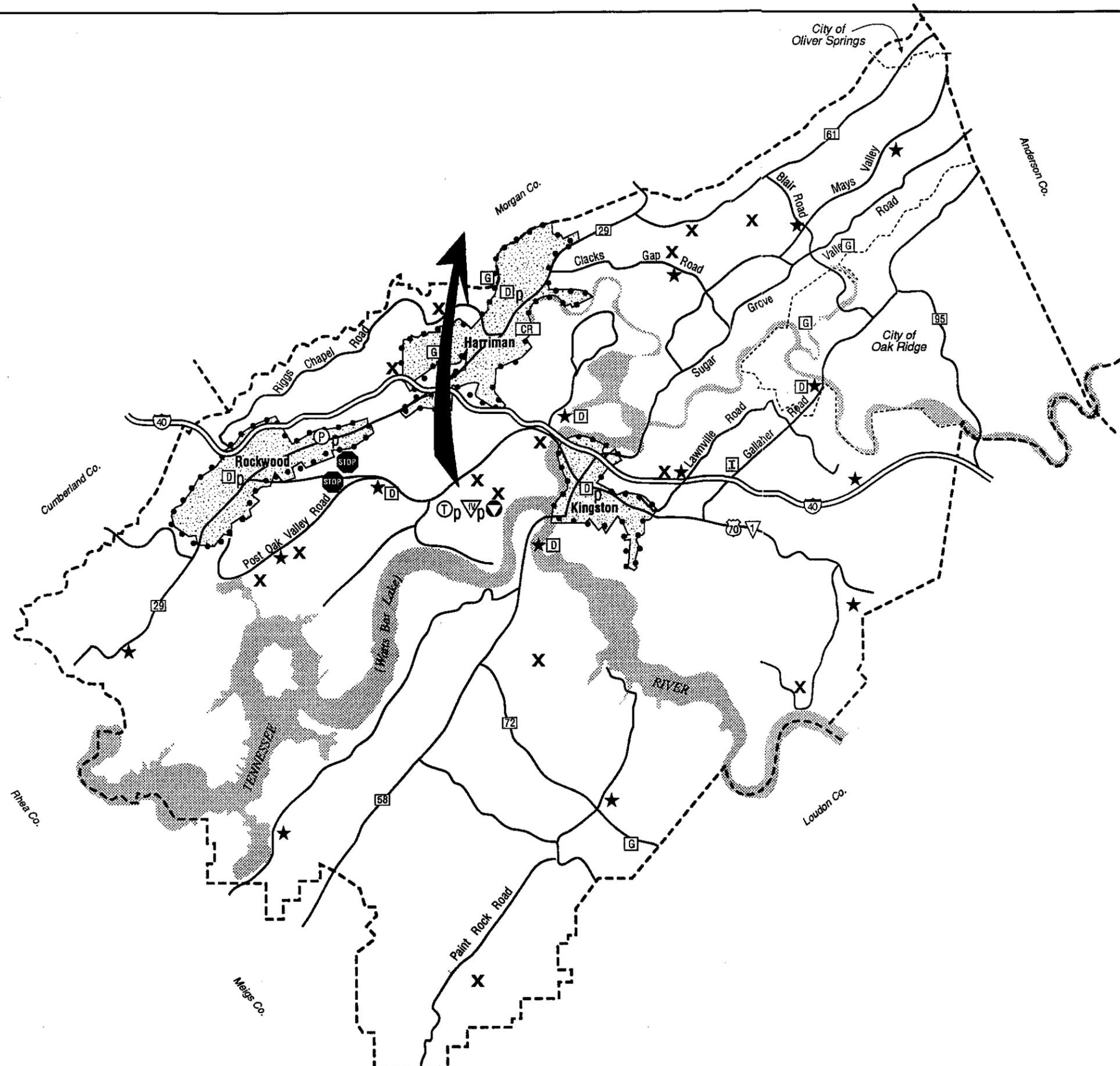
The Solid Waste Authority is responsible for permit review, flow control, and daily solid waste operations. It is responsible for the operation of the transfer system and for plan implementation.

The county is responsible for operation of the convenience centers, cleanup of illegal dumps, Mobile Collection Events for HHW, and disposal of waste tires. The proposed Solid Waste Coordinator is responsible for program development.

RCCS is responsible for public education and information, and for coordinating with the new Solid Waste Coordinator position.

The municipalities are responsible for the collection of solid waste within their jurisdictions and operation of the drop-off recycling centers proposed for each city.

Private industry will take a more active role in source reduction after attending the waste reduction seminar sponsored by UT CIS. Private industry also has responsibilities in the pallet exchange program. The Chamber of Commerce and Industrial Development Board will assist with waste education and recycling programs directed toward industries.



LEGEND

- Roane County Boundary
- [Stippled Area] Approximate Area of Municipality
- Approximate Boundary of Municipality Not in the Region
- ==== Interstate Highway
- ~~~~~ River
- Street
- ★ [D] Convenience Center
- [CR] Commercial Recyclers
- STOP End Use Industry that Purchases Recovered Materials Directly
- (T) Transfer Station
- ▽ Permitted Class I Landfill (Municipal Solid Waste)
- ▽ Permitted Class IV Landfill
- Approximate Boundary of Municipal House to House Collection Areas
- ↪ Indicates Waste Flow Patterns
- X Illegal Dumps
- [G] Greenbox
- p Planned Facility
- Closing Landfill
- (P) Other Permitted Processing Centers
- [I] Major In-house Commercial/Industrial Recycling Program

NORTH

 NOT TO SCALE

Figure ES.1
**Regional Solid Waste System
 (1994 - 2003)**
 ROANE COUNTY REGIONAL SOLID WASTE BOARD

Chapter 1

Description of the Municipal Solid Waste Region

1.1 General Description

The Roane County Solid Waste Planning Region consists of a single county and three municipalities. The municipalities include Kingston, Harriman, and Rockwood, with Harriman being the largest of the municipalities. The portions of the cities of Oak Ridge and Oliver Springs that are in Roane County are not part of this region.

The total area of the county is 361 square miles, most of which is in the Appalachian Valley and Ridge Physiographic Province. It consists of parallel, gently rolling northeast/southwest trending hills and valleys. The relief is generally less than 500 ft. The Cumberland Escarpment parallels the northwestern edge of the county and is the southeastern edge of the Cumberland Plateau. Elevation differences along the escarpment are somewhat greater than 500 ft.

The rivers and Tennessee Valley Authority (TVA) lakes are the other prominent physiographic features in this region. The Tennessee River is the major river cutting through the region and is joined by the Clinch and Emory Rivers just south of Kingston. All major rivers in the region have been dammed by TVA.

The physiographic features of the region play an important role in solid waste movement throughout the region and in the decisions in making an integrated solid waste management system. Most secondary roads run in a northeast/southwest alignment, following the orientation of the valleys and ridges. The river system effectively divides the county into three unequal portions: the area to the south and east of the Tennessee River, the area west of the Tennessee and Emory Rivers, and the area north of the Tennessee River and east of the Clinch/Emory Rivers. With a limited number of bridges crossing these rivers, traffic flow is not generally in a direct route. Finally, the Cumberland Escarpment also functions as an effective barrier to traffic flow. The combination of bisecting rivers, parallel ridge topography, and the Cumberland Escarpment impacts decisions such as siting of solid waste facilities.

Outside the municipalities the dominant land uses are rural, agricultural, and recreational. Watts Bar Lake, formed when TVA dammed the Tennessee River in 1939, provides a focal point for fishing, boating, and water skiing along its 783 miles of shoreline. The regional base map shown in Figure 1-1 (located at the end of this chapter) is adapted from the Tennessee Department of Transportation (DOT) General Highway Map.

1.2 Rationale for Region Formation

Roane County formed a single-county region largely because no neighboring county was interested in forming a multi-county region. At the time of region formations, Roane County approached other neighboring counties, but none were at a point where they were ready to form

a multi-county region. A public hearing was held on September 8, 1992, at which it was suggested that Roane County should be a separate solid waste region. Roane County drafted its resolution (Appendix A) in such a manner to allow revision of the single-county region at a later date.

1.3 Institutional Structure

1.3.1 Solid Waste Board

After the September 8, 1992, public hearing to determine if Roane County would be a single-county region, the County Commissioners passed Resolution No. 2432 on December 4, 1992, establishing the Solid Waste Board. The Board consists of 11 members, 7 from the county and 1 each representing the municipalities of Kingston, Harriman, Rockwood, and Oliver Springs. The resolution was amended on April 26, 1993, when Oliver Springs elected to participate in the Anderson County Municipal Solid Waste Regional Board. The city of Oak Ridge is also part of the Anderson County region. Therefore, the Roane County Region is actually less in area, population, and waste generation than the entire county. However, it was beyond the scope of this plan to prorate the regional information based on removing the Roane County portion of Oak Ridge and Oliver Springs population. Therefore, the information provided in this plan (such as population and waste projections) is based on the entire county.

A special called session of the Roane County Commission was convened on March 22, 1993, at which the appointments to the board were confirmed. The Board elected a Chair, Vice-Chair, and Secretary. The powers and duties are as described in the 1991 Solid Waste Act [Tennessee Code Annotated (T.C.A.) Sections 68-211-813 through 816], with the Board's principal responsibility being to prepare the plan.

Coordination is achieved through a strict advertising procedure for all public meetings. The Board involves the public in its decisions primarily through keeping all meetings open to the public and advertising them in the local papers five working days before the meeting. The Board also coordinates with existing local government agencies informally, in that many of the Board members know staff working for the local government agencies. A special public meeting was held to review this plan in its final draft stage and to solicit input from the public.

A regional advisory committee has been formed in Roane County. Details on its membership and function are found in Appendix A.

1.3.2 Solid Waste Authority

After a public hearing on January 7, 1993, a Solid Waste Authority was formed in Roane County pursuant to T.C.A. 68-211-904. The Authority is composed of 11 members, with 7 members from the county and 1 each from Kingston, Harriman, Rockwood, and Oliver Springs. Members of the Authority were confirmed at the March 22, 1993, special session of

the County Commission. The powers and duties of the Authority are as described in T.C.A. 68-211, Part 9—Solid Waste Authority Act of 1991.

The Authority coordinates with existing local government agencies informally, and involves the public in its decisions primarily through the public meeting forum. All of the Authority's meetings are advertised in the local paper five days before they are held.

1.4 Demographics

The 1993 population in Roane County was 46,516, based on the U.S. Census Bureau projections from the 1990 census. The average population density was 128.9 people per square mile, which is a decrease from the 130.8 people per square mile cited in the Needs Assessment [East Tennessee Development District (ETDD), 1992].

The principal demographic trend in the county that will affect the waste generation rates is the declining population in the county and its municipalities. For the decade 1980 to 1990, Roane County's population declined 2.5 percent. It is anticipated that the population will continue to decline in the next decade at a rate of 4.9 percent per decade. The decline is attributed to a limited amount of construction and a decline in household size (ETDD, 1992). This trend is likely to decrease waste generation and erode the rate base necessary for solid-waste-related capital improvements.

However, other evidence exists that may contradict the population predictions in the Needs Assessment (ETDD, 1992). For example, the school population has been growing by 2 percent for the last two years, and the school board anticipates the same rate of increase for the next five to six years (Rex Galyon, School Board, personal communication).

1.5 Economic Activity

The information provided in Chapter 2 of the Needs Assessment has been reviewed and verified as appropriate. For example, all the major health care facilities (those with more than 50 beds) were contacted to verify the number of beds, to verify the estimated quantity of solid waste generated per year, and to verify the method of infectious waste management. The latest edition (1990) of County Business Patterns of Tennessee was obtained to determine if any significant change had occurred in the types and distribution of employers since the Needs Assessment was prepared. No significant changes were noted.

Table I-13 describes the sources of revenue utilized in Roane County and its municipalities participating in the region for solid waste management during fiscal year (FY) 1993. Over 60 percent of total solid waste revenue requirements are met through the use of property taxes paid by citizens in rural areas who use convenience centers free of charge. Table I-14 describes the tax bases of the types of local revenue used for solid waste management in Roane County.

The total tax base of real property in the county is approximately \$294 million, resulting in total property tax revenues of more than \$9 million.

The Roane County Industrial Development Board was consulted to determine if any major projects were planned (i.e., new malls) or any major new industries were planning to locate to the county. Recruiting manufacturing jobs to the county is a priority of the Industrial Development Board, and several prospective industries are considering Roane County. Mr. Perry, Director of the Industrial Development Board at the time he was interviewed, indicated that Tennessee Valley Steel Company reopened in August 1993 and will employ approximately 200 people. Several other industries (either new or expanding) are adding more staff, but they are all less than 100 people.

approved the widening of Highway 58 between I-40 and Oak Ridge in 1997. funds have already been allocated. It is expected that this improved road will bring more traffic, people, and business into the county, and as a result possibly more solid waste.

Chapter I
Forms

**Table I-1
Population and Population Density
(1990)**

County^a	Area (Square Miles)	Population	Average Density Population/Square Miles
Roane	361.0	47,227	130.8
Regional Total	361.0	47,227	130.8

^aFor each of these tables, the county and region are assumed to be the same.
Source: ETDD, 1992.

**Table I-2
Distribution of the Total Regional Population
by Urban and Rural Areas
(1990)**

County	Urban		Rural	
	Population	Percent	Population	Percent
Roane	20,209	42.8	27,018	57.2
Regional Total	20,209	42.8	27,018	57.2

Source: 1990 Census.

**Table I-3
Distribution of the Total Regional Population
by Sex and Age
(1990)**

Age	Total	Male	Percent	Female	Percent
0-4	2,666	1,368	51.3	1,298	48.7
5-17	8,441	4,366	51.7	4,075	48.3
18-44	17,934	8,769	48.9	9,165	51.1
45-64	11,131	5,350	48.1	5,781	51.9
65+	7,055	2,891	41.0	4,164	59.0
Regional Total	47,227	22,744	48.2	24,483	51.8

Source: 1990 Census.

Table I-4
Distribution of Regional Population (1990) by Education
(Age ≥ 25)

Roane County	Number	Percent
Less than 9th Grade	5,689	17.8
9th-12th Grade, no diploma	4,963	15.5
High School, Graduate	10,610	33.2
Some College, no degree	5,066	15.9
Associate Degree	1,393	4.4
Bachelor's Degree	2,478	7.8
Post Graduate/Professional (>4)	1,744	5.5
Regional Total	31,943	100.0
Source: 1990 Census.		

Table I-5
Distribution by Type of Housing and Occupancy

	Total Units	Occupied	Owner	Rented
Single Family				
1, Detached	36,298	13,801	11,926	1,875
1, Attached	567	256	122	134
Multi-Family				
2	1,020	435	49	386
3-4	832	439	40	399
5-9	553	325	9	316
10-19	319	198	6	192
20-49	258	155	2	153
50 or more	302	235	1	234
Institutional ^a	408	NA	NA	NA
Mobile Home/Trailer	6,234	2,454	1,847	607
Other ^b	364	155	100	55
Regional Total	47,155	18,453	14,102	4,351

^aThe number of persons in institutional housing in 1990 was 12,349; that includes dorms, correctional facilities, nursing homes, mental hospital, and juvenile institutions.

^bEmergency shelters and group quarters (non-institutional).

Source: 1990 Census.

Table I-6
Regional Population Projections 1994-2003

Regional Population 1993: 46,516										
County	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Roane Region	46,283	46,050	45,819	45,588	45,359	45,132	44,907	44,555	44,209	43,865
Regional Total	46,283	46,050	45,819	45,588	45,359	45,132	44,907	44,555	44,209	43,865

Source: The University of Tennessee (UT), Department of Sociology.

Table I-7
Basic Economic Information for Each County and the Region in 1991

County	Population	MSA County (yes/no)	Total Employment	Total Earnings	Per Capita Income	% Population Below the Poverty Line
Roane Region	46,987	No	24,234	\$727,540,000	\$15,411	16.0
Regional Total	46,987	No	24,234	\$727,540,000	\$15,411	16.0

Source: ETDD, 1992.

Table I-8
Non-Agricultural Employment by Sector in 1993
Percent of Total Employment

County	Manufacturing	Construction	Trade	Finance	Service	Government	Transportation Public Utilities	Other
Roane Region	5.978	647	N/A	581	N/A	3,711	436	186
Regional Total	5.978	647	N/A	581	N/A	3,711	436	186
Percent	25.4	2.7	13.3*	2.5	37.9*	15.8	1.9	0.8

*Estimate.
Source: Bureau of Economic Analysis, U.S. Department of Commerce.

Table I-9 Agricultural Employees	
County	Employment
Roane	673
Regional Total	673
Source: ETDD, 1992.	

Table I-10 Summary of Major Generators of Commercial and Non-Hazardous Industrial Waste in 1991			
County	Screening Criteria Applied	Number of Generators	Estimated Total Quantity of Waste
Roane		657	17,257
Regional Total		657	17,257
Source: ETDD, 1992, and U.S. Department of Commerce, County Business Patterns, 1989, Tennessee.			

Table I-11 Regional Summary of Institutions Housing More Than 100 Persons			
County	Total Number of Institutions	Total Number of Students/ Prisoners/Residents	Estimated Quantity of Waste Generated
Roane	None		
Regional Total	None		
Source: ETDD, 1992, as verified by CH2M HILL, 1993.			

**Table I-12
Summary Data on Major Health Facilities In Roane County
(Larger than 50 Beds)**

Facility	Location	No. of Beds	Estimated Quantity of Solid Waste Generated (tons)	Infectious Waste Management	
				Onsite/Offsite	Type Treatment
Baptist Hospital of Roane County	Rockwood	97	283	Offsite	Incineration – Waste Management, Inc. (WMI), hauls to North Carolina
Harriman City Hospital	Harriman	109	318	Offsite	Incineration
Johnson Health Care Center	Harriman	170	155	Offsite	Browning-Ferris Industries (BFI) hauls offsite – Incineration
Marshall C. Voss Health Care Facility	Harriman	130	119	Offsite	Haul to Baptist Hospital – Incinerated in North Carolina
Rockwood Health Care Center	Rockwood	150	137	Offsite	Haul to Baptist Hospital – Incinerated in North Carolina
Regional Total		656	1,012		

Source: Estimates from WMI: 16 lb/person/day (hospitals), 5 lb/person/day (nursing homes). Data verified by CH2M HILL, 1993.

Table I-13
Sources of Local Revenue Utilized in the Region for Solid Waste Management in FY 1993^a

City/County	Property Tax	Local Sales Tax	Wheel Tax	Local Waste Fee	User Fee/ Tipping Fee	Other ^b
Roane County	\$488,584	\$0	\$0	\$0	\$148,823	\$557,906
Rockwood	209,763	0	0	0	0	0
Harriman	316,630	0	0	0	0	0
Kingston	148,431	0	0	0	0	0
Total	\$1,163,407	\$0	\$0	\$0	\$148,823	\$557,906

^aRevenue sources and financial structure changed in FY 1994.

^bOther revenues include state grants, debt proceeds, state surtax funding, sale of materials, and previously unused fund balances.

Source: Roane County Financial Department reports and data provided by cities.

Table I-14
Tax Bases for Local Tax Revenue Utilized for Solid Waste Management in FY 1993

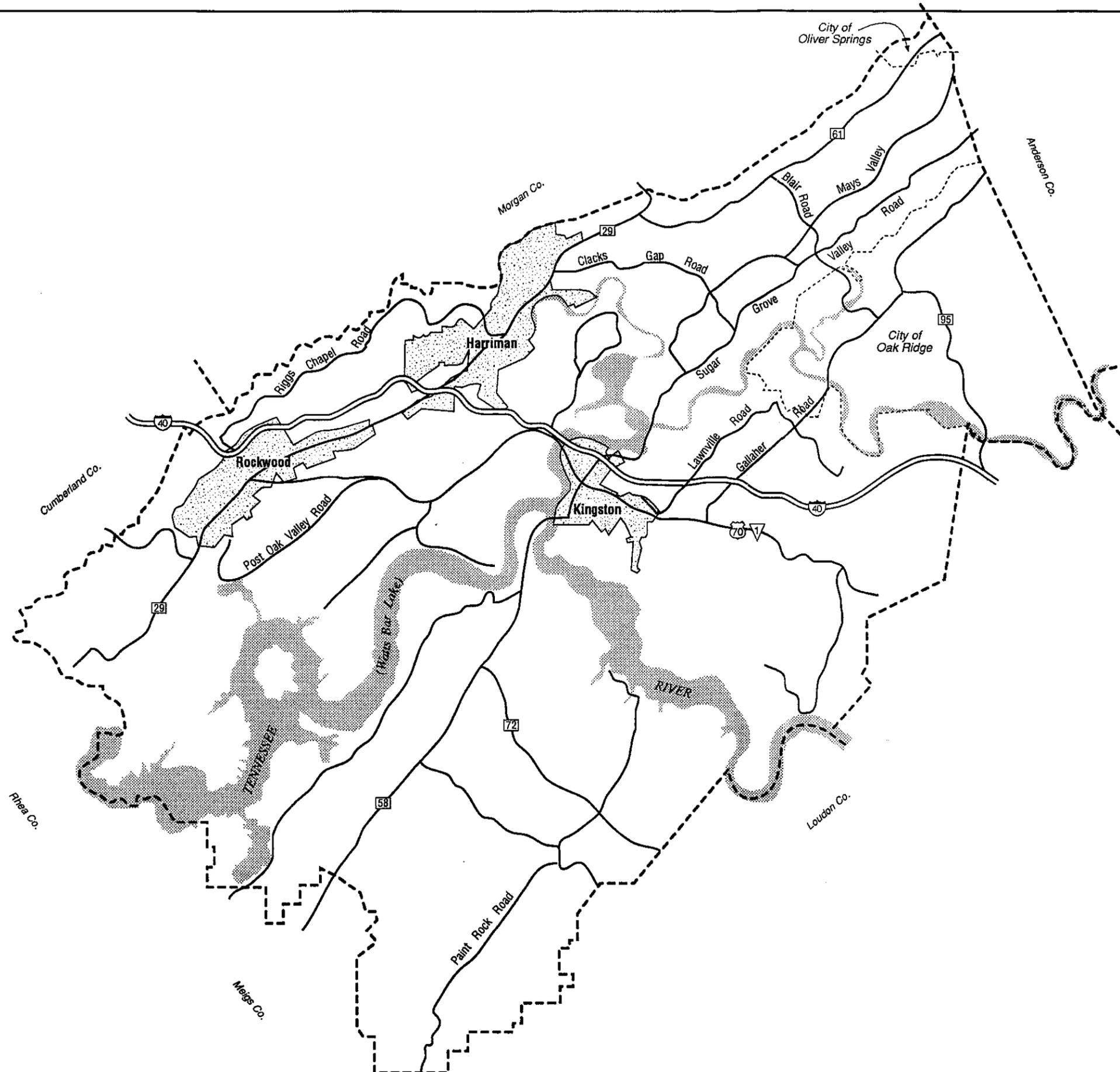
City/County	Total Assessed Value	Property Tax Revenue	Sales Subject to Sales Tax	Sales Tax Revenue	Number of Registered Vehicles	Wheel Tax Revenue
Roane County	\$293,655,448	\$9,094,228	UA	\$4,267,680	\$35,000	\$0
Rockwood	30,928,898	433,305	UA	863,293	NA	NA
Harriman	36,256,120	1,040,577	UA	0	NA	NA
Kingston	29,377,958	601,067	UA	344,324	NA	NA
Total	\$390,218,424	\$11,169,176	\$0	\$5,475,297	\$35,000	\$0

Notes:

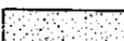
NA = Not Applicable.

UA = Unavailable.

Source: Roane County Financial Department reports and data provided by cities.



LEGEND

-  Roane County Boundary
-  Approximate Area of Municipality
-  Approximate Boundary of Municipality Not in the Region
-  Interstate Highway
-  River
-  Street

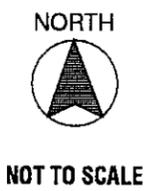


Figure 1.1
Regional Base Map
 ROANE COUNTY REGIONAL SOLID WASTE BOARD

Chapter 2

Analysis of the Current Waste Management System for Roane County

This chapter of the Solid Waste Management Plan presents an analysis of the current solid waste management system in the Roane County Region. The purpose of this analysis is to identify county waste management needs based on the information gathered in the *Roane County Solid Waste Needs Assessment* (ETDD, 1992).

To help evaluate the current program and identify regional needs, the information in this chapter has been divided into the following categories:

- Waste stream characterization
- Waste collection and transportation systems
- Source reduction and recycling systems
- Waste processing, composting, and waste-to-energy/incineration systems
- Disposal facilities
- Cost of current system
- Revenues
- Public information and education programs
- Problem wastes
- System map for base year (1993)
- Strengths and weaknesses of current system

Each of these categories as related to the region are discussed in the following sections.

2.1 Waste Stream Characterization

The data used to characterize the present waste stream in Roane County were collected for calendar year 1991 and are based on written records kept by operators for the period of July 1, 1991 through December 31, 1991. In some instances, it was necessary to estimate quantities for the first 6 months of this year to fill in information gaps. This characterization is not based on a labor-intensive sorting and weighing of wastes from scientifically selected sampling over a year's period, which would be required for a full engineering waste analysis.

Weekly data from July and August, 1993, are presented in Table 2-1 as a point of comparison after the scales were installed on July 1, 1993. Tipping fees also increased beginning July 1, 1993, which resulted in a different distribution of materials being received at the landfill.

Roane County is host to several industries. As a result, approximately 32 percent of the county's waste stream is comprised of "special waste." This special waste stream percentage causes differences from the U.S. Environmental Protection Agency (EPA) default percentages

**Table 2-1
Composition of Waste Received at Landfill After July 1, 1993**

Type of Material	Quantities (tons per day) ^a	
	July 1993	August 1 Through 18, 1993
Carpet	0.4	
Fluff	25	3
Garbage	2,737	1,269
Glass	111	51
Lumber	12	10
Mud	6	
Shingles	121	13
Siding	0.5	1
Tires	0.2	
Wire	1	
Total	3,014	1,347

^aQuantities rounded from raw data provided.

Source: Data obtained from Bill Harris, Roane County Landfill Director.

by nearly 30 percent. Because of its characteristics, the landfill operations have been required to incorporate specific operation procedures when disposing of this waste stream.

For example, IMCO's aluminum salt cake waste requires monofilling. Ninety-nine percent of the waste is a mixture of sodium chloride, potassium chloride, 1 to 2 percent aluminum and aluminum oxide (Tennessee clay). However, IMCO likely will construct its own landfill in the near future.

Other special wastes identified in the Needs Assessment (ETDD, 1992) include shredded fluff from Southern Alloys and Metal Corporation and water sludge from The Tate Group. Shredded fluff has been received at the landfill and mixed with cover fill material. The Tate Group received a permit for special waste, but never used it.

A comparison of the waste stream by materials in Roane County to the national default percentages has been provided in Table II-4 at the end of this chapter.

2.2 Waste Collection and Transportation Systems

Waste collection services (including convenience centers) are provided for a total of 18,453 residences and 330 businesses in Roane County by municipalities or private hauling companies (Table 2-2). Collection services are in the form of convenience centers, door-to-door collection, and green box drop. Roane County has a contract with Browning-Ferris Industries (BFI) to provide collection services because Roane County's trucks are out of service. Three private companies provide collection services (door-to-door collection) for 170 households and 200 businesses within the county. A breakdown of the types of collection services is provided in the Table 2-2.

2.2.1 Door-to-Door Collection Service

The cities of Harriman, Rockwood, and Kingston provide door-to-door collection for households, and account for the 7,106 residences shown in Table 2-3. In addition, Rockwood and Kingston provide door-to-door waste collection for 30 and 100 businesses, respectively. The remaining door-to-door collection services have been provided by BFI, Volunteer Refuse, and V&R Garbage Services. The distribution of door-to-door waste collection services between the municipalities and private companies is shown in the Table 2-3 below, and the general areas of the collection routes are shown in Figure 2-1 (located at the end of this chapter).

2.2.2 Convenience Centers

Roane County currently operates a total of 14 convenience centers within the county, as the Blue Spring Store site has been upgraded to a manned convenience center. In 1991, 13 centers accepted an estimated waste volume of 15,900 tons of residential waste based on information gathered in the Needs Assessment. Commercial waste is not accepted at these facilities. Waste collected at convenience center locations is transported to the county landfill for ultimate

**Table 2-2
Types of Waste Collection Services Provided in Roane County**

Collection Services	Number of Residences Served	Number of Businesses Served
Convenience Centers	11,177	
Door-to-Door Collection	7,106	130
Green Box Drop	NA	NA
Direct Commercial Contracted Services	170	200
Note: NA = Not Available.		

**Table 2-3
Waste Collection Distribution by Provider
Roane County**

Waste Collection (Municipal)	Number of Residences Served	Number of Businesses Served
City of Harriman	2,931	--
City of Rockwood	1,800	30
City of Kingston	2,375	100
Waste Collection (Private Companies)	Number of Residences Served	Number of Businesses Served
BFI ^a	--	43
Volunteer Refuse ^b	--	150
V&R Garbage Services ^a	125	0
Jerry Bailey Sanitation	N/A	N/A
Diane Rose	N/A	N/A
Fred Collins	100	6
R&H Sanitation	120	2
Roy Tate	48	

^aData verified by Solid Waste Board, 1994.

^bVolunteer Refuse service area purchased by BFI in 1993.

disposal. The average distance traveled by a householder to deliver waste to a convenience center is estimated to be 5 miles.

The estimated volume of waste received at each of the 14 convenience centers based on the number of containers and a 52-week operation schedule is shown in Table 2-4. However, review of the county landfill records and personal communication with Gene Dutton (Roane County High Department; August 27, 1993) indicate the actual volume accepted by these centers is closer to 12,000 tons per year (tpy). The locations of these centers has been provided in Figure 2-1 (located at the end of this chapter).

2.3 Unserved or Underserved Areas

Roane County currently has a green box service at two locations within the county. The green box service consists of a total of four unattended waste containers (6-yd³ dumpsters) distributed among the two locations. Each green box location services approximately a 2.5 mile radius. The dumpsters from these locations are emptied and hauled to the Roane County landfill on a daily basis. Roane County estimated a total of 3,510 tons of solid waste was collected from this collection system in 1991 when the Blue Spring Store site was still an unattended green box site. The locations of the green box system are shown in Figure 2-1. The waste collection distribution for this system is provided in Table 2-5.

In addition, the county has 37 green boxes at 20 other locations. The majority of these green boxes are at schools, with one to four green boxes at each school. The Roane County jail, park, and landfill are also served; 10 green boxes are placed at the entrance to the landfill.

The county has proposed a plan for phasing out its green box collection system and enhancing its convenience center system to provide service for the residences currently using the green boxes for disposal. However, citizens in the county who use the green boxes are not in favor of discontinuing this service.

2.2.3.1 Unmanaged Waste

The Needs Assessment (1992) estimates that approximately 696 tons of solid waste is currently uncollected as shown in Table II-5. This number is based on a potential maximum solid waste generation rate of 6 lb per person per day as reported by the *Guidelines for Decision Makers—Solid Waste Management* [University of Tennessee (UT), County Technical Assistance Service, 1991]. The estimate accounts for wastes that are outside the collection system such as materials in roadside dumps, litter, etc.

Illegal dumping has been identified as a problem in the region. Several dumps have been in existence for many years. It is speculated that some of the construction wastes are brought in from other counties. Types of wastes found in these dumps include tires, household garbage, furniture, cars, construction debris, and dead animals.

**Table 2-4
Convenience Center Locations in Roane County^a**

Site Location	Number of Containers	Size of Containers	Estimated Amount of Waste Accepted (tpy)
1. Orchard View	14	6 yd ³	1,092
2. Blair	12	6 yd ³	936
3. Clax Gap	14	6 yd ³	1,092
4. Swan Pond	15	6 yd ³	1,170
5. Post Oak	16	6 yd ³	1,248
6. Pumphouse	13	6 yd ³	1,014
7. Glen Alice	12	6 yd ³	936
8. North Gallaher	2 compacted roll-offs	40 yd ³	2,080
9. Bradburry	12	6 yd ³	936
10. Cave Creek	15	6 yd ³	1,170
11. Lawnville	14	6 yd ³	1,092
12. Highway 58 South	2 compacted roll-offs	40 yd ³	2,080
13. East Paint Rock	14	6 yd ³	1,092
Estimated Total			15,938

^aAs of 1991. Source: ETDD, 1992.

Notes:

1. Estimated waste accepted based on 4 yd³ = 1 ton.
2. Actual recorded waste accepted estimated to be 12,000 tons.

**Table 2-5
Green Box Collection System
Roane County^a**

Site Name	Number of Containers	Estimated Quantity of Waste Collected in 1991 (Tons)
Snow Lane	3	780
Emory Gap	2	780
Blue Springs Store	5	1,950
Total		3,510

^aAs of 1991. Source: ETDD, 1992. Blue Springs Store is now a manned convenience center.

Information on the illegal dumps was obtained from Mr. Boots Barr, Litter Control Officer, Roane County Highway Department. Members of the Solid Waste Board also supplied information on known illegal dumps. Details on the individual dumps are provided in Chapter 10 and the locations of the dumps are shown on Figure 2-1.

2.3 Source Reduction and Recycling Systems

From 1991 to 1993, Roane County operated a non-profit recycling collection service (Volunteer Recyclers, Inc.) that serviced the entire county and recovered materials through a drop-off program utilizing convenience centers. This program accounted for approximately 692 tons of materials recovered and sold in 1991, which was 1.3 percent of the total county waste stream. This program is no longer in operation.

The recycling collection programs currently in operation in the region are those that have been initiated by industries and businesses within the region. A breakdown of the businesses participating in these programs and the materials recovered is provided in Table 2-6.

Dunn Diversified Industries, Inc. (DDI) has started an aluminum can recycling program in conjunction with Southern Alloys and Metals. Various businesses in the county save their cans until DDI picks them up and stores them onsite. Southern Alloys and Metals transports them from DDI to its facility.

The county has recently begun a recycling program at the county municipal buildings. A county truck is used to transport office paper and mixed paper to a Knoxville dealer.

2.4 Waste Processing, Composting, and Waste-to-Energy/ Incineration Systems

No waste processing, composting, or waste-to-energy/incineration facilities are currently in operation within the county.

2.5 Disposal Facilities—Landfills and Balefills

The Roane County Sanitary Landfill is the only Class I sanitary landfill in operation in the region. This facility services the entire county and has been in operation since the late 1960s, but was first permitted in June 1972. The landfill, on average, received an estimated 167 tons of solid waste per day until July 1, 1993. After that date, tipping fees were increased to \$32.85 per ton, causing the waste amounts to drop to around 100 tons per day (tpd).

The estimated remaining disposal capacity for the existing site is 15 to 18 months from February 1993. Information regarding the existing facility has been summarized in Tables II-8 and II-9. Roane County has received a permit for a lateral expansion of the existing Class I

**Table 2-6
Private Recycling Programs
Roane County**

Name	Materials Recovered	Quantity Recovered
Baptist Hospital	Aluminum cans	N/A
Beemac Enterprises, Inc.	Cardboard	35 to 40 boxes/day
Camelot Care Centers, Inc.	Aluminum cans	0.52 tpy
DDI	Aluminum cans/wood	
Fortafil Fibers, Inc.	Cardboard White paper	4,500 lb/week 6,000 lb/week
McDonald's of Harriman	Cardboard	30 boxes/day
Partners Home Health of East Tennessee	Aluminum cans	50 to 100 cans/week
Rockwood Electric Utility	Ferrous/non-ferrous scrap Paper	1,000 lb/month N/A

Note: N/A = Not Available.

Landfill. Information regarding the planned facility expansion has been summarized in Table II-10.

In addition to the Class I Landfill, a Class IV Landfill was also in operation in Roane County until 1991. This demolition landfill was owned and operated by the Department of Energy (DOE) and accepted waste from the Oak Ridge National Laboratory (ORNL) DOE facility. This facility is now closed, and wastes previously going to this site are disposed of in the Y-12 Plant's Class IV Landfill.

2.6 Costs of Current System

Table 2-7 provides a summary of costs incurred by Roane County and its municipalities for solid waste management during FY 1993. Figure 2-2 is a bar chart, portraying the expenditures of Roane County and its municipalities on solid waste management for three cost categories: landfill, convenience centers, and collection.

2.7 Revenues

Table 2-8 presents a summary of the sources of revenues supporting the current solid waste management system. Figure 2-3 is a pie chart, graphically illustrating the relative share of each major category of revenues.

2.8 Public Information and Education Programs

The Harriman and Roane County School systems have established education programs available to teachers for use in their daily curriculum. In addition, the Roane Clean Community System (RCCS) provides in-service training for teachers using specific solid waste and recycling curriculum. The RCCS also introduced a Keep America Beautiful curriculum in the school systems in Fall 1992.

2.9 Problem Waste

Existing and future plans for regional problem waste management are discussed in detail in Chapter 10 of this plan.

Table 2-7
Costs Incurred by Roane County & Municipalities
For Solid Waste Management
In Fiscal Year 1993

Cost Category	Roane County	Rockwood	Harriman	Kingston	Total
Collection/Transportation	\$283,440	\$196,197	\$297,090	\$139,069	\$915,796
Convenience Centers (a)	170,346	0	0	0	170,346
Intermediate Processing	0	0	0	0	0
Recycling	0	0	0	0	0
Composting	0	0	0	0	0
Problem Wastes (b)	0	0	0	0	0
Landfill Services (c)	<u>746,059</u>	<u>13,566</u>	<u>19,539</u>	<u>9,362</u>	<u>788,527</u>
	\$1,199,845	\$209,763	\$316,630	\$148,431	\$1,874,669

- a. Convenience Centers serve as collection centers in the unincorporated County.
- b. Current accounting procedures do not allow tracking of costs to manage problem wastes.
- c. Landfill costs for Roane County exclude the costs shown for the municipalities. The municipal cost figures include only direct payments at the landfill during FY 1993. Residents of the cities made additional payments in property taxes for the landfill directly to the County, which are included in the County figure.

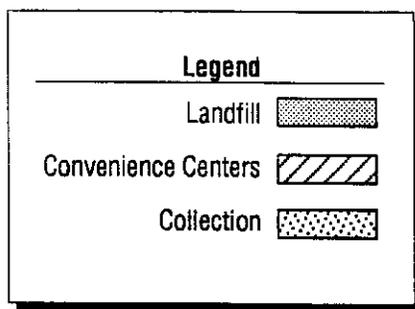
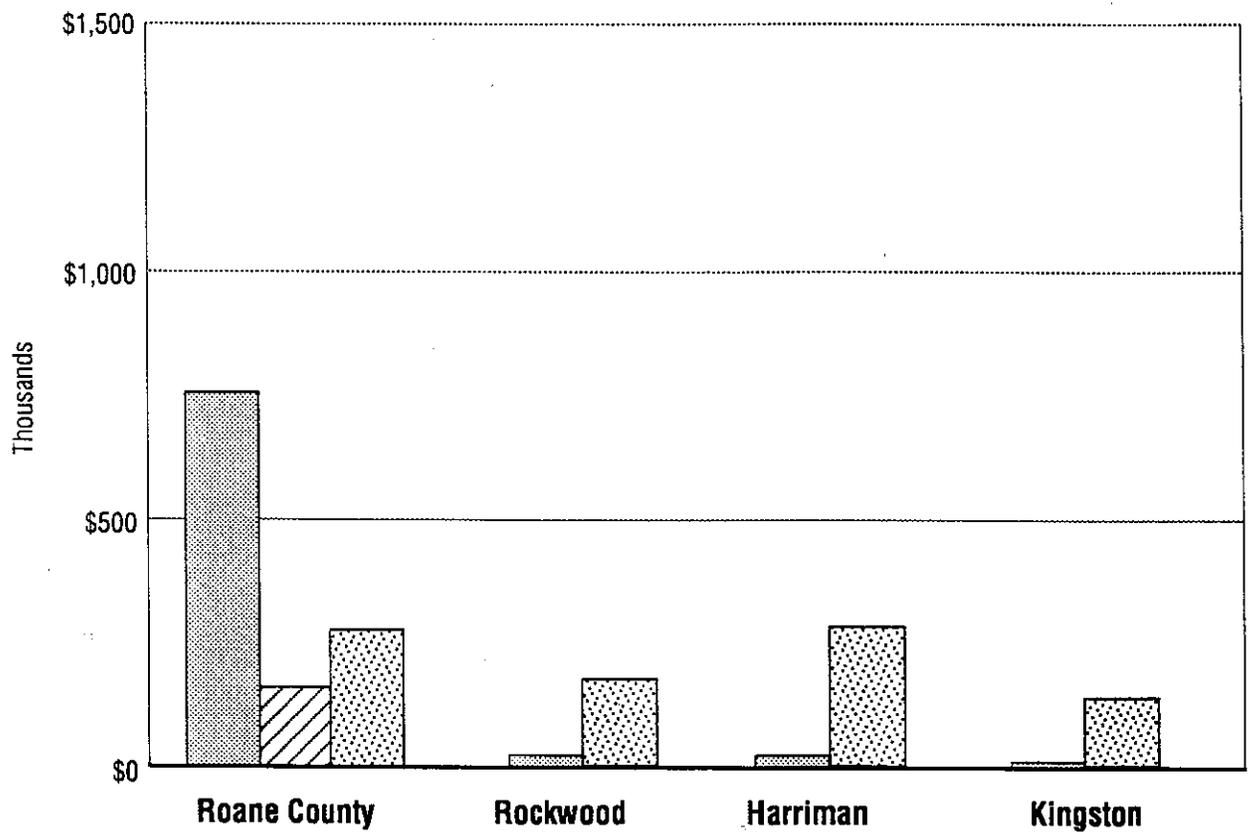
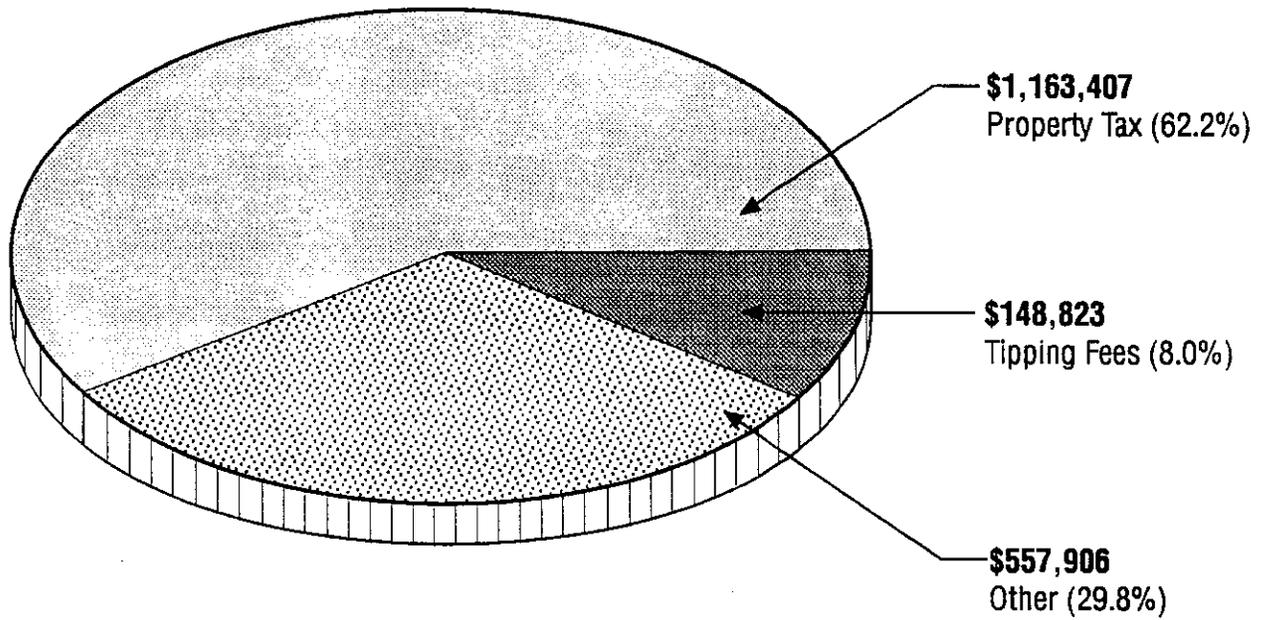


Figure 2.2
Components of FY1993 Solid Waste Management System Cost
 Knox County and Municipalities - FY1993
 ROANE COUNTY REGIONAL SOLID WASTE BOARD

Table 2-8
Sources of Revenue for Roane County & Municipalities
For Solid Waste Management
In Fiscal Year 1993

Type of Revenue	Base (a)	Rate (b)	Revenue Yield (c)	% For Solid Waste (d)	\$ For Solid Waste (e)
Roane County					
Property Tax	\$293,655,448	0.0310	9,094,228	5.4%	\$488,584
Tipping Fees	NA	NA	148,823	100.0%	148,823
Other Revenues (f)					
State Grants	NA	NA	31,485	100.0%	31,485
Debt Proceeds	NA	NA	0	100.0%	0
Surtax Funding	NA	NA	42,143	100.0%	42,143
Sales of Materials	NA	NA	1,174	100.0%	1,174
Fund Balances	NA	NA	483,104	100.0%	483,104
Misc. Revenues	NA	NA	0	100.0%	0
Rockwood					
Property Tax	30,928,898	0.0140	433,305	48.4%	209,763
Harriman					
Property Tax	36,256,120	0.0287	1,040,577	30.4%	316,630
Kingston					
Property Tax	UA	UA	601,067	24.7%	148,431
Totals					
Property Tax					\$1,163,407
Tipping Fees					148,823
Other Revenues (f)					557,906
Total					<u>\$1,870,136</u>

- a. From Table I-14.
- b. Estimated by dividing Revenue Yield by Tax Base.
- c. Property Tax yield from Table I-14, tipping and other fees from Table I-13.
- d. Estimated by dividing dollars for solid waste by revenue yield.
- e. Property Tax revenues are from Table I-13, tipping and other revenues are product of "Revenue Yield" and "% For Solid Waste".
- f. Other revenues are derived from County budget documents supporting the data in Table I-13. Miscellaneous Revenues include trustee's collections and interest & penalties.



NOTE

Other revenues include: state grants, debt proceeds, state surtax funding, sale of materials, and previously unused fund balances.

Figure 2.3
**FY1993 Sources of Revenue for
 Solid Waste Management**
 Roane County and Municipalities - FY1993

ROANE COUNTY REGIONAL SOLID WASTE BOARD

2.10 Strengths and Weaknesses of the Existing System

2.10.1 Strengths of the Existing System

The existing solid waste system in operation in the Roane County Region has definite strengths that will be key components in enabling the region to meet its future solid waste management needs.

These strengths include the following:

- A county-wide network of convenience centers
- Solid waste education programs already established by the RCCS
- Suitable land at the landfill site for potential central transfer system
- Suitable land at the landfill site for construction of a Class IV Landfill
- High level of community interest in improving solid waste management in the region

2.10.2 Weaknesses of the Existing System

A review of the current system shows that distinct areas need improvement to provide Roane County better service and a more integrated solid waste management system capable of meeting the future reduction goals. These areas include the following:

- Public information and education programs
- Waste reduction and recycling
- Illegal dumping, especially of shingles and other construction and demolition (C&D) material
- Household hazardous wastes (HHWs) disposal program
- Lack of a Class IV facility

2.10.2.1 Public Information and Education Programs

Although Roane County has initiated education programs within the school systems of the county, this program needs to be expanded to include businesses and the general population of the region. Public education programs for adults have also been identified as a need.

2.10.2.2 Waste Reduction and Recycling Programs

The Roane County Region needs to implement a more aggressive waste reduction and recycling program throughout the region. The keys to implementation of these programs are through use of public information and education and by providing accessible recycling collection services.

2.10.2.3 Illegal Dumping

Illegal dumping continues to be a serious problem within the Roane County Region. One factor that may be a major contributor to this is the recent increase in tipping fees imposed at the county landfill.

2.10.2.4 Household Hazardous Wastes Program

The region needs to develop and implement a program to address HHW and to prevent the disposal of these wastes at the county landfill. The region will work with the state to schedule and coordinate a Mobile Collection Event.

2.10.2.5 Lack of a Class IV Disposal Facility

Currently, all C&D wastes are being disposed of in the Roane County Class I Landfill. The construction of a Class IV Landfill would allow the region to divert this away from the Class I facility and extend its disposal life.

Chapter II Forms

Table II-1 ^a Quantity of Solid Waste Received for Disposal/Incineration in Calendar 1991			
County	Tons Disposed	Population (1991)	Waste Disposed Per Capita (tons)
Roane	50,754	47,227	1.07
Regional Total	50,754	47,227	1.07

^aFor each of these tables, the county and region are assumed to be the same.
Source: ETDD, 1992.

Table II-2 Origin of Regional Solid Waste in 1991 Tons Per Year					
County	Residential	Institutional/ Commercial	Non-Hazardous Industrial	Special ^a	Other
Roane	17,256	5,837	11,420	16,241	N/A
Regional Total	17,256	5,837	11,420	16,241	N/A

^a"Special" waste as defined by Tennessee Solid Waste Regulations: In general, special wastes are non-hazardous industrial solid waste that may be buried in a landfill, provided the generator receives consent of the operator and the state.
Source: ETDD, 1992.

Table II-3 Acceptance of Certain Categories of Solid Waste for Disposal or Incineration										
Roane County Facility	Yard Waste (clippings, leaves, grass)		Sewage Sludge		Construction and Demolition		Tires		White Goods ^a	
	Y/N	Qty	Y/N	Qty	Y/N	Qty	Y/N	Qty	Y/N	Qty
Sanitary Landfill	Y	5,075	Y	20	Y	5,075	Y	300	Y	12
Regional Total		5,075		20		5,075		300		12

^a"White Goods": Discarded major appliances such as washing machines, dryers, refrigerators, etc.
Source: ETDD, 1992.

**Table II-4
Description of the Waste Stream by Materials^a**

Waste Category	National Percent	Calculated Regional Tons
Paper and Paperboard	40.0	20,302
Glass	7.1	3,604
Ferrous Metals	6.5	3,300
Aluminum	1.4	710
Other Non-Ferrous Metals	0.6	304
Plastics	8.0	4,060
Rubber and Leather	2.5	1,268
Textiles	2.1	1,066
Wood	3.6	1,827
Food Waste	7.4	3,756
Yard Waste	17.6	8,933
Miscellaneous Inorganic Waste	1.5	761
Other	1.7	863
Total Municipal Solid Waste	100.0	50,754

^aSource: ETDD, 1992.

Table II-5 Unmanaged Waste ^a				
County	Potential Waste Generation 1991 (tpy)	Actual Waste Disposal 1991 (tpy)	Unmanaged Waste 1991 (potential-actual) (tpy)	Percent of Potential Total
Roane	51,450	50,754	696	1.4
Regional Total	51,450	50,754	696	1.4
^a Wastes that are "outside" the collection system such as materials in roadside dumps, litter, etc. Source: ETDD, 1992.				

Table II-6 Operating and Planned Composting Facilities in the Region					
County	Facility Location	Tons of Waste Processed/Year	Composited Materials		
			Yard Waste	Sewage Sludge	Solid Waste
Existing: None					
Planned: None					
Regional Total					
Source: ETDD, 1992.					

Table II-7 Municipal Solid Waste Incinerators or Waste-to-Energy Facilities in the Region				
County	Facility Location	Design Capacity (tpy)	Current Use (tpy)	Anticipated Operating Life of Facility
Operating Facilities: None				
Planned Facilities: None				
Source: ETDD, 1992.				

**Table II-8
Existing Municipal Solid Waste Landfills in the Region**

County	Name of Landfill	Location	Permitted Capacity (acres)	Current Rate of Waste Accepted (tpd)	Remaining Capacity ^a (tons)
Roane	Roane County Sanitary Landfill	Midtown - off Highway 70	100	100-130	45,000
Regional Total			100	100-130	45,000

^aPer information provided by Solid Waste Authority at September 23, 1993, Joint Work Session, where 180,000 yd³ of space remain for daily operations and daily cover, but does not include final cover. Conversion factor of 4 yd³ = 1 ton used.

**Table II-9
Existing Landfills Expected to Close Before 2003**

County	Location	Current Use (tpd)	Current Annual Use (tpy)	Anticipated Date of Closure ^a
Roane	Midtown - off Highway 70	100-130	31,200-40,560	February 1995
Regional Total		100-130	31,200-40,560	February 1995

^aPer information provided by Solid Waste Authority at September 23, 1993, Joint Work Session.

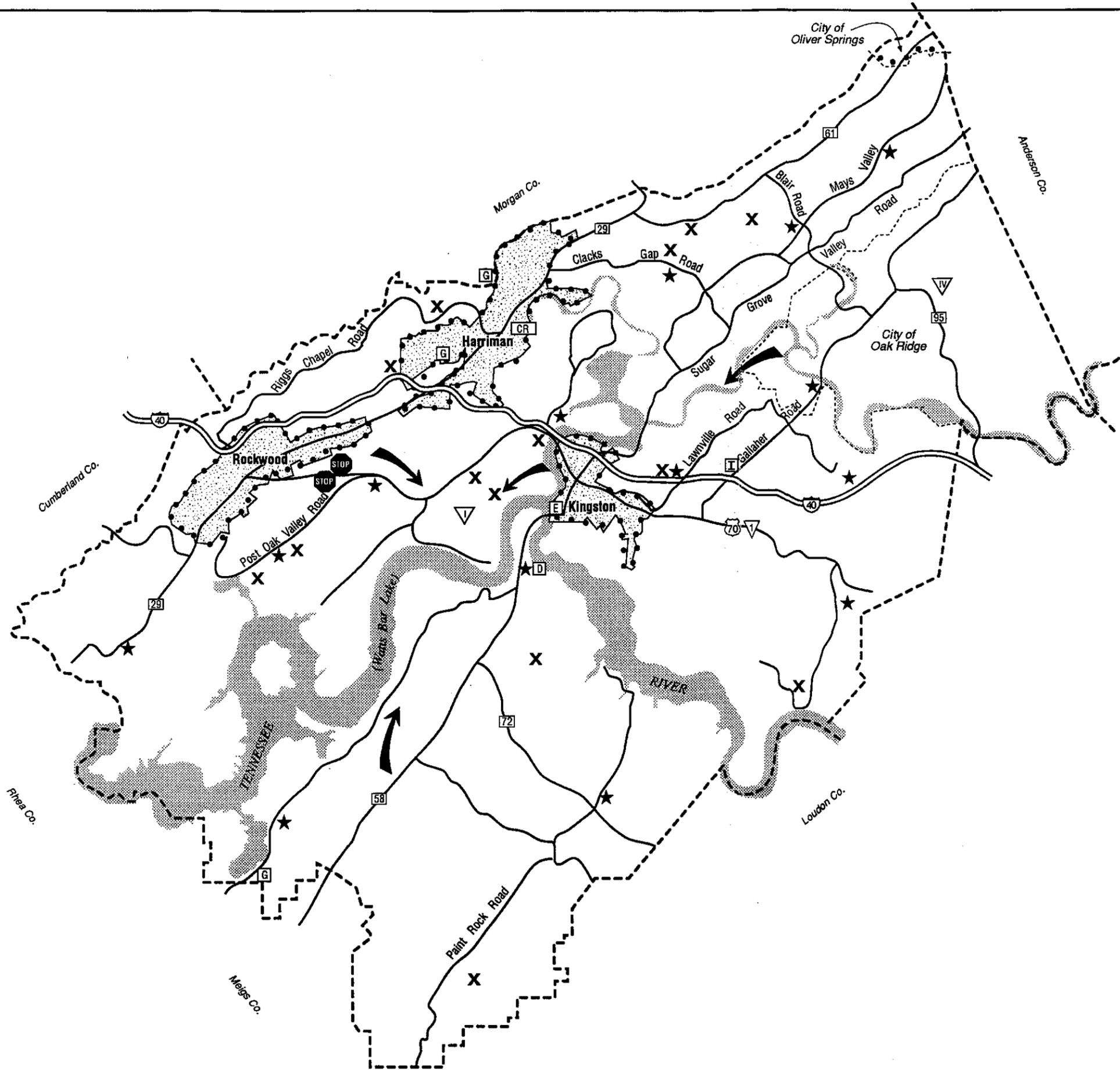
**Table II-10
Planned Expansions and Planned New Facilities That Will Operate for 10 Years or More**

County	Proposed Facility		When Capacity Will Be Available	Permitted Capacity Sought (acre)	Design Rate of Waste (tpd) Disposed	Potential Expansion Yes/No
	Expan.	New				
Roane	N/A					
Planned New Regional Capacity						

Table II-11
Total Existing and Planned Capacity in the Region
at the Close of the Next 10 Years

Fiscal Year	Tons		
	Existing	Planned	Total
1994	31,000	0	31,000
1995	4,800	0	4,800
1996	0	0	0
1997	0	0	0
1998	0	0	0
1999	0	0	0
2000	0	0	0
2001	0	0	0
2002	0	0	0
2003	0	0	0

^aPer information provided by Solid Waste Authority at Joint Work Session on September 23, 1993.



LEGEND

- Roane County Boundary
- [Stippled Area] Approximate Area of Municipality
- - - - - Approximate Boundary of Municipality Not in the Region
- ==== Interstate Highway
- ~~~~~ River
- _____ Street
- ★ Convenience Center
- ★[D] Convenience Center with Drop-off Recycling
- ▽ Permitted Class I Landfill (Municipal Solid Waste)
- ▽[IV] Permitted Class IV Landfill
- [CR] Commercial Recyclers
- STOP End Use Industry that Purchases Recovered Materials Directly
- Approximate Boundary of Municipal House to House Collection Areas
- ↪ Indicates Waste Flow Patterns
- [E] Education Sites
- X Illegal Dumps
- [G] Greenbox
- [I] Major In-house Commercial/Industrial Recycling Program

NORTH

 NOT TO SCALE

Figure 2.1
System Map
for Base Year 1993
 ROANE COUNTY REGIONAL SOLID WASTE BOARD

Chapter 3

Growth Trends, Waste Projections, and Preliminary System Structure

The purpose of this chapter is to establish probable growth trends and evaluate the quantity of solid waste the region must manage in each year of the 10-year planning period (1994 to 2003). Information established in Chapter IV of the Needs Assessment (ETDD, 1992) will be used to define the solid waste management demand. To evaluate this 10-year planning period, the current projections from the Needs Assessment will be extended 2 additional years using the same methodology and reporting format used in the Needs Assessment (ETDD, 1992).

Based on this information, the region will evaluate possible components of an integrated solid waste management system to be incorporated for Roane County. The region will also estimate the amount of waste stream that might be handled by each component and how the effectiveness of each component will be evaluated.

3.1 Projections of Solid Waste Generation

The projection of solid waste generation for Roane County provided in the Needs Assessment is based on population and economic projections obtained from the UT Department of Sociology and UT Center for Business and Economic Research, respectively.

Information from these studies was used to establish the projected annual waste generation rate through the year 2003. These projections are included in Tables III-1 through III-6.

3.2 Preliminary System Design

An integrated solid waste management system involves the complementary use of several alternatives for managing solid waste. The alternatives to be evaluated for the Roane County Region are source reduction, source diversion, recycling, and waste export. Estimates are that 75 percent of the total projected quantity of solid waste will be exported to an out-of-county landfill, 16 percent will be diverted, and the remaining 9 percent will be recycled or reduced at the source. A description and function of each of these components is discussed in the following paragraphs.

3.2.1 Source Reduction

Source reduction is an effort to prevent the need to manage waste at all and can be practiced by businesses, industry, and individual households within the region. The key element in implementing source reduction is through public education programs. Specific possibilities for components of a region-wide source reduction include the following:

- A school and commercial education program on waste reduction
- A residential education program that might include:
 - Creation of brochures
 - Displays in stores
 - Community-level education efforts
 - Media advertising and progress reports
 - Workshops
- Joint efforts with industries to reduce their packaging and process wastes
- Development of county and city governmental agency waste reduction policies and strategies

3.2.2 Source Diversion

Source diversion is a management practice that involves diverting specific components of the waste stream to alternative disposal methods other than a Class I disposal facility. Source diversion reduces the total volume of waste requiring sanitary landfilling, and thereby reduces the total cost to export wastes out-of-county. Three waste stream components currently entering the county landfill are proposed for diversion.

Industrial special waste received from IMCO likely will be diverted from the waste stream and disposed of at a facility constructed and operated by IMCO. This facility is estimated to be permitted and constructed in early 1995. This diversion will account for approximately 30 percent of the current waste stream.

Two other waste stream components the region is evaluating for possible diversion are C&D debris and yard waste. Possible disposal alternatives would include the construction of a Class IV Landfill for disposal of the C&D waste stream and for management of yard waste produced in the region.

3.2.3 Recycling

A recycling program will be implemented to help reach the state-mandated waste reduction goal. The factors that will influence the selection of a recyclable material include:

- Recyclability of the material
- Value of the material and stability of the end market
- Quantity of the material available from sources within the region
- Ease of identification, separation, and preparation of the material for recycling

- Economic feasibility of collection and processing
- Environmental benefit from recycling and removal of the material from the waste stream

Materials targeted for recycling feasibility include the following:

- Newspaper
- Cardboard
- Glass
- Aluminum cans
- Plastics
- Batteries
- Used motor oil and antifreeze

The Roane County Region intends to target businesses, industry, and residences for the recycling program further described in Chapter 6. The county also plans to expand the collection of recyclables from residences by establishing drop-off centers at the convenience centers. Specific information regarding the future recycling program and the implementation schedule has been provided in Chapter 6.

3.2.4 Waste Export

The Roane County Solid Waste Board proposes sending the waste that is generated in the county, which is not recycled or diverted, through a transfer system for landfilling at an out-of-county site. The transfer system may use a central transfer point or a series of mini-transfer stations at some of the convenience centers. The out-of-county landfill(s) proposed to receive the waste have not yet been selected. The transfer system is proposed in part to provide the region with the flexibility to make other disposal decisions later in the planning period. Chapter 8 discusses this concept in more detail.

3.3 Evaluation Criteria

The Roane County Solid Waste Board has developed evaluation criteria to test the acceptability of each system component as it is developed and to test the feasibility of the overall system. The final configuration of the solid waste management system is detailed in Chapter 11.

The primary criteria selected by the Board are as follows:

- **Public Acceptability**—The selected alternative(s) must be acceptable to the citizens of the county.

- Economics—Costs will be evaluated as new elements of the plan are proposed to determine if the costs are reasonable to the value provided. The Board is committed to proposing a system the citizens can afford.
- Environmental Concerns—The selected alternatives shall meet all federal, state, and local regulations, as well as be implemented in a manner to reduce environmental impact.
- Availability of Regional Markets—Recycling will have limited success if markets for the material are not available or cannot be developed.
- Integration with Existing Elements—Efficiently expanding and integrating new elements with existing systems will be considered to minimize disruption of services.

Chapter III
Forms

Table III-1 ^{a,b} Solid Waste Generation Rates Per Capita			
County	Total Waste Disposed in FY 1993 ^c	Projected Population 1993 ^c	Annual Per Capita Generation Tons/Person/Year
Roane	50,237	46,516	1.08
Total	50,237	46,516	1.08

^aTables III-1 through III-8 were prepared in accordance with the *Guidelines for Preparation of a Municipal Solid Waste Regional Plan, 1992*, which dictate that the data and procedures in Chapter IV of the Needs Assessment be used.

^bFor each of these tables, the county and region are assumed to be the same.

^cETDD (1992).

Table III-2 Quantity of Solid Waste Requiring Disposal (in tons)										
County	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Roane	49,986	49,734	49,485	49,235	48,988	48,743	48,500	48,119	47,832	47,374
Total	49,986	49,734	49,485	49,235	48,988	48,743	48,500	48,119	47,832	47,374

Table III-3 Quantity of Solid Waste Requiring Disposal (in tons) Adjusted for Population and Economic Growth										
County	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Roane	51,771	51,576	51,386	51,197	51,013	50,832	50,656	50,345	50,129	49,744
Total	51,771	51,576	51,386	51,197	51,013	50,832	50,656	50,345	50,129	49,744

Table III-4
Quantity of Waste Requiring Disposal (in tons) Adjusted for Population Changes, Economic Growth, and Waste Reduction and Recycling

County	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Roane	39,830	36,840	36,724	36,609	36,499	36,390	36,286	36,087	35,957	35,707
Total	39,830	36,840	36,724	36,609	36,499	36,390	36,286	36,087	35,957	35,707

Table III-8
Annual Projections of Solid Waste Requiring Disposal Adjusted for All Applicable Factors (tpy)

County	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Roane	39,830	36,840	36,724	36,609	36,499	36,390	36,286	36,087	35,957	35,707
Total	39,830	36,840	36,724	36,609	36,499	36,390	36,286	36,087	35,957	35,707

Note: Tables III-5, III-6, and III-7 are not applicable.

Chapter 4 Waste Reduction

This chapter describes the Roane County Region's waste reduction activities intended to attain the 25 percent reduction required by Section T.C.A. 68-211-861(a) of the 1991 Solid Waste Management Act. These methods (source reduction, reuse, and recycling) will be used to reduce the solid waste disposed at the Midtown Landfill and meet this 25 percent reduction by December 31, 1995.

4.1 Establishing the Base Year Quantity

4.1.1 1989 Population and Waste Generation

The Tennessee Department of Environment and Conservation (TDEC) has established 1989 as the base year from which the targeted 25 percent waste reduction goal will be measured. The base year quantity of waste generated in Roane County must first be determined to establish the amount of waste reduction necessary to meet the mandatory 1995 reduction goal. This reduction goal will be measured on a per capita basis.

Information required to establish the base year quantity includes the population and quantity of waste disposed of in the referenced year. The 1989 estimated population of Roane County was 49,650, and the waste disposed of was 64,272 tons, as provided by UT's Waste Management Research and Education Institute's report on *Managing Our Waste: Solid Waste Planning for Tennessee*, February 1991. Therefore, the 1989 per capita generation rate is 1.29 tons per person per year.

4.1.2 Adjustment to Base Year Data

No adjustment to the base year quantity is requested.

4.1.3 Alternate Base Year

An alternate base year is not applicable to the Roane County Region.

4.2 1995 Target Reduction Goal

The 25 percent reduction is calculated on the basis of the TDEC *Guidelines on the 25% Waste Reduction Goal* (December 1993). The average 1989 per capita disposal rate (1.29 tons/person/year) derived above was multiplied by 0.75 to obtain the targeted per capita waste disposal goal of 0.97 tons/person/year, which reflects a 25 percent reduction:

$$(1.29) (0.75) = 0.97 \text{ tons/person/year}$$

Based on the target per capita disposal rate of 0.97 and the projected 1995 county population of 46,050, no more than 44,669 tons in 1995 of waste from Roane County should be disposed of in the Midtown Landfill:

$$(0.97) (46,050) = 44,669 \text{ tons in 1995}$$

Thus, if generation continued at a rate of 1.29 pounds per person per year in 1995, actual generation would total 59,405 tons, and the target reduction tonnage would total 59,405 tons minus 44,669 tons, or 14,736 tons:

$$(1.29) (46,050) = 59,405$$

$$59,405 - 44,669 = 14,736 \text{ tons}$$

This target reduction tonnage can also be obtained by multiplying 1.29 times 0.25 to obtain 0.32 tons per person per year target reduction, in turn multiplied by the projected 1995 population of 46,050 to obtain 14,736 tons. If the per capita generation rate increases above 1.29 by 1995, the target reduction tonnage will increase correspondingly.

4.3 Methods for Meeting the Statewide Waste Reduction Goal

4.3.1 Waste Reduction Goals and Objectives

The short-term (present through December 31, 1995) goal of the region is to achieve the 25 percent waste reduction goal mandated in T.C.A. 68-211-861(a). The objectives to reach this goal include:

- Scheduling the UT Center for Industrial Services (CIS) Waste Reduction Seminar for industries in the region
- Increasing residential, commercial, and industrial recycling
- Increasing public awareness through more educational programs
- Adding drop-off recycling to existing convenience centers in a phased approach
- Obtaining a permit for and constructing a Class IV Landfill for brush and C&D waste
- Starting recycling at municipal office buildings
- Hiring a Solid Waste Coordinator to implement the new programs

The long-term goal (1995 to 2003) is to achieve a 0.5 percent waste reduction each year after 1995, for a total reduction of 29 percent by the year 2003. The objectives to meet this goal include increased recycling, source reduction, and increased public education.

4.3.2 Quantitative Allocation of the 1995 Target

4.3.2.1 Materials

Materials that will be targeted are paper (including cardboard), glass, aluminum, ferrous metals (including scrap metal), plastic, yard and untreated wood waste, and C&D debris. The target quantities per year of each material necessary to achieve the 25 percent reduction goal are presented in Table 4-1, although the exact methods to achieve these targets have not yet been clearly identified.

Aluminum is currently not recycled, but the infrastructure is in place through the convenience centers, and an intermediate processor/end-user is located in the region. A collection system is also available through DDI. Since aluminum is one of the highest revenue generators of the recycled materials, the potential exists for recycling a greater tonnage. It is estimated, using the national average for waste composition and projected waste quantities in 1994 (from Table IV-3 of Needs Assessment), that 725 tpy are available in the waste stream.

Scrap *ferrous metal* is diverted and recycled at the convenience centers and the landfill. Although several businesses recycle ferrous metals, most have not been keeping records of this information. Private haulers and end users are unable to provide these data because they accept materials from many sources and do not track the origin of the materials.

Glass is not recycled now, but the infrastructure is in place through the use of convenience centers. The region will begin by recycling clear, brown, and green glass. The region has one industry that produces large quantities of waste glass and is currently working with that industry to find methods to recycle the glass.

Plastic is currently not recycled, but the infrastructure is available through the use of convenience centers. The region will start with polyethylene terephthalate (PET) and high-density polyethylene (HDPE) plastic. PET is the most commonly recycled plastic. HDPE plastic (milk jugs and detergent bottles) are a growing market and are easy to identify. The quantities proposed in Table 4-1 are based on a strong participation from the residential sector.

Paper is another material with enormous potential, especially since Power Paper, Inc., is located in the county, and Knox Recycled Fibers is conveniently located in adjacent Knox County. A cardboard baling program can be developed through the convenience center infrastructure and in cooperation with an existing local hauler of cardboard. The region is currently applying for a recycling grant for purchase of a baler that would be housed at the proposed materials recovery facility further described in Chapter 6.

Table 4-1
Quantitative Allocation of the 1995 Waste Reduction Target
(14,736 tpy)

Material	Sector (quantities in tpy)				Total for 1995
	Residential (1995)	Commercial (1995)	Industrial (1995)	Institutional ^a (1995)	
Paper	2,742	151	395	454	3,742
Glass	487	-	70	-	557
Ferrous	349	-	64	-	413
Aluminum	96	5	14	16	131
Non-ferrous	-	-	6	-	6
Plastics	548	-	79	-	627
Wood ^b	193	14	1,372	-	1,579
Yard waste	1,600	-	174	-	1,774
C&D waste ^c	4,942	1,000	-	-	5,942
Total	10,957	1,170	2,174	470	14,771

^aSchools, school board, and government offices.

^bIncludes pallets. Assumes all pallets from industrial sector.

^cAssumes C&D waste mostly from residential and commercial sectors.

Yard waste is an integral part of the reduction plan in that the Authority plans to construct a Class IV Landfill. Once this landfill is adequately permitted, it can serve as an effective waste diversion technique for yard and C&D waste. As a long-term objective for the waste reduction goal, it may also be possible to establish a chipping program at the Class IV Landfill or possibly to provide neighborhood chipping.

Pallets represent an opportunity for large quantities of waste to be diverted, through development of an effective repair, reuse, and recycling program. As a long-term possibility, Mid-South Cogeneration in Harriman may take irreparable pallets to burn for fuel.

4.3.2.2 *Economic Sector*

The portion of the waste reduction that each economic sector is projected to contribute is also shown in Table 4-1. The residential and industrial sectors are expected to contribute the greatest amount to the waste reduction.

4.3.2.3 *Year*

The amounts to be reduced for calendar year 1995 is shown in Table 4-1. The long-term goal is to increase waste reduction by 0.5 percent per year in each category after 1995. The 0.5 percent increase is reasonable given the proposed new educational programs further described in Chapter 9.

4.3.3 Strategies to Meet Target Reduction

The region will use two main strategies to achieve the waste reduction goal: materials recovered and recycled, and materials diverted to alternative disposal. The estimated quantities of waste removed or diverted from the waste stream for the years 1985 through 2003 are shown in Table IV-2.

The status of a major industry's waste stream (whether it would remain in the Class I Landfill or be diverted to a new Class II Landfill) was highly uncertain during development of this plan. Therefore, the conservative approach of assuming that the waste would remain part of the Class I waste stream was used in this chapter when determining how the waste reduction goal would be met. The waste reduction goal was met without assuming that that industry's waste stream (which would in itself meet the goal) was diverted. If future plans result in the Class II facility being constructed, Roane Region will more than meet the waste reduction goal as TDEC has indicated that diversion to a Class II Landfill counts toward the goal.

4.3.3.1 *Prior Waste Reduction Credit*

The Roane County Solid Waste Planning Region does not currently intend to apply for any credit for previous waste reduction prior to 1989.

4.3.3.2 Materials Recovery, Reuse, and Recycling

The strategy for materials recovery, reuse, and recycling is more fully described in Chapter 6, but consists of the elements described below. The quantities of materials estimated to be recovered from the waste stream in 1995 are presented in Table 4-1.

- Expand aluminum recycling to the convenience centers, using DDI, for collection.
- Initiate clear, brown, and green glass recycling at the convenience centers.
- Add plastic recycling at the convenience centers, starting with PET and HDPE plastics.
- Apply for a grant from Wal-mart to supplement the recycling program.
- Initiate a cardboard recycling program at the convenience centers. Apply for a state recycling equipment grant to obtain a cardboard baler.
- Institute an office paper recycling program at city and county municipal buildings and possibly at the school administrative offices as well.
- Expand the aluminum recycling program to the schools using Southern Alloys and Metals as the end market.
- Institute a pallet exchange and reuse program, possibly through Mid-South Cogeneration.
- Institute a waste exchange program among the various industries, working with the Chamber of Commerce as a facilitator. Provide information to the Southern Waste Information eXchange Clearinghouse, a regional waste exchange.

4.3.3.3 Regulatory Bans

The region does not propose that a regulatory ban be imposed on materials to be processed or diverted. However, as part of the waste reduction strategy, it is proposed to divert yard waste and C&D waste to the new Class IV Landfill. The amount of yard waste proposed to be diverted each year is shown in Table 4-1.

4.3.3.4 Economic Incentives or Disincentives

The Roane County Planning Region is not proposing any economic incentives or disincentives at this time. However, the Solid Waste Authority is considering a lower tipping fee at the Class IV Landfill.

4.4 Staffing, Budget, and Funding

Recycling waste reduction strategies and the staffing, budget, and funding are discussed in Chapter 6. Staffing, budget, and funding for the diversion strategies (to the Class IV Landfill) are included in this subsection.

The staffing requirements to maintain the new Class IV Landfill are estimated to consist of four full-time staff each year based on the need for supervisors, scale operators, heavy equipment operators, and general labor, with the potential need to work a split shift. The 10-year budget is shown in Table 4-2.

4.5 Implementation Schedule

A composite 10-year implementation schedule for the waste reduction strategies described in Chapter 4 and the recycling programs described in Chapter 6 is provided in Table 6-3. The strategies selected and the implementation schedule proposed are both designed to be conservative so that early successes will provide momentum for future waste reduction activities.

Initial planning work is scheduled for the remainder of FY 1993/1994, while the majority of the organizational work will occur in FY 1994/1995. The first 6 months of FY 1995/1996 will be used to ensure that the programs are in place and functional before the December 31, 1995, waste reduction deadline is reached.

4.6 Allocating Responsibility for Plan Implementation

The Solid Waste Authority will have overall responsibility for implementation of the waste reduction plan and for meeting the intermediate milestones. The Solid Waste Board will have oversight responsibility to ensure that the waste reduction goals are being met. Specific responsibility for the recycling components of the plan will fall to the Solid Waste Board members and the new Solid Waste Coordinator position.

Responsibility for the pallet exchange and reuse program and the waste exchange program belongs to the Solid Waste Coordinator, with assistance from the Chamber of Commerce and Industrial Development Board. Responsibility for initiating the office paper recycling program will rest with the county executive's office.

The waste diversion component of the waste reduction strategy will fall to the Solid Waste Authority since it will be responsible for the Class IV Landfill.

Table 4-2 Projected 10 Year Budget and Funding Plan (a)											
Division to Class IV Landfill											
	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Operating Revenues											
General Tax Revenues (b)	\$0	\$381,060	\$235,660	\$235,660	\$235,660	\$235,660	\$381,060	\$235,660	\$235,660	\$235,660	\$235,660
Tip Fee Revenues (c)		31,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200
Total	0	412,260	266,860	266,860	266,860	266,860	412,260	266,860	266,860	266,860	266,860
Operating Expenditures											
Labor (d)		\$142,060	\$142,060	\$142,060	\$142,060	\$142,060	\$142,060	\$142,060	\$142,060	\$142,060	\$142,060
Non-Labor O&M (e)		124,800	124,800	124,800	124,800	124,800	124,800	124,800	124,800	124,800	124,800
Total	0	266,860	266,860	266,860	266,860	266,860	266,860	266,860	266,860	266,860	266,860
Net Operating Income	0	145,400	0	0	0	0	145,400	0	0	0	0
Non-Operating Revenues											
Total	0	0	0	0	0	0	0	0	0	0	0
Non-Operating Expenditures (f)											
Class IV Landfill Expansion (g)		\$145,400					\$145,400				
Total	0	145,400	0	0	0	0	145,400	0	0	0	0
Net Non-Operating Income	0	(145,400)	0	0	0	0	(145,400)	0	0	0	0
Net Income	0	0	0	0	0	0	0	0	0	0	0

a. All revenues and expenditures are shown in constant 1993 dollars. Cost projections are consistent with budgets developed under the new FY 1994 full cost accounting requirements.

b. Property tax revenues fund the majority of all expenditures on solid waste in Roane County. These figures include amounts from the Cities and the County.

c. Tipping fee revenues from industrial/commercial dumping at the Class IV landfill are projected based on the Board's recommended initial rate of \$10 per ton, and an assumed volume of 10 tons per day for 6 days per week for 52 weeks. Ten tons per day should be a conservatively low estimate based on information from the landfill director, Lewis Bumpus of CTAS, Ron Woody, County Budget Director, and an assumed capture of some portion of waste currently being dumped illegally.

d. The labor rates used are those agreed upon by the joint work session between the Authority and the Board. They include a fringe benefit of 40%. It is assumed that these same labor rates will apply to a class IV landfill.

e. Operating and Maintenance (O&M) costs are from 11/22/93 memorandum: "Cost Estimates for Board's Preferred Alternative", by CH2M Hill.

f. "Non-Operating Expenditures" is a category used to present expenditures on capital acquisition for the solid waste system, in contrast to the ongoing expenditures shown under "Operating Expenditures".

g. Construction cost estimates are from 11/22/93 memorandum: "Cost Estimates for Board's Preferred Alternative", by CH2M Hill. Cost estimates assume \$72,700 per acre for construction, and a need for two acres of landfill area every five years.

4.7 Reporting Requirement

By March 1, 1994, and annually thereafter, the region will submit its first annual report to TDEC for the 1993 calendar year (T.C.A. 68-211-871). The format of this report will be based on guidance received at a future date from TDEC. Data requirements of this report include the following:

- Waste collection and transportation system
- Recycling
- Disposal
- Public costs
- Other information deemed relevant by the Board regarding solid waste planning and management

Any entities actively engaged in transportation of municipal solid waste or in the recovery of recycling materials will be required to provide information to the region if the region does not already have this information.

In addition to and in conjunction with the annual report, the region will submit an annual progress report to TDEC on the progress made on implementation of this solid waste management plan.

The region will collect the data from the Solid Waste Authority, County Executive, City Manager's Office, the Knoxville Field Office of TDEC, and cooperating industries (i.e., Knox Recycled Fibers, IMCO Recycling, Southern Alloys and Metals, etc.).

Chapter IV
Forms

Table IV-1
Population and Quantities of Waste Disposed of at
Municipal Solid Waste Disposal Facilities
and Incineration^a
(1989)

County	1989 Population	1989 Total Waste Disposed (tons)
Roane	49,650	64,272
Regional Total	49,650	64,272

^aUT's Waste Management Research and Education Institute's report on *Managing Our Waste: Solid Waste Planning for Tennessee*, February 1991.

**Table IV-2
Estimated Quantities of Waste Removed or Diverted From the Waste Stream (tons)**

Year	Previous Reductions ^a	Recovered and Recycled ^b	Diverted to Alternative Disposal ^c	Economic Incentives	Other	Total
1985 to 1989	0	N/A ^d	0	0	0	
1990	0	N/A	0	0	0	
1991	0	692	0	0	0	692
1992	0	N/A	0	0	0	
1993	0	N/A	0	0	0	
1994	0	N/A	0	0	0	
1995	0	5,476	9,295	0	0	14,771 ^e
Subtotal	0	6,168	9,295	0	0	15,463
1996	0	5,493	9,352	0	0	14,845
1997	0	5,520	9,399	0	0	14,919
1998	0	5,548	9,446	0	0	14,994
1999	0	5,576	9,493	0	0	15,069
2000	0	5,603	9,541	0	0	15,144
2001	0	5,633	9,587	0	0	15,220
2002	0	5,659	9,637	0	0	15,296
2003	0	5,688	9,685	0	0	15,373
TOTAL	0	50,888	85,435	0	0	136,323

^aNo credits for previous reductions are claimed.

^bValue consists of paper, glass, aluminum, ferrous, non-ferrous, and plastic.

^cValues consist of yard waste and C&D waste.

^dNot available.

^eValues for 1995 and beyond based on meeting short-term goal of 25 percent by 1995 and long-term goal of 0.5 percent per year thereafter.

Chapter 5 Waste Collection and Transportation

5.1 Existing Regional System

The current solid waste collection system serves residents, both rural and municipal, commercial businesses, and industries. Service is provided through a combination of municipal, county, and private collection.

5.1.1 Municipal Collection Service

Harriman, Rockwood, and Kingston (which are located within Roane County) provide collection services to their residents. According to the Needs Assessment, 7,106 households were provided with door-to-door service. No transfer stations are currently involved in any collection services in the region.

Harriman uses three packer trucks (25- to 30-yd³) to provide weekly service to 2,931 households and service to commercial businesses from one to three times per week. The trucks are driven approximately 7 miles to the landfill.

The City of Rockwood serves 1,800 households and 30 businesses. Service is provided with two sideloader trucks to all residences within the city and commercial businesses. Waste is collected twice a week for residences and three times per week for businesses, and the waste is transported approximately 6 miles to the landfill.

The City of Kingston provides 100 businesses and 2,375 households with service three times weekly. The truck is driven an average of 12.5 miles to the landfill.

5.1.2 Rural Collection Service

Rural collection service is provided by the county in the form of convenience centers and numerous green boxes at schools and other locations throughout the county. Green boxes are also set up at the entrance to the landfill. The county currently contracts with BFI to provide all collection services through the convenience centers. The Roane County School Department has contracted with Waste Management, Inc. (WMI), for collection at all school locations. The Needs Assessment estimates that 11,177 households are served by the convenience centers.

The county operates 14 convenience centers at locations shown on Figure 2-1. Two of the locations use 40-yd³ roll-offs (one with a compactor) while the remaining locations use from 12 to 16 containers. The convenience centers are fenced and have variable operating schedules. All centers are fully staffed. The estimated amount of waste generated from each convenience center is presented in Table 5-1.

**Table 5-1
Summary of Convenience Center Waste Stream**

Site Location	Number of Containers	Size of Containers (yd ³)	Estimated Amount of Waste ^a (tpy)	Yearly Tonnage ^b
1. Orchard View	14	6	1,092	69
2. Blair	12	6	936	698
3. Clax Gap	14	6	1,092	772
4. Swan Pond	15	6	1,170	1,457
5. Post Oak	16	6	1,248	1,009
6. Pumphouse	13	6	1,014	754
7. Glen Alice	12	6	936	131
8. North Gallaher	1 compactor 1 open-top roll-off	40	2,080	
9. Bradbury	12	6	936	331
10. Cave Creek	15	6	1,170	698
11. Lawnville	14	6	1,092	928
12. Highway 58 South	2 open-top roll-offs 8-10	40 6	2,080	642
13. East Paint Rock	14	6	1,096	436
14. Blue Springs ^c	5	6	1,950	
Estimated Total			17,888 tpy	
^a Estimated amount of waste determined using 4 yd ³ = 1 ton. Source: ETDD, 1992. ^b Per Roane County Purchasing Department and Lewis Bumpus, CTAS. ^c Blue Springs was formerly an unmanned green box collection site.				

Green boxes are provided at schools throughout the county, the jail, the highway department, the parks, and the landfill, as well as at various other locations. The largest number of green boxes are located outside the landfill.

Problems with the current system consist of night dumping outside the fences at the convenience centers, complaints about the operating hours, waste coming in from out-of-county, and messy dumping at the green box locations, especially at the green boxes outside the landfill.

5.1.3 Commercial Collection Service

Commercial collection services provide service to both businesses and homes in the region. BFI, which recently bought Volunteer Refuse, serves 200 businesses using vehicles ranging in size from a 5-yd³ to a 31- to 40-yd³ frontloader truck. Industries and commercial businesses may have their waste collected from daily to three times per week. Distances travelled to the landfill range from 2 to 30 miles.

V&R Garbage Service provides pickup for 170 households on a weekly basis. The average distance travelled to the landfill is 25 miles.

5.1.4 Industrial Collection Service

Industries may choose to take their process or industrial waste to the landfill rather than pay a private hauler. However, they may still have their garbage removed by the city or a private hauler.

5.1.5 Comparison to Standards

The guidelines require that a comparison be made between the existing collection system and the standards established by rule for the number, location, and design of collection facilities. In T.C.A. 68-211-851, the intent of the 1991 Act is such that at least one collection and disposal system is available to the county residents, and that the minimum level of assurance that the county will provide is "a system consisting of a network of convenience centers throughout the county."

The method for calculating the minimum level of service is stipulated in the new convenience center rule, 1200-1-7-.10, which went into effect on August 5, 1993. The number of required convenience centers is determined by calculating the minimum level of service. To determine the service areas that requires convenience centers, subtract the population that is currently served by mandatory collection service from the total population of the county. The number of convenience centers is then determined by dividing by 12,000. For Roane County, the number of convenience centers necessary to meet the minimum level of service is 2.36.

The Roane County Region currently has 14 convenience centers, and no areas in the region are unserved. These centers are evenly distributed throughout the region and are all fenced and staffed.

5.2 Analysis of Total Regional Needs

The region has both transportation and collection needs. Of two trucks that are currently owned by the county, one needs replacement while the other is in need of repair. No county trucks are currently hauling waste. As an interim measure, the county has contracted with BFI to use their trucks. However, the FY 1993/1994 budget includes funds for at least one new truck.

The collection needs consist of upgrading the convenience centers to provide compactors and roll-offs so that savings can be realized through reduced transportation charges for the overall operation of the convenience centers. Compactors will allow pickups from the upgraded centers to be only two to three times per week, instead of the current daily rate, which will save significantly on mileage and time.

The proposed upgrades will occur over a several-year period. The upgrades consist of placing a compactor, roll-off container, and open-top container at each convenience center. The roll-off container will be used to store the compacted material, while the open-top container will be used to store material that cannot be compacted. The location of the convenience centers proposed to receive compactors has not yet been decided by the county.

5.3 Ten-Year Plan

5.3.1 Collection Goals and Objectives

The collection goals and objectives are as follows:

- Conduct a survey to determine how far people are willing to drive to a convenience center and what operating hours they would prefer.
- Investigate the feasibility of partial or complete county curbside pickup and recycling to replace the convenience center system.
- Investigate the feasibility of consolidating the number of convenience centers from 14 to 8.
- Provide recycling capabilities at some of the convenience centers.

- Upgrade all remaining convenience centers to meet the new design standards.
- Consider the feasibility of county-supplied boxes for private homeowners to dispose of their C&D wastes.
- Investigate mechanisms to control out-of-county solid waste taken to Roane County convenience centers.

These goals will be realized over several years, as is described in subsequent sections.

5.3.2 Service Area Strategy

Because all areas are served by a convenience center or collection service, Roane County does not have a strategy for expanding existing service areas or creating additional collection services. Rather, the county is considering developing a strategy for reducing the number of convenience centers to increase the overall efficiency of the operation. The incentive for this reduction is to avoid the necessary increase in rural property taxes to cover the operation of the convenience centers. Factors to consider when selecting candidates for closure include proximity to other centers, waste volumes relative to other centers, location relative to the perimeter of the county (which makes a site more likely to receive out-of-county wastes), and distance residents must travel. The Solid Waste Board recommends that the total number of convenience centers be reduced to eight.

5.3.3 Timetable and Milestones for Construction of New Convenience Centers

This requirement of the guidelines does not seem applicable because the number of convenience centers will be reduced, but the timetable for reducing the number of convenience centers has not been determined. This overall reduction may be achieved by closing some centers and opening a fewer number of new centers, but this approach has not been finalized. The Board recommends a staggered schedule, such as closing one convenience center for every one that is upgraded, or closing out three each in FY 1994/1995 and FY 1995/1996.

5.3.4 Timetable and Milestones for Purchase of Collection Vehicles

Since the county's two collection vehicles are currently in poor condition, the FY 1993/1994 approved budget contains funds to purchase at least one more vehicle. Funds in the amount of \$196,000 were included in the FY 1993/1994 budget, for a roll-off and a frontloader truck. The county has not decided whether to buy trucks or contract with a private hauler. The current plan is that one truck at most will be purchased. It will likely be a roll-off truck (without a compactor) and is expected to cost between \$70,000 and \$80,000.

5.3.5 Proposed Transfer Stations and/or Intermediate Processing Facilities

Additional equipment approved in the FY 1993/1994 budget will enable the convenience centers to function more efficiently. The approved plan is to provide the following new equipment in FY 1993/1994:

- 2- to 4-yd³ compactors with containers
- Four 42-yd³ portable roll-off containers
- Four 42-yd³ open-top containers

This equipment will be set up at three convenience centers. The fourth roll-off and open-top containers will be used for changing out containers and as backups.

It is proposed to upgrade the convenience centers where drop-off recycling will be established. These centers are proposed to be Post Oak, Highway 58 South, North Gallaher (already upgraded), and Swan Pond. The recycling program is discussed in greater detail in Chapter 6.

Equipment to upgrade the four remaining centers will be requested in FY 1994/1995. A transfer system is also proposed as part of the collection and transportation system. Details on the transfer system are provided in Chapter 8.

5.3.6 Integration of Collection System

The collection system will be integrated with the recycling program in that drop-off recycling will be set up at convenience centers. Problem waste collection and storage will occur at the transfer station site.

5.4 Ten-Year Staffing and Training Needs

Staff members at the additional convenience centers with compactors will need to be trained on proper and efficient use. As the additional centers are upgraded, the staff at those centers will also need to be trained. Personnel will have to be trained in transfer station operation once that system is operational.

5.5 Budget

The capital costs for collection and transportation fall into two main categories. They include the potential purchase of two new trucks, and funds to upgrade the convenience centers. The trucks and upgrading of the centers will occur in FY 1993/1994. The remaining centers will be upgraded in FY 1994/1995.

The capital costs will be financed by state convenience center grants (i.e., \$50,000 is expected in FY 1993/1994) and by rural property taxes. For each \$100 in assessed property value, rural Roane County residents will be assessed \$3.825, of which \$0.35 is applied toward maintenance of the convenience centers.

Roane County will fund annual operating and maintenance costs through property taxes. Some costs (\$1,000 per convenience center) are assumed to be allotted for demolition, dismantling, and reseeded of the sites where the convenience centers are to be closed.

The 10-year budget is presented in Table 5-2. Major recurring expenditures include labor and tipping fees to the Solid Waste Authority. However, it is anticipated that tipping fees to the Authority should gradually decrease as the recycling program is instituted at the centers. Labor rates should stay relatively constant (after the six centers are eliminated) for the eight centers that remain.

5.6 Implementation Table

Implementation of the waste collection and transportation element of the system consists primarily of upgrading the transportation capabilities, and upgrading the compacting capabilities at the remaining convenience centers. Details of the implementation schedule are presented in Table 5-3. Responsibilities outlined in this schedule belong to the county and the region.

5.7 Waste Collection and Transportation Element Location

Figure 2-1 shows the location of the convenience centers throughout the region. Waste flow patterns are also shown on Figure 2-1.

Table 5-2

Projected 10 Year Budget and Funding Plan (a)
Waste Collection and Transportation

	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Operating Revenues (b)											
General Tax Revenues	\$1,744,333	\$1,619,333	\$1,547,333	\$1,544,333	\$1,544,333	\$1,544,333	\$1,554,333	\$1,544,333	\$1,544,333	\$1,544,333	\$1,544,333
Total	<u>1,744,333</u>	<u>1,619,333</u>	<u>1,547,333</u>	<u>1,544,333</u>	<u>1,544,333</u>	<u>1,544,333</u>	<u>1,554,333</u>	<u>1,544,333</u>	<u>1,544,333</u>	<u>1,544,333</u>	<u>1,544,333</u>
Operating Expenditures (c)											
Collection/Transportation	\$677,428	\$677,428	\$677,428	\$677,428	\$677,428	\$677,428	\$677,428	\$677,428	\$677,428	\$677,428	\$677,428
Roane County	632,356	632,356	632,356	632,356	632,356	632,356	632,356	632,356	632,356	632,356	632,356
Municipalities	234,549	234,549	234,549	234,549	234,549	234,549	234,549	234,549	234,549	234,549	234,549
Convenience Centers											
Total	<u>1,544,333</u>										
Net Operating Income	200,000	75,000	3,000	0	0	0	10,000	0	0	0	0
Non-Operating Revenues											
State Grants (d)	50,000										
Total	<u>50,000</u>										
Non-Operating Expenditures											
Conv. Center Upgrade Eqp. (e)	\$54,000	\$72,000									
Convenience Center Close Out (f)		3,000	3,000								
Trucks & Other Vehicles (g)	196,000						10,000				
Total	<u>250,000</u>	<u>75,000</u>	<u>3,000</u>	<u>3,000</u>	<u>3,000</u>	<u>3,000</u>	<u>10,000</u>	<u>10,000</u>	<u>10,000</u>	<u>10,000</u>	<u>10,000</u>
Net Non-Operating Income	(200,000)	(75,000)	(3,000)	0	0	0	(10,000)	0	0	0	0
Net Income	<u>0</u>										

a. All revenues and expenditures are shown in constant 1993 dollars. Cost projections are consistent with budgets developed under the new FY 1994 full cost accounting requirements.
 b. Property tax revenues fund the majority of all costs associated with collection and transportation. The revenues shown include money from various sources from the Cities and the County.
 c. Fiscal Year 1994 projections are constructed from Roane County and Municipal budget estimates for FY 1994. Future years assume that costs will remain approximately constant, despite the decrease in total waste volume to be hauled.
 d. State grants as projected by Roane County Budget Department.
 e. Equipment to upgrade three convenience centers for FY 1994 and four for FY 1995, at a cost of \$18,000 for each center.
 f. Three convenience centers are scheduled for closure in FY 1995, and three more centers will be closed in FY 1996. Closure costs are estimated by the County to be \$1,000 per center. No provision is made for any environmental clean-up at the sites.
 g. A total of \$196,000 is budgeted for the purchase of trucks for FY 1994, although the entire amount may not be spent. A recurring expenditure of \$10,000 every five years is projected for vehicle replacement.

**Table 5-3
Ten-Year Implementation Timetable for Collection and Transportation**

Fiscal Year	Task	Target Date
1993/1994	1. Plan Update and Annual Report on Waste Collection 2. Purchase collection truck or contract with hauler 3. Purchase compactors, roll-offs, and open-top containers for 3 convenience centers 4. Train staff members at 3 convenience centers	1. 06/30/94 2. 06/30/94 3. 06/30/94 4. 06/30/94
1994/1995	1. Conduct convenience center survey 2. Submit Annual Report 3. Purchase compactors, roll-offs, and open-top containers for 4 convenience centers 4. Train staff members at 4 convenience centers 5. Phase out three convenience centers	1. 12/31/94 2. 06/30/95 3. 06/30/95 4. 06/30/95 5. 06/30/95
1995/1996	1. Submit Annual Report 2. Phase out three convenience centers	1. 06/30/96 2. 06/30/96
1996/1997	1. Collect transportation and collection data for Annual Report 2. Submit Annual Report	1. 01/31/97 2. 03/31/97
1997/1998	1. Collect transportation and collection data for Annual Report 2. Submit Annual Report	1. 01/31/98 2. 03/31/98
1998/1999	1. Collect transportation and collection data for Annual Report 2. Submit Annual Report	1. 01/31/99 2. 03/01/99
1999/2000	1. Collect transportation and collection data for Annual Report 2. Submit Annual Report	1. 01/31/00 2. 03/01/00
2000/2001	1. Collect transportation and collection data for Annual Report 2. Submit Annual Report	1. 01/31/01 2. 03/01/01
2001/2002	1. Collect transportation and collection data for Annual Report 2. Submit Annual Report	1. 01/31/02 2. 03/01/02
2002/2003	1. Collect transportation and collection data for Annual Report 2. Submit Annual Report	1. 01/31/03 2. 03/01/03
2003 ^a	1. Collect transportation and collection data for Annual Report 2. Submit Annual Report	1. 01/31/04 2. 03/01/04

^aEnd of planning period is December 31, 2003, which is only half of this fiscal year.



Chapter 6 Recycling

6.1 Introduction

This section of the report discusses the steps that the Roane County Solid Waste Board proposes to expand its recycling efforts. The region has little recycling now, and an earlier recycling program was discontinued. Current recycling efforts consist of collection of aluminum cans at the convenience centers and paper at some municipal buildings.

The Board is interested in expanding recycling throughout the region and making recycling a major means of meeting its waste reduction goal. Although recycling is not currently a strong part of the existing solid waste system, community interest seems to be high. The Board anticipates that recycling will become a strong component of the 10-year plan.

6.2 Regional Needs

Regional needs include establishment of recycling programs for the four economic sectors (residential, commercial, industrial, and institutional) as described in Section 6.3.3. To implement the residential program, the Roane County Region will need to procure equipment or secure the services of a contractor to pick up the materials and transport them to a central collection area or directly to an end user. The overall program must include an educational and promotional component targeted to all individuals and businesses within the region to build support, awareness, and participation in successful recycling programs. Finally, the region will need to further identify and develop markets to accommodate materials generated by the implementation of new recycling programs.

6.3 Specific Recycling Program Actions

6.3.1 Goals

The regional recycling goal of the Solid Waste Board is to establish a framework for a viable recycling industry in the region. A viable industry is one in which recyclables are effectively separated, a collection and transportation system exists to bring these materials to market, and markets are available to purchase these materials. Benefits of a viable industry are that materials are not stockpiled for lack of markets and intermediate dealers can remain in business. Objectives to reach that goal include the following:

- Increase public awareness of recycling through education and promotion programs, with special emphasis on adult education programs
- Provide for public input into recycling plans and programs

- Fund a Solid Waste Coordinator position to implement the proposed programs.
- Design and implement regional opportunities for recycling for residences, commercial establishments, industries, and institutions
- Enhance cooperation between private recycling enterprise and local government to facilitate a viable recycling industry
- Design a county-wide waste reduction and recycling program that is compatible with regional recycling systems
- Foster cooperation between county and participating municipalities to achieve plan goals

6.3.2 Recycling Strategies

The strategy for expanding recycling to unserved residential areas consists of adding drop-off recycling centers at the convenience centers, within municipalities, and at schools. Curbside collection is not a part of the strategy at this time because of the low population density that would probably result in inefficient collection routes. However, the feasibility is being explored. The feasibility of establishing collection points for wood pallets in industrial areas will also be investigated.

The recycling program will also expand to include all economic sectors. The primary strategy for all sectors other than residential (industrial, commercial, and institutional) will be to focus initial efforts on "high" recyclability accounts, or those generators with large quantities of homogenous recyclables that will significantly offset disposal fees. Therefore, different materials are proposed for each sector. A description of the recycling program by economic sector is provided in the section below.

The strategy for expanding all recycling programs to include additional materials is to add these materials in a conservative manner. For example, rather than starting with all types of plastic at the convenience centers, only two types of plastics (HDPE and PET No. 1 and No. 2) are initially proposed.

6.3.3 Description of Planned Recycling Programs

The planned recycling programs were developed by economic sector and are summarized in Table 6-1. The recycling program implementation schedule is aggressive in that the region has very little recycling now and will need to implement all programs described to meet the waste reduction goal. The participation rates presented in Table 6-1 are also necessarily aggressive to meet the waste reduction goal. However, based on information obtained during plan preparation, Roane County residents, businesses, and industries seem to have a commitment to increase their recycling levels.

Table 6-1
Estimated 1995 Recycling Quantities^a from New Program Implementation

Program	Service Area (Fraction of County)	Participation Rate (in percent)	Recycled Tons by Program	Percent Waste Stream Reduction	Percent by Sector
Residential					
Drop-off at Conv.	0.6	60	4,518	8.8	
Drop-off, City	0.4	25	842	1.6	
Backyard Composting	1	25	656	1.3	11.7
Commercial					
Commercial	1	10	170	0.3	0.3
Institutional					
Government Offices	0.4	90	188	0.4	
Schools	0.6	90	282	0.5	0.9
Industrial					
Industrial	1	10	836	1.6	1.6
Other					
Class IV Diversion	1	100	7,278	14.1	14.1
Total			14,770	28.6	28.6

^aEPA Waste Composition applies uniformly to all sectors; better data not available.

^bCommercial and Institutional Waste totals were split 75/25 percent from aggregated number in Needs Assessment (ETDD, 1992).

The estimated percentages of materials to be diverted by each program was calculated using the percent of the waste stream that is contributed from each sector, as described in the Needs Assessment. The breakdown is as follows:

- Residential—34 percent
- Commercial/Institutional—11 percent
- Industrial—23 percent
- Special—32 percent

In order to estimate recycling quantities for each program, material, and sector, the amount of waste in each sector was multiplied by the following compounded factors:

- Percentage waste composition (obtained from the EPA averages presented in the Needs Assessment) to obtain estimates of material quantities available in each section
- Capture rate, defined as the portion of available material in the waste stream that is actually recovered by recycling participants, assumed to be 0.85 percent in the region
- Participation rate, defined as the percent of individuals, businesses, and institutions who participate in a given recycling program
- Service area, or that portion of the region in which programs are to be implemented, which is the factor of one when the service area is the entire region

The percent of the waste reduction goal that each recycling program is estimated to achieve is also shown in Table 6-1.

6.3.3.1 Residential Recycling Programs

Three different recycling programs will be offered to the residents of the region. Each program is designed to reach a different segment of the population.

The drop-off recycling centers at the convenience centers are designed to be available to the county rural residents and have an assumed participation rate of 60 percent. Materials proposed to be recycled include aluminum cans and scrap; newspaper; PET (No. 1 and No. 2) and HDPE plastic; scrap metal; yard waste; clear, green, and brown glass; and cardboard. Collection bins will be provided for each material, and pickup will be provided by the county. It is anticipated that implementation will occur in FY 1994/1995.

This program will have a greater amount of waste recycled relative to the municipal drop-off centers for three reasons. Participation will be higher because county residents have to go to the center anyway to dispose of their garbage. The potential materials that can be

collected at a rural convenience center are greater than at a drop-off center located within city limits as a result of space availability. Scrap metal and yard waste would be unsightly, cumbersome materials to collect within city limits. Finally, the rural population (60 percent) is greater than the urban (40 percent) in the county (ETDD, 1992) and in the region (62 percent rural, 38 percent urban per ETDD, verbal communication) and therefore offers the potential to produce more materials. Also, convenience centers provide ready sites for drop-off bins and are under control of the county, while urban sites will need to be developed.

One drop-off center in each of the three major municipalities in the region will also be developed. It is assumed that the residents of Oak Ridge residing in Roane County can use the BFI recycling center in Oak Ridge, and therefore no additional services are proposed for them. The participation rate is estimated to be no more than 25 percent, since residents will have to make a special trip. Except for scrap metal and yard waste, the same materials will be collected at these convenience centers as at the rural centers. Scrap metal and yard waste are assumed to be unsightly materials to collect within the city limits, and therefore the cities will need to find alternative sites to collect these materials. Collection bins will be provided for each material, which will be picked up by private haulers. Implementation will occur in FY 1994/1995.

One possibility in lieu of collection by private haulers is to expand the current collection efforts of DDI. They presently collect aluminum cans from the convenience centers and businesses throughout the county. The cans are stored in a collection bin on DDI property, and Southern Alloys and Metals collects the cans and pays DDI for the aluminum.

The third residential program is backyard composting. This program will target all residents in the region and will be promoted through a strong waste reduction education program. However, the county will not initially provide or subsidize composting bins because of the high implementation expense. A participation rate of 25 percent is assumed, and implementation is anticipated in FY 1994/1995.

The combined percent of waste that is estimated to be diverted from the landfill through the county-wide residential recycling program is 11.7 percent toward the 25 percent goal.

6.3.3.2 Commercial Recycling Program

The commercial recycling program is designed with a service area of the entire region. The strategy of this program is for the Solid Waste Coordinator to target large generators first and find a showcase business that can set an example for the remaining businesses. Incentives such as an annual "Green Business" award will be considered. Additional generators will be targeted throughout the program. The materials proposed to be recycled include cardboard, office paper, aluminum cans, and pallets.

Given an assumed participation rate of 10 percent, by the end of 1995 the amount of waste that can be diverted from the waste stream through this program is 1 percent. Implementation is anticipated to occur in FY 1994/1995.

6.3.3.3 Institutional Recycling Program

The institutional (schools, county and city government buildings) recycling program is divided into the government and school components. The participation rate from both components is expected to be about 90 percent. These programs will be implemented early and given a high profile through the public education program to set a positive example for the rest of the region. Initially, a limited list of materials is proposed, but more materials can be added as feasible.

Onsite collection and temporary storage will be used for both the government and school buildings, with private pickup when available. As a temporary measure, county employees are already collecting and delivering office paper to a local dealer.

The target service area for the government part is the County Courthouse, Chamber of Commerce, library, and city government offices. Office paper, aluminum cans, newspaper, and mixed paper will be included in this program. Implementation has already begun in some buildings and will continue through FY 1994/1995.

The primary and secondary public schools, both county and city, comprise the school component of this program. Only two materials are proposed for this program, aluminum and office paper, to keep it simple and to increase the chances of sustained participation. Aluminum cans are proposed because they provide one of the highest sources of revenue from drop-off centers. White paper is proposed because of its ease in recycling in a school environment and because of readily available markets. Implementation will be in FY 1994/1995.

Some schools or school clubs have already begun recycling efforts, such as the Roane County High School Ecology Club's newspaper recycling program. The Solid Waste Coordinator will integrate the new programs with such existing programs to provide encouragement and support to the existing efforts.

With an assumed participation rate of 90 percent, the combined amount of waste diverted from the landfill through this program is 0.9 percent of the total waste stream.

6.3.3.4 Industrial Recycling Program

The industrial recycling program will target the entire region, but only a 10 percent participation rate is initially assumed. This program will be implemented in a similar fashion to the commercial program. Key elements of the program are the UT CIS Waste Reduction Seminar, participation in a waste exchange program, and participation in a pallet exchange and repair program.

Materials to be recycled in this program include pallets, scrap metal, glass, cardboard, aluminum cans and scrap, and plastic. Implementation is scheduled for FY 1994/1995. Also, large quantities of special wastes with recycling potential will be targeted. Collection will be a combination of onsite collection and temporary storage or collection and temporary storage at a central site such as the Industrial Park.

The industrial recycling program will be initiated with the UT CIS Waste Reduction Seminar. One purpose of the seminar is to get industries in the same room to exchange information. The Chamber of Commerce will have previously polled the industries to determine willingness to participate in the program and types of waste that are available.

It is not possible to estimate the quantities of materials that may be reused in this fashion until a complete waste inventory of all industries in the region is completed, the participating industries are known, and the wastes to be exchanged are identified. This information should become available after the UT CIS Waste Reduction Seminar and can be included in a plan update. The Chamber of Commerce may be willing to become a sponsor (\$75 per year) for the region and join the Southern Waste Information eXchange Clearinghouse. Industries in Roane County with wastes to sell or give away can then be listed; they will also have access to other available wastes.

The pallet exchange and repair program is a multi-faceted program ultimately designed to keep pallets out of the landfill. The pallet exchange initially involves the Roane County Industrial Development Board or the Chamber of Commerce, which will serve as a facilitator for local industries to determine if any pallets can be exchanged among them. The industries will be responsible for the actual physical exchange.

The repair portion of the program involves increased coordination between pallet dealers and the industries to determine if a greater percentage can be repaired versus discarded. Currently, the East Tennessee Pallet Company comes to Roane County to pick up pallets from IMCO, and Pallet Exchange of Knoxville also picks up pallets in Roane County.

6.3.4 Recyclable Materials Collection Site Locations

It is proposed to establish drop-off recycling centers at four of the convenience centers by the end of FY 1994. In FY 1996, after the program has been in place for one year, its success will be evaluated in terms of upgrading an additional four convenience centers to rural drop-off centers.

The approximate location of the sites proposed for collection of recyclable materials is shown in Figure 6-1 (located at the end of this chapter). The convenience centers and municipal drop-off locations are also shown. Locations of specific industries and businesses that might participate in the industrial and commercial recycling programs are not shown.

6.3.5 Regional Processing Centers

Roane County is planning to develop a modified Materials Recovery Facility (MRF) at the Industrial Park. The center will serve as a central point for collection and storage of recyclable materials, as well as some processing for markets such as crushing glass and baling cardboard.

All-Waste Recycling, Inc., Ashland City, Tennessee, is the proposed regional processing center for the glass recycling efforts in Roane County. All-Waste will provide two roll-off containers, one for clear glass and one divided for green and brown glass that will be centrally located in the county. Roane County will be responsible for hauling the roll-offs to All-Waste.

Power Paper, Inc., of Harriman, Tennessee, recycles tailings from the manufacturer of cardboard boxes. It also accepts baled corrugated cardboard from businesses, industries, and recycling cooperatives.

Most of the processing centers that the region would use are located in the Knoxville metropolitan area. Southern Alloys and Metals and IMCO Recycling are shown on Figure 6-1 (located at the end of this chapter) because they serve as regional intermediate processors/end-users for aluminum. A DDI recycling center is located on Highway 58, as shown in Figure 6-1. Table 6-2 lists recyclable materials markets near or in Roane County.

6.3.6 Marketing of Recyclable Materials

By using the network of convenience centers and by providing drop-off centers in the municipalities, economically viable quantities can be accumulated at these sites. These sites were also selected to provide for easy transportation. The region will help specific industries coordinate their recycling programs. The county is also willing to consider membership in the nonprofit organization, Recycled Materials Cooperative of East Tennessee (RMCET), to help promote recycling.

6.3.7 Interaction with Office of Cooperative Marketing

Because the Office of Cooperative Marketing, established under T.C.A. 68-211-826, is designed to facilitate an individual region's success with recycling, the Roane County Solid Waste Board will cooperate to the fullest. Specifically, the region will provide updated information and data that Cooperative Marketing needs to keep its directories and other services current.

Table 6-2
Recyclable Materials Market in Close Proximity to Roane County

Company Name, Address, and Telephone	Scrap Iron, Copper, Brass	Aluminum Cans	Newsprint	Corrugated Cardboard	Office Paper	Plastic	Glass	Used Oil, Oil Filters, and Fluids	Other Materials
A-1 Wiping Rag Company 1942 Western Avenue Knoxville, TN (615) 521-6580	X	X							
Alcoa Recycling Alcoa, TN		X							
Alcoa Recycling Center 600 North Gay Street Knoxville, TN (615) 971-1907		X							
BFI Recycling Systems 2400 Chipman Street Knoxville, TN (615) 522-0078		X	X		X	X	X		
IMCO Recycling, Inc. Rockwood, TN		X							
Industrial Oil Service 2708 Crosslane Drive Knoxville, TN (615) 693-7627								X	
Inskip Recycling 210 Sylvia Drive Knoxville, TN (615) 522-6129									X
Joyner's Enterprises Highway 58 Kingston, TN	X	X							
Knox Metals Corporation 822 Richards Avenue Knoxville, TN (615) 637-4353	X								

**Table 6-2
Recyclable Materials Market in Close Proximity to Roane County**

Company Name, Address, and Telephone	Scrap Iron, Copper, Brass	Aluminum Cans	Newsprint	Corrugated Cardboard	Office Paper	Plastic	Glass	Used Oil, Oil Filters, and Fluids	Other Materials
Knoxville Recycled Fiber 410 Frazier Drive Knoxville, TN (615) 522-6129			X	X	X				
Knoxville Recycling Coalition 220 Carriek Street Knoxville, TN (615) 525-9694					X				
Pallet Exchange 214 West Morelia Avenue Knoxville, TN (615) 523-1203									
Paper Stock Dealers, Inc. 1111 Mitchell Street Knoxville, TN (615) 524-0309		X	X		X				
Phillips Salvage Rockwood, TN			X	X					
Power Paper, Inc. 728 Emory Harriman, TN (615) 882-5151				X					
Reclamation Services Central Recycling 301 West Quincy Road Knoxville, TN (615) 525-9775	X	X							
Safety-Kleen Corporation 826 Stewart Lane Knoxville, TN (615) 522-2333								X	

Table 6-2
Recyclable Materials Market in Close Proximity to Roane County

Company Name, Address, and Telephone	Scrap Iron, Copper, Brass	Aluminum Cans	Newsprint	Corrugated Cardboard	Office Paper	Plastic	Glass	Used Oil, Oil Filters, and Fluids	Other Materials
Southern Foundry 2826 North Central Avenue Knoxville, TN (615) 524-2791		X	X						
Southern Salvage Scrap Metals Lower Carter Street Harriman, TN	X	X							
Waste Management Inc. 2552 Western Avenue Knoxville, TN (615) 525-0529		X			X	X	X		
Willy's Recycling 7220 Central Avenue Pike Powell, TN (615) 947-1442									X

6.3.8 Incentives to Encourage Program Participation

The implementation of ordinances and other incentives provide alternatives for local governments to ensure progress of a waste diversion plan toward established goals. Brief descriptions of several alternatives for ordinances are presented below to demonstrate the types of ordinances that may be available to the region (as the county cannot pass ordinances) to encourage recycling.

6.3.8.1 Mandatory Separation Ordinance

The region and the three municipalities may be able to require that residential and commercial generators separate their recyclables from waste being set out for disposal, although this is considered a fairly aggressive alternative. A properly implemented mandatory separation ordinance will ensure greater participation and material recovery than a voluntary program with equivalent levels of service. A mandatory separation ordinance sends a strong signal to generators about the importance of recycling. In addition, this type of ordinance may be desirable for market development by assuring a reliable flow of materials. However, this type of ordinance may rule out other recycling alternatives such as post-collection sorting of high-grade commercial loads at a disposal facility. The region may incur some administrative costs through enforcement of the ordinance to ensure compliance. This type of ordinance may specify which materials must be separated, how the materials must be set out for collection, and if they may be taken to drop-off facilities or donated to nonprofit groups.

6.3.8.2 Service Level Requirements

The region or the municipalities may be able to require haulers to provide recycling collection services as a condition of their business licenses or franchise agreements. If the region enacts an ordinance that implements the recommendations of a solid waste management plan, this would require compliance by its affected certificated haulers. Such an ordinance will require definition of standards for minimum service levels in different areas of the region and could benefit the region by specifying a greater level of detail than normally specified by a solid waste plan. Service level ordinances may imply issues of equity between larger companies able to capitalize new recycling equipment and smaller firms that cannot. An enforcement system accompanying such an ordinance must be able to handle complaints about non-complying haulers. Key specifications in the ordinance would include materials to be collected, required frequency of collection, whether or not incentives for recycling must be provided (e.g., rate reductions to customers who actively recycle or penalties for those who do not recycle), and a payment system for compensation of costs to the hauler. While expanding recycling programs will decrease the amount of waste requiring disposal, maintenance of the private sector's role in providing waste management services may be enhanced by including recycling as part of such services.

6.3.8.3 Incentive Rate Structures

Variable container garbage rate structures are often used as an incentive for participation in waste reduction, recycling, and composting programs. These require that waste generators pay more for service to dispose of high quantities of waste, and they rely on the incentive that disposal behavior can be used to affect the disposal bill. This type of rate structure relies on customer choice and is nonmandatory in nature. However, a variable per-can rate structure does not prohibit the implementation of a mandatory separation ordinance. Several rate structure types, in order of increasing recycling incentive, are as follows:

- Flat monthly charge (no incentive)
- Declining per-can charge
- Fixed per-can charge
- Increasing per-can charge
- Weight-based charge

While a weight-based charge may provide the highest incentive for waste diversion programs, it is also the hardest to implement and is experimental in nature at this time. The revenue uncertainty created by the implementation of a new rate structure must be mitigated by a balancing mechanism between allowed revenues, actual revenues, and needed revenues. The region would affect rate structures in its jurisdiction by working with local haulers and by passing a minimum service level ordinance.

6.3.8.4 Building Codes

A common barrier to the separation of recyclables is the cost of providing collection containers, inconvenient locations for containers, and/or a lack of building space for the containers. When Roane County hires a building inspector and the Southern Standard Building Codes are enforced, building codes may possibly be revised to require adequate space for recycling in new apartment buildings or commercial developments. Codes may require new developments to have adequate access for recycling trucks, safe storage for recyclables, and sufficient floor space for desk-side or centralized collection bins. Unless existing facilities are also required to provide convenient access to recycling containers (often a difficult proposition) code revisions provide benefits over the long run as older business facilities are replaced with newer ones.

6.3.8.5 Landfill Disposal Bans

The region may wish to develop prohibitions on the disposal of specific waste types that create a significant burden on the waste stream. Bans on the disposal of yard waste, white goods, corrugated cardboard, wood, tires, and even standard recyclables have been implemented in many communities throughout the country. If a disposal ban were implemented, several elements necessary to contribute to its success would include provision of recovery alternatives for banned materials, effective monitoring and

enforcement, and clear communication of goals and implementation schedules to affected parties such as haulers, regulators, and generators.

6.3.8.6 Scavenging Policy

The region can approach scavenging by either allowing scavenging to occur or by taking an anti-scavenging stance. The most restrictive form of an anti-scavenging policy would prohibit scavenging at any time. Milder anti-scavenging policies may allow scavenging on any day other than collection days. An anti-scavenging policy may be appropriate if the region depends upon material collected to make recycling programs economically viable or if scavenging is a significant public nuisance problem. Such a policy should not prevent residents from leaving recyclables for volunteer groups. Enforcement and protection activity, such as locking up drop-off containers at night, should accompany such an ordinance.

6.3.8.7 Recycling Reporting Requirements

This type of ordinance can require, as a condition of receiving a business license or permit, that recycling and private refuse haulers record and report documentation of quantities handled. The goal of implementing reporting requirements is to achieve accurate monitoring of progress toward meeting state waste reduction and recycling goals and to serve as an education opportunity. While some legislation addresses this issue at the state level, this type of ordinance can be of assistance to a municipality's monitoring and measurement programs. T.C.A. 68 211-871(c) allows the region the opportunity to require haulers and others in the business to report on quantities recycled.

6.3.9 Education and Promotion

Waste reduction education is a required element of the Roane County Solid Waste Plan. Education can be of three types: motivational, program specific, and product specific. It can target residential, commercial, industrial, and municipal generators of waste, including product manufacturers, distributors, and retailers. Education can be impersonal (public service announcements, etc.) or personal (workshops, etc.). For an educational program to be successful at reducing waste, it must be sustained over time. Educational programs will work best when retailers and the media are similarly convinced of the needs and opportunities to reduce waste at the source.

6.3.9.1 Scope of Education Program

Recycling program guidelines require the Roane County Region to include an educational component aimed at all appropriate waste generators as part of the Solid Waste Plan. The county must decide how extensive and what kind of an educational program it is willing to fund, and at what level of effort its program will continue. The county must decide if it will seek a stable source of funding, such as grant funding, or a tipping fee surcharge. It must be decided whether the focus will be solely on program education or whether it will

include motivation and product education as well. The education program could target specific audiences or it could use mass media to reach all county residents and businesses. The county could examine whether to pursue intensive education or whether to spread its resources more widely. It is anticipated that the Solid Waste Coordinator will have overall responsibility for the education program, and will work closely with the school board and RCCS.

6.3.9.2 School Curricula

Waste reduction curricula can be a valuable way of impressing a conservation ethic upon the youngest generation of consumers and generators of waste. The county can adapt state or other existing curricula or develop its own curricula for implementation at all grade levels K through 12. Local schools can likewise be involved through special classes and integration of waste reduction concepts into different business, industrial, and economics classes. The county can work with students, teachers, schools, and school districts to implement waste reduction curricula.

6.3.9.3 Waste Audits

Waste audits are a specific form of technical assistance to nonresidential generators of waste. The county can provide waste audits to local businesses as a method of motivating and educating businesses and institutions about the need to and opportunities for reducing and recycling waste. The UT CIS may be willing to provide waste audit training to county staff or a group of volunteers (e.g., Master Recyclers). Programs elsewhere using a similar pool of volunteers have proven to be successful in assisting businesses reduce their waste stream.

6.3.9.4 Technical Assistance

If county staff were available, they could offer waste reduction technical assistance to nonresidential generators using fact sheets, the waste reduction and recycling director, workshops, labor and management training, demonstration programs, clip art, etc. Like waste audits, technical assistance offers a valuable service to nonresidential generators by providing them with experience and knowledge that can take months to develop without outside assistance.

6.3.9.5 Waste Reduction Planning by Nonresidential Generators

Roane County can require or request all or a number of nonresidential generators to prepare and implement plans to reduce and recycle wastes at their operations. Such requirements are usually supported by a specific waste reduction planning form, technical assistance in completing the form, and fines for noncompliance. Waste reduction plans can be a valuable source of reporting and monitoring information. The plans themselves can be structured in such a way as to be a helpful tool in assisting business and operations managers in identifying opportunities for waste diversion. Some businesses may have

legitimate concerns over confidentiality, and some generators may find required waste reduction planning to be a difficult compliance burden.

6.3.9.6 In-House Waste Reduction

The county can expand its current in-house waste reduction program to include additional county facilities and to encompass new waste reduction measures. By carefully monitoring the waste reduction effectiveness, costs, avoided costs, and revenues of this program, the county can develop a model for county businesses, schools, and city government facilities.

6.3.9.7 Support of Business and Nonprofit Groups that Promote Reuse

Businesses and nonprofit groups that promote the reuse of items include pallet remanufactures, tire retreaders, diaper services, equipment rental services, cartridge remanufactures, furniture reupholstering businesses, appliance reconditions, and second-hand retail outlets. All such entities provide an infrastructure that supports waste reduction activities. The county can support this in a variety of ways, including promotion and education, reduced business taxes and fees, reduced regulatory burdens, or avoided disposal credits where the county provides a direct financial payment for each ton of waste diverted from the landfill.

6.3.9.8 Awards and Public Recognition

Awards and public recognition can be used to develop intrinsic motivations to reduce waste at the source. Awards honoring individuals, organizations, institutions, and businesses that have contributed significantly to waste reduction in the region through leadership, innovation, volunteerism, or simply setting a positive example for others to follow can be developed. Public recognition provides an opportunity for the region to publicize innovative waste reduction programs, as well as encourages the nonresidential sector to participate in waste reduction activities.

6.3.10 Staffing Plan

Additional staffing needs for each of the recycling programs are described below. Many of the staffing duties of the various programs will be shared by the Solid Waste Coordinator, whose position is strongly recommended for FY 1994/1995. Duties of the Solid Waste Coordinator include overseeing all county and city recycling programs, working actively with the private sector, and managing the public education program. This person will also serve as a liaison with the recycling markets, apply for grants, and stay knowledgeable about the latest technologies.

The residential recycling program can use the same personnel that are already at the convenience centers to monitor the recycling collection bins. Drop-off centers within the municipalities are proposed to be unstaffed, purely as a cost-savings measure. However, it

would be desirable for staff from the sanitation departments to make daily visits to the drop-off centers to maintain the area.

Part of the Solid Waste Coordinator's duties will be to promote the backyard composting program. It is assumed that this will take 10 percent of this person's time.

Staffing needs to implement the institutional and commercial recycling program can be met through a portion of the Solid Waste Coordinator's time. This person would develop a plan to meet with the large generators and would spend time helping businesses initiate their recycling programs. This position would also help identify private haulers that would pick up the materials. Janitorial staff at the schools and county and city municipal buildings may also be able to help manage the recycled office paper and other materials proposed under the institutional recycling program.

To implement the industrial recycling program, much of the Solid Waste Coordinator's time will be spent coordinating with industries, the Chamber of Commerce, and the Industrial Development Board to help get the waste exchange and pallet exchange programs started and to help industries with their recycling efforts.

6.3.11 Ten-Year Budget

The average yearly salary for a convenience center attendant including fringe benefits is \$12,038. No additional staff are anticipated to be needed at the convenience centers to oversee the recycling activities. Therefore, the total yearly cost of operating a convenience/recycling center should not require an increase in the county budget for labor. Table 6-3 presents a 10-year budget and funding plan for the recycling program.

Although the salary is not included in this budget, it is assumed that a position for the Solid Waste Coordinator would be established to oversee the entire county/city program. The estimated yearly salary is \$18,000 to \$20,000 plus fringe benefits. This position is planned for FY 1994/1995.

These costs appear under Non-Operating Revenues. It is assumed that no land purchases will be required for the additional planned recycling because adequate space exists at the convenience centers.

The new and existing elements of the recycling program proposed for the Roane County Region will incur some implementation costs. Types of costs that will be incurred include mailings, costs to coordinate the UT CIS Workshop, costs to prepare artwork for various ads, containers and setup for the office paper program, meetings with industries and schools, and initial and ongoing educational and promotional aspects of the program. As a conservative estimate, it is assumed that \$2,000 per element per year will be needed.

Capital costs are included in this budget for the purchase of recycling bins. Given the space limitations at some of the convenience centers, it is proposed that six 6-yd³ covered

Table 6-3

Projected 10 Year Budget and Funding Plan (a)

	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Recycling											
Operating Revenues											
General Tax Revenues	\$2,800	\$65,435	\$0	\$0	\$12,800	\$12,800	\$51,975	\$12,800	\$12,800	\$12,800	\$12,800
Sale of Recycled Materials (b)	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Total	4,000	66,635	1,200	1,200	14,000	14,000	53,175	14,000	14,000	14,000	14,000
Operating Expenditures											
Solid Waste Coordinator (c)	4,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
Recycling Programs (d)	4,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
Total	8,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000	28,000
Net Operating Income	0	52,635	(12,800)	(12,800)	0	0	39,175	0	0	0	0
Non-Operating Revenues											
State Grants (e)	0	\$20,000	\$20,000	\$20,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	0	20,000	20,000	20,000	0	0	0	0	0	0	0
Non-Operating Expenditures											
Glass Crusher (f)			\$6,000								
Conv. Center Bins (g)		13,800					13,800				
Drums & Bins (h)		360					6,900				
Bins at Schools (i)		6,400					6,400				
Bins for Municipalities (j)		12,075					12,075				
Used Baler (k)		40,000									
Total	0	72,635	6,000	0	0	0	39,175	0	0	0	0
Net Non-Operating Income	0	(52,635)	14,000	20,000	0	0	(39,175)	0	0	0	0
Net Income	0	0	1,200	7,200	0	0	0	0	0	0	0

a. All revenues and expenditures are shown in constant 1993 dollars. Cost projections are consistent with budgets developed under the new FY 1994 full cost accounting requirements.

b. Historic income levels from the sale of recovered materials are shown. The increase in recycling activities should lead to increases in the amounts of revenue from this source in the future.

c. A position for a recycling coordinator is planned for FY 1995, but has not yet been included in the budget. The cost is estimated at \$19,000 plus 25% in fringe benefits.

d. Recycling programs are projected at \$2,000 per program in 1993 dollars. A partial year of activity is shown for FY 1994.

e. State Recycling grants at a maximum of \$20,000 are available through FY 1997.

f. An expenditure of \$6,000 is anticipated for purchase of a glass crusher; a portion of grant funds is to be allocated to this purchase.

g. 24 six-cubic yard bins are planned for 4 convenience centers in FY 95. Bins for recycling at the remaining 4 convenience centers are not included in the budget. Bins are replaced in FY 2000.

h. Twelve 55-Gallon drums are budgeted for placement at schools. Bins are scheduled to be replaced in FY 2000.

i. Sixteen 4-cubic yard containers are planned for placement at schools. Bins are scheduled to be replaced in FY 2000.

j. Twenty one 6-cubic yard bins are planned for the three municipalities. Bins are scheduled to be replaced in FY 2000.

k. The County intends to acquire a used baler, which is to be partially funded with the proceeds from the \$20,000 State grant.

bins be set up at the four convenience centers that will have compactors (North Gallaher, South 58, Post Oaks, and Swan Pond). The remaining materials will initially be collected in 55-gal. drums to save money. Eventually three 6-yd³ containers at each of the four convenience centers will replace the drums. Two 4-yd³ containers will be set up at eight school locations (where the county already has green boxes). Therefore, the total number of containers that are needed for recycling is:

- Twenty-four 20-yd³ covered bins
- Twelve 55-gal. drums now and twelve 6-yd³ containers in the second half of the planning period
- Sixteen 4-yd³ covered containers

It is assumed that the region will apply for state grants to help defray the costs of these purchases. The recycling bins will be purchased during FY 1994/1995 to be available to help meet the waste reduction goal. Additional bins for possible program expansion are not included in this budget. Each municipality will need to set up bins for aluminum; newspaper; cardboard; plastic; and clear, green, and brown glass. Seven 6-yd³ covered bins are proposed for each municipality.

6.3.12 Funding Plan

As previously stated, the additional costs associated with operating recycling centers at the existing convenience centers will be minimal because they are currently staffed with appropriations accounted for in the county budget. As an option to salary increases for the additional responsibilities of managing a recycling center, an incentive system could be incorporated into the program that rewards a particular center for the amount of materials collected, the condition of the materials, and the general operations of the center. Revenues generated from the sale of recyclable materials may be returned to the center attendant under the incentive program. For example, a certain percentage of gross revenues could be given back to the attendant based on the success of their individual recycling center. The percentage could be scaled also to compensate for longevity, in other words to increase the percentage commensurate with the length of employment. This would serve to limit turnover, and thus limit additional costs for training.

Funding for the Solid Waste Coordinator position will be obtained from county funds. State grants will be applied for until they are no longer offered (1997) to purchase additional recycling bins. Grant applications emphasizing regional cooperation with recycling programs are preferred. It is estimated that the majority of the funding for the recycling program will be from appropriations from the Authority's general fund, and less than 10 percent combined from the sale of recovered materials and grant money (while available).

6.3.13 Data Collection

For the successful operation of a recycling program, information and data must be collected for making evaluations. Such evaluations are necessary to gauge the success of the program in terms of costs and benefits and to assist in prioritizing yearly budget and resource allocations. At a minimum, data collection should include the following:

- Amounts of materials collected by classifications and types
- Total amount of materials disposed of in the landfill per center (i.e., contaminated loads)
- Numbers of residents utilizing the centers
- Total money collected from selling recyclable materials

The above information should be collected monthly on a standard reporting form and sent to the Solid Waste Coordinator, who will maintain a central file for each element of the program. Also, a yearly report incorporating all information for each element should be prepared by the coordinator and submitted to the Division of Solid Waste after approval from the region.

6.4 Coordination of Recycling Program with Other Programs

An integrated regional system is achieved through the coordination between DDI and the county-owned convenience centers. It may be possible to achieve further integration by providing for DDI pickup from the municipality drop-off centers and from other businesses willing to participate.

The new county program may be integrated with the private sector because a large glass generator (Chase Instruments, Inc.) is located in the county. It may be possible to coordinate with this generator to achieve mutually satisfactory goals of efficiently collected and processed glass that is diverted from disposal. One example of this might be that Chase Instruments, Inc., is willing to cooperate with the county in its efforts to recycle glass by contributing to the cost of the glass crusher.

6.5 Implementation Schedule

The implementation schedule is detailed in Table 6-4. It is weighted toward the beginning of the planning period because many aspects of the recycling program are necessary to fulfill the 25 percent waste reduction goal. Therefore, these programs need to be operational before December 31, 1995.

**Table 6-4
Ten-Year Implementation Timetable for Recycling Program**

Fiscal Year	Task	Target Date
1993 ^a /1994	<ol style="list-style-type: none"> 1. Apply for recycling grant for baler 2. Complete preliminary work on waste exchange and pallet exchange programs 3. Implement institutional recycling program 4. Start public education program (Chapter 9) 5. Kickoff events for new recycling programs 6. Inventory industries for waste exchange listing 7. Poll industries and businesses for pallet exchange and reuse 8. Schedule UT CIS Waste Reduction Seminar 9. Poll businesses for cardboard recycling interest 	<ol style="list-style-type: none"> 1. 03/25/94 2. 06/30/94 3. 06/30/94 4. 06/30/94 5. 06/30/94 6. 06/30/94 7. 06/30/94 8. 06/30/94 9. 06/30/94
1994/1995	<ol style="list-style-type: none"> 1. Hire Solid Waste Coordinator 2. Complete waste and pallet exchange program implementation 3. Submit recycling data for annual report 4. Add recycling to convenience centers and city drop-off centers 5. Implement backyard composting program 6. Find a showcase business for commercial recycling program 7. Conduct UT CIS Waste Reduction Seminar 8. Apply for recycling grant for glass crusher 	<ol style="list-style-type: none"> 1. 07/01/94 2. 12/31/94 3. 12/31/94 4. 12/31/94 5. 12/31/94 6. 12/31/94 7. 12/31/94 8. 03/25/95
1995/1996	<ol style="list-style-type: none"> 1. Submit recycling data for annual report 2. Have yard waste and demolition waste landfill permitted and operational 	<ol style="list-style-type: none"> 1. 12/31/95 2. 12/31/95
1996/1997	<ol style="list-style-type: none"> 1. Apply for state grant for collection bins or other recycling equipment 2. Submit recycling data for annual report 	<ol style="list-style-type: none"> 1. 07/01/96 2. 12/31/96
1997/1998	<ol style="list-style-type: none"> 1. Submit recycling data for annual report 	<ol style="list-style-type: none"> 1. 12/31/97
1998/1999	<ol style="list-style-type: none"> 1. Evaluate plastic recycling program to consider adding other types 2. Submit recycling data for annual report 	<ol style="list-style-type: none"> 1. 12/31/98 2. 12/31/98
1999/2000	<ol style="list-style-type: none"> 1. Submit recycling data for annual report 	<ol style="list-style-type: none"> 2. 12/31/99
2000/2001	<ol style="list-style-type: none"> 1. Submit recycling data for annual report 	<ol style="list-style-type: none"> 1. 12/31/2000
2001/2002	<ol style="list-style-type: none"> 1. Submit recycling data for annual report 	<ol style="list-style-type: none"> 1. 12/31/2001
2002/2003	<ol style="list-style-type: none"> 1. Submit recycling data for annual report 	<ol style="list-style-type: none"> 1. 12/31/2002
2003 ^b	<ol style="list-style-type: none"> 1. Submit recycling data for annual report 	<ol style="list-style-type: none"> 1. 12/31/2003

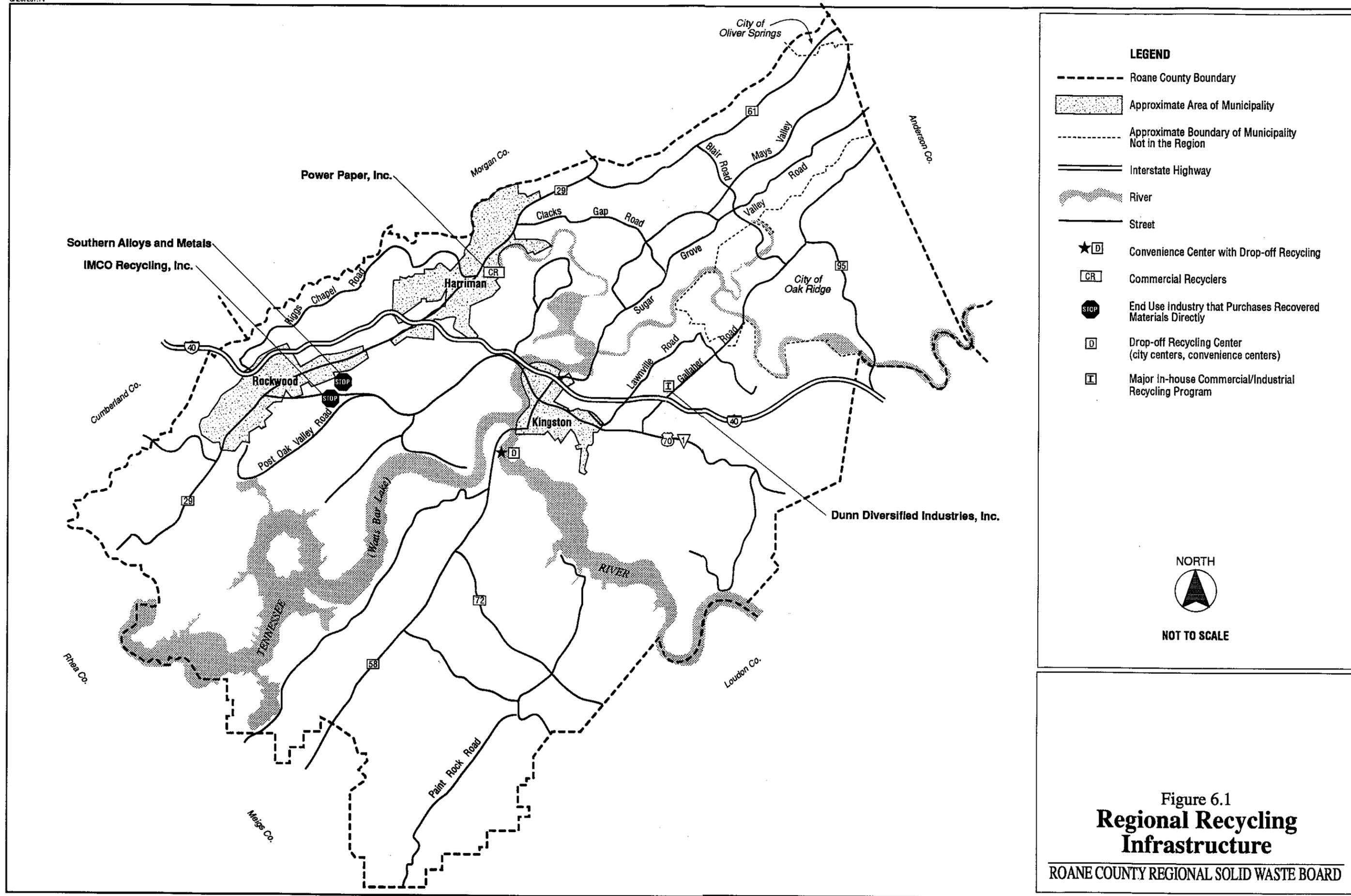
^aOnly covers second half of base year.

^bEnd of planning period is December 31, 2003, which is only half of this fiscal year.

6.6 Specific Allocation of Responsibility

The county will be responsible for the recycling programs at the convenience centers. Each municipality will be responsible for the drop-off centers in its jurisdiction. The Solid Waste Coordinator will have oversight responsibility for implementation of the recycling programs. The Solid Waste Coordinator will report to the county because the county is providing the source of funding. A designated individual in each city and county municipal building and in each school will be responsible for the recycling program in those buildings.

The Chamber of Commerce will take the lead on initiating the waste exchange and pallet exchange program. After the waste and pallet exchange programs are established, a representative from the Industrial Development Board will be selected to assume responsibility.



LEGEND

- Roane County Boundary
- [Stippled Area] Approximate Area of Municipality
- Approximate Boundary of Municipality Not in the Region
- ==== Interstate Highway
- ~~~~~ River
- _____ Street
- ★[D] Convenience Center with Drop-off Recycling
- [CR] Commercial Recyclers
- STOP End Use Industry that Purchases Recovered Materials Directly
- [D] Drop-off Recycling Center (city centers, convenience centers)
- [I] Major In-house Commercial/Industrial Recycling Program

NORTH

 NOT TO SCALE

Figure 6.1
Regional Recycling Infrastructure
 ROANE COUNTY REGIONAL SOLID WASTE BOARD

Chapter 7

Composting, Solid Waste Processing, Waste-to-Energy, and Incineration

Chapter 7 describes specific solid waste management alternatives available to the region and addresses the viability of these alternatives based on the region's waste management needs for the next 10 years. The specific alternatives to be evaluated are as follows:

- Composting
- Solid Waste Processing Facilities
- Waste-to-Energy
- Incineration

Options available to the region to implement any of these alternatives are limited primarily because of the relatively small waste stream (100 to 130 tpd) that does not provide sufficient economies of scale or revenue base for economic implementation of these capital intensive facilities. Also, the region has identified means other than these facilities to achieve the waste reduction goal of 25 percent. The following sections describe each of the above options and their applicability to the region.

7.1 Composting

7.1.1 System Description

Composting is defined as the biological decomposition of organic materials under controlled conditions. Composting is most often accomplished by aerobic means. In this process, oxygen and moisture content, temperature, and the carbon/nitrogen ratio are controlled to provide an optimum environment for natural microbial growth. The living microbes multiply in the organic substrate provided by the feedstock.

The onset of organic decomposition is reflected in a rapid rise in the temperature of the compost pile. Sustained temperature and decomposition require frequent aeration of the compost pile and careful attention to moisture content. A finished (i.e., stabilized) compost product contains little or no usable substrate for microbial growth. This is reflected by consistent low temperatures in the compost pile when optimum moisture and oxygen are provided. In the composting process, waste volume can be reduced as much as 50 to 85 percent. The finished product is usually a dark brown humic material, commonly known as compost.

Yard waste composting can divert a large amount of waste from landfill disposal. Yard waste consists of leaves, grass clippings, garden waste, prunings, and brush. Sources of these wastes include residents, landscapers, nurseries, parks, public works, and construction crews. In many communities yard waste comprises between 5 and 30 percent

of the waste stream. The biodegradability of yard waste offers the opportunity to reduce its volume by applying simple composting techniques that accelerate its natural decomposition. For example, the composting process can reduce the initial volume of leaves 60 to 80 percent, although this varies with the initial physical condition of the leaves, site conditions, and the nature of the finished compost product.

Yard waste can be collected either through self-hauling to a designated site or by pickup systems. Designated drop sites may involve restrictions on the type of material accepted and a disposal fee that would presumably be less than that for other disposal options. Pickup systems may be on-call or may be a regularly scheduled curbside service. The pickup system method may be incorporated into an existing collection system for refuse, although the collection of yard waste often depends on the season and supply of material.

Equipment used for collecting yard waste includes vacuum trucks, packer trucks, and a combination of a front-end loader and a dump truck. Mobile chipping units may also be used to process items such as large branches at the point of collection.

A yard waste program with high participation can divert between 3 and 15 percent of the waste stream. A convenient collection system is probably the most important factor in establishing a successful program.

Space requirements for a composting operation can be substantial. Leaf-only operations require approximately 1 acre per 3,000 yd³ of unground leaves and 1 acre per 4,500 yd³ of ground leaves.

Zoning ordinances may classify composting operations as light industrial, which may hinder the siting of such a facility close to the source of material (i.e., residential areas). In addition, there may be opposition by residents to siting such a facility in their neighborhoods because of the potential for dust, noise, and odors.

The reported operating costs for composting operations average \$20 to \$30 per ton. The facilities require land, labor, and equipment. Equipment for large-scale operations include grinders, chippers, screens, front-end loaders, pickup trucks, and sprinkler systems. Costs are partially offset by end-product sales and the avoided costs of alternative disposal. Compost or uncomposted chips or fines (mulch) may be marketed to residents, landscapers, and public works crews. It may also be used by nurseries, golf courses, and cemeteries.

7.1.2 Applicability

The Roane County Region is not currently considering implementation of a centralized yard waste composting program. Although this program will not be necessary to meet the 25 percent reduction goal, there may be some long-term interest in having some type of composting at the existing landfill site. However, the region will promote backyard composting as described in Chapters 4 and 6, and some yard waste and Christmas trees may be chipped at the existing landfill to use as cover material. Also, yard waste drop-offs

will be provided at convenience centers, which will help divert yard waste away from Class I disposal. The yard waste collected at the convenience centers will be taken to the new Class IV Landfill for diversion.

As a long-range objective, the Roane County Solid Waste Board recommends continued investigation into the development of an in-vessel composting facility similar to the Bedminster Bioconversion Corporation's facility in Sevierville, Tennessee. This is a co-composting facility designed to process 150 tons of municipal solid waste combined with 75 tons of sewage sludge per day. Further details on this option are provided in Chapter 8.

7.2 Solid Waste Processing

7.2.1 System Description

Solid waste processing means an operation for the purpose of modifying the characteristics or properties of solid waste to facilitate transportation or disposal of solid wastes including, but not limited to, incineration, composting, separation, grinding, shredding, and volume reduction (T.C.A. 68-211-103).

As such, "solid waste processing" may apply to Mixed Waste Processing (MWP) facilities used to separate recyclables from the waste stream, MRFs used to process incoming recyclables for market, transfer stations with compactors used to reduce transportation costs, in-vessel composting operations, as well as incinerators and waste-to-energy plants. This section will address MWP and MRFs because the other facility types are addressed in other chapters of this plan. MWP plants use mechanized, manual, or a mix of methods to remove recyclables from the general solid waste stream, and dispose of the remaining residual in a landfill. MRFs typically process recyclables only, usually with special equipment to meet material preparation specifications required by buyers. Examples of equipment that may be used in these types of waste processing operations include the following:

- Trommel screens
- Magnetic separators
- Air classifiers
- Conveyors with hand picking lines
- Balers
- Glass crushers
- Can flatteners
- Wood grinders and chippers

7.2.2 Applicability

The use of the above waste processing equipment as part of the region's integrated solid waste management system is dependent on the types and quantities of materials chosen for recycling, market demand, and capital and operating cost for implementing the processing equipment. Roane County is in the process of acquiring a building in the Industrial Park that will primarily be used for central collection and storage of the recyclables. It will also house the baler and glass crusher proposed to be purchased with state grant money. Mixed waste processing is not necessary because other programs are designed to reach the 25 percent waste reduction goal and because of the infeasibility caused by high capital requirements of the automated machinery.

7.3 Waste-to-Energy/Incineration

7.3.1 System Description

Waste-to-energy facilities are commonly either field-erected systems or modular systems. The field-erected incinerators typically have a limited amount of prefabrication. Modular units are prefabricated in modules that are shipped to a site for assembly and can burn 100 tpd or less.

The availability of markets for recovered energy will determine the viability of a waste-to-energy facility. Without revenue from the recovered energy, the cost of building and operating the facility can greatly exceed the cost of an alternative means of waste management. Energy markets are either steam or electricity customers. Because of the high cost of steam and condensate piping and the substantial heat loss that occurs in steam transport, steam customers are usually located within 3 miles of the facility. A waste-to-energy facility that generates electricity is less restricted in terms of proximity to a customer because the customer will usually be a utility company, and connection to the utility powerlines can be made at numerous points along the distribution grid. Although electric utilities are less desirable than steam customers from the standpoint of capital investment and revenue, they tend to be stable customers and are more likely to participate in long-term agreements.

7.3.2 Applicability

The cost for a facility sized for regional use only is expected to be significantly higher than other solid waste management alternatives. For these reasons, a waste-to-energy facility is not considered a feasible part of the region's future management of solid waste.

Chapter 8 Disposal Capacity

8.0 Introduction

This chapter discusses the region's need for additional disposal capacity, presents several alternatives, and describes the recommended alternative. The purpose of this chapter is to place existing knowledge of Roane County disposal options on a common footing, and position the region as well as possible for a necessary decision with available data. Therefore, a recommended course of action is described (Section 8.3.2.1), based on the best available technical and cost information (Section 8.3.3.2).

However, a distinct need for additional solid waste planning data exists. To ensure decisions that minimize long-term cost and provide reliable disposal for Roane County citizens, the region will be well served to collect and apply the following data for this decision and for future planning efforts:

- Accurate, weight-based tonnage records
- Comparison of disposal alternatives on an objective net-present-value (NPV) long-term basis
- Bids structured as described in this document

8.1 Regional Demand for Disposal Capacity

In determining the regional solid waste disposal needs, a disposal capacity analysis was performed whereby the projected quantity of solid waste requiring disposal is compared with the current remaining disposal capacity for the region. In the analysis, the waste quantity for disposal is the projected amount of waste remaining after waste reduction and adjustment for population and economic growth (Table III-4). However, waste reduction programs will take time to implement, and Roane County needs to plan for sufficient capacity to dispose of waste quantities not accounting for waste reduction efforts (Table III-3). Waste reductions include the use of recycling, reuse, recovery, and other solid waste technologies discussed in Chapters 4 and 6. The effectiveness of these programs, as well as source reduction programs, will be highly influenced by the degree of public support.

Forecasts used in this analysis are based on the Needs Assessment and do not reflect weight-based tonnages recorded at the landfill in the last 8 to 9 months. These data have not been made available for planning purposes.

In September 1993, the Roane County Solid Waste Authority reported the results of engineering calculations that estimate landfill volume usage at a rate of 124,000 yd³ per year, leaving 17 months of capacity. At this rate, existing landfill capacity will be depleted by March 1995. Table VIII-1 presents this disposal capacity analysis. This pending closure results in a need for immediate action by Roane County to identify available capacity for future disposal.

8.2 Excess Disposal Capacity

Based on the above disposal capacity analysis performed for this plan, no excess disposal capacity is available to the region for the planning period. Planning for replacement capacity has been initiated through this solid waste management plan and parallel efforts by the Solid Waste Authority.

8.3 Shortfall in Disposal Capacity

Future disposal capacity requirements will be provided through the use of new in-county or out-of-county disposal facilities. This will entail the construction of a future county-owned disposal facility or the acquisition of capacity through contracts with private firms.

8.3.1 Regional Goals and Objectives

The overriding goal of the region's disposal plan is to provide solid waste disposal capacity that can meet existing and projected demands in an environmentally sound, reliable, and economical manner. Several objectives are specified to meet this goal:

- Provide for immediate capacity to resolve the current capacity crisis
- Identify a long-term, least-cost disposal solution that serves the region in an environmentally responsible manner
- Aggressively implement waste reduction programs to decrease the amount of waste requiring disposal

8.3.1.1 Regional Institutional Structure

As a single-county region, Roane County does not currently plan for solid waste disposal in combination with another county. However, if future decisions to implement long-term disposal solutions require waste in addition to that generated within Roane County in order to feasibly construct and operate a new capital-intensive facility, Roane County Region will consider necessary interlocal agreements or other institutional structures.

8.3.2 Disposal Solutions

The Roane County Region is currently considering several alternatives for disposal systems, including new in-county Class I and Class IV Landfills, export of wastes to an out-of-county location, and in-vessel composting followed by landfilling of residuals.

Option 1: Develop In-County Landfill. The Roane County Solid Waste Authority has identified that sufficient space and capacity could be provided for future disposal through a new Class I cell at the existing landfill site. The Solid Waste Authority estimates that 15-year capacity would result from 69 acres of development if the landfill disposed of 200 tpd. In addition, the existing site also has sufficient space for a new Class IV cell. Thus, a siting process would not be necessary, and development of the new cells would consist of the following:

- Additional site-specific investigations
- Preparation of permit documents
- Preparation of construction documents
- Construction
- Startup and operations

Option 2: Export Wastes Out-of-County. This type of short- or long-term disposal system would consist of the following:

- Preparation of request for proposal (RFP) or request for bids (RFB)
- Contract negotiations (if RFP)
- Development of transfer facility
- Startup and operations

Option 3: In-Vessel Composting. The Roane County Solid Waste Board and Authority have reviewed preliminary information regarding the feasibility for implementation of an in-vessel composting facility in the county. Pursuit of this option would require:

- Technology review
- Market analysis for finished product
- Preparation of an RFP with appropriate technical specifications
- Contract negotiations
- Composting facility development
- Residuals disposal at Class I Landfill (in- or out-of-county)
- Startup and operations

Regardless of the preferred alternative, Roane County will need to close the existing landfill to State of Tennessee and Federal closure standards.

8.3.2.1 Shortfall in the First Five Years

As discussed above, the region must provide for immediate capacity prior to landfill closure in March 1995. To meet this objective, this plan recommends the following course of action:

- Institute flow control of regional wastes as soon as possible to assure that wastes generated within the region are managed by the region's solid waste management system.
- Immediately construct a Class IV Landfill at the existing landfill site and divert maximum Class IV wastes to avoid Class I disposal area.
- Use the existing landfill to capacity.
- Implement short-term export (3 to 5 years) of Class I wastes to an out-of-county location. This entails finalizing a transport and disposal contract and transferring the solid waste out of the county using a transfer system consisting of either a single transfer station adjacent to the existing Class I Landfill or satellite transfer stations developed at the convenience centers that have compactors. Possible phasing of transfer is discussed under "Implementation Issues" below; however, minimum overall cost for the region would be achieved from a central transfer point such as the existing landfill site that achieves compacted loads in high-volume trailers.
- Continue to review long-term disposal options, including in-county landfilling, waste export, in-vessel composting with a Class I cell, or other viable technologies.
- Select a long-term disposal option after conducting a thorough comparative technical and economic analysis of available options.

This strategy considers the cost conclusions below (Section 8.3.3). A number of factors are favorable for immediate implementation of a new in-county Class I Landfill, including:

- Available site, staff, and equipment
- Provides for long-term solution
- Combined onsite activities may result in closure cost-efficiencies for existing landfill
- Support from the Solid Waste Authority, who is responsible for implementing this plan.

However, the recommended interim course of action described above was developed for the following reasons:

Waste Stream Trends—Several factors are acting to decrease the quantity of Class I materials disposed in the Roane County Region (see Chapter 3 forecasts) including the following:

- A projected decrease in Roane County disposal tonnages as a result of economic and population factors, based on 1990 census and ETDD (1992) data.
- The county plans to separate Class IV materials into a new in-county Class IV Landfill cell.
- The county plans to implement additional waste reduction programs necessary to achieve 25 percent waste reduction by the end of 1995.
- County citizens have expressed opposition to the import of wastes generated outside of Roane County.

Financial Issues—Through export, ratepayers and local industry can be virtually guaranteed an immediate, reliable, cost-effective disposal system where future rate increases are not higher than inflation, as described below.

- Lower up-front capital costs for exporting as compared to landfilling results in lower financing needs.
- The decreasing Class I waste stream will erode the tipping fee revenues necessary for maintaining the financial viability of a capital intensive disposal facility with required environmental controls. Decreasing waste stream quantities will require the county to continue to raise tipping fees faster than inflation to support a capital investment with high fixed costs such as a landfill. Thus, first-year cost-per-ton estimates are not a good indicator of long-term costs to the county.
- Waste export programs, however, may be bid on a unit cost basis (per ton) with no minimum tonnage guarantee (or a guarantee so low that the county can meet it) because of the low capital requirements. Also, the contract can be negotiated to escalate slower than or no higher than the rate of inflation for the long term. As a result, the waste export program will result in 1:1 avoided disposal cost savings resulting from waste reduction efforts and decreasing waste quantities. This means that for every ton recycled, the county saves one ton worth of tipping fees. This is not the case over the long term with a landfill because of the high-fixed capital investment (although recycling may extend the life of the landfill after the debt service

is paid). Thus, no financial penalty or higher tipping fees (other than inflationary increases) will be necessary with waste export.

- It has not been demonstrated that sufficient waste can be directed to an in-county disposal facility to ensure its financial viability. A new flow control ordinance will only control waste generated within regional borders. The Santech bid, however, requires a minimum of 200 tpd, subject to financial penalties. Securing imported waste will be particularly difficult because of the current surplus of landfill disposal capacity in adjacent counties, competitive environment for waste disposal services, and Roane County's status as a single-county region. However, it is possible that some additional industrial waste currently exported from the region may be used to increase the Class I wastes available for disposal.
- Closure costs of the existing landfill do not substantively affect the decision between alternatives. As a regulatory requirement or "sunk costs" they will be necessary in every alternative. If closure costs vary from alternative to alternative (e.g., economies achieved from having staff and equipment already onsite from construction of the new landfill), then closure costs should be included in an NPV economic analysis. The Authority has stated that closure costs may be about \$900,000 without staff and equipment available from construction of the new landfill, while they may be as low as \$417,000 if combined with new landfill activities. A closure cost difference of \$500,000 would affect the tipping fee by \$1.30 per ton, assuming financing in a bond issue combined with other capital improvements (20 years, 7 percent, spread over 36,500 tons annually). This represents about 3.2 percent of the \$41/ton tipping fee being projected in this report. Also, the \$900,000 figure does not account for the economies that will also be gained by retaining staff and equipment onsite under the export option where a new Class IV Landfill and transfer station would be placed at the landfill site. Thus, closure costs are not likely to vary significantly between alternatives.

Implementation Issues—Site space, staff, and equipment are available at the existing landfill for both a new Class IV cell and a transfer station necessary for export. These staff can double-duty with closure of the existing landfill to save costs. The varied topography of available site space at the landfill provides ideal site conditions to minimize cost by providing the grade separation needed for a gravity-drop transfer station.

- A transfer station and export system can be more quickly implemented (6 months) than construction of a new landfill cell. The region has a short time frame in which to implement an interim disposal solution. It is not clear whether new Class I and Class IV Landfill cells can be completed by March 1995. In any event, it is in the region's interest to construct the

Class IV cell immediately to divert wastes to a new facility of lower cost than other options.

Bidding Issues—The county has existing bids that can be used to implement the recommended course of action. However, an improved solid waste system with lower cost and liability might be achieved by rebidding under conditions specified under Section 8.4 in this chapter.

If the waste stream trends, financial, implementation, and bidding issues described above can be resolved, then it is also possible that a new in-county landfill may be an appropriate solution for immediate implementation in Roane County. However, for the purposes of this planning document, the Roane County Solid Waste Board advocates Option 2, "Export Wastes Out-of-County."

8.3.2.2 Shortfall in the Second Five Years

Roane County has the option to renew, rebid, or cancel the short-term waste export contract after the initial contract term. At this point, the county will either continue the waste export program on a long-term basis or implement a new long-term disposal solution in the county. Any new long-term disposal solution will be sited at the existing landfill location.

8.3.3 Estimated Costs of Development

8.3.3.1 Comparison of Cost Data

Comparison of alternative disposal solutions to guarantee Roane County the lowest long-term cost alternative would require an objective analysis such as an NPV economic analysis. This type of analysis would ensure objective comparison of alternatives by applying consistent assumptions regarding parameters such as waste stream forecast, salvage values, and ensuring that alternatives represent comparable systems that include all relevant costs such as closure costs of the existing landfill. The NPV economic analysis also accounts for differences in cost streams (or cash flow) between alternatives.

Because of a lack of engineering estimates or long-term NPV analyses of alternatives, the best available data are existing bids to the county, supplemented by knowledge of costs from other solid waste systems. The bids represent a "real" cost of services for Roane County, assuming no problems exist in binding the county to the proposed prices and contract terms.

However, comparison of per-ton costs does not clarify all the issues and risks of importance to the county. Per-ton costs are deceiving as they can represent different annual tonnages, non-comparable alternatives, and misrepresent long-term costs to the county. Thus, the recommended alternative is based in part on available cost information,

and in part on other waste stream, financial, implementation, and bidding factors as described in this chapter.

Option 1—Cost Data Available for In-County Landfill: The following are typical costs associated with the development of Subtitle D compliant landfill facilities (CH2M HILL, 1993):

Hydrogeologic study	\$200,000
Geotechnical study	\$200,000
Permitting and design	\$300,000
Cost of construction	\$250,000 to \$350,000 per acre
Cost of closure	\$100,000 per acre

The Authority has solicited and received two bids for construction and operation of a new Class I cell. Santech bid \$31.50 per ton at 100 to 199 tpd, \$30.50 at 200 to 299 tpd, and \$29.50 at 300 to 400 tpd. However, the Santech bid requires a guaranteed minimum tonnage of 200 tpd average, with financial penalties if sufficient waste is not generated. The second bid received from the companies of Beard and Step, Inc. indicates a cost of \$27.00 per ton, independent of the tonnage received. The county is currently evaluating these bids. This option could use either county staff for operations or contract for private landfill operations. Neither bid specifies the future tipping fee escalation rate.

The Roane County Solid Waste Authority has also distributed a spreadsheet comparing the per-ton costs of a number of bids and academic estimates of landfilling costs. This spreadsheet shows the average cost of a 100-tpd landfill at \$44.42, a 200-tpd landfill at \$28.09, and a 300-tpd landfill at \$22.55.

Based on best available data, this analysis assumes that the most attractive 100-tpd landfill option is \$44 per ton first-year cost (as a result of low economies of scale), and the most attractive 200-tpd landfill option is \$27.00 per ton, and that these costs escalate only subject to inflation with no financial penalties. If the county can guarantee lower landfill costs for the long-term, such as by adding a long-term cost escalation cap to the bid, then those long-term prices should be used for the comparison. Even higher costs have been estimated for Subtitle D landfills, as presented in "Cost Implications of Subtitle D Landfills" at the ASTSWMO National Solid Waste Forum, July 19 through 21, 1993, which estimated 250-tpd landfills at \$48 per ton decreasing to \$14 per ton for a 3,000-tpd landfill. Thus, significant economics are achieved with large regional landfills.

Option 2—Cost Data Available for Exporting Wastes Out-Of-County Option: Table 8-1 provides concept-level cost ranges at 100 tpd for Roane County's waste export option, based on numerous transfer station and export projects. The low and high scenarios represent possible best and worst cases for Roane County, depending upon choice of transfer station and location of the destination landfill. Actual project costs will depend upon implementation decisions, bidding conditions, and other influencing factors to be determined by the county, as described in the table.

**Table 8-1
Roane County Waste Export Option
Estimated Cost Ranges for Hypothetical Scenarios**

	Low Cost Scenario	Middle Cost Scenario	High Cost Scenario	Influencing Factors
Annual Tonnage ^a	36,500	36,500	36,500	Varies with growth, reduction
Transfer				
Transfer station capital	\$250,000	\$625,000	\$1,000,000	Low-tech, open versus enclosed with amenities
Debt service (7%, 20 yr) ^b	\$23,598	\$58,996	\$94,393	
Capital cost per ton ^c	\$0.65	\$1.62	\$2.59	
O&M cost per ton	\$8.00	\$10.00	\$12.00	Low staffing and equipment versus higher tech
Transfer cost per ton	\$8.65	\$11.62	\$14.59	Varies with county preferences for performance
Transport				
Cost per ton-mile	\$0.34	\$0.23	\$0.12	Depends on distance, capacity, payloads
Miles to landfill ^d	20	65	125	Varies with location
Haul cost per ton	\$6.80	\$14.95	\$15.00	
Disposal				
Tipping Fee ^e (\$/ton)	\$20	\$24	\$28	Varies with location, quality of bid documents
Total				
Total cost per ton ^f	\$35.45	\$50.57	\$57.59	
State surcharge	\$0.85	\$0.85	\$0.85	Low-high range for Roane County
Total program cost per ton (rounded)	\$36.00	\$51.00	\$58.00	

^aBased on the average tonnage in Table III-8 for the period 1995 through 2003, rounded to nearest 500 tpd. The 1994 tonnages are excluded because they do not reflect the waste reduction goal.

^bAnnual debt service on transfer station capital amortized at 7 percent over 20 years.

^cCapital cost per ton = debt service divided by annual tonnage.

^dRange of distances based on approximate distances to actual landfills.

^eBased on a survey of actual tipping fees as of January 1994.

^fTotal cost per ton = (transfer cost/ton) + (haul cost/ton) + (tipping fee).

To date no engineering cost estimate of a transfer, transport, and disposal system has been performed for the county. Such an estimate would require additional consideration by the county as to whether it prefers a basic, low-tech open facility with minimal equipment or a larger operationally-efficient facility with equipment such as a knuckle-boom crane or compactor to achieve dense loads that minimize transport costs. This type of analysis would also entail further refinement of which regional landfills (from those listed in Table 8-2) will provide attractive tipping fees to the county (possibly reduced from current rates after negotiation or interlocal agreement). This is important because haul costs per ton-mile, total haul costs, and tipping fees are dependent upon the landfill to which the wastes are exported. Bids tend to reflect private companies' preferences to dispose of Roane County's waste at their own facility. However, it is possible that the county could achieve a lower overall system cost by contracting only for hauling services (or using county staff and equipment) and directing waste to a closer facility through an interlocal agreement with another county.

The Solid Waste Authority has also solicited and received two bids for waste transfer and export services. Both bids appear reasonable as they fall at the lower end of the range indicated in Table 8-1, although better prices may be generated by a rebid under conditions described in Section 8.4. BFI bid a first-year cost of \$43.99 per ton (100 minimum tpd, 5 year minimum term) that would escalate subject to the CPI, which includes construction and operation of a transfer station, and transport and disposal of wastes at the BFI landfill in Murfreesboro, Tennessee. WMI bid \$37.20 for the same services and contract term, however, requires a minimum of 160 tpd. A second option was bid by WMI for \$29.50, assuming the county constructs and operates the transfer station and guarantees a minimum tonnage of 80 tpd. This option can also use county staff for operation of the transfer station or allow private operation of the transfer station.

For comparison, Monroe County recently received bids for similar services. WMI bid \$42 per ton, and BFI bid \$37.50 per ton.

This analysis concludes that the most attractive waste export option is likely to be approximately \$41 per ton, applicable to any tonnage and escalating only with inflation. This assumes the county builds and operates its own transfer station efficiently for \$11.62 per ton and utilizes WMI's haul and disposal bid of \$29.50 per ton. The county may be able to drive overall costs below \$41 per ton with improved bidding documents and conditions.

Option 3 – Cost Data Available for In-Vessel Composting: Cost estimates for recent composting facilities range from \$6.5 million to \$15 million for a 150-tpd facility. Three recent bids in Florida (Charlotte, Manatee, and Monroe Counties) ranged from \$10 to \$15 million. However, costs of the 150-tpd Sevier County composting facility were \$6.5 million for the facility and over \$9 million total, including land, landfill fees, etc. Reliable operating cost information is not available as of this writing.

**Table 8-2
Adjacent Landfill Distances and Tipping Fees
Roane County Solid Waste Management Plan**

Landfill	Approximate Distance from Middtown	Tipping Fee
Middle Point	111	\$28
Carters Valley	85	\$26
Loudon County	23-25	?
McMinn County	52	?
Jefferson County	65	\$35
Fentress County	54	?
Scott County	45	\$20
Shoat Lick Hollow	20	\$22
Chestnut Ridge	50	\$26.50

8.3.3.2 Conclusions

At 100 tpd, waste export appears to be the most attractive economic option by a decrease in price of approximately \$3 per ton. Unless the county can secure new in-county landfill disposal for less than \$41 per ton (guaranteed long-term without financial penalties), then a properly implemented waste transfer and export system is likely to be lower in cost. The primary risks associated with selecting the waste export option include the following:

- Unreliable or inefficient service if contract is not properly specified.
- Some unquantifiable risks associated with disposing of wastes in an out-of-county landfill (this risk may not be more than disposing of wastes in the county's own landfill).

At 200 tpd, an in-county landfill may be less by approximately \$13 per ton on a first-year per-ton basis. However, the county must evaluate whether the lower cost is worth assuming several risks, including those of:

- Financial penalties for failure to meet minimum tonnage
- Tipping fees increasing faster than inflation as a result of dropping tonnages
- Loss of tipping fee revenue resulting from waste reduction
- Higher up-front financing requirements
- Loss of additional time to evaluate long-term options

8.3.4 Financing Plan

The county has the option of either developing its own disposal facility or acquiring disposal capacity through waste export contracts with private firms. Of these two options, the latter requires the least capital.

Transition to an interim waste export arrangement will require the county to finance transfer station upgrades. Financing of a transfer station could be accomplished by public bond issue, private financing, or even from general reserves to avoid incurring debt. Loans and grants, if available, could also be utilized depending upon the capital cost. In this type of system, operating costs are the substantial cost component, which will be funded through tipping fee revenues (tipping fees would then be collected at the transfer station rather than the landfill). Guaranteed minimum tipping fee revenue may be necessary for financing purposes, which may indicate the need for some form of flow control.

The process of siting, purchasing, permitting, designing, and constructing a solid waste disposal facility will require the county to finance substantial capital costs. In this instance, it will be necessary for the county to finance the costs by incurring debt that may be repaid over time, rather than attempting to provide funding in the year in which expenses are

incurred. This will require the procurement of a loan, issuance of bonds, or acquisition of grants. The county could also facilitate private financing of an in-county landfill.

Tipping fees will be based on the needed operating revenue required to support the solid waste management system's operations, provide funds for capital improvements, and provide sufficient cash flow to meet all debt service coverage requirements currently in effect and expected to be included as part of future bonding.

8.3.5 Staff, Training, and Certification

Under any new disposal option the Solid Waste Authority will need to identify whether county employees or private sector staff will be responsible for operations and maintenance. Under a waste export program, county staff or a private company could operate the transfer station and/or long-haul transport system. If a new landfill is developed, existing county landfill staff could be utilized. However, the county has received at least one bid that would involve privatization of landfill operations.

The existing staff at the landfill could work at either the new landfill or at the new transfer station proposed at the existing landfill, and therefore no new staff will be needed. If the waste export option is chosen, the existing staff will need some minimal retraining in effective transfer station operations. No certification is required. If the in-county landfill option is selected no new training needs are anticipated. However, the existing staff will have to stay current with their certifications.

8.3.6 Ten-Year Operation and Maintenance Budget

Table 8-3 presents a projected 10-year budget and funding plan for disposal in Roane County. The budget assumes that the Authority constructs its own transfer station and contracts out for the transport and disposal, as described under the recommended alternative.

8.3.7 Operation and Maintenance Funding

Funding for operation and maintenance of any disposal solution will be through tipping fee revenues, except for the rural convenience center drop-box system. Currently, the convenience center is funded through property taxes, and it is anticipated that the county is likely to continue this funding mechanism.

8.3.8 Integration of Waste Management System

Waste disposal programs will be integrated with current and future waste reduction programs. This will include measures to ensure that avoided disposal costs are realized when waste reduction results in lower disposal quantities, such as lower staffing and equipment levels at the disposal facility.

Table 8-3

Projected 10 Year Budget and Funding Plan (a)

	Disposal Capacity (b)										
	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Operating Revenues											
General Tax Revenues (c)	\$1,025,030	\$1,025,440	\$1,024,684	\$1,024,969	\$1,025,459	\$1,024,990	\$1,024,726	\$1,024,567	\$1,025,237	\$1,024,987	\$1,024,500
Industrial/Other Tipping Fees (d)	608,000	485,000	481,000	476,000	471,000	467,000	463,000	455,000	449,000	439,000	431,000
Total	1,633,030	1,510,440	1,505,684	1,500,969	1,496,459	1,491,990	1,487,726	1,479,567	1,474,237	1,463,987	1,455,500
Operating Expenditures											
Total Cost of Waste Export (e)	\$1,633,030	\$1,510,440	\$1,505,684	\$1,500,969	\$1,496,459	\$1,491,990	\$1,487,726	\$1,479,567	\$1,474,237	\$1,463,987	\$1,455,500
Total	1,633,030	1,510,440	1,505,684	1,500,969	1,496,459	1,491,990	1,487,726	1,479,567	1,474,237	1,463,987	1,455,500
Net Operating Income	0	0	0	0	0	0	0	0	0	0	0
Non-Operating Revenues											
Total	0	0	0	0	0	0	0	0	0	0	0
Non-Operating Expenditures (f)											
Total	0	0	0	0	0	0	0	0	0	0	0
Net Non-Operating Income	0	0	0	0	0	0	0	0	0	0	0
Net Income	0	0	0	0	0	0	0	0	0	0	0

a. All revenues and expenditures are shown in constant 1993 dollars. Cost projections are consistent with budgets developed under the new FY 1994 full cost accounting requirements.

b. Disposal capacity costs are projected as a function of the "Projections of Solid Waste Requiring Disposal Adjusted for All Applicable Factors" from Table III-8.

c. Property tax revenues fund the majority of all costs associated with collection and transportation. The revenues shown include money from various sources from the Cities and the County.

d. General Tax revenues required are estimated as total expenditures less industrial tipping fee revenues.

e. Industrial and other tipping fees are estimated as a percentage of the total cost of waste disposal. The percentage reflects an estimated City & County contribution of approximately 25,000 tons per year, per Ron Woody, County Budget Director, with the difference between that amount and the total volumes from Table III-8 designated as industrial and other waste.

f. The total cost of waste export includes operation of the transfer station, costs of hauling waste to a private landfill, tipping fees at the landfill, and tipping fee surcharges. The total cost has been estimated by CH2M Hill to be approximately \$41.00 per ton for 1994 as described in Section 8.3.3. This cost factor is applied to projections of total solid waste volumes according disposal; the total projected cost decreases over the planning period due to reductions in the total volume of waste requiring disposal. This reduction is a result of increased recycling and waste reduction efforts, as well as declining population.

g. Note that this table does not include projections of costs associated with closure and post-closure care of the existing landfill.

8.4 Implementation Schedule and Issues

The implementation schedule will be as presented in Table 8-4. The county may pursue a phased approach that will transfer a portion of county wastes (prior to full waste export implementation) if needed to extend the life of the existing landfill. However, the county appears to have sufficient time to fully implement a waste export program prior to landfill closure in March 1995, at which time full waste export may begin concurrent with closure of the existing landfill.

The county has existing bids that can be used to implement the recommended course of action. However, an improved solid waste system and minimum cost may be achieved by rebidding under the following conditions:

- Itemization of cost components (separation between transfer, transport, and disposal) to assist in decisions as to whether the county should operate the transfer and/or transport or contract for all services.
- Pre-specified contract clauses that protect and indemnify the county, including backup facility and emergency operations requirements, definition of acceptable/unacceptable wastes, specification of bid options that define county/contractor responsibilities, security and default conditions, protections against environmental liability and risk, and administrative and payment procedures.
- Specification of technical requirements for the system to ensure compatibility with county solid waste goals and waste reduction programs. Also, specification of performance requirements to ensure lowest possible cost operations (e.g., large minimum trailer capacities and payloads).
- Guarantee of long-term prices by requiring the CPI multiplier to be stated in the bid.
- Specification of no (or low) minimum tonnage guarantee to ensure a fully variable cost and no financial penalty.
- The county may wish to evaluate whether it can achieve a lower cost system than reflected in the private bids by transporting wastes itself to a closer landfill (public or private) with a lower tipping fee than represented in the two private bids.

8.5 Multi-County Implementation

This requirement does not apply because Roane County is a single-county region.

**Table 8-4
Ten-Year Solid Waste Disposal Implementation Schedule**

Fiscal Year	Task	Target Date
1993/1994	1. Develop waste export capacity through contracts with private firms and the region 2. Initiate design, permitting, and construction of transfer station	1. Present 2. 05/94
1994/1995	1. Disposal capacity is depleted. Begin full waste export	1. 03/95
1995/1996		
1996/1997	1. Evaluate disposal options (regarding in-vessel composting)	1. 12/96
1997/1998		
1998/1999		
1999/2000		
2000/2001		
2001/2002		
2002/2003		

8.6 Location of Existing and Planned Solid Waste Facilities

The location of the existing Class I Landfill is shown in Figure 2-1.

8.7 Documentation of Import/Export Capacity

8.7.1 Export

Roane County has not yet executed a contract or interlocal agreement guaranteeing out-of-county waste disposal capacity. Appendix D contains letters from two nearby out-of-county landfill operators, indicating their willingness to accept Roane County's waste.

However, as described above Roane County has received two bids for transport and disposal in out-of-county locations, including Murfreesboro (BFI) and Chestnut Ridge (WMI). Both of these landfills currently receive waste from out-of-county locations. By executing the received bids, Roane County will have access to sufficient disposal capacity as documented in Appendix D.

8.7.2 Import

Roane County has not secured a guaranteed waste flow from out-of-county sources.

Chapter VIII
Forms

**Table VIII-1
Projected Demand and Supply (tpy)
Roane County Region**

Year	Demand: Tons of Waste Requiring Disposal^a	Supply: Existing and Planned Capacity	Surplus (+)	Shortfall (-)
1993	31,000	76,000	45,000	
1994	31,000	45,000	14,000	
1995	31,000	14,000		17,000
1996	31,000	0		31,000
1997	31,000	0		31,000
1998	31,000	0		31,000
1999	31,000	0		31,000
2000	31,000	0		31,000
2001	31,000	0		31,000
2002	31,000	0		31,000
2003	31,000	0		31,000

^aDemand will be met by exporting waste to out-of-county landfills. Demand assumes a constant 124,000 yd³/year according to information supplied by Solid Waste Authority in September 1993. Conversion factor of 4 yd³ = 1 ton used.

Table VIII-2
Projected Net Disposal Capacity^a (tpy)
County/Regional

Year	1	2	3	4	5	6	Regional Total ^b
1993 Base year	+45,000	--	--	--	--	--	+45,000
1994	+14,000	--	--	--	--	--	+14,000
1995	-17,000	--	--	--	--	--	-17,000
1996	-31,000	--	--	--	--	--	-31,000
1997	-31,000	--	--	--	--	--	-31,000
1998	-31,000	--	--	--	--	--	-31,000
1999	-31,000	--	--	--	--	--	-31,000
2000	-31,000	--	--	--	--	--	-31,000
2001	-31,000	--	--	--	--	--	-31,000
2002	-31,000	--	--	--	--	--	-31,000
2003	-31,000	--	--	--	--	--	-31,000

^aUse (+) to indicate surplus capacity, a (-) to indicate a capacity shortfall.

^bAlgebraic sum.

Chapter 9 Public Information and Education

9.1 Regional Needs

The Roane County Region has distinct needs in the area of public education. The region needs to expand the adult educational opportunities, involve more businesses and industries in source reduction and recycling, reach new businesses entering the county, and expand the education in the schools. A Solid Waste Coordinator position is needed early in the first half of the planning period. Much of this position's duties would involve public education and information.

The region has a particular strength in the educational program already established by the RCCS. This organization offers training to teachers, a litter hotline, a Speaker's Bureau, and is currently developing a recycling pamphlet and slide presentation.

9.2 Strategy

9.2.1 Regional Goals and Objectives

The regional goal for the public information program is to reach every citizen in the region with educational materials about recycling and source reduction in a cost-effective manner. This goal will be accomplished through the following objectives:

- Seek state grant money for the educational aspect of the solid waste plan as soon as it is approved
- Take advantage of the offers from the local radio stations and newspapers to run public service announcements (PSAs) and feature articles on recycling and solid waste management
- Work closely with the State Planning Office and the Department of Education to take advantage of their education and training programs and materials
- Work closely with the Chamber of Commerce, Leadership Roane, and other civic organizations in the community

9.2.2 Target Groups and Audiences

Implementation of the public education program necessitates defining the target audiences in order to prioritize efforts and be effective. The education program will focus on the need to educate the general public and selected groups that are essential to the success of the program.

The general public is an important target group, especially for recycling and the HHW collection program. City and county office workers are a specific target for the new office paper recycling program. Schools are a target for further recycling efforts and for expanded education. Industries and businesses are targets for source reduction and recycling, while new industries and businesses are targeted for general education about solid waste management in the region. Civic and community clubs are targets as a means of efficiently reaching large numbers of citizens. See Table 9-1 for a breakdown of the target audience.

9.2.3 Amount and Types of Information

Several types of information will be used to create the educational program in the region. Estimates of the amount of each type of information are also provided where possible (see Table 9-2).

An advertising campaign should be developed. This should include the use of a recycling logo and the creation of a recycling slogan for Roane County that can be easily recognized and identified by the general public. The logo and slogan should be used for all media presentations and other communications that will include television, radio, newspaper, and news releases. A recycling mascot could also be part of the advertising campaign. A recycling poster should be designed to be distributed at recycling events and other educational presentations.

The Standard and the *Roane County News* will write news stories with pictures about the HHW collection day. Also, a weekly column may be established in *The Standard* to provide information on ways to recycle in the region. Three radio stations are estimated to run 12 PSAs each per year on general solid waste topics (such as announcing when the convenience centers start recycling additional materials) and numerous PSAs the week before the state HHW contractor comes to the region.

The Chamber of Commerce has offered to run articles in its publication, *Chamber Channels*. It is anticipated that the chamber would feature two educational articles per year on solid waste issues and run short announcements as needed.

TDEC has prepared a series of pamphlets on automotive fluids, paint, HHW, used oil, pesticides, etc. Five thousand of each of these pamphlets will be obtained by the region for distribution.

**Table 9-1
Target Groups and Audiences**

Category	Subcategory
Public	Neighborhood Groups Civic Groups Community Organizations Scouts Church Groups Fraternal Orders
Business	Individuals Chamber of Commerce Business and Professional Organizations
Industry	Individuals Professional Associations Industrial Parks Farmers
Educational Institutions	Preschool Grades K through 5 Grades 6 through 8 Grades 9 through 12 Post-Secondary Community Education Parent/Student/Teacher Organizations Roane State Community College

Table 9-2
Summary of Proposed Public Education Activities
Roane County 10-Year Solid Waste Plan
Base Year 1994 Through 1995

Target Audience	Workshops	Focus Groups	Forums	Printed Handouts ^a	Audio-Visual Presentation	Exhibits	Speakers Bureau Visits
PUBLIC							
Neighborhood Groups/Associations				10	5		2
Civic Groups				5	5		2
Community Organizations				10			2
Individual Business	5/yr			50/yr	10/yr		
Chamber of Commerce	1/yr					1/yr	1/yr
Business/Professional Organizations			3/yr				
Individual Industry		2/yr					
Professional Associations		2/yr					
Industrial Parks	1/yr	1/yr					
Grades K through 5				3/yr	1/yr	1/yr	1/yr
Grades 6 through 8				3/yr	1/yr	1/yr	1/yr
Grades 9 through 12				3/yr	1/yr	1/yr	1/yr
Post-Secondary							
Community Education							
Parent/Student/Teacher Organizations							
Roane State Community College			1/yr			1/yr	

Table 9-2

Summary of Proposed Public Education Activities
 Roane County 10-Year Solid Waste Plan
 Base Year 1994 Through 1995

Target Audience	Workshops	Focus Groups	Forums	Printed Handouts ^a	Audio-Visual Presentation	Exhibits	Speakers Bureau Visits
School Administration/Board	1/yr	1/yr				1/yr	
Summer Programs			1/yr			1/yr	
^a Number represents different topics.							
MEDIA							
Target Audience	Public Service Announcements	News Feature Stories	Newsletter Stories/Announcements				
Television/Cable TV	3/yr	12/yr					
Radio Stations	36/yr	12/yr					
Newspapers		12/yr					

The RCCS is preparing a booklet containing re-use, reduction, and recycling information. It will include instruction about (1) places that accept or purchase items (e.g., clothing, household goods, baby items, books, personal items) for re-use or sale; (2) locations and hours of operation for convenience centers; (3) recycling collection points and information on what is accepted and how to sort; (4) ways to reduce household waste; and (5) other solid waste information.

A telephone hotline has already been established by RCCS and made available for the residents of Roane County to receive verbal communication and instructions regarding the solid waste program. The telephone hotline is staffed by RCCS personnel who are trained to be knowledgeable in the various aspects of the solid waste program. The telephone hotline representatives are able to send out requested materials regarding the solid waste program and keep records regarding the use of the telephone hotline. These records could help evaluate the education program and the effectiveness of this particular tool.

9.2.4 Specific Methods to be Used

9.2.4.1 *School-Based Instruction*

As an objective for this planning period, the school-based instruction will concentrate on recycling because this is easiest for the students to understand. This emphasis will also coordinate with the increased recycling proposed for the schools in Chapter 6. Many EPA publications geared toward student education are available and should be used as appropriate. Information about the HHW program should also be incorporated into the school-based instruction program.

A program should be developed for educational institutions to enable students in Roane County to learn and demonstrate an awareness of the quantity and types of recyclable materials produced by individual households and to identify relationships between good and poor habits of household solid waste management. RCCS has a coloring book available for distribution to students in lower grades. Also available are a comic book on aluminum can recycling and a brochure featuring their mascot, "Phil-Me-Yup," a large garbage can. These are generally inserted in car litter bags and given to each child when a program is presented.

RCCS has four approved curricula for use in Roane County and Harriman City Schools. A teachers' in-service day is held each year to provide in-depth understanding of the programs to teachers interested in using them in their classes. The in-service days alternate between elementary and high school curricula.

If state grant money is obtained, a special visual presentation should be developed to provide information to students regarding the need for recycling in the Roane County Region. Topics that should be covered include the benefits of recycling, ways students can recycle, and ways students can promote good family recycling habits. Any visual

presentation developed for the general public can also be used for presentations given to junior and senior high schools and colleges.

The school education program should include the elements contained in the program for the general public, as well as a pamphlet insert and a storybook. The storybook should be distributed to elementary school children. This will help them understand the who, why, and how of recycling. A pamphlet insert should be developed for parents that will include information regarding the recycling program and how they can participate together with their children in the recycling program. In addition, *The Standard* will feature recycling information in the "Kids Page" once or twice.

The county-wide recycling slogan should be included in the school presentations. This should make it easy for the students to remember the recycling message. Posters should be given to every classroom teacher for display following the educational presentation. This will serve as a reminder of the importance of their participation in recycling. A poster designating a school as a "recycling school" should be distributed to the schools that actively participate in the recycling program. It will become a symbol of a successful implementation of a recycling program within a given school. RCCS offers a Clean Campus Award to those educational institutions that excel in recycling efforts. In addition, to encourage teachers to participate in the recycling program, a teacher in-service program has already been developed for Roane County educators by RCCS.

9.2.4.2 Workshops, Conferences, and Training Courses

The UT CIS offers a workshop on solid waste reduction to industries in any Tennessee county. Billed as a "prepaid" workshop, this would be an effective means to educate many industries at one time and at no cost to the county. The Chamber of Commerce is also willing to host waste reduction or other seminars.

RCCS has two business and industry programs available for use. "The Clean Team" Program is used for businesses that request information about making their facilities cleaner and thus more efficient. This gives an owner an opportunity for a one-to-one waste credit at their place of business. "Waste In The Workplace" is geared to larger businesses and industries. It describes ways to accommodate and reduce solid waste.

State agencies, such as the UT Center for Government Training, the TDEC, and the State Planning Office, often as a joint effort offer many conferences and workshops on solid waste issues. These are free and open to anyone interested in the topic.

Sending one person, such as the RCCS Executive Coordinator, to these seminars could be effective if that person returned to train other groups in the region.

Roane State Community College offers training courses in waste management for both individuals and organizations. These training courses include HAZWOPR, AHERA courses, Resource Conservation and Recovery Act/Comprehensive Environmental

Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act (RCRA/CERCLA/SARA) courses, as well as many other waste management training courses. Roane State Community College will also provide consulting services to organizations who are starting waste management training programs.

9.2.4.3 Audiovisual Materials, Slides, and Videos

Unless state grant monies can be applied to these types of educational materials, none are proposed because of the high cost of production. State grants cannot be applied for until after the plan is approved. However, RCCS is preparing a slide presentation on illegal dumping and how it affects everyone. The program will provide a speaker and will be available to civic groups, etc.

Any EPA- or state-prepared materials will be fully utilized.

9.2.4.4 Publications

It is proposed to only use publications already prepared either by EPA or the state, but to aggressively distribute them throughout the region. Brochure racks can be set up in the lobby of the Chamber of Commerce, at the Farmer's Cooperative, library, road races, checkout stands at grocery stores, and at stores selling materials that later become solid waste management problems. For example, automotive stores that sell batteries or change oil can offer the state brochures entitled "Proper Disposal of Automotive Fluids" and "Used Motor Oil" at their cash register, and the Farmer's Cooperative can offer the state brochures entitled "What To Do With Unwanted Pesticides" at their locations.

The RCCS brochure on reuse will be distributed by direct mail to every household in Roane County. This will be expensive, but it is the only way to assure effective distribution. The brochure and mailing will be paid for with state litter grant funds.

9.2.4.5 Exhibits or Demonstrations

The mobile exhibit entitled "Partners in Recycling," developed by TVA, the Tennessee Soft Drink Association, and the State Planning Office can be scheduled upon request to visit the region. The exhibit is designed for adult citizens and older students. It explains recycling as part of an integrated solid waste management system and also covers source reduction, a 21st century landfill, and the 1991 Solid Waste Act.

RCCS offers two plays and is working with an environmental club at a local high school for presenting them to both school and adult audiences.

Locally developed exhibits or demonstrations are also possibilities. Demonstrations of the new recycling equipment or of the types of paper that can be recycled might be effective. RCCS and 4-H clubs might also be interested in preparing some type of exhibit.

9.2.4.6 *Speaker's Bureau*

The Chamber of Commerce has offered to act as a referral agency for a Speaker's Bureau to match organizations that are looking for speakers with speakers (possibly from the state) that need audiences.

9.2.4.7 *Other*

Kickoff events are possibilities to draw attention to the new recycling capabilities at the convenience centers. Such an event should take place one week before the start of all new recycling programs. They should be promoted with news releases and PSAs for television, radio, and newspapers. Information regarding the kickoff event(s) should be sent to the civic clubs throughout the region to encourage participation.

RCCS is planning a county-wide paint recycling in conjunction with the region's HHW collection day on July 9, 1994. The paint will be donated to churches, schools, etc., or used at the county's convenience centers. If participation warrants, the organization plans to repeat the collection twice each year.

9.2.5 Staff and Budget Needs

Staffing needs for the planning period will have to be met with existing staff at RCCS or through volunteer efforts. A Solid Waste Coordinator position for the region is strongly recommended, with duties that include public education and information.

Budget needs include funds for developing the slogan, printing posters, purchasing school education programs, writing articles and PSAs, setting up/coordinating state workshops, and advertising kickoff events. It is estimated that \$15,000 to \$20,000 per year will be needed for this purpose.

9.2.6 Funding Plan

It is proposed that funding for the public education program come from state grants and from the county general revenue fund. The proposed 10-year funding plan is shown in Table 9-3.

The RCCS is funded by state litter grant funds, private grants, membership, and donations. Their purpose is to educate the general public, including students, on solid waste, anti-litter, recycling, etc. Because this organization has been in existence for 10 years and has an educational program in place, the Solid Waste Board suggests they be utilized in implementing the educational portion of this plan. The Board further suggests that because the group is a tax exempt organization under 501(a) of the 1954 Internal Revenue Code and is all volunteer, specific educational projects should be evaluated by the 15-member Board of Directors and approved for funding or rejected. In order to assure that funds are available as needed, this Board could be used to expend state grant funds.

Table 9-3

Projected 10 Year Budget and Funding Plan (a)
Public Information and Education

	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Operating Revenues											
General Tax Revenues	\$0	\$12,500	\$12,500	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
Total	0	12,500	12,500	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Operating Expenditures											
Program Costs (b)	\$7,500	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
Solid Waste Coordinator (c)											
Total	7,500	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Net Operating Income	(7,500)	(7,500)	(7,500)	0	0	0	0	0	0	0	0
Non-Operating Revenues											
State Grants (d)	7,500	7,500	7,500	0	0	0	0	0	0	0	0
Total	7,500	7,500	7,500	0	0	0	0	0	0	0	0
Non-Operating Expenditures											
Cash Funded Capital	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0
Net Non-Operating Income	7,500	7,500	7,500	0	0	0	0	0	0	0	0
Net Income	0	0	0	0	0	0	0	0	0	0	0

a. All revenues and expenditures are shown in constant 1993 dollars. Cost projections are consistent with budgets developed under the new FY 1994 full cost accounting requirements.

b. Expenses for public information are estimated at between \$15,000 and \$20,000 per year after startup.

c. If the recommended solid waste coordinator is hired, fifteen percent of the time will be dedicated to public information and education.

d. State grants of \$7,500 are projected for FY 1994-1996 according to the Solid Waste Management Act of 1991 Fact Sheet #4, provided by the State Division of Solid Waste Assistance.

9.2.7 Evaluation and Reporting

A need exists for evaluating the effectiveness of the educational program. For this reason, a recordkeeping system should be developed for keeping records of special events, education presentations, news releases, letters to the general public, letters to targeted selected organizations, and pamphlets and materials distributed.

To measure the success of the education program in the schools, a pre-evaluation/post-evaluation should be developed to measure the understanding of the recycling program and the willingness to participate. The test will be given before and after each classroom presentation to determine the effectiveness of the presentation and to make adjustments and changes accordingly. Information received from the testing should be recorded and kept for evaluation on the effectiveness of the education program.

RCCS already keeps records of the number and types of environmental education presentations and the attendance at each. This information can be incorporated into the annual report.

9.3 Ten-Year Implementation Schedule

The 10-year implementation schedule is presented in Table 9-4. The most important milestone is to apply for the state educational grant money as soon as the 10-year plan is approved.

**Table 9-4
Ten-Year Implementation Timetable for Public Information and Education**

Fiscal Year	Task	Target Date
1993 ^a /1994	<ol style="list-style-type: none"> 1. Obtain state brochures and distribute 2. Schedule UT CIS Waste Reduction Seminar 3. Place PSAs 	<ol style="list-style-type: none"> 1. 06/30/94 2. 06/30/94 3. Ongoing
1994/1995	<ol style="list-style-type: none"> 1. Seek grant for education program implementation 2. Distribute RCCS recycling booklet 3. Complete RCCS Illegal Dumping Slideshow 4. Hold RCCS Paint Swap at HHW Collection Day 5. Kickoff events for new recycling programs 6. Continue RCCS activities 7. Bring "Partners in Recycling" to Roane 8. Hold UT CIS Waste Reduction Seminar 9. Place PSAs 	<ol style="list-style-type: none"> 1. ASAP after plan approved 2. 07/31/94 3. 12/31/94 4. 07/09/94 5. 12/15/94 6. Ongoing 7. 12/31/94 8. 12/31/94 9. Ongoing
1995/1996	<ol style="list-style-type: none"> 1. Continue RCCS activities 2. Place PSAs 	<ol style="list-style-type: none"> 1. Ongoing 2. Ongoing
1996/1997	<ol style="list-style-type: none"> 1. Establish Adult Education Program 2. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/96 2. Ongoing
1997/1998	<ol style="list-style-type: none"> 1. Place PSAs 	<ol style="list-style-type: none"> 1. Ongoing
1998/1999	<ol style="list-style-type: none"> 1. Place PSAs 	<ol style="list-style-type: none"> 1. Ongoing
1999/2000	<ol style="list-style-type: none"> 1. Place PSAs 	<ol style="list-style-type: none"> 1. Ongoing
2000/2001	<ol style="list-style-type: none"> 1. Place PSAs 	<ol style="list-style-type: none"> 1. Ongoing
2001/2002	<ol style="list-style-type: none"> 1. Place PSAs 	<ol style="list-style-type: none"> 1. Ongoing
2002/2003	<ol style="list-style-type: none"> 1. Place PSAs 	<ol style="list-style-type: none"> 1. Ongoing
2003 ^b	<ol style="list-style-type: none"> 1. Place PSAs 	<ol style="list-style-type: none"> 1. Ongoing

^aOnly covers second half of base year.

^bEnd of planning period is December 31, 2003, which is only half of this fiscal year.

Chapter 10 Problem Wastes

10.1 Household Hazardous Waste

10.1.1 Regional Needs

The Roane County Solid Waste Region currently does not have a HHW management program. Illegal dumping, including waste tire piles, has been a long-term problem.

10.1.2 Regional Plan

10.1.2.1

The overall goal of the Solid Waste Board and the Solid Waste Authority is to have a well-advertised, well-utilized HHW collection system in place by the year 1995, and functional for the next 10 years so that the HHW generated in the region is disposed of in an environmentally sound manner. Objectives to reach that goal include selecting a temporary site, developing an education and promotional program, incorporating that program into the school system's solid waste education program, and providing for long-term support. Therefore, the HHW program provides mobile collection for as long as the state provides this service. It also provides a temporary site, education, and promotion. If the Solid Waste Act sunsets, the region will have to find another long-term solution for HHW collection.

10.1.2.2 Selection of Temporary Site

The county has recommended that the courthouse parking lot serve as the temporary site for the HHW Mobile Collection Event. Recommendations were based on location, amount of use, and easy access. State minimum criteria for the temporary site include the following (TDEC, 1993):

- Be accessible by paved, gravel roads, or well maintained roads
- Be located conveniently to the majority of the region's residents
- Possess a flat, asphalt or concrete working area of 100 ft × 100 ft minimum
- Accommodate a minimum of 15 parked cars nearby
- Have a clean water source within the working area
- Have toilet facilities (portable or permanent) within approximately 200 ft of the working area

- Have telephone access (portable or permanent) within approximately 50 ft of the working area
- Have accessibility to a grounded, 110-V electrical outlet

The state must pre-approve the location before the actual event takes place. Roane County's Mobile Collection Event is scheduled for July 9, 1994.

10.1.2.3 Educational and Promotional Program

The region will use promotional materials already developed by the state Division of Solid Waste Assistance. These cover topics such as paint and solvent disposal, household cleaners, unwanted pesticides, used motor oil, and lead acid batteries. In addition, the region will develop its own ads for placement in newspapers and will write its own copy for radio advertisements.

Distribution of information and educational materials will be accomplished as follows:

- Brochure racks at the RCCS
- Brochure racks at the Chamber of Commerce
- Information flow through the Chamber of Commerce to the civic clubs in the area
- Information flow through the UT Agricultural Extension Program
- Brochures at checkout counters of participating grocery stores and discount-type stores
- Information available upon request through the solid waste hotline

Promotion of the Mobile Collection Event will be accomplished through PSAs and through advertisements in the *Roane County Standard* and *Roane County News*. Both newspapers have indicated that they will run educational articles on the mobile collection unit. Many local radio stations (WBBX, WLIQ, WOFE, WXVO) have also indicated willingness to promote the Mobile Collection Event.

10.1.2.4 Coordination and Support of State Collection Day

Roane County will designate Mr. Gary Human, Administrative Assistant to the County Executive, to serve as the point of contact with the state in organizing the Mobile Collection Event. He will work with the state in providing information about the proposed collection site so that the state may pre-approve it before arrival. Mr. Human will also work with the county to coordinate arrangements such as traffic control, emergency

medical services, and bomb squads. Emergency medical services and bomb squads are needed in case of fire or explosion from the material brought in.

The county will also supply one individual to be onsite on the day of collection to represent the county or region. This person will serve in an oversight role and protect the region's interests on the day of collection. For example, this representative would ensure that HHW is not accidentally disposed of in the convenience center containers and would stay in contact with the sheriff's department if traffic becomes a problem.

10.1.2.5 Staff and Training Needs

The county has three responsibilities to fulfill for a HHW Mobile Collection Event that pertain to location, advertising, and site representative (TDEC, 1993). Existing staff can be used to satisfy these requirements. Training needs for the site representative are expected to be nominal.

10.1.2.6 Costs

The costs to the region include advertising, copying and distribution costs, and labor costs for the region's contact person. Nominal production costs are anticipated because much of the state literature can be used as is. It is anticipated that the advertising will be supplied gratis by the local radios and newspapers. Distribution can be achieved through the existing network of clubs and organizations. Labor costs represent three days per year at \$115 per day for the contact person. The projected 10-year budget and funding plan for the HHW program is shown in Table 10-1.

10.1.3 Implementation Schedule

The major effort in implementing the HHW Program will occur during FYs 1993/1994 and 1994/1995. This effort will include selecting the site and getting it approved by the state, developing the advertising and distribution program, and holding the first Mobile Collection Event. The schedule for the next 10 years is shown in Table 10-2.

10.2 Waste Tires

10.2.1 Current Practices

Roane County has used the Midtown landfill as its tire storage facility for several years. It is located on Highway 70 in Midtown and is the only facility in the region.

The approximate average number of tires stored at the site is 9,000 to 10,000, based on information from the landfill director. The design for a maximum number of tires could not be determined.

Table 10-1 Projected 10 Year Budget and Funding Plan (a) Problem Wastes											
	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Operating Revenues											
General Tax Revenues	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tire Pre-Disposal Fees (b)	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000
Total	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000
Operating Expenditures											
Household Hazardous Waste (c)	\$345	\$345	\$345	\$345	\$345	\$345	\$345	\$345	\$345	\$345	\$345
HHW Disposal costs (d)											
Waste Tires (e)	200	200	200	200	200	200	200	200	200	200	200
Other Problem Wastes	0	0	0	0	0	0	0	0	0	0	0
Total	545	545	545	545	545	545	545	545	545	545	545
Net Operating Income	17,455	17,455	17,455	15,455	15,455	15,455	15,455	15,455	15,455	15,455	15,455
Non-Operating Revenues											
State Grants for Used Oil (f)	0	7,500	7,500	0	0	0	0	0	0	0	0
Total	0	7,500	7,500	0	0	0	0	0	0	0	0
Non-Operating Expenditures											
Cash Funded Capital	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0
Net Non-Operating Income	0	7,500	7,500	0	0	0	0	0	0	0	0
Net Income	17,455	24,955	24,955	15,455	15,455	15,455	15,455	15,455	15,455	15,455	15,455

a. All revenues and expenditures are shown in constant 1993 dollars. Cost projections are consistent with budgets developed under the new FY 1994 full cost accounting requirements.

b. \$18,000 is the annual average amount of tire pre-disposal fees received by the County from October 1, 1991 through June 30, 1993.

c. Household hazardous waste program is budgeted to reflect 3 days of labor per year at the labor rate of the County contact person (\$115/day).

d. Projected cost of disposal of household hazardous waste after the State program to handle this waste ends.

e. Cost estimates reflect continuing participation in the State's shredding program, with two visits per year at a cost of \$100 per visit.

f. Grants for waste oil disposal are assumed to be made available under the Used Oil Collection Act of 1993, as reported by Joyce Dunlap, Grants Manager, Division of Solid Waste Assistance.

**Table 10-2
Ten-Year Implementation Timetable
for Household Hazardous Waste Program**

Fiscal Year	Task	Target Date
1993 ^a /1994	1. Select HHW temporary site 2. Finalize advertising and distribution program	1. Done 2. 06/15/94
1994/1995	1. Hold first HHW collection day 2. Incorporate program into school curriculum 3. Collect problem waste data for Annual Report 4. Submit Annual Report 5. Hold second HHW collection day	1. 07/09/94 2. 08/94 3. 01/31/95 4. 03/01/95 5. Spring 1995
1995/1996	1. Collect problem waste data for Annual Report 2. Submit Annual Report 3. Hold third HHW collection day	1. 01/31/96 2. 03/01/96 3. Spring 1996
1996/1997	1. Collect problem waste data for Annual Report 2. Submit Annual Report 3. Hold fourth HHW collection day	1. 01/31/97 2. 03/01/97 3. Spring 1997
1997/1998	1. Collect problem waste data for Annual Report 2. Submit Annual Report 3. Hold fifth HHW collection day	1. 01/31/98 2. 03/01/98 3. Spring 1998
1998/1999	1. Collect problem waste data for Annual Report 2. Submit Annual Report 3. Hold sixth HHW collection day	1. 01/31/99 2. 03/01/99 3. Spring 1999
1999/2000	1. Collect problem waste data for Annual Report 2. Submit Annual Report 3. Hold seventh HHW collection day	1. 01/31/00 2. 03/01/00 3. Spring 2000
2000/2001	1. Collect problem waste data for Annual Report 2. Submit Annual Report 3. Hold eighth HHW collection day	1. 01/31/01 2. 03/01/01 3. Spring 2001
2001/2002	1. Collect problem waste data for Annual Report 2. Submit Annual Report 3. Hold ninth HHW collection day	1. 01/31/02 2. 03/01/02 3. Spring 2002
2002/2003	1. Collect problem waste data for Annual Report 2. Submit Annual Report 3. Hold tenth HHW collection day	1. 01/31/03 2. 03/01/03 3. Spring 2003
2003 ^b	1. Collect problem waste data for Annual Report 2. Submit Annual Report	1. 01/31/03 2. 03/01/03

^aOnly covers second half of base year.

^bEnd of planning period is December 31, 2003, which is only half of this fiscal year.

The state shredding operation had been to the storage site once before July 1993 and shredded about 3,600 tires. It returned in August 1993 and shredded about 3,000 tires before the equipment failed. Assistance was provided from the landfill staff, in that one employee (in one truck) spent two days during each visit hauling shredded tires to the disposal site in the landfill.

Operating costs for the storage site are included in the landfill operating costs, in that no additional labor or facilities are necessary. Vector control has not been a problem, according to the landfill staff. Operating costs for shredding operation support are approximately \$100 per visit for labor. No additional costs are incurred to dispose of the shredded tires since the tipping fees are already paid by the individuals bringing in the tires.

10.2.2 Tire Flow

The number of new tires sold in the region was calculated by obtaining the amount paid into the Solid Waste Management Fund for pre-disposal fees from the Department of Revenue. For the period October 1, 1991 through June 30, 1993, which is the period of record for which data are available, Roane County collected \$32,233.56 in pre-disposal fees. This equates to 18,419 tires sold each year.

It is unlikely that the state shredder will be able to keep up with the generation rate. A larger shredder than the one that was used on the August visit will be needed, and in the opinion of the landfill staff, it will need to come more often. It is estimated that approximately 12,000 to 15,000 tires will still remain in storage at the close of 1993.

10.2.3 Illegal Tire Pile Inventory

The region plans to inventory the illegal tire piles through the activities of the Litter Control Officer. As the Litter Control Officer makes the normal rounds, a complete inventory of illegal tires will be taken. The region will use PSAs on local radios and television and ask residents to use the RCCS hotline to call in the location of illegal tire piles. The Litter Control Officer will then visit the site to estimate the number of tires in each pile.

The number of tires in each pile will be estimated by measuring the length, width, and height of the pile and using a factor of 4.5 tires per yd³.

10.3 Waste Oil

10.3.1 Current Practices

Several car dealers that also provide service and automotive repair shops were contacted to determine how used oil is currently handled in the region. The majority of the oil is stored until a recycling company picks it up.

10.3.2 Recycled Quantities

The amount of oil recycled from the businesses that were contacted is presented in Table 10-3. To estimate the total amount of oil that was recovered in 1993, the major dealers (Safety-Kleen, Enterprise Oil, and Industrial Oil Service) were contacted to estimate the quantity of oil recovered from the county. They serve over 100 customers in Roane County and recycle an estimated 54,300 gal. per year. Assuming an additional 2,500 gal. per year from Kendrick Trucking and First Recovery of Lexington, Kentucky, an estimated 56,800 gal. were recycled from Roane County in 1993.

10.3.3 Private Sector Support

Adequate opportunities are available through the private sector in the county so that the region does not have to provide a site to receive and store the fluids. In particular, Wal-Mart in Rockwood offers to take up to 5 gal. of used oil from their customers that change their own oil. Therefore, the requirements of T.C.A. 68-211-866(b) will be satisfied by the private sector.

The region will provide support to the private sector by including information about proper handling of used oil in its educational program. The region will also help distribute state literature about proper disposal of automotive fluids through the same network described for the HHW program.

10.4 Lead Acid Batteries

10.4.1 Current Practices

Boat, tractor, and car dealers, farm equipment sales and service centers, Wal-Mart, and truck repair shops in the county were contacted to determine how they handled lead-acid batteries. Results of those calls are presented in Table 10-4. Most of them offered the service of handling their customers' used batteries.

**Table 10-3
 Representative Current Management of Used Oil and Other Automotive Fluids
 Roane County Planning Region**

Firm	Fluids	Management	Amount (year)
Roane County Engine Service	Cleaning Fluid Sludge	Recycled – Intermont Compliance Systems	14 gal.
Sexton Automotive Group, Inc.	Oil Antifreeze Parts Thinner Parts Cleaner	Recycled – Enterprise Oil Recycled – Kendrick Trucking Recycled – Kendrick Trucking	6,000 gal. minimal minimal minimal
Norwood Auto and Diesel Repair	Oil	Recycled – Industrial Oil Service	110 gal.
Oliver Springs Phillips 66	Oil Antifreeze	Recycled – Industrial Oil Service Reuses	1,200 gal.
Lambert's Automotive Repairs	Oil Transmission Fluid Antifreeze	Recycled – Enterprise Oil Recycled – Enterprise Oil	1,200 gal. minimal minimal
Jerry Duncan Ford Lincoln Mercury	Oil Antifreeze	Recycled – Industrial Oil Service Recycled – Industrial Oil Service	3,600 gal. 55 gal.
Larry's Hot VW	Oil	Recycled – Enterprise Oil	250 gal.
Wal-Mart	Oil	Recycled – First Recovery of Lexington, Kentucky	2,400 gal.

Table 10-4
Representative Current Management of Lead-Acid Batteries
Roane County Planning Region

Firm	Disposition of Batteries	Estimated Amount Handled per Month
Norwood Auto & Diesel Repair	Recycled – Interstate Battery	2
Jerry Duncan Ford Lincoln Mercury	Recycled – Southeast Battery	14
Blue Springs Boat Co.	Recycled – Exide Battery Co.	1
Harris Marine & Tire Co.	Recycled – First Tennessee Battery Co.	2.5
Tanner's Auto Repair	N/A	
Import Enterprises	Recycled – Interstate Battery Co.	8
S.L. Bowman & Sons	Recycled – Monroe Battery Co.	5
Wal-Mart, Rockwood	Recycled through Johnson Controls, Inc., Battery Division, Winston – Salem, NC and GNB, Columbus, GA	300
Larry's Hot VW	Recycled – Interstate Battery Co.	4

10.4.2 Private Sector Support

Adequate opportunities are available through the private sector in the region so that it does not have to provide a site to receive and store lead-acid batteries. Therefore, the requirements of T.C.A. 68-211-866(b) will be satisfied by the private sector.

The region will provide support to the private sector by including information about proper handling of lead-acid batteries in its educational program. The region will also help distribute state literature about proper disposal of lead-acid batteries through the same network described for the HHW program.

10.5 Litter

County jail prisoners participating in litter control will be asked to start monitoring where the heaviest amounts of litter are generated. For example, larger than normal amounts may concentrate around fast food restaurants or schools. After this information is compiled, it will be provided to the individual responsible for the public education program and to the Chamber of Commerce.

The Chamber of Commerce will approach each establishment that is indirectly responsible for the increased litter and suggest that they find a method to encourage their customers to reduce their littering. The public education program coordinator will work with the establishments to see if they are willing to provide space for educational material.

The coordinator will also analyze the pattern of concentrated litter to determine if a particular subset of the population seems to be generating most of the litter. Examples of this would be tourist areas, or concentrations around schools, etc. If such a pattern emerges, the coordinator will concentrate education efforts at this subset of the population.

The possibility of sorting the collected litter to achieve waste reduction will be investigated. At a minimum, the aluminum cans can be pulled before the material is sent to the landfill.

Numerous illegal dumps are known in the county. Their contents and locations were determined by interviewing Mr. Boots Barr, Litter Control Officer with the county Highway Department. Descriptions of the materials in the dumps are found in Table 10-5.

**Table 10-5
Roane County
Illegal Dump Survey**

Name and Map Number: Pine Ridge Road (1)			
Estimated Size (Volume or Area): 5-6 trailer loads			
Location: On Pine Ridge between Highway 61 and Dyllis School			
Estimated Age: 4-5 years			
Contents:			
Tires	X	Cars	X
Refrigerators		Lumber	X
Batteries ¹		Large Tree Stumps	
Household Garbage	X	Construction Debris ²	X
Furniture	X	Brush	
Dead Animals	X	Live Animals	
¹ Not usually – scavenged for sale. ² Construction debris consists of sheetrock, lumber, and plywood.			

Name and Map Number: (2)			
Estimated Size (Volume or Area): 2 ton dump truck			
Location: Little Emory in the curve near convenience Center – Clax Gap area			
Estimated Age: 4-5 years			
Contents:			
Tires	X	Cars	X
Refrigerators		Lumber	X
Batteries ¹		Large Tree Stumps	
Household Garbage	X	Construction Debris ²	X
Furniture	X	Brush	
Dead Animals		Live Animals	
¹ Not usually – scavenged for sale. ² Construction debris includes shingles, concrete, and carpet.			

Table 10-5
(continued)

Name and Map Number: Old Elverton Road (3)			
Estimated Size (Volume or Area): 1-1/2 mile and into wooded area			
Location: Off Little Emory to Pine Ridge Road –all along the lake			
Estimated Age: 5-7 years			
Contents:			
Tires	X	Cars	X
Refrigerators		Lumber	X
Batteries ¹		Large Tree Stumps	X
Household Garbage	X	Construction Debris ²	X
Furniture	X	Brush	
Dead Animals		Live Animals	
¹ Not usually-scavenged for sale.			
² Construction debris includes shingles, carpet, and plywood.			

Name and Map Number: Johnson Va (4)			
Estimated Size (Volume or Area): 2-3 trailer loads have been burnt – 1 trailer load and construction debris on most all of road.			
Location: Johnson Va above Johnson Va Church			
Estimated Age: 8-10 years			
Contents:			
Tires	X	Cars	X
Refrigerators	X	Lumber	
Batteries ¹		Large Tree Stumps	X
Household Garbage	X	Construction Debris ³	X
Furniture ²	X	Brush	
Dead Animals		Live Animals	
¹ Not usually – scavenged for sale.			
² Furniture includes mattresses.			
³ Construction debris from Sweetwater – out-of-county people.			

Table 10-5
(continued)

Name and Map Number: Rolling Acres (5)	
Estimated Size (Volume or Area): Trailer load	
Location: Housing project (subdivision) off Post Oak Road. First road to left at Bradshaw Hollow	
Estimated Age: 3+ years	
Contents:	
Tires	Cars
Refrigerators	Lumber X
Batteries ¹	Large Tree Stumps
Household Garbage X	Construction Debris ² X
Furniture	Brush X
Dead Animals	Live Animals X
¹ Not usually – scavenged for sale.	
² Construction debris includes carpet.	

Name and Map Number: Bradshaw Hollow (6)	
Estimated Size (Volume or Area): 400 feet in a big ditch	
Location: Same road as Rolling Acres, off Post Oak, near I Be Lifted Up Church	
Estimated Age: 1 year	
Contents:	
Tires	Cars
Refrigerators	Lumber
Batteries ¹	Large Tree Stumps
Household Garbage	Construction Debris
Furniture	Brush X
Dead Animals	Live Animals
¹ Not usually – scavenged for sale.	

Table 10-5
(continued)

Name and Map Number: Rockwood Mountain (7) (Private Property) Browders, State Wildlife Area	
Estimated Size (Volume or Area): 4 miles or more	
Location: Airport Road to Browder Road Old Forrester Road (Radio Towers, Fire Tower)	
Estimated Age: 1 year or more	
Contents:	
Tires ¹	X Cars
Refrigerators	X Lumber
Batteries ²	Large Tree Stumps
Household Garbage	X Construction Debris
Furniture ³	X Brush
Dead Animals ⁴	X Live Animals
¹ Thousands of tires. ² Not usually – scavenged for sale. ³ Furniture includes TVs and radios. ⁴ Dead animals includes cows, sheep, and dogs.	

Name and Map Number: Snow Lane (8)	
Estimated Size (Volume or Area): 3 green boxes – cleaned up when green boxes are serviced	
Location: Off Riggs Chapel – dumped around container and into branch (creek)	
Estimated Age: 10+ years	
Contents:	
Tires	X Cars X
Refrigerators	X Lumber X
Batteries ¹	Large Tree Stumps
Household Garbage	X Construction Debris X
Furniture	X Brush
Dead Animals	Live Animals
¹ Not usually – scavenged for sale.	

Table 10-5
(continued)

Name and Map Number: Smalley Lane (9)	
Estimated Size (Volume or Area): All along road and in creek	
Location: From Highway 58 to Laurel Bluff	
Estimated Age: 3-4 years or longer	
Contents:	
Tires	Cars
Refrigerators	Lumber
Batteries ¹	Large Tree Stumps
Household Garbage X	Construction Debris
Furniture X	Brush
Dead Animals	Live Animals
¹ Not usually – scavenged for sale.	

Name and Map Number: Cave Creek Landing (10) (TVA access area goes down to Tennessee River)	
Estimated Size (Volume or Area): 1 dump truck (cleaned up by TVA)	
Location: Off Highway 70	
Estimated Age: 3+ years	
Contents:	
Tires	Cars
Refrigerators	Lumber
Batteries ¹	Large Tree Stumps
Household Garbage X	Construction Debris
Furniture X	Brush
Dead Animals ² X	Live Animals
¹ Not usually – scavenged for sale.	
² Dead animals include dogs and a beheaded cow (possibly used heads for lab).	

Table 10-5
(continued)

Name and Map Number: 11 – Known to be the old Kingston Dump		
Estimated Size (Volume or Area): 500 ft × 100 ft		
Location: About 1 mile west of the Lawnville Exit on I-40. Can be seen from the interstate on the north side.		
Estimated Age: In existence for years, but has more activity in recent months.		
Contents:		
Tires	Cars	
Refrigerators	Lumber	X
Batteries ¹	Large Tree Stumps	X
Household Garbage	Construction Debris	X
Furniture	Brush	X
Dead Animals	Live Animals	
¹ Not usually – scavenged for sale.		

Name and Map Number: 12 – Closed road entering Highway 70		
Estimated Size (Volume or Area): 400 ft × 75 ft		
Location: Three-tenths of a mile west of the Clinch River Bridge on Highway 70.		
Estimated Age: 4 or 5 years		
Contents:		
Tires	Cars	
Refrigerators	Lumber	
Batteries ¹	Large Tree Stumps	
Household Garbage	Construction Debris	
Furniture	Brush	X
Dead Animals	Live Animals	
¹ Not usually – scavenged for sale.		

Table 10-5
(continued)

Name and Map Number: 13 – Private dump on Duncan Hollow Road	
Estimated Size (Volume or Area): 100 ft × 100 ft	
Location: First road to left off Old Rockwood Highway (old Highway 70) behind the machine shop.	
Estimated Age: 5 years or more	
Contents:	
Tires	X
Refrigerators	
Batteries ¹	
Household Garbage	
Furniture	
Dead Animals	
Other: Shingles	X
Cars	
Lumber	
Large Tree Stumps	
Construction Debris	
Brush	
Live Animals	
¹ Not usually – scavenged for sale.	

Name and Map Number: 14 – Old Peach Orchard	
Estimated Size (Volume or Area): Loads dumped at random over many acres.	
Location: Take left behind Re-Cal Nursery on Old Highway 70. Go 1 mile to the top of the hill. Turn right on Casey Road. Entrance to the left at curve.	
Estimated Age: 10 years	
Contents:	
Tires	X
Refrigerators	
Batteries ¹	
Household Garbage	X
Furniture	
Dead Animals	
Other: Shingles	X
Cars	
Lumber	X
Large Tree Stumps	X
Construction Debris	X
Brush	X
Live Animals	
Comments:	
Has not been used for several months due to the entrance being blocked. This is a favorite place for people wanting to dump shingles, brush, and tree limbs that have chipped up, usually truckloads at a time.	
¹ Not usually – scavenged for sale.	

Table 10-5
(continued)

Name and Map Number: 15 – Old truck stop property	
Estimated Size (Volume or Area): 500 ft × 500 ft	
Location: One-half mile west of the junction of Highway 29 and Highway 70. Across from veterinary hospital.	
Estimated Age:	
Contents:	
Tires	X
Refrigerators	
Batteries ¹	
Household Garbage	
Furniture	
Dead Animals	
Other: Pallets	X
	Cars Lumber Large Tree Stumps Construction Debris Brush Live Animals
¹ Not usually – scavenged for sale.	

Chapter 11 Implementation: Schedule, Staffing, and Funding

11.1 System Definition

11.1.1 Overall Strategy

The integrated waste management system for the Roane County Region consists of four elements: source reduction, source diversion to a Class IV Landfill, recycling, and waste export. It is anticipated that source diversion and recycling will divert the largest quantities of waste from a Class I Landfill (whether this landfill is in- or out-of-county).

The regional goal is to use the existing solid waste management infrastructure in the county and adjacent counties to improve upon a system that has the potential to be more fully integrated. The strategy for achieving this goal includes increasing the types and amounts of recycled materials; getting more of the public, educational institutions, businesses, and industries involved in source reduction and recycling; phasing out the in-county landfill and using a transfer system for waste export; and expanding the public education program.

For the purposes of overall strategy and system definition, the region has chosen to use a transfer system to out-of-county landfills to dispose of its materials (those that are not recycled or diverted to the new Class IV Landfill) for at least a portion of the planning period. The region has not selected which landfill or combination of landfills will be used for ultimate disposal.

The overall strategy proposed by the Solid Waste Board is as follows:

- Use the existing Class I Landfill for as long as possible, closing the landfill as each portion is filled.
- Transfer the solid waste out of the county using a transfer system consisting of either a single transfer station adjacent to the existing Class I Landfill or satellite transfer stations developed at the convenience centers that have compactors.
- Solicit bids and contract for transfer and disposal of Class I solid waste at one or more out-of-county Class I Landfills.
- Immediately construct a Class IV Landfill for C&D and yard wastes adjacent to the existing Class I Landfill.
- Continue to review disposal options for Class I wastes. Possible alternatives would include the following:

- To construct an in-vessel solid waste composting facility
 - To transfer Class I wastes to a different out-of-county landfill(s)
 - To construct a new Class I Landfill
- Institute recycling at the convenience centers.
 - As changes to the system are appropriate or at the required five-year intervals, review and amend the Roane County Solid Waste Plan.

11.1.2 Flow Diagram

The flow components of the proposed regional system are shown in Figure 11-1. The components include source reduction, source diversion, recycling, and waste export. The approximate percentages of each component are also shown in the figure.

11.1.3 Composite Map

A composite map of the proposed regional system is shown in Figure 11-2 (located at the end of this chapter). Both existing and proposed system elements are shown. Arrows indicate both the waste flow patterns within the county and the waste flow to an importing county, which has not yet been determined.

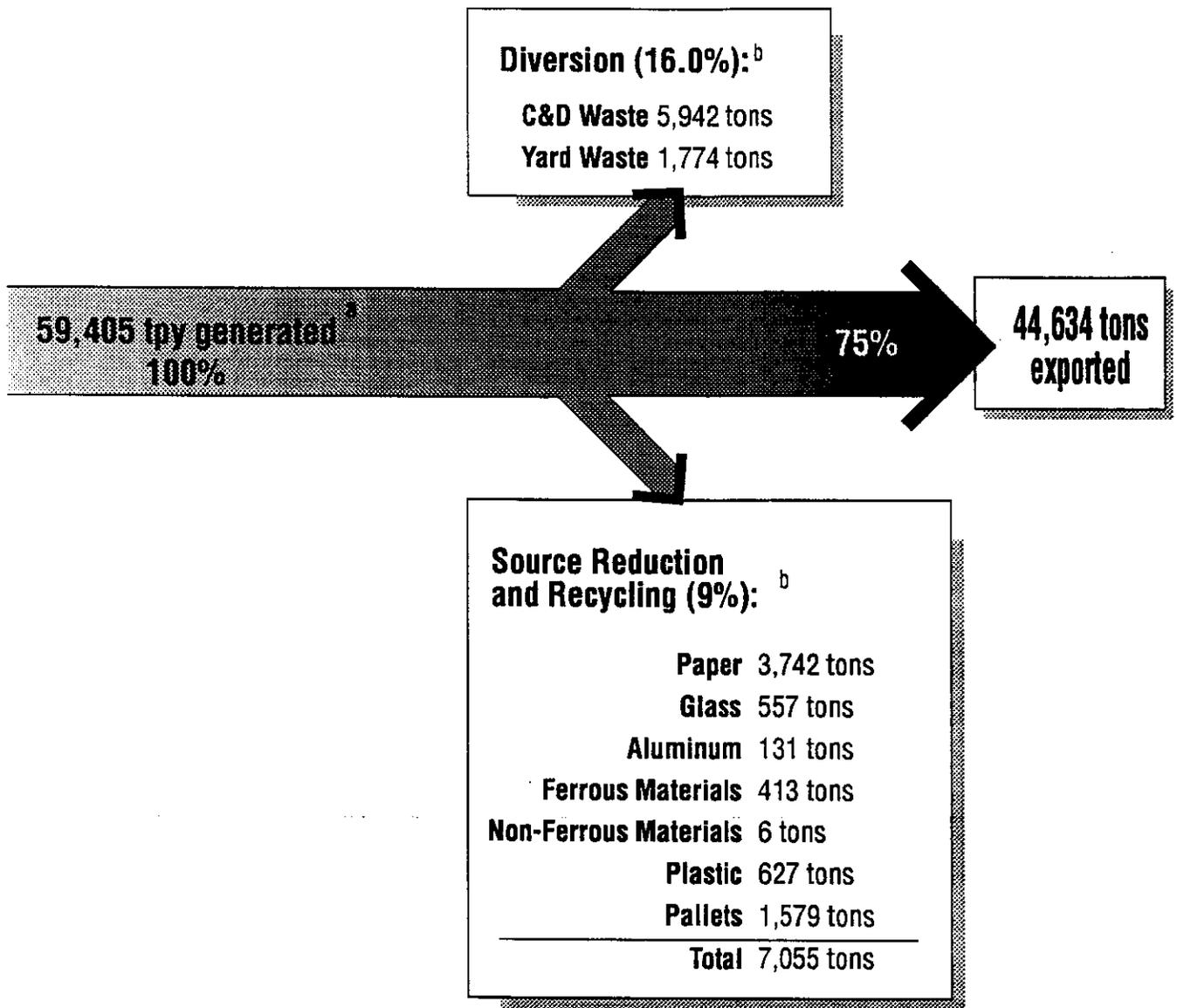
11.1.4 Institutional Structure

The institutional structure that has been established to implement the plan consists of the Roane County Solid Waste Board and five implementing bodies—Roane County, the Solid Waste Authority, Kingston, Rockwood, and Harriman. The Board, as a planning body, will have responsibility for plan modifications, the five-year plan update, and annual reports. The Board will also function in an oversight role to ensure that the major milestones and goals of the plan are being met.

The Solid Waste Authority is responsible for permit review, flow control, and daily solid waste operations. It is responsible for the operation of the transfer system and for plan implementation.

The county is responsible for operation of the convenience centers, cleanup of illegal dumps, Mobile Collection Events for HHW, and disposal of waste tires. The Solid Waste Coordinator is responsible for program development.

The municipalities are responsible for the collection of solid waste within their jurisdictions and operation of the drop-off recycling centers proposed for each city.



NOTES:

^a 1995 projected waste tonnages were used from Table 4-1.

^b Quantities are from 1995 target in Table 4-1.

Figure 11.1
Final System Configuration
 ROANE COUNTY REGIONAL SOLID WASTE BOARD

11.2 Implementation Schedule

The combined implementation schedule for all components of the plan is presented in Table 11-1. Items that were mentioned in more than one chapter have been combined in this schedule, which is based on the budgetary FY's to facilitate comparisons between the budget and schedule tables.

The schedule is more detailed in the first half of the planning period because goals and objectives are more clearly defined for this period. However, it is anticipated that when the five-year update is prepared, a detailed schedule will be provided for the second half of the planning period.

11.3 Staffing and Training Requirements

11.3.1 Authorized 1993 Solid Waste Management Positions

Authorized local government positions involved in the management of solid waste for the base year 1993 are with Roane County and the three municipalities.

The county staff employed in solid waste management consist of 22 people. Fourteen attendants staff the convenience centers, and three employees (one officer and two workers) provide for litter control. Four equipment operators work at the landfill under a supervisor.

Harriman and Rockwood each use two truck drivers and four loaders. A part-time administrative assistant is also employed by each city. Kingston uses one truck driver, two loaders, and one part-time supervisor and administrative assistant.

11.3.2 Ten-Year Staffing Plan

The proposed staffing needs for the next 10 years are dictated primarily by the increased recycling and public education. It is highly recommended that a Solid Waste Coordinator be hired in FY 1994/1995 to facilitate recycling, waste reduction, and education program implementation. This position will be funded by the county. The staffing plan is presented in Table 11-2.

11.4 Budget

11.4.1 Overall Ten-Year Budget

The estimated costs for all system elements of the 10-year plan are combined for all programs and presented in Table 11-3. An adjustment for inflation was not made.

**Table 11-1
Overall Implementation Schedule for
Roane County Solid Waste Planning Region**

Fiscal Year	Task	Target Date
1993/1994	<ol style="list-style-type: none"> 1. Select temporary HHW collection site 2. Develop waste export capacity through contracts with private firms and the region 3. Submit Class IV landfill permit application 4. Submit Annual Report 5. Submit recycling grant application for baler 6. Inventory industries for waste exchange listing 7. Poll industries and businesses for pallet exchange and reuse 8. Initiate design, permitting, and construction of transfer station 9. Finalize HHW advertising and distribution program 10. Schedule UT CIS Waste Reduction Seminar 11. Obtain state public education brochures and distribute 12. Implement institutional recycling program 13. Kickoff events for new recycling programs 14. Inventory industries for waste exchange listing 15. Poll industries and businesses for pallet exchange and reuse 16. Poll businesses for cardboard recycling interest 17. Purchase collection truck or contract with hauler 18. Purchase compactors, roll-offs, and open-top containers for 3 convenience centers 19. Train staff members at 3 convenience centers in new operations 20. Place PSAs 	<ol style="list-style-type: none"> 1. Done 2. ASAP 3. ASAP 4. 03/01/94 5. 03/25/94 6. 04/31/94 7. 04/31/94 8. 05/31/94 9. 06/15/94 10. 06/30/94 11. 06/30/94 12. 06/30/94 13. 06/30/94 14. 06/30/94 15. 06/30/94 16. 06/30/94 17. 06/30/94 18. 06/30/94 19. 06/30/94 20. Ongoing
1994/1995	<ol style="list-style-type: none"> 1. Seek grant for public education program implementation 2. Hire Solid Waste Coordinator 3. Apply for state grant for used oil collection center 4. Hold first HHW Collection Day 5. Hold RCCS Paint Swap at HHW Collection Day 6. Distribute RCCS recycling booklet 7. Incorporate HHW program into school curriculum 8. Conduct UT CIS Waste Reduction Seminar 9. Conduct convenience center survey 10. Complete RCCS Illegal Dump Slideshow 11. Submit recycling, problem waste and transportation and collection data for Annual Report 12. Complete waste and pallet exchange program implementation 13. Hold UT CIS Waste Reduction Seminar 14. Submit Annual Report 15. Add recycling to convenience centers and city drop-off centers 16. Implement backyard composting program 17. Find a showcase business for commercial recycling program 18. Apply for recycling grant for glass crusher 19. Disposal capacity is depleted. Begin full waste export 20. Hold second HHW collection day 21. Purchase compactors, roll-offs, and open-top containers for 4 convenience centers 22. Train staff members at 4 convenience centers in new operations 23. Phase out 3 convenience centers 24. Continue RCCS activities 25. Place PSAs 	<ol style="list-style-type: none"> 1. ASAP after plan approved 2. 07/01/94 3. 07/01/94 4. 07/09/94 5. 07/09/94 6. 07/31/94 7. 08/01/94 8. 09/30/94 9. 12/31/94 10. 12/31/94 11. 12/31/94 12. 12/31/94 13. 12/31/94 14. 12/31/94 15. 12/31/94 16. 12/31/94 17. 03/01/95 18. 03/25/95 19. 03/31/95 20. Spring 1995 21. 06/30/95 22. 06/30/95 23. 06/30/95 24. Ongoing 25. Ongoing

**Table 11-1
Overall Implementation Schedule for
Roane County Solid Waste Planning Region**

Fiscal Year	Task	Target Date
1995/1996	<ol style="list-style-type: none"> 1. Evaluate all recycling programs to determine quantities reduced 2. Apply for recycling and education program grants 3. Apply for state grant for used oil collection center 4. Apply for state grant for glass crusher and collection bins 5. Have yard waste and demolition waste landfill permitted and operational 6. Submit recycling, problem waste and transportation and collection data for Annual Report 7. Have yard waste and demolition waste landfill permitted and operational 8. Submit Annual Report 9. Hold third HHW collection day 10. Phase out 3 convenience centers 11. Place PSAs 12. Continue RCCS activities 	<ol style="list-style-type: none"> 1. 07/01/95 2. 07/01/95 3. 07/01/95 4. 07/01/95 5. 12/31/95 6. 12/31/95 7. 12/31/95 8. 03/01/96 9. Spring 1996 10. 06/30/96 11. Ongoing 12. Ongoing
1996/1997	<ol style="list-style-type: none"> 1. Apply for state grant for collection bins or other recycling equipment 2. Submit recycling, problem waste and transportation and collection data for Annual Report 3. Establish Adult Education Program 4. Evaluate disposal options (regarding in-vessel composting) 5. Submit Annual Report 6. Hold fourth HHW collection day 7. Ongoing education 8. Place PSAs 	<ol style="list-style-type: none"> 1. 07/01/96 2. 12/31/96 3. 12/31/96 4. 12/31/96 5. 03/01/97 6. Spring 1997 7. Ongoing 8. Ongoing
1997/1998	<ol style="list-style-type: none"> 1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Hold fifth HHW collection day 4. Ongoing education 5. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/97 2. 03/01/98 3. Spring 1998 4. Ongoing 5. Ongoing
1998/1999	<ol style="list-style-type: none"> 1. Evaluate plastic recycling program to consider adding other types 2. Submit recycling, problem waste and transportation and collection data for Annual Report 3. Submit Annual Report 4. Hold sixth HHW collection day 5. Ongoing education 6. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/98 2. 12/31/98 3. 03/01/99 4. Spring 1999 5. Ongoing 6. Ongoing
1999/2000	<ol style="list-style-type: none"> 1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Hold seventh HHW collection day 4. Ongoing education 5. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/99 2. 03/01/00 3. Spring 2000 4. Ongoing 5. Ongoing
2000/2001	<ol style="list-style-type: none"> 1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Hold eighth HHW collection day 4. Ongoing education 5. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/00 2. 03/01/01 3. Spring 2001 4. Ongoing 5. Ongoing

**Table 11-1
Overall Implementation Schedule for
Roane County Solid Waste Planning Region**

Fiscal Year	Task	Target Date
2001/2002	<ol style="list-style-type: none"> 1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Hold ninth HHW collection day 4. Ongoing education 5. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/01 2. 03/01/02 3. Spring 2002 4. Ongoing 5. Ongoing
2002/2003	<ol style="list-style-type: none"> 1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Hold tenth HHW collection day 4. Ongoing education 5. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/02 2. 03/01/03 3. Spring 2003 4. Ongoing 5. Ongoing
2003 ^a	<ol style="list-style-type: none"> 1. Submit recycling, problem waste and transportation and collection data for Annual Report 2. Submit Annual Report 3. Place PSAs 	<ol style="list-style-type: none"> 1. 12/31/03 2. 03/01/04 3. Ongoing

^aOnly covers second half of base year.

^bEnd of planning period is December 31, 2003, which is only half of this fiscal year.

**Table 11-2
Ten-Year Overall Staffing Plan**

Fiscal Year	Chapter 5	Chapter 6	Chapter 7	Chapter 8	Chapter 9	Chapter 10
1993/1994						
1994/1995		Solid Waste Coordinator			Solid Waste Coordinator ^b	
1995/1996		Solid Waste Coordinator			Solid Waste Coordinator ^b	
1996/1997		Solid Waste Coordinator			Solid Waste Coordinator ^b	
1997/1998		Solid Waste Coordinator			Solid Waste Coordinator ^b	
1998/1999		Solid Waste Coordinator			Solid Waste Coordinator ^b	
1999/2000		Solid Waste Coordinator			Solid Waste Coordinator ^b	
2000/2001		Solid Waste Coordinator			Solid Waste Coordinator ^b	
2001/2002		Solid Waste Coordinator			Solid Waste Coordinator ^b	
2002/2003		Solid Waste Coordinator			Solid Waste Coordinator ^b	
2003 ^c		Solid Waste Coordinator			Solid Waste Coordinator ^b	

^aOnly covers second half of base year.

^bSame position as Solid Waste Coordinator in Chapter 6.

^cEnd of planning period is December 31, 2003, which is only half of this fiscal year.

Table 11-3

Projected 10-Year Budget and Funding Plan (a)
Comprehensive Solid Waste Management Plan (b)

	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
Operating Revenues											
General Taxes (b)	\$2,772,163	\$3,103,767	\$2,820,176	\$2,824,961	\$2,838,251	\$2,837,782	\$3,032,093	\$2,837,359	\$2,838,029	\$2,837,779	\$2,837,292
Class IV Tipping Fee Revenues	0	31,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200
Industrial Tipping Fees	608,000	485,000	481,000	476,000	471,000	467,000	463,000	455,000	449,000	439,000	431,000
Tire Pre-Disposal Fees	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000
Sale of Recycled Materials	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Total	\$3,399,363	\$3,639,167	\$3,351,576	\$3,351,361	\$3,359,651	\$3,355,182	\$3,545,493	\$3,342,759	\$3,337,429	\$3,327,179	\$3,318,692
Operating Expenditures											
Waste Diversion to Class IV	\$0	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860	\$266,860
Waste Collection and Transport	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333	1,544,333
Recycling	4,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000	14,000
Disposal	1,633,030	1,510,440	1,505,684	1,500,969	1,496,459	1,491,990	1,487,726	1,479,567	1,474,237	1,463,987	1,455,500
Public Information	7,500	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Problem Wastes	545	545	545	545	545	545	545	545	545	545	545
Total	\$3,189,408	\$3,356,177	\$3,351,421	\$3,348,706	\$3,344,196	\$3,339,727	\$3,335,463	\$3,327,304	\$3,321,974	\$3,311,724	\$3,303,237
Net Operating Income (c)	209,955	282,990	155	2,655	15,455	15,455	210,030	15,455	15,455	15,455	15,455
Non-Operating Revenues											
State Grants	\$57,500	\$35,000	\$35,000	\$20,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$57,500	\$35,000	\$35,000	\$20,000	\$0						
Non-Operating Expenditures (d)											
Waste Diversion	\$0	\$145,400	\$0	\$0	\$0	\$0	\$145,400	\$0	\$0	\$0	\$0
Waste Collection and Transport	250,000	75,000	3,000	0	0	0	10,000	0	0	0	0
Recycling	0	72,635	6,000	0	0	0	39,175	0	0	0	0
Disposal	0	0	0	0	0	0	0	0	0	0	0
Public Information	0	0	0	0	0	0	0	0	0	0	0
Problem Wastes	0	0	0	0	0	0	0	0	0	0	0
Total	\$250,000	\$293,035	\$9,000	\$0	\$0	\$0	\$194,575	\$0	\$0	\$0	\$0
Net Non-Operating Income (e)	(\$192,500)	(\$258,035)	\$26,000	\$20,000	\$0	\$0	(\$194,575)	\$0	\$0	\$0	\$0
Net Income (f)	17,455	24,955	26,155	22,655	15,455						

SOURCE: Summarized from Tables 4-2, 5-2, 6-3, 8-3, 9-3, and 10-1.

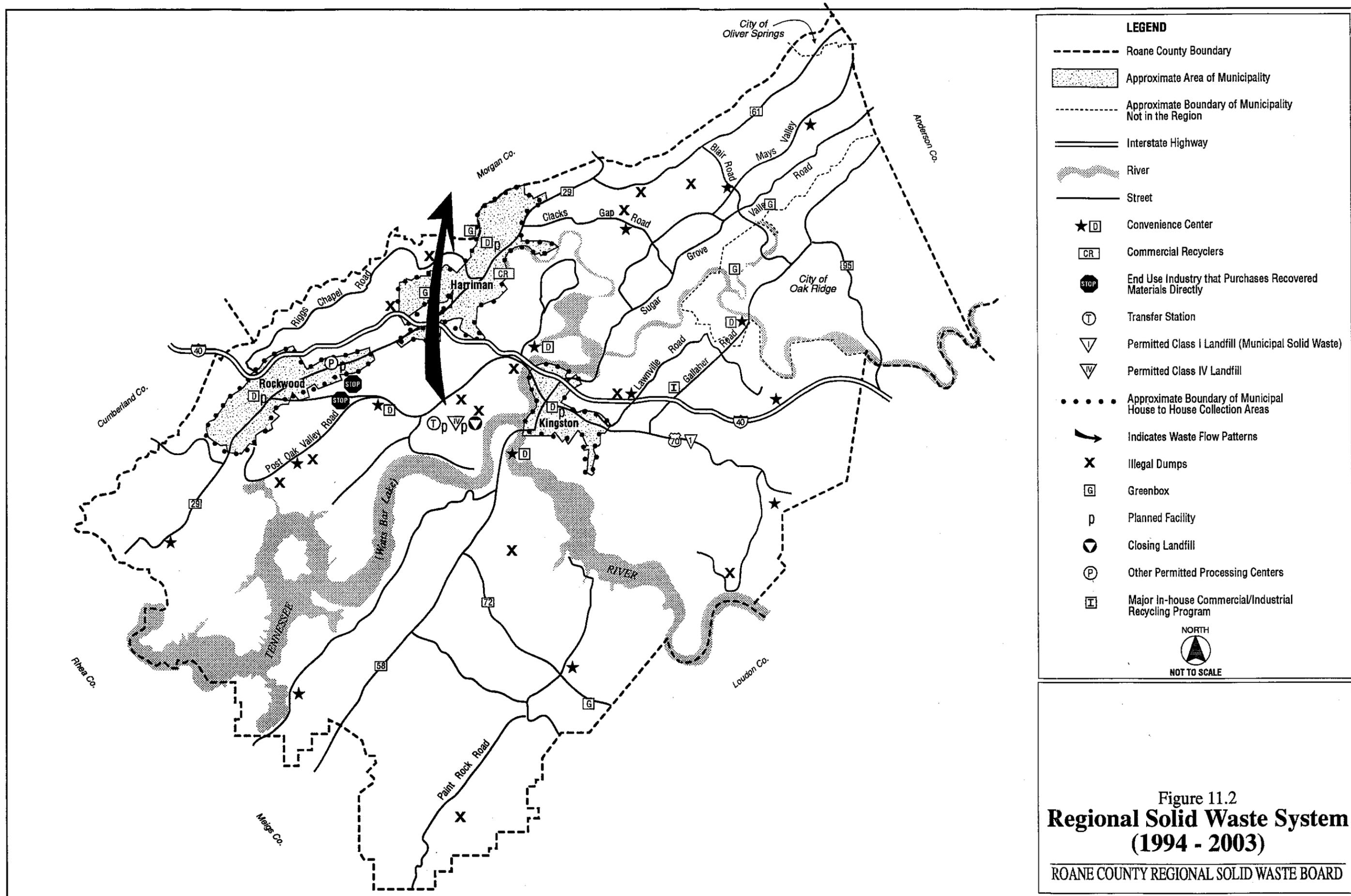
- a. All revenues and expenditures are shown in constant 1993 dollars. Cost projections are consistent with budgets developed under the new FY 1994 full cost accounting requirements.
- b. While projections of revenues and costs are shown in detail to facilitate understanding, note that these projections are not intended to suggest that future operations can be forecast with the degree of precision that may be implied.
- c. Property tax revenues fund the majority of all costs associated with collection and transportation. The revenues shown include money from various sources from the Cities and the County.
- d. Net Operating Income is calculated as operating revenues less operating expenditures. The positive amounts in each year reflect generation of revenues sufficient to allow for capital acquisitions.
- e. "Non-Operating Expenditures" is a category used to present expenditures on capital acquisition for the solid waste system, in contrast to the ongoing expenditures shown under "Operating Expenditures".
- f. Net Non-Operating Income is calculated as Non-Operating Revenues less Non-Operating Expenditures. The negative amounts in some years indicate the funding of some capital acquisitions through the use of current operating revenues.
- g. Net Income is calculated as the sum of Net Operating Income and Net Non-Operating Income.

11.4.2 Plan for Financing Capital Improvement Project

The expenditures that will probably occur in the planning period will be for the upgraded convenience centers, drop-off recycling facilities, and construction of a transfer station and Class IV Landfill. These will be purchased with general obligation bonds or state grant monies or through an operating contractor firm that has its own financing mechanisms. Normal equipment replacement costs will also occur during the planning period.

11.4.3 Plan for Operation and Maintenance Costs

Roane County will meet projected annual operation and maintenance costs for the next 10 years as it has in the past. The majority of the total revenue requirements have been met through the use of property taxes.



LEGEND

- Roane County Boundary
- Approximate Area of Municipality
- Approximate Boundary of Municipality Not in the Region
- ==== Interstate Highway
- ~~~~~ River
- _____ Street
- ★ D Convenience Center
- CR Commercial Recyclers
- STOP End Use Industry that Purchases Recovered Materials Directly
- T Transfer Station
- ▽ Permitted Class I Landfill (Municipal Solid Waste)
- ▽ Permitted Class IV Landfill
- Approximate Boundary of Municipal House to House Collection Areas
- Indicates Waste Flow Patterns
- X Illegal Dumps
- G Greenbox
- p Planned Facility
- Closing Landfill
- P Other Permitted Processing Centers
- I Major In-house Commercial/Industrial Recycling Program

NORTH

 NOT TO SCALE

Figure 11.2
**Regional Solid Waste System
 (1994 - 2003)**
 ROANE COUNTY REGIONAL SOLID WASTE BOARD

Chapter 12
Allocation of Implementation Responsibilities:
Plan Adoption and Submission

12.1 One-County Regions

This 10-Year Solid Waste Plan was formally adopted by resolution of the Roane County Solid Waste Planning Region Board on March 10, 1994. The resolution was signed by the Chairwoman of the region, Ms. Nancy Lee. A copy of the resolution is found in Appendix E.

The County Commission adopted the plan on 5-23-94. The resolution describing this action is found in Appendix E.

12.2 Solid Waste Authorities

This section does not apply because the plan was developed and adopted by the Roane County Solid Waste Planning Region Board and a Solid Waste Authority has already been formed. In addition, the Authority will not have total responsibility for implementing the plan because the cities of Kingston, Harriman, and Rockwood have retained their collection responsibilities and can independently contract for disposal.

The Authority has already assumed some of the solid waste responsibilities formerly held by the county. It is anticipated that once the plan is approved, the Authority will take responsibility for implementing those parts of the plan that apply to its duties.

12.3 Local Planning Commission Review

The Roane County Regional Planning Commission was provided the opportunity to review the draft 10-year plan before it was submitted to the Planning Region Board for approval. Mr. Allen Williams, Chairman of the Regional Planning Commission, indicated that the commission did not have any comments on the plan. Documentation is found in Appendix E.

Chapter 13 Flow Control and Permit Application Review

13.1 Flow Control

Flow control is considered by many to be an option for the region to exercise once the plan is approved. A flow control resolution has been drafted and presented to the County Commission, but no final action, if any, will be taken until after the plan is approved. The solution is intended to direct all the waste generated within the region to the county-owned landfill to help ensure its cost-effective operation.

This plan does not contain any proposals for flow control measures, but the region retains the option to revise the plan by adding flow control measures at a later date. The authority has taken steps to modify the permit to allow out-of-county wastes into the Roane County landfill. This proposition is controversial and, as yet, unresolved.

13.2 Permit Application Review

The procedure to be used in the Roane County Region when a new solid waste disposal facility or incinerator is proposed is to have both the Planning Region and the Authority review it. As soon as the application is received, a notice will be published in the paper announcing that the application has been received and may be viewed by the public at the library and the courthouse. The public notice will also announce when a public meeting will be held concerning the application. Although a public meeting before the public hearing is not required, it is believed that using a two-step approach (in which the first step is to exchange information at the public meeting) would increase the public's opportunities to understand the issues.

Interested persons may comment in writing and verbally, both at the public meeting and the public hearing. A public hearing will also be held in accordance with the provisions of T.C.A. 68-211-814(b)(2)(A), and the decision on the permit application will be made at that time. The decision will be made by the Solid Waste Authority. The decision will be documented by resolution, and a copy of that resolution shall be immediately submitted to the commissioner of TDEC.

Works Cited

East Tennessee Development District (ETDD). *Knox County Solid Waste Needs Assessment*. September 30, 1992.

Tennessee Department of Environment and Conservation (TDEC). *Guidelines on the 25% Waste Reduction Goal*. Division of Solid Waste Assistance. December 1993.

University of Tennessee (UT). *Managing Our Waste: Solid Waste Planning for Tennessee*. Waste Management Research and Education Institute. February 1991.

Appendix A
Legal Documentation and Organization of the Region

**SUBSTITUTE
RESOLUTION #-2432 (AS AMENDED)**

A RESOLUTION creating a Roane County Solid Waste Region, establishing an administrative board for the region and providing for the terms of office, pursuant to T.C.A. 68-31-813.

WHEREAS, the Solid Waste Management Act of 1991 requires that Roane County Commission create a Solid Waste Region after consideration of the development district needs assessment, and

WHEREAS, a public hearing was held on September 8, 1992 and suggests that Roane County should be a separate solid waste region, the pertinent portion of which is attached hereto and made a part of the resolution.

WHEREAS, given the present daily waste tonnages, and the planned Class 1 landfill facility in Midtown, no other alternatives would be economical for Roane County (and its cities) to pursue.

BE IT THEREFORE RESOLVED that the Roane County Commission hereby designates the county itself as its own solid waste region with the County having the authority to enter into contractual agreements with other counties/regions for the purpose of providing the most effective and efficient management of the solid waste system.

BE IT FURTHER RESOLVED that a solid waste board of eleven (11) members is hereby created to administer the activities of the region.

BE IT FURTHER RESOLVED that the board shall be composed of the following members:

Seven (7) members appointed by the Roane County Executive and confirmed by the Roane County Commission, representing Roane County, Tennessee.

One (1) member appointed by the Mayor of the City of Kingston and confirmed by the City Council of the City of Kingston, representing Kingston, Tennessee.

One (1) member appointed by the Mayor of the City of Harriman and confirmed by the City Council of the City of Harriman, representing Harriman, Tennessee.

One (1) member appointed by the Mayor of the City of Rockwood and confirmed by the City Council of the City of Rockwood, representing Rockwood, Tennessee.

One (1) member appointed by the Mayor of the city of Oliver Springs and confirmed by the City Council of the City of Oliver Springs, representing Oliver Springs, Tennessee.

BE IT FURTHER RESOLVED that the members of the board shall serve for terms of six (6) years or until their successors are elected and are qualified by taking an oath of office, except that the initial board shall have approximately one-third (1/3) of the members with terms of two (2) years, those being two representatives from Roane County and one from the City of Kingston, and approximately one-third (1/3) of the members with terms of four (4) years, those being three representatives from Roane County and one from the City of Harriman, the remaining members to have six (6) year terms so as to stagger the terms of office.

BE IT FURTHER RESOLVED that the County Clerk shall provide a certified copy of this resolution to the State Panning Office by December 31, 1992.

Upon motion by Commissioner Coffman, seconded by Commissioner Harmon, the following Commissioners voted Aye: Calfee, Coffman, Easter, Hacker, Harmon, Johnson, Lassiter, Neal, Wicks (9)

The following Commissioners passed: -0-

The following Commissioners voted No: -0-

Thereupon, the County chairman announced to the Commission that said Resolution had received a constitutional majority and ordered same spread of record.

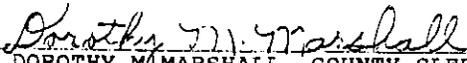
APPROVED:



COUNTY CHAIRMAN

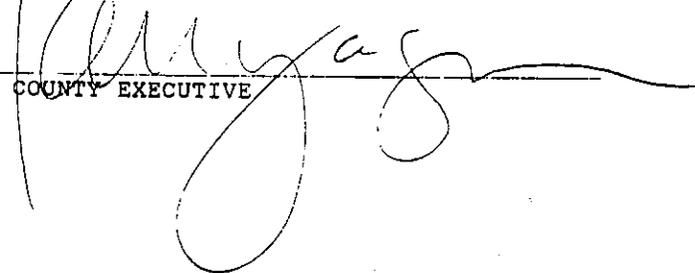
The foregoing Resolution was submitted to the County Executive for his consideration this the 4th day of Dec 1992.

ATTESTED:



DOROTHY M. MARSHALL, COUNTY CLERK

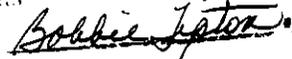
I hereby approve/veto the foregoing Resolution this the 4th day of Dec 1992.



COUNTY EXECUTIVE

MISSISSIPPI
COUNTY OF ROANE

Witness my hand and
seal this 7th day of

March 7 1994
Day Year

Bobbie Lator

APR 02 1993

#2496

A RESOLUTION amending Resolution No. 2432 (as amended)

WHEREAS, Resolution No. 2432 (as amended) was duly adopted by the Roane County Commission on December 4, 1992, which resolution created a Roane County Solid Waste Authority, established an administrative board for the region and provided for the terms of office,

WHEREAS, subsequently, the City of Oliver Springs has adopted a resolution electing to participate in the Anderson County Municipal Solid Waste Regional Board and is, therefore, not eligible to be represented on the Roane County Regional Board,

WHEREAS, Resolution No. 2432 (as amended) should be amended to delete the City of Oliver Springs representation and the membership of the Regional Board should be adjusted to reflect the change while preserving an odd total number and staggered initial terms;

NOW, THEREFORE, BE IT RESOLVED Resolution No. 2432 (as amended) is amended as follows:

1. In the third paragraph after the Preamble, the following words are deleted:

Seven (7) members appointed by the Roane County Executive and confirmed by the Roane County Commission, representing Roane County, Tennessee.

In lieu thereof, the following language is substituted:

Eight (8) members appointed by the Roane County Executive and confirmed by the Roane County Commission, representing Roane County, Tennessee.

2. In the third paragraph after the Preamble, the following words are deleted:

One (1) member appointed by the Mayor of the City of Oliver Springs and confirmed by the City Council of the City of Oliver Springs, representing Oliver Springs, Tennessee.

Upon motion of Commissioner HARMON, seconded by Commissioner NEAL, the following Commissioners voted Aye:

MOTION TO ADOPT PASSED UPON VOICE VOTE.

The following Commissioners passed:

The following Commissioners voted No:

Thereupon the Chairman announced to the Commission that said resolution had received a constitutional majority and ordered the same spread of record.

APPROVED: [Signature] COUNTY CHAIRMAN

The foregoing resolution was submitted to the County Executive for his consideration this the 26th day of April, 1993.

ATTESTED: [Signature] COUNTY CLERK

I hereby approve/veto the following resolution this the 26 day of April, 1993.

[Signature] COUNTY EXECUTIVE

Submitted by County Attorney for County Executive Ken Yager

STATE OF TENNESSEE
COUNTY OF ROANE
Attest:
[Signature] Clerk

Certified a true and correct copy:
August 5 19 93
Month Day Year
[Signature] R. B.

Executive Offices
376-5578
FAX (615) 376-4318

Accounting Department
376-5553

Office of the County Executive
Roane County Courthouse
Kingston, Tennessee 37763

March 23, 1993

MR. TERRY EASTWOOD
Route 2 Box 163 H
Kingston, TN 37763

Dear Mr. Eastwood:

I am pleased to tell you that the County Commission has confirmed your appointment to the Solid Waste Region Board.

Enclosed please find a copy of the pertinent portion of Tennessee Code Annotated regarding this Board.

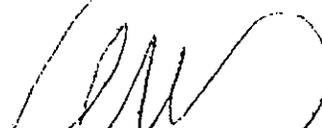
Please be advised that the first meeting of this Board is set for Thursday, April 1, 1993 at 7:00 p.m. in the County Commission Room at the Courthouse in Kingston. Ms. Chris Garkovich from the East Tennessee Development District will attend to provide you with orientation.

Please call Sheila Lemons in my office at 376-5578 or 376-5553 to confirm your attendance.

Also enclosed for your information is a roster of the membership of the Solid Waste Region Board.

If you have any questions please feel free to call on me.

Yours truly,


Ken Yager
County Executive

KY:sl

Office of the County Executive
Roane County Courthouse
Kingston, Tennessee 37763

March 23, 1993

MR. MIKE EASTER
Route 3 Box 1056
Loudon, TN 37774

Dear Mr. Easter:

I am pleased to tell you that the County Commission has confirmed your appointment to the Solid Waste Region Board.

Enclosed please find a copy of the pertinent portion of Tennessee Code Annotated regarding this Board.

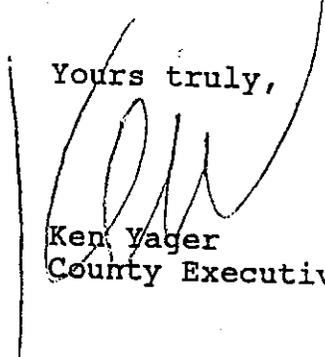
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Please call Sheila Lemons in my office at 376-5578 or 376-5553 to confirm your attendance.

Also enclosed for your information is a roster of the membership of the Solid Waste Region Board.

If you have any questions please feel free to call on me.

Yours truly,


Ken Yager
County Executive

KY:sl



Office of the County Executive
Roane County Courthouse
Kingston, Tennessee 37763

March 23, 1993

MRS. ANN COOK
P/O Box 1015
Kingston, TN 37763

Dear Mrs. Cook:

I am pleased to tell you that the County Commission has confirmed your appointment to the Solid Waste Region Board.

Enclosed please find a copy of the pertinent portion of Tennessee Code Annotated regarding this Board.

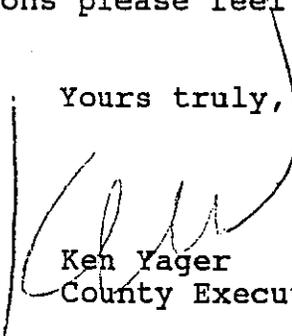
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Please call Sheila Lemons in my office at 376-5578 or 376-5553 to confirm your attendance.

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If you have any questions please feel free to call on me.

Yours truly,


Ken Yager
County Executive

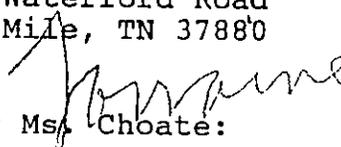
KY:sl



Office of the County Executive
Roane County Courthouse
Kingston, Tennessee 37763

March 23, 1993

MS. LORRAINE CHOATE
137 Waterford Road
Ten Mile, TN 37880


Dear Ms. Choate:

I am pleased to tell you that the County Commission has confirmed your appointment to the Solid Waste Region Board.

Enclosed please find a copy of the pertinent portion of Tennessee Code Annotated regarding this Board.

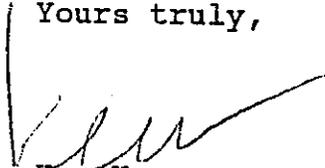
Please be advised that the first meeting of this Board is set for Thursday, April 1, 1993 at 7:00 p.m. in the County Commission Room at the Courthouse in Kingston. Ms. Chris Garkovich from the East Tennessee Development District will attend to provide you with orientation.

Please call Sheila Lemons in my office at 376-5578 or 376-5553 to confirm your attendance.

Also enclosed for your information is a roster of the membership of the Solid Waste Region Board.

If you have any questions please feel free to call on me.

Yours truly,


Ken Yager
County Executive

KY:sl



Office of the County Executive
Roane County Courthouse
Kingston, Tennessee 37763

March 23, 1993

MR. RONNIE BORING
Route 1 Box 476
Harriman, TN 37748

Dear Mr. Boring:

I am pleased to tell you that the County Commission has confirmed your appointment to the Solid Waste Region Board.

Enclosed please find a copy of the pertinent portion of Tennessee Code Annotated regarding this Board.

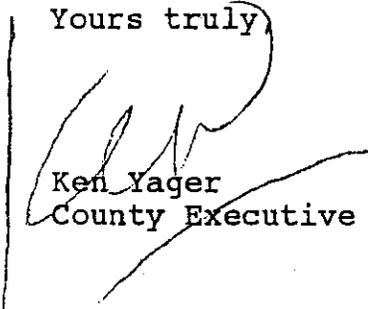
Please be advised that the first meeting of this Board is set for Thursday, April 1, 1993 at 7:00 p.m. in the County Commission Room at the Courthouse in Kingston. Ms. Chris Garkovich from the East Tennessee Development District will attend to provide you with orientation.

Please call Sheila Lemons in my office at 376-5578 or 376-5553 to confirm your attendance.

Also enclosed for your information is a roster of the membership of the Solid Waste Region Board.

If you have any questions please feel free to call on me.

Yours truly,


Ken Yager
County Executive

KY:sl



Executive Offices
376-5578
FAX (615) 376-4318

Accounting Department
376-5553

Office of the County Executive
Roane County Courthouse
Kingston, Tennessee 37763

March 23, 1993

Mr. R.C. Ladd
400 Molyneux
Rockwood, TN 37854

Dear Mr. Ladd:

Please be advised that the first meeting of the Roane County Solid Waste Region Board of Directors is set for Thursday, April 1, 1993 at 7:00 p.m. in the County Commission Room at the Courthouse in Kingston. Ms. Chris Garkovich from the East Tennessee Development District will attend to provide you with orientation.

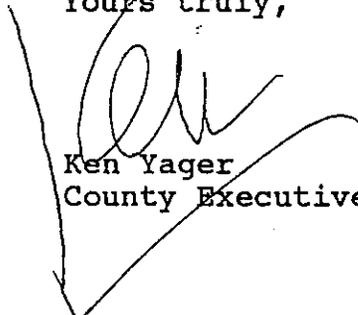
Enclosed please find a copy of the pertinent portion of Tennessee Code Annotated regarding this Board.

Please call Sheila Lemons in my office at 376-5578 or 376-5553 to confirm your attendance.

Also enclosed for your information is a roster of the membership of the Solid Waste Region Board.

If you have any questions please feel free to call on me.

Yours truly,


Ken Yager
County Executive

KY:sl

Office of the County Executive
Roane County Courthouse
Kingston, Tennessee 37763

March 23, 1993

MR. ARTHUR RIVERS
1148 Brentwood Point
Kingston, TN 37763

Dear Mr. Rivers:

Please be advised that the first meeting of the Roane County Solid Waste Region Board of Directors is set for Thursday, April 1, 1993 at 7:00 p.m. in the County Commission Room at the Courthouse in Kingston. Ms. Chris Garkovich from the East Tennessee Development District will attend to provide you with orientation.

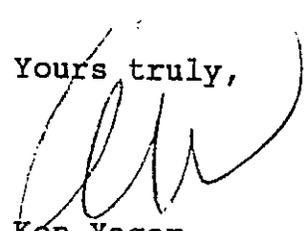
Enclosed please find a copy of the pertinent portion of Tennessee Code Annotated regarding this Board.

Please call Sheila Lemons in my office at 376-5578 or 376-5553 to confirm your attendance.

Also enclosed for your information is a roster of the membership of the Solid Waste Region Board.

If you have any questions please feel free to call on me.

Yours truly,


Ken Yager
County Executive

KY:sl



Office of the County Executive
Roane County Courthouse
Kingston, Tennessee 37763

March 23, 1993

MRS. NANCY LEE
P O Box 557
Rockwood, TN 37854

Dear Mrs. Lee:

I am pleased to tell you that the County Commission has confirmed your appointment to the Solid Waste Region Board.

Enclosed please find a copy of the pertinent portion of Tennessee Code Annotated regarding this Board.

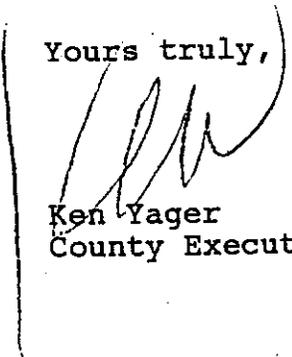
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Please call Sheila Lemons in my office at 376-5578 or 376-5553 to confirm your attendance.

Also enclosed for your information is a roster of the membership of the Solid Waste Region Board.

If you have any questions please feel free to call on me.

Yours truly,


Ken Yager
County Executive

KY:sl



**Roane County Solid Waste Planning Region
Board of Directors – 1994**

Member	Jurisdiction	Term of Office
Nancy Lee, Chair	Roane County	6 years
Arthur Rivers, Vice-Chair	Wagston	2 years
Ann Cook, Secretary	Roane County	6 years
R. C. Ladd	Rockwood	6 years
Ronnie Boring	Roane County	2 years
Lorraine Choate	Roane County	2 years
Mike Easter	Roane County	6 years

R E S O L U T I O N

WHEREAS, the State Legislature has enacted the Solid Waste Management Act of 1991, *Tennessee Code Annotated*, Section 68-211-801 et seq.; and

WHEREAS, *Tennessee Code Annotated*, Section 68-211-813, requires that counties in the State of Tennessee form municipal solid waste regions no later than December 12, 1992; and

WHEREAS, the City of Oak Ridge, Tennessee, provides solid waste collection services or solid waste disposal services; and

WHEREAS, the City of Oak Ridge lies within the County of Anderson and the County of Roane, and under *Tennessee Code Annotated*, Section 68-211-813(d), must designate the region/county it agrees to participate with for the purpose of regional solid waste planning.

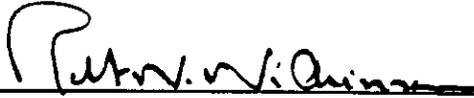
NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCILMEN OF THE CITY OF OAK RIDGE, TENNESSEE:

That the City of Oak Ridge, Tennessee desires to participate with the County of Anderson, Tennessee for the purpose of regional solid waste planning and to designate a representative to the regional board that will be established to administer the activities of the solid waste planning region.

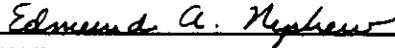
BE IT FURTHER RESOLVED that the Mayor so notify the County Executive of Anderson and Roane Counties of this action.

This the 16th day of November 1992.

APPROVED AS TO FORM
AND LEGALITY:



City Attorney



Mayor



City Clerk

MINUTES OF THE ROANE COUNTY COMMISSION
SPECIAL CALLED MEETING
MARCH 22, 1993

STATE OF TENNESSEE
COUNTY OF ROANE

BE IT REMEMBERED that the County Commission of Roane County, Tennessee convened in a special called session in Kingston, Tennessee on the 22nd. day of March 1993 at 7:30 P.M.

The Commission was called to order by David Haggard from the Sheriff's Office.

Invocation was given by Commissioner Harmon.

The Pledge of Allegiance to the Flag of the United States of America was led by Dorothy Marshall, County Clerk.

Present and presiding was the Honorable Terry Hacker and the following Commissioners: Burnum, Calfee, Coffman, Easter, Farmer, Ferguson, Gullett, Harmon, Johnson, Lassiter, Neal, Wicks (13)

Absent: Collins, Peelle (2)

Thereupon Chairman Hacker announced the presence of a quorum. Also present was Honorable Ken Yager, County Executive and Attorney J. Scott McCluen.

CONFIRMATION OF APPOINTMENTS TO ROANE COUNTY SOLID WASTE REGION BOARD

Motion to accept the County Executive's recommendation of the following persons to serve on the Solid Waste Region Board was made by Harmon with second by Wicks.

Ronnie Borum, Lorraine Choate, Ann Cook, Mike Easter, Terry Eastwood, Nancy Lee, Mitchell Ollis and Bill Mee.

Upon roll call vote the following Commissioners voted Yea: Burnum, Calfee, Coffman, Easter, Farmer, Ferguson, Gullett, Hacker, Harmon, Johnson, Lassiter, Neal, Wicks (13)

The following Commissioners Passed: -0-

The following Commissioners voted Nay: -0-

Thereupon Chairman Hacker announced that the motion Passed.

CONFIRMATION OF APPOINTMENTS TO ROANE COUNTY SOLID WASTE AUTHORITY

Motion to accept the County Executive's recommendation of the following persons was made by Easter with second by Coffman.

Harold Harder, Jack Henry, Pete Malmquist, Eddie Owings, David Smith, Johnny Thompson and Ed Isham.

Upon roll call vote the following Commissioners voted Aye: Burnum, Calfee, Coffman, Easter, Farmer, Ferguson, Gullett, Hacker, Harmon, Johnson, Lassiter, Neal, Wicks (13)

The following Commissioners Passed: -0-

The following Commissioners voted Nay: -0-

Thereupon Chairman Hacker announced that the motion Passed.

The County Executive was instructed to send notification of their appointment to the members of the Roane County Solid Waste Region and Roane County Solid Waste Authority.

Motion being duly made by Easter with second by Farmer the meeting stood adjourned at 8:00 P.M.

Motion to assign terms of the Solid Waste Region Board was made by Neal with second by Ferguson. Motion Passed upon voice vote.
Terms would be as follows:

ROANE COUNTY SOLID WASTE REGION BOARD OF DIRECTORS

MR. ARTHUR RIVERS
1148 Brentwood Point
Kingston, TN 37763
484-8435 (w) 376-5437 (h)
CITY OF KINGSTON
REPRESENTATIVE
Term Expires: 3/22/95

MR. TOM HAMBY
P O Box 12
Harriman, TN 37748
882-6734 (h)
CITY OF HARRIMAN
REPRESENTATIVE
Term Expires: 3/22/97

MR. R.C. LADD
400 Molyneux
Rockwood, TN 37854
CITY OF ROCKWOOD
REPRESENTATIVE
Term Expires: 3/22/99

MR. RONNIE BORING
Route 1 Box 476
Harriman, TN 37748
521-1433 (w) 882-0557 (h)
Term expires: 3/22/95

MS. LORRAINE CHOATE
137 Waterford Road
Ten Mile, TN 37880
594-6533 (w) 376-9690 (h)
Term expires: 3/22/95

MRS. ANN COOK
P O Box 1015
Kingston, TN 37763
354-4215 (w) 376-5470 (h)
Term expires: 3/22/97

MR. MIKE EASTER
Route 3 Box 1056
Loudon, TN 37774
457-5960 (w) 376-1266 (h)
Term expires: 3/22/97

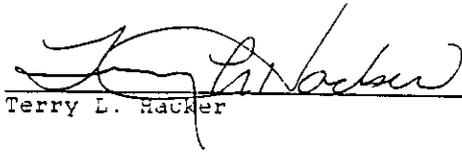
MR. TERRY EASTWOOD
Route 2 Box 163 H
Kingston, TN 37763
354-9821 (w) 376-2686 (h)
Term expires: 3/22/97

MRS. NANCY LEE
P O Box 557
Rockwood, TN 37854
376-5932 (w) 354-3657 (h)
Term expires: 3/22/99

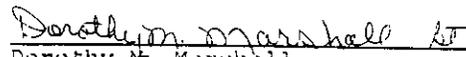
MR. WILLIAM MEE
Route 5 Box 684
Rockwood, TN 37854
354-9124
Term expires: 3/22/99

MR. MITCHELL OLLIS
Route 2 Box 20
Oliver Springs, TN 37840
435-6355 (h)
Term expires: 3/22/99

Approved:


Terry L. Hacker

ATTEST:


Dorothy M. Marshall

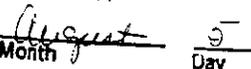
STATE OF TENNESSEE
COUNTY OF ROANE

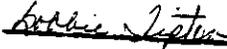
Attest:

Dorothy M. Marshall

Clerk

Certified a true and
correct copy


Month August Day 5 Year 1993

By:  R. S.

ROANE COUNTY COMMISSION
REGULAR MEETING

JULY 12, 1993

STATE OF TENNESSEE
COUNTY OF ROANE

BE IT REMEMBERED, that the County Commission of Roane County, Tennessee convened in regular session in Kingston, Tennessee on the 12th day of July, 1993 at 7:30 P.M.

The Commission was called to order by David Haggard from the Sheriff's Office.

Invocation was given by Commissioner Harmon.

The Pledge Allegiance to the Flag of the United States of America was led by Dorothy Marshall, County Clerk.

Present and presiding was the Honorable Terry Hacker and the following Commissioners: Burnum, Calfee, Coffman, Collins, Easter, Farmer, Ferguson, Gullett, Harmon, Johnson, Lassiter, Peelle, Wicks (14)

Absent: Neal (1)

Thereupon Chairman Hacker announced the presence of a quorum. Also present was the Honorable Ken Yager, County Executive, Ron Woody, Budget Director and Attorney J. Scott McCluen.

5. APPROVE MINUTES OF THE JUNE 14, 1993 AND JUNE 29, 1993 MEETINGS.

Motion was made by Wicks with second by Johnson to approve the minutes of the June 14, 1993 and June 29, 1993 meeting.

Motion Passed upon voice vote.

6. COMMITTEE REPORTS AND CORRESPONDENCE:

1. MINUTES OF JOINT MEETING BETWEEN COUNTY COMMISSION & SOLID WASTE AUTHORITY FOR 6-1-93.
2. MINUTES OF FIRE BOARD FOR 8-25-92.
3. MINUTES OF FIRE BOARD FOR 11-92.
4. MINUTES OF FIRE BOARD FOR 2-23-93.
5. MINUTES OF FIRE BOARD FOR 4-27-93.
6. MINUTES OF REGIONAL PLANNING COMMISSION FOR 5-19-93.
7. MINUTES OF REGIONAL PLANNING COMMISSION FOR 4-21-93.
8. MINUTES OF SOLID WASTE AUTHORITY FOR 4-26-93.
9. MINUTES OF SOLID WASTE AUTHORITY FOR 4-16-93.
10. MINUTES OF SOLID WASTE AUTHORITY FOR 5-3-93.
11. MINUTES OF SOLID WASTE AUTHORITY FOR 5-11-93.
12. MINUTES OF SOLID WASTE AUTHORITY FOR 5-26-93.
13. MINUTES OF JOINT WORK SESSION BETWEEN SOLID WASTE AUTHORITY AND ROANE COUNTY COMMISSION FOR 6-1-93.
14. MINUTES OF SOLID WASTE AUTHORITY FOR 6-7-93.
15. MINUTES OF BUDGET COMMITTEE FOR 6-16-93.
16. MINUTES OF BUDGET COMMITTEE FOR 6-17-93.
17. MINUTES OF SOLID WASTE COMMITTEE FOR 6-7-93.
18. MINUTES OF FIRE BOARD FOR 6-22-93.
19. STATEMENT OF INCOME AND EXPENDITURES FOR FIRST DISTRICT FIRE DEPARTMENT FOR THE 4-1-93 TO 6-30-93.
20. STATEMENT OF EXPENDITURES AND INCOME FOR BLAIR FIRE DEPARTMENT FOR 4-1-93 TO 6-30-93.
21. STATEMENT OF EXPENDITURES AND INCOME FOR EAST ROANE COUNTY, 3RD DISTRICT FIRE DEPARTMENT FOR 3-23-93 TO 5-31-93.
22. STATEMENT OF EXPENDITURES AND INCOME FOR FOURTH DISTRICT FIRE DEPARTMENT FOR 4-1-93 TO 6-30-93.
23. ANNUAL FINANCIAL REPORT FOR LIBRARY BOARD FOR FISCAL YEAR ENDING 6-30-92.
24. MINUTES OF ROAD COMMITTEE FOR 6-19-93.

COUNTY EXECUTIVE'S REPORT:

County Executive Yager discussed the budget hearings and distributed a schedule of dates for special budget meetings and also a public hearing for July 22, 1993.

11. SPECIAL ORDERS:

Commissioner Wicks discussed an article that appeared in the local papers re: Volunteer Recyclers fund.

Ken Yager agreed to provide the Solid Waste Authority with a copy of the lease giving Volunteer Recyclers use of a section of property at the landfill.

Commissioner Easter reported that the Mayor of Harriman had called a special meeting between Harriman, Rockwood and Kingston to discuss the rising cost of solid waste and invited Roane County Commission to attend this meeting.

Motion was made by Farmer with second by Coffman for Chairman Hacker to appoint a Committee to study the allocation of space in the Courthouse. Motion Passed upon voice vote.

Commissioner Calfee acknowledged the accomplishment of Commissioner Coffman's daughter in receiving a grant to pursue her studies.

Motion was made by Calfee with second by Peelle for the Purchasing Commission to take under consideration economic impact on Roane County when taking bids with special consideration to in county bidders. Motion Passed upon voice vote.

CONFIRMATION OF G.L. LONG TO THE SOLID WASTE REGION AS THE REPLACEMENT FOR TOM HAMBY WHO MOVED FROM THE REGION BOARD TO THE SOLID WASTE AUTHORITY.

Motion to confirm was made by Collins with second by Wicks. Motion Passed upon voice vote.

OLD BUSINESS:

RESOLUTION # 2536

A RESOLUTION ESTABLISHING A DEFERRED COMPENSATION PLAN FOR ROANE COUNTY.

Motion was made by Easter with second by Wicks to defer resolution # 2536. Motion Passed upon voice vote.

RESOLUTION # 2543

A RESOLUTION MAKING APPROPRIATIONS FOR VARIOUS FUNDS, DEPARTMENTS, INSTITUTIONS, OFFICES AND AGENCIES OF ROANE COUNTY, TENNESSEE FOR THE FISCAL YEAR BEGINNING JULY 1, 1993 AND ENDING JUNE 30, 1994.

RESOLUTION # 2544

A RESOLUTION FIXING THE TAX LEVY IN ROANE COUNTY, TENNESSEE FOR THE FISCAL YEAR BEGINNING JULY 1, 1993.

Motion was made by Collins with second by Farmer to defer Resolutions # 2543 and 2544. Motion Passed upon voice vote.

Harold Wester
MAYOR

ATTEST:

J. M. Palko
CITY CLERK

* * * * *

JUNE 8, 1993

The Harriman City Council met in Regular session on June 8, 1993 at 7:30 PM in the Council Chambers. The Honorable Harold Wester, Mayor, was present and presiding. The following named Aldermen answered roll call:

Present: Ronald Coleman
Mary Harback
Don McKinney
Garvin Morris
Johnny Plemons
William Powers

Absent: None

The minutes of the last meeting were read and approved as read.

Alderman Morris made a motion, seconded by Alderman Powers to pay the bills for the previous month. On roll call the vote was unanimous.

Patricia Murphy, City Attorney, read an Ordinance to Amend the School Budget for the fiscal year 1992/93. Alderman Morris made a motion, seconded by Alderman Powers to pass the Ordinance on First reading. On roll call the vote was unanimous.

The City Attorney, read a Resolution that the Harriman City Hospital Board of Trustees be responsible for the maintenance, repair, general upkeep of the building, payment of any appropriately assessed taxes, collection of any rents, and the payment of the bonded indebtedness heretofore incurred by the City of Harriman for the construction of of the building. Alderman McKinney made a motion, seconded by Alderman Coleman to pass the Resolution. On roll call the vote was unanimous.

RESOLUTION

WHEREAS, it appears that there may be a void in the understanding as to the rights and responsibilities of the City of Harriman and the Board of Trustees of the Harriman City Hospital in regard to the Medical Building located at 415 Devonia Street.

NOW, THEREFORE, BE IT RESOLVED AND UNDERSTOOD by the City Council of the City of Harriman that the Board of Trustees of the Harriman City Hospital shall be responsible for the maintenance, repair, general upkeep of the building, payment of any appropriately assessed taxes, collection of any rents, and the payment of the bonded indebtedness heretofore incurred by the City of Harriman for the construction cost.

Approved 8th day of June, 1993.

/s/ Harold Wester
Mayor

ATTEST:

/s/ Jane M. Palko
City Clerk

Council discussed naming the Emory River Bridge. Alderman Coleman made a motion, seconded by Alderman Harback to name the bridge the Lon Mee Memorial Bridge. On roll call the vote was unanimous.

Mayor Wester asked Council approval of Daniel Cooley to replace David Nelson on the Harriman Utility Board. Alderman Powers made a motion, seconded by Alderman Harback to approve the appointment.

Mayor Wester asked Council approval of G. L. Long to the Regional Solid Waste Authority. Alderman Coleman made a motion, seconded by Alderman Plemons to approve the appointment. On roll call the vote was unanimous.

Mayor Wester asked Council approval of the appointment of Dr. Miriam B. Tedder and Paula Margrave to the Harriman Hospital Board. Alderman Morris made a motion, seconded by Alderman Coleman to approve the appointments. On roll call the vote was unanimous.

Alderman Coleman reported that he'd had complaints concerning Triangle Park noise late at night. Alderman Coleman made a motion, seconded by Alderman McKinney giving the Police Department the authority to close all City Parks at 10:00 PM. On roll call the vote was unanimous.

There being no further business, the meeting adjourned.

Harold Wester
Mayor

ATTEST:

Jane M. Palko
CITY CLERK

* * * * *

SPECIAL CALL LETTER

TO: Ronald Coleman Garvin Morris
 Mary Harback Johnny Plemons
 Don McKinney William Powers

Gentlemen:

You are hereby called and instructed to attend a Special Call Meeting on June 15, 1993 at 7:30 PM in the Council Chambers for the following purpose:

To consider and possibly take action on two Applications for Certificate of Compliance as follows:

1. Thomas Gregory Goldston- to be located at Hwy 27/61 at Exit 347.
2. Laura Kiriluk Overstreet-to be located at Hwy 27, Old Montgomery Ward building.

/s/ Harold Wester
Harold Wester, Mayor

/s/ Mary Harback

/s/ Garvin Morris

/s/ Ron Coleman

/s/ Bill Powers

/s/ Don McKinney

*

I hereby certify that the above named Aldermen were served with the above notice on the 11th day of June, 1993.

/s/ Ptl. Chuck Moore 31/ 108
POLICE DEPARTMENT

* Note: Johnny Plemons is on Vacation and not be found within Jurisdiction.

C. Moore

I, Jane M. Palko, City Clerk of the City of Harriman, do hereby certify that this and the foregoing page is a true and correct copy of the minutes of June 8, 1993 at which time G.L. Long was appointed to the Regional Solid Waste Authority.

Jane M. Palko
Jane M. Palko
City Clerk

The regular meeting of the Kingston City Council was called to order by Mayor Humphreys on Tuesday, December 8, 1992 at 7:00 p.m. City Manager Pete Lamon gave the invocation with Mayor Humphreys leading the pledge. Upon roll call the following members were present: Councilman Pogue, Councilman Rivers, Councilwoman Taylor, Councilman White, Councilman Woody and Mayor Humphreys. Councilwoman Fitzgerald arrived at 7:10 p.m. Staff members present were: City Manager Pete Lamon, City Attorney Jack McPherson, City Clerk Eleanor Neal and Fiscal Officer Carolyn Brewer.

PREVIOUS MINUTES

Motion by Councilman White second by Councilman Pogue to waive the reading and approve as written the minutes of the regular meeting on November 10, 1992. The motion passed with a unanimous roll call vote.

APPROVAL OF BILLS

Motion by Councilman White second by Councilman Pogue to approve payment of the bills presented. (McPherson Law Office, \$1292.00; Valley Construction Co., \$6723.01; NAFECO, Inc., \$4340.89; Randy Denton, \$2600.00; Devaney Electric, \$2728.19; Patterson, Inc., \$1706.00). The motion passed with a unanimous roll call vote.

PUBLIC HEARING ON SPRING STREET REZONING

Mayor Humphreys call to order a public hearing on the rezoning from R-1 to R-2 of the property located at 812 Spring Street. After hearing several comment from the developers on the property and concerned citizens opposing the rezoning, Mayor Humphreys adjourned the hearing.

SPRING ST REZONING ORDINANCE - SECOND READING

Motion by Councilwoman Taylor second by Councilman Rivers to adopt on second reading ordinance #92-11-10-1, to rezone the property at 812 Spring Street from R-1 to R-2. The motion failed with a unanimous roll call vote taken.

ANNEXATION OF PROPERTY AT CENTER' FERRY BRIDGE - SECOND READING

Motion by Councilman Pogue second by Councilman White to adopt on second reading ordinance #92-11-10-2, to complete the intent of ordinance #91-10-8-1 to annex the entire right-of-way at the Center's Ferry Bridge. The motion passed with a unanimous roll call vote.

OLD BARRELS'S LEFT BY CARGO REMANUFACTURING CO.

Motion by Councilman Rivers second by Councilwoman Taylor to authorize the City Manager to take bids on the removal of the barrels's left at the Kingston Industrial Building by Cargo Remanufacturing Co. The motion passed with unanimous roll call vote.

TRAFFIC CONTROL SIGNALS

Motion by Councilman White second by Rivers to authorize the City Manager to take bids on a new traffic control system in accordance with proposal #4 as recommended by Maintenance Master Co. The motion passed with a unanimous roll call vote.

APPROVAL OF STREET NAMES FOR E-911

Motion by Councilwoman Taylor second by Councilman Rivers to accept the street names change for the new E-911 system. The motion passed with a unanimous roll call vote.

APPOINTS TO LIBRARY BOARD

Motion by Councilwoman Taylor second by Councilman Woody to approve Mary Ann Wesoloski and Linda Mowrer to 4 year terms on the Library Board. The motion passed with a unanimous roll call vote.

RENT PROPERTY ON JAMES FERRY ROAD

Motion by Councilman Rivers second by Councilwoman Taylor to rent the vacant building on James Ferry Road which belongs to Leo Scalf for 1 month at \$500.00. The motion passed with the following roll call vote taken: Councilwoman Fitzgerald, Nay; Councilman Pogue, Aye; Councilman Rivers, Aye; Councilwoman Taylor, Aye; Councilman White, Aye; Councilman Woody, Aye; Mayor Humphreys, Aye.

STATE SURPLUS RESOLUTION

Motion by Councilwoman Taylor second by Councilman Rivers to adopt resolution #92-12-8-1, authorizing the City Manager and various department heads to purchase surplus property from the State of Tennessee. The motion passed with a unanimous roll call vote.

SURPLUS SHELVEING FROM OLD LIBRARY

Motion by Councilman Pogue second by Councilwoman Taylor to donate equal shares of the surplus shelving at the library to Roane County High School and Midway Elementary School. The motion passed with a unanimous roll call vote.

LEGAL SERVICES

Motion by Councilman Rivers second by Councilman White to adopt ordinance #92-12-8, an ordinance to amend ordinance #82-3 to redefine the City Attorney's responsibilities therein. The motion failed with the following roll call vote taken: Councilwoman Fitzgerald, Nay; Councilman Pogue, Pass; Councilman Rivers, Aye; Councilwoman Taylor, Nay; Councilman White, Aye; Councilman Woody, Nay; Mayor Humphreys, Aye.

HIGHLAND STREET RESOLUTION

Motion by Councilman Pogue second by Councilman Rivers to adopt resolution #92-12-8-2, prohibiting large trucks on Highland Street and authorizing the placement of appropriate signage. The motion passed with a unanimous roll call vote.

SOLID WASTE COMMITTEE APPOINTMENT

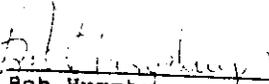
Motion by Councilman Woody second by Councilman White to appoint Councilman Rivers as the City's representative to the Solid Waste Committee. The motion passed with a unanimous roll call vote.

RIP RAP ON JAMES FERRY ROAD AND ALMA LANE

Motion by Councilman Rivers second by Councilman Pogue to fill the ditch on James Ferry Road at Alma Lane with rip rap. The motion passed with a unanimous roll call vote.

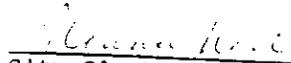
There being no further business to bring before the council, Mayor Humphreys duly adjourned the meeting.

APPROVED _____ January 12, 1993



Bob Humphreys, Mayor

ATTEST:



City Clerk

I certify that the foregoing is a true and correct copy of the minutes of the regular City Council meeting held on Tuesday, December 8, 1992,; approved on January 12, 1993; and recorded in minute book number 18 and that no other action to rescind or amend has been taken by the City Council.

This the 22nd day of March, 1994

Eleanor Neal, City Clerk

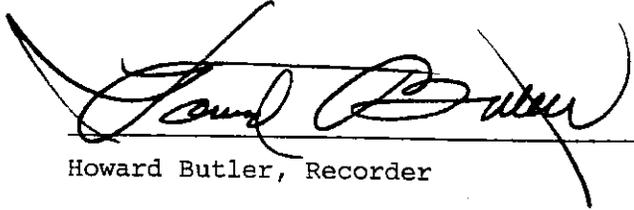
March 14, 1994

ROCKWOOD)
ROANE COUNTY)
TENNESSEE)

This is to Certify that I am the duly appointed, qualified and acting Recorder of the City of Rockwood, Tennessee.

This is to further Certify that attached hereto is a complete, exact and correct copy of the Minutes of a Called Meeting of the City Council of Rockwood, Tennessee, held on March 22, 1993, in which R. C. Ladd was named to the Roane County Solid Waste Board, as the same is of record in my office in the City Hall in Rockwood, Tennessee in Minute Book No. 74, Pages 51, 52, and 53.

This 14th day of March, 1994.



Howard Butler, Recorder

(SEAL)



The City Council of the City of Rockwood, Roane County, Tennessee, met in Called Session at the City Hall in Rockwood on Monday, March 22, 1993 at 7:00 PM.

The meeting was called to order by Mayor Sanny L. Bowman and the Recorder called the roll with five (5) members being present and one (1) absent. Councilman Edwards was absent.

Councilman Miller moved that Bert Pemberton be taken off the Roane County Regional Solid Waste Board, and that he be replaced by R. C. Ladd. This was seconded by Councilman Russell and upon roll call the motion carried by a vote of five (5) ayes.

Councilman Russell moved that Bert Pemberton be named to the Roane County Solid Waste Authority Board. This was seconded by Councilman Miller and upon roll call, the motion carried by a vote of five (5) ayes.

City Attorney Elmer Rich recommended that the City quit claim property the city may have interest in adjoining the Roane Theater Property, as requested by realtor Glen McCuiston. After discussion, Councilman Miller moved that we follow Mr. Rich's recommendations and that the property be quit claimed to the owner of the Roane Theater, and that Mr. McCuiston pay the costs and attorney fees. This was seconded by Councilman Long, and upon roll call, the following voted:

Aye - Long, Miller and Russell
Nay - East and Wiseman

The motion failed.

Councilman East moved that a Resolution supporting Oak Ridge Installations be adopted. This was seconded by Councilman Russell and upon roll call, the motion carried by a vote of five (5) ayes.

The matter of a course of action regarding the Golf Course was brought up.

Councilman Miller moved that Ordinance No. 946, creating a Golf Course Board, be adopted on 2nd reading. This was seconded by Councilman Long, and after discussion, the following voted:

Aye: East, Long and Miller
Nay: Russell and Wiseman

The motion failed.

Councilman Wiseman moved the Golf Course be put under the Parks and Recreation Department. This was seconded by Councilman East, and upon roll call, the following voted:

Aye: East, Russell and Wiseman
Nay: Miller
Passing: Long

The Motion failed.

(Continued on Page 53)

RESOLUTION

WHEREAS, The Oak Ridge Centers for Defense and Manufacturing Technologies at the Y-12 plant are the Nation's storehouse for uranium and lithium and the entire history of U. S. dismantlement, processing, storage; and processing and machining of these materials has occurred at the Y-12 Plant to meet the Nation's defense needs; and more than \$1 billion has been spent to upgrade the facilities, buildings, and equipment at the Y-12 Plant in recent years; and

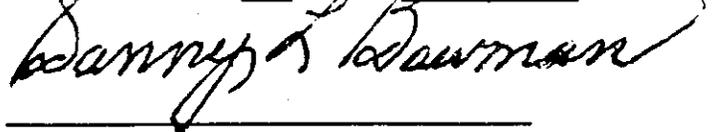
WHEREAS, The Oak Ridge National Laboratory, and Advanced Neutron Source, and other Federal programs and projects contribute greatly as the cornerstone of the economic well-being of East Tennessee and make significant contributions to the advancement of the quality of life of all Americans through scientific research in medical, industrial, and other technologies; and

WHEREAS, The resources available in the various Department of Energy facilities in the Oak Ridge area can make a significant contribution to the President's Economic Recovery Plan almost immediately through application of existing technologies and capabilities; and

WHEREAS, these government resources have stimulated the creation of more than 10,000 new technology-oriented private sector jobs in East Tennessee over the past decade, and provide a real economic stimulus for the entire region;

NOW, THEREFORE, BE IT RESOLVED BY THE City Council of the City of Rockwood that we urge our elected representatives to actively support a continued fair share of Federal funding to maintain current weapons programs at the Y-12 Plant in Oak Ridge; and to support the Advanced Neutron Source Project, the Oak Ridge National Laboratory and other Federal projects in the area which result in a significant payroll in the City of Rockwood.

Approved, This 22nd day of March 1993,



Sanny L. Bowman, Mayor

ATTEST:



Recorder

Councilman Wiseman moved the Golf Course be put under the operations of the City Council. This was seconded by Councilman Russell, and upon roll call the motion carried by a vote of five (5) ayes.

Mr. Charles E. Roberts of Knoxville presented a proposal to the City Council for Mr. Roberts to manage the Golf Course. A lengthy and detailed proposal was given and discussion by all interested parties.

After Mr. Roberts proposal was presented, Councilman Wiseman moved that Mr. Roberts' proposal be accepted. This was seconded by Councilman East.

Councilman Long felt the Council may be moving too quickly to vote on this at this time, and called for one more meeting with Mr. Roberts to work out details. The Mayor said he would like to have the City Attorney here at the meeting to work out the legal questions.

The Council agreed to have a meeting with Mr. Roberts on Tuesday, March 23 at 7:00 PM.

Donna Dickson asked the Council for a decision on the location of the Boosters Club Carnival in May. The Mayor said he would get with David Woods and try to come up with a suitable location, but that the Carnival should be located in an area besides the downtown area where it has been located in the past. Mr. Woods said a lot of work needed to be done on the B. J. Lamb Farm, but it has been so wet, we may not be able to get it suitable to locate the carnival there this year.

The Mayor acknowledged a request by Mr. Hershel Freels that the City remove the Christmas Lighting decorations from the Coca Cola Building within 2 months. The Mayor said we would find a place to put the Christmas Lights.

There being no further items of business for which the meeting was called, Councilman East moved the meeting be adjourned to Tuesday, March 23, 1993 at 7:00 PM. This was seconded by Councilman Miller, and the motion carried.

Danny L. Bauman

Mayor

Attest:

Samuel Baker

Recorder

Roane County Solid Waste Region Board

Mrs. Nancy Lee – Chair
Mr. Arthur Rivers – Vice-Chair
Mrs. Ann Cook – Secretary

JAN 20 1993

RESOLUTION

#2481

IN THE COUNTY COMMISSION FOR ROANE COUNTY, TENNESSEE

A RESOLUTION creating a Roane County Solid Waste Authority, establishing an administrative board to administer the activities of the Authority and providing for the terms of office, pursuant to T.C.A. 68-31-904.

WHEREAS, the Solid Waste Authority Act of 1991 provides that Roane County Commission may create a Solid Waste Authority.

WHEREAS, a public hearing was held on 1-7-93 and suggests that Roane County should create a Solid Waste Authority.

BE IT THEREFORE RESOLVED that the Roane County Commission hereby designates and creates the Roane County Solid Waste Authority.

BE IT FURTHER RESOLVED that a board of eleven (11) members is hereby created to administer the activities of the authority.

BE IT FURTHER RESOLVED that the board shall be composed of the following members:

Seven (7) members appointed by the Roane County Executive and confirmed by the Roane County Commission, representing Roane County, Tennessee.

One (1) member appointed by the Mayor of the City of Kingston and confirmed by the City Council of the City of Kingston, representing Kingston, Tennessee.

One (1) member appointed by the Mayor of the City of Harriman and confirmed by the City Council of the City of Harriman, representing Harriman, Tennessee.

One (1) member appointed by the Mayor of the City of Rockwood and confirmed by the City Council of the City of Rockwood, representing Rockwood, Tennessee.

One (1) member appointed by the Mayor of the City of Oliver Springs and confirmed by the City Council of the City of Oliver Springs, representing Oliver Springs, Tennessee.

BE IT FURTHER RESOLVED that the members of the board shall serve for terms of six (6) years or until their successors are elected and are qualified by taking an oath of office, except that the initial board shall have approximately one-third (1/3) of the members with terms of two (2) years, those being two representatives from Roane County and one from the City of Kingston, and approximately one-third (1/3) of the members with terms of four (4) years, those being three representatives from Roane County and one from the City of Harriman, the remaining members to have six (6) year terms so as to stagger the terms of office.

BE IT FURTHER RESOLVED that the County Clerk shall provide a certified copy of this resolution to the Tennessee Secretary of State and the respective clerks of the Cities of Kingston, Harriman, Rockwood and Oliver Springs.

Upon motion of Commissioner CALFEE, seconded by Commissioner GULLETT, the following Commissioners voted Aye:

BURNUM, CALFEE, COFFMAN, COLLINS, EASTER, FERGUSON, GULLETT, HACKER, HARMON, LASSITER, (10)

The following Commissioners passed: -0-

The following Commissioners voted No: FARMER, JOHNSON, NEAL, WICK:

Thereupon the Chairman announced to the Commission that said resolution had received a constitutional majority and ordered same spread of record.

APPROVED: *Frank Jackson* COUNTY CHAIRMAN

The foregoing resolution was submitted to the County Executive for his consideration this the 9th day of February, 1992.

ATTESTED: *Dorothy M. Marshall* COUNTY CLERK

I hereby approve/veto the following resolution this the _____ day of _____, 1993.

_____ COUNTY EXECUTIVE

Submitted by County Commissioners:

Audie Ray Bullitt
Kent D. Calfee

STATE OF TENNESSEE
COUNTY OF ROANE

Attest

Dorothy M. Marshall

Clerk

Subscribed and sworn to before me this _____ day of _____, 1994.

Month March Day 9 19 94 Year

Bobbie Lipton

RESOLUTION # 2551 (AS AMENDED)

A RESOLUTION OUTLINING THE COUNTY'S CONTRIBUTIONS AND RESPONSIBILITIES TO THE SOLID WASTE AUTHORITY, AND THE AUTHORITY'S RESPONSIBILITIES TO THE COUNTY.

WHEREAS, the Roane County Commission established a Solid Waste Authority through adoption of Resolution #2481 in February of 1993, and

WHEREAS, said Resolution directs the Solid Waste Authority to operate the existing and future Roane County Landfill(s), and

WHEREAS, for the Solid Waste Authority to fully and functionally operate said Landfill, various responsibilities and functions of both the County and Solid Waste Authority shall be set out herein.

1. Transitional Period and Financial Assets in Fund 207

BE IT RESOLVED, that the County, as Fiscal Agent, shall assist the Solid Waste Authority in a transition period beginning July 1, 1993 and continuing until December 31, 1993, unless an extension of the initial transition shall be made.

BE IT FURTHER RESOLVED, that the County will remain as the Fiscal Agent during the transitional period by the handling of Revenues, and payment of Bills upon approval of the Solid Waste Authority and/or Designate. The method in which the Accounting Department and Trustee's Office will process Funds will be in the same manner in which presently exists under Generally Accepted Accounting Principles. The handling of these Funds will cease on December 31, 1993, unless an extension is granted. The Trustee will take the normal percentage Fee of Revenue as is customary and normal to help offset Administrative Costs in the Trustee's Office and Accounting Department.

BE IT FURTHER RESOLVED, that the Solid Waste Authority will take financial responsibility effective July 1, 1993, wherein the Solid Waste Authority shall approve all payments of invoices, and will take over daily operations of financial affairs.

BE IT FURTHER RESOLVED, that the County shall provide the Solid Waste Authority with the Financial Assets which are available in the County Solid Waste Management Fund (207), which shall be used for the Solid Waste Authority and their operations. The Solid Waste Authority shall allow a credit for future County Waste Disposal Charges in order to repay the initial financial assets, which are available in Fund 207. The determination of the Actual Financial Assets shall be the Undesignated and/or Designated Fund Balance as reflected in the Comprehensive Annual Financial Report as prepared by the Comptroller of the Treasury for the Year Ending June 30, 1993. The repayment by credit of said Financial Assets shall be in a systematic and rational method, not to exceed five (5) years.

2. Closure/Post-Closure Liabilities and Contract In Lieu of Performance Bond

BE IT RESOLVED, that the County shall maintain the existing Contract In Lieu of Performance Bond as same relates to Closure/Post-Closure Costs, the Agreement being approved by the Roane County Commission, and signed by the County Executive, dated August 13, 1992. (See Attached)

BE IT FURTHER RESOLVED, that the Solid Waste Authority shall assess and/or levy a per ton charge to recover in a systematic and rational method the Closure/Post-Closure Cost Liability as set out in said Agreement dated August 13, 1992, and subsequent Closure/Post-Closure Liabilities.

BE IT FURTHER RESOLVED, that it is the intent of this Resolution that by the County maintaining said Agreement with the State of Tennessee, that no Expenditures shall be made of the County or the Solid Waste Authority regarding the specific Agreement; However, the actual cost of Closure/Post-Closure shall be borne by the Solid Waste Authority, and that by the Solid Waste Authority assessing a fee per ton, Funds shall be set aside as required by EPA and Governmental Accounting Standards Boards to pay for the Closure/Post-Closure liabilities

once a Landfill has been permanently closed.

3. Landfill Equipment

BE IT RESOLVED, that the County may herein turn over title to all Landfill Equipment, as set out herein to the Solid Waste Authority, the value of which has been estimated to be the remaining debt owed on same, same being Principle and Interest of \$357,000.

Equipment:	Description	Year	Model	Serial Number
Caterpillar	Trash Compactor	1980	316	570790
	Tractor wheel Scrap			4600X5888
Caterpillar	Bulldozer	1989	D-7H	79201911
Chevrolet	Dump Truck	1975		0CE865V154289
Coage	911 Truck/Van	1985		1346W12T0FS675478
Caterpillar	Bulldozer	1980	D-8A	77714916
Caterpillar	Bulldozer	1980	D-8A	77715473
omag	Compactor	1990		50601R8
Rebo	Earth Moving Van		D-37	17502-CW173
Gov. Issue	Earth Moving Van			61899-64742

BE IT FURTHER RESOLVED, that the Solid Waste Authority shall provide a credit for the negotiated value of the equipment to Roane County for Roane County's Waste Disposal Fee in a systematic and rational manner over a period not to exceed three (3) years.

SECTION 1. This Resolution shall become an agreement between both the County and the Solid Waste Authority only by approval and execution by both parties.

SECTION 2. All resolutions in conflict herewith be and the same are repealed insofar as such conflict exists.

SECTION 3. This resolution shall become effective upon passage, the public welfare requiring it.

Upon motion by Commissioner Harmon, seconded by Commissioner Coffman, the following Commissioners voted Aye: Burnum, Coffman, Farmer, Hacker, Harmon, Johnson, Lassiter, Neal, Peelle, Wicks (10)

The following Commissioners passed: -0-
The following Commissioners voted No: Calfee, Gullett (2)

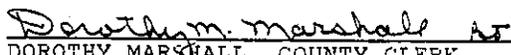
Thereupon, the County chairman announced to the Commission that said Resolution had received a constitutional majority and ordered same spread of record.

APPROVED:

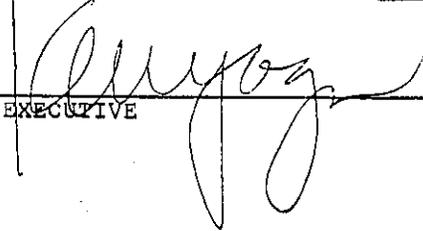

Chairman Terry Hacker

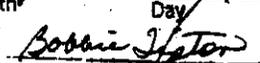
The foregoing Resolution was submitted to the County Executive for his consideration this the 21st day of June 1993.

ATTEST:


DOROTHY MARSHALL, COUNTY CLERK

I hereby approve/veto the foregoing Resolution this the 22 day of June 1993.


COUNTY EXECUTIVE

Certified a true and correct copy
March 1994
Month Day Year

Bobbie Hester

RESOLUTION # 2575 (AS AMENDED)

A RESOLUTION CHANGING the Administration, Operations, and Supervision of Activities Funded in Roane County Special Revenue Fund 116 - Solid Waste/Sanitation.

WHEREAS, the activities funded in Fund 116 consist of the collection of waste (Convenience Centers), transporting, disposal, and administration of waste collected through Convenience Centers and Green Box sights.

WHEREAS, the County Commission desires to change the Supervision and Administration from the Highway Superintendent's Office to the County Executive's Office.

BE IF FURTHER RESOLVED, that all fourteen (14) convenience centers that are in operation will continue to be in operation and during the next two or three months the commission will expect a report on how to save \$30,000.00

NOW, THEREFORE, BE IT RESOLVED, that upon adoption of this Resolution, that the Administration and Supervision of Fund 116 and all components supported within said Fund shall be placed under the direction and supervision of the County Executive, effective September 14, 1993 at 8 o'clock a.m.

SECTION 1. All resolutions in conflict herewith be and the same are repealed insofar as such conflict exists.

SECTION 2. This resolution shall become effective upon passage, the public welfare requiring it.

UPON MOTION of Commissioner Neal, seconded by Commissioner Johnson the following Commissioners voted Aye: Coffman, Collins, Farmer, Hacker, Harmon, Johnson, Neal, Peelle, Wicks (9)

The following Commissioners passed: -0-

The following Commissioners voted No: Burnum, Calfee, Easter, Ferguson, Gullett, Lassiter (6)

THEREUPON, the County Chairman announced to the Commission that said resolution had received a constitutional majority and ordered same spread of record.

APPROVED:

[Signature]
County Chairman

The foregoing resolution was submitted to the County Executive for his consideration this 17 day of September, 1993.

ATTESTED:

[Signature]
County Clerk

I approve veto the foregoing resolution this the 17 day of Sept 1993

[Signature]
County Executive

SUBMITTED BY THE JAMES NEALY OF ROANE

Commissioner Charles Johnson

Month March Day 9 Year 1994

Bonnie Jipton

FILED
JAN 03 1994

#2620

I N THE COUNTY COMMISSION FOR ROANE COUNTY, TENNESSEE

A RESOLUTION EXTENDING Resolution #2551 as same relates to the County acting as Fiscal Agent for the Solid Waste Authority.

WHEREAS, Resolution #2481 in February of 1993 established a Solid Waste Authority, and

WHEREAS, Resolution #2551 in June of 1993 set out certain County and Solid Waste Authority contributions and responsibilities, and

WHEREAS, Resolution #2551 established the County as Fiscal Agent until December 31, 1993, with provisions of extension of Fiscal Agent duties if granted.

NOW, THEREFORE, BE IT RESOLVED, that the County approves the extension of Fiscal Agent duties as set out in Resolution #2551, until June 30, 1994.

SECTION 1. All resolutions in conflict herewith be and the same are repealed insofar as such conflict exists.

SECTION 2. This resolution shall become effective upon passage, the public welfare requiring it.

UPON MOTION of Commissioner PEELLE, seconded by Commissioner COFFMAN the following Commissioners voted Aye: BURNUM, COFFMAN, EASTER, FARMER, FERGUSON, GULLETT, HACKER, HARMON, JOHNSON, LASSITER, NEAL, PEELLE WICKS (13) The following Commissioners passed: -0-

The following Commissioners voted No: -0-

THEREUPON, the County Chairman announced to the Commission that said resolution had received a constitutional majority and ordered same spread of record.

APPROVED:

[Signature]
County Chairman

The foregoing resolution was submitted to the County Executive for his consideration this 25th day of Jan, 1994.

ATTESTED:

[Signature]
County Clerk

I approve/veto the foregoing resolution this the 26 day of Jan, 1994.

[Signature]
County Executive

SUBMITTED BY THE COUNTY EXECUTIVE: [Signature]

STATE OF TENNESSEE
COUNTY OF ROANE

Commissioner

County Clerk

Attest: _____
County Clerk

March 9 1994
Month Day Year

[Signature]

Motion to assign terms to the Solid Waste Authority Board alphabetically was made by Neal with second by Ferguson. Motion Passed upon voice vote.
Terms would be as follows:

**ROANE COUNTY SOLID WASTE AUTHORITY
BOARD OF DIRECTORS**

Harold Harder
Poplar Creek Road
Oliver Springs, TN 37840
435-0819 (h)
Term Expires: 3/22/95

Jack Henry
33 Red Bud Drive
Harriman, TN 37748
882-1301
Term Expires: 3/22/95

Ed Isham
Route 2
Oliver Springs, TN 37840
435-7313 (h)
Term Expires: 3/22/97

Pete Malmquist
P. O. Box 207
Kingston, TN 37763
882-6327 (w) 376-6022 (h)
Term Expires: 3/22/97

Eddie Owings
P O Box 583
Rockwood, TN 37854
354-9644 (w) 354-9577 (h)
Term Expires: 3/22/97

David Smith
2036 Cedar Lane
Kingston, TN 37763
435-1777 (w) home # unlisted
Term Expires: 3/22/99

Johnny Thompson
602 Clinton Street
Harriman, TN 37748
882-3210 (h)
Term Expires: 3/22/99

Harriman Representative
Term Expires: 3/22/97

Kingston Representative
Term Expires: 3/22/95

Sam Davis
909 Butler Street
Oliver Springs, TN 37840
435-7722 (w) 435-0831 (h)
Oliver Springs Representative
Term Expires: 3/22/99

Bert Pemberton
119 N. Kingston Avenue
Rockwood, TN 37854
354-1521
Rockwood Representative
Term Expires: 3/22/99

Appendix A
Roane County Solid Waste Advisory Committee Members

Member	Representing	Term of Office
John Robinson	Businessman	a
Bruce Cantrell	Program Director Environmental Health Tech.	a
Judith Delaney	High School Chemistry Teacher	a
Larry Ferguson	Environmental Work – Martin Marietta	a
Jerry Gallaher	Citizen	a

^aAs needed.

Appendix A
Roane County Municipal Advisory Committee

Mission Statement

The Regional Solid Waste Advisory Committee shall support and provide public guidance and input to the Roane County Solid Waste Planning Board such that the Board may provide the regional governments with the rationale and framework to produce an improved solid waste management system to; control costs, protect the environment, better use our natural resources, develop a long range solid waste plan, educate the citizens of the region in solid waste matters, reduce and minimize solid waste generation, and develop alternative methods of waste disposal. The Committee shall consider the needs of the region's citizens, general commercial establishments and industry when providing input and recommendations to the Board.

Summary of Activities During Plan Development

Advisory Committee members attended some of the Solid Waste Board meetings, participated in discussions, and provided input during plan development. Committee members also assisted Board members by providing advice and technical information.

Probable Role in Implementation

As opportunities are presented, the Advisory Committee shall support the implementation of the approved Solid Waste Plan by communicating with citizens, businesses, and industry about the goals and intent of the plan.

Office of the County Executive
Roane County Courthouse
Kingston, Tennessee 37763

March 11, 1994

Solid Waste Regional Planning Board
Chairperson Nancy Lee
223 Michael Drive
Rockwood, TN 37854

Dear Nancy,

In reference to Financial Accounting for Landfills-TCA 68-211-374(a) the code states that:

"Effective July 1, 1993 any County, Solid Waste Authority or Municipality that operates a landfill and/or incinerator shall account for financial activities related specifically to that landfill and/or incinerator in an enterprise fund. Each County, Solid Waste Authority and Municipality shall use a uniform Solid Waste Financial Accounting System and Chart of Accounts developed by the Comptroller of the Treasury."

Roane County Government has established a Solid Waste Authority who has both operational and management responsibility and as such the Solid Waste Authority has the related financial accounting responsibility.

The Solid Waste Authority has requested the County to perform the accounting functions; however, the County has agreed to account for the Landfill activities as same were accounted for in previous years being as a Special Revenue Fund.

The County does not presently have the resources to account for the Landfill activities in an enterprise; however, upon the Solid Waste Authority's hiring of an independent auditor to perform the Annual Audit or the State Comptroller Office's Audit, the records should be adjusted to comply with the statutes.

The County is using the recommended Comptroller of the Treasury Uniform Chart of Accounts to account for substantially all activities. The Governmental Accounting Standards Board has recently changed various accounting requirements related to the closure and post-closure cost that have not fully worked through the State Comptroller Office and thus to the local level for full implementation.

Therefore your question that appeared to have a simple answer becomes complex in that the accounting model has not fully been developed and a full range of data regarding estimates are not presently known. These exceptions mean that presently the Accounting partially complies but could fully comply within the accounting period of July 1, 1993 thru June 30, 1994 if all unanswered factors are resolved prior to June 30.



Executive Offices
376-5578
FAX (615) 376-4318

Accounting Department
376-5553

**Office of the County Executive
Roane County Courthouse
Kingston, Tennessee 37763**

I would be glad to discuss the specific details at a later date if so desired.

Sincerely,



Ronald B. Woody
Budget Director

c: Solid Waste Authority-Chairman Pete Malmquist
County Executive Ken Yager
Budget Committee File

RBW:ks





OFFICE OF THE CITY MANAGER

February 25, 1994

Roane County Solid Waste Regional Board
ATTN: Arthur Rivers

Dear Mr. Rivers: *Arthur*

The City of Kingston is in compliance with state law regarding full cost accounting for our Solid Waste and Sanitation Department.

We requested that Municipal Technical Advisory Service get a ruling from the State Comptroller office because we do not have one (1) separate account for Sanitation.

Currently our user fee charge for land fill operations is accounted for separately because our budget was already set for this year, other Sanitation expenses are in our regular general fund account. Should you or the Solid Waste Board have additional question, please let me know.

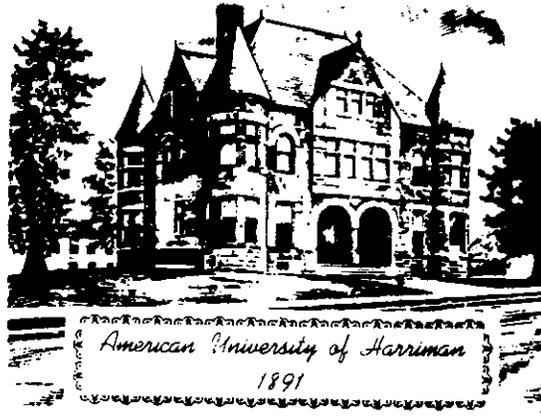
Thank you and the Board for all of the time and energy you have spent on a very emotional and serious problem.

Sincerely,

Ed Smith
City Manager

ES/en

Harold Wester - Mayor
P.O. Box 433
HARRIMAN, TENNESSEE
37748
(615) 882-2123



Council:
Ron Coleman
Mary Harback
Douglas Lombard
Don McKinney
Garvin Morris
Johnny Plemons

CITY OF HARRIMAN, 1993

Ms. Leslie Shannon
CH₂M HILL
599 Oak Ridge Turnpike
Oak Ridge, TN 37830-7817

Dear Ms. Shannon:

The City of Harriman is now participating in full cost accounting for our Sanitation and Solid Waste Department.

Please find enclosed a certified copy of the minutes in which Mr. G. L. Long was appointed to the Regional Solid Waste Board.

Sincerely,

Harold Wester

Harold Wester
Mayor

Enclosure
HW/me



City of Rockwood

110 N. CHAMBERLAIN AVENUE • ROCKWOOD, TENNESSEE 37854 • PHONE 354-0163

April 26, 1994

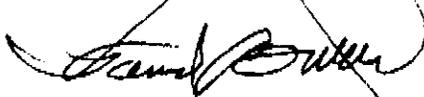
Ms. Leslie Shannon
CHAM HILL
599 Oak Ridge Turnpike
Oak Ridge, Tn 37830-3817

Dear Ms. Shannon:

Please be advised that we have not implemented full cost accounting for our Sanitation and Solid Waste Department.

We are in the process of setting this hope and hope to have it fully enacted soon.

Very truly yours,



Howard Butler
Recorder

APR 29 94

#266

IN THE COUNTY COMMISSION FOR ROANE COUNTY, TENNESSEE

A RESOLUTION approving the Solid Waste Regional Board's Ten-Year Plan for submission to the State Planning Office

WHEREAS, the Roane County Solid Waste Regional Board has developed a ten-year plan for handling the County's solid waste, and

WHEREAS, the deadline for submission of this plan to the State Planning Office is July 1, 1994, and

WHEREAS, the plan must be approved for submission by the legislative body of the County.

BE IT THEREFORE RESOLVED that the Roane County Commission hereby approves the Roane County Solid Waste Regional Board's ten-year plan for handling the County's solid waste for submission to the State Planning Office.

Upon motion of Commissioner E. HARMON, seconded by Commissioner EASTER, the following Commissioners voted Aye: BURNUM, CALFEE, COLLINS, EASTER, FERGUSON, GULLETT, HARMON, LASSITER (8)

The following Commissioners passed: -0-

The following Commissioners voted No: COFFMAN, FARMER, HACKER, PE WICKS (5)

Thereupon the Chairman announced to the Commission that said resolution had received a constitutional majority and ordered same spread of record.

APPROVED: [Signature] COUNTY CHAIRMAN

The foregoing resolution was submitted to the County Executive for his consideration this the 20th day of June, 1994.

ATTESTED: Dorothy M. Marshall (BT) COUNTY CLERK

21 I hereby approve/veto the foregoing resolution this the day of June, 1994.

[Signature] COUNTY EXECUTIVE
Submitted by Commissioner James Harmon

STATE OF TENNESSEE
COUNTY OF ROANE

Attest:
Dorothy M. Marshall
Clerk

Certified a true and correct copy

June 21, 1994
Month Day Year

[Signature]

Appendix B
Documentation for Adjustments to the Base Year Generation
and Prior Waste Reduction Credit

Appendix B
Documentation for Adjustments to the Base Year Generation
and Prior Waste Reduction Credit

Not Applicable to Roane County

Appendix C
Public Participation Activities

MEETING: Roane County Solid Waste Region
Minutes of Public Hearing on Draft Solid Waste Plan

MEETING DATE: April 4, 1994

MEETING PLACE: Circuit Courtroom, Roane County Courthouse,
Kingston, Tennessee

MEETING ATTENDEES: See Attached List

MINUTES PREPARED BY: Leslie B. Shannon/CH2M HILL

A public hearing to receive comments on the draft Municipal Solid Waste Regional Plan of the Roane County Solid Waste Region was held on April 4, 1994, in the Roane County Circuit Courtroom, County Courthouse. The meeting was called to order by Ms. Nancy Lee, Chair of the Roane County Regional Solid Waste Board. Ms. Lee provided introductions of the board members and elected officials in the audience.

Ms. Lee noted that the purpose of the meeting was to solicit comments from the general public on the draft plan. The ground rules for receiving the comments were that each speaker would have an initial 5 minutes to make a statement. After all residents had an opportunity to speak, anyone wishing to add further comments would be given the opportunity. Forms were provided for residents to submit written comments, either to the County Executive's office or to CH2M HILL. Comments will be received until 5 p.m. on April 11, 1994. The comments received by the deadline are provided as Attachment A to these minutes.

Ms. Lee provided a brief overview of the major elements of the plan. She discussed the regional needs, waste reduction strategies, and waste reduction goals. Major points of the recycling, collection and transportation, and disposal components of the plan were also summarized. Plans for management of household hazardous waste, including a Roane Clean Community System Paint Collection Day, were presented.

Ms. Lee then received comments from the audience on the draft plan. After comments were received, a 15-minute break was taken to provide some members of the audience an opportunity to review copies of the plan available at the hearing. The meeting then reconvened to receive additional comments.

Ms. Lee reminded the audience of the deadline and procedure for submitting written comments, and indicated that the newspapers would probably be willing to print the submitted questions and written responses. The hearing was adjourned at 8:15 p.m.

**Roane County Solid Waste Board
Public Hearing on Municipal Solid Waste
Regional Plan – April 4, 1994
Attendance List**

Page 1 of 2

Name	Address	Phone
Barbara Rosensteel	201 Caney Creek Road Rockwood, TN	354-3875
Chris Cawood	1209 North Kentucky Kingston, TN	376-3765
W. A. Kocher	1219 Riverbend Drive Kingston, TN	
John A. Will	105 Bendamere Kingston, TN	376-6318
Una Coffman	304 Windswept Lane Kingston, TN	376-5842
Clint and Geneva Stinnett	601 Clifty Street Harriman, TN	882-3160
Bob Peelle	130 Oklahoma Avenue Oak Ridge, TN	483-8974
Ann Kocher	1219 Riverbend Drive Kingston, TN	
Mabre and Deborah Holder	Route 1, Box 234 Harriman, TN	376-4071
Don Alford	6 Hilltop Harriman, TN	882-0977
Mike Morrissey	530 Old Johnston Valley Road Kingston, TN	376-0822
Greg Howard	Montcrest Midtown, TN	882-6423
Susan Howard	Montcrest Midtown, TN	882-6423
Ken Yager	Courthouse Kingston, TN	376-5578

**Roane County Solid Waste Board
Public Hearing on Municipal Solid Waste
Regional Plan – April 4, 1994
Attendance List**

Page 2 of 2

Name	Address	Phone
Ann Cook	29 Westshore Drive Harriman, TN	376-5470
Arthur Long	No address provided	
Michael Easter	153 Pine Grove Road Loudon, TN	376-1266
Ronnie Boring	Route 1, Box 476 Harriman, TN	882-0557
John D. Agee	P. O. Box 1176 Kingston, TN 37763	376-2641 376-9100
Betty Taylor	P. O. Box 837 Kingston, TN	376-1606
Joe Taylor	P. O. Box 837 Kingston, TN	376-1606
Libby Reel	Kingston, TN	376-0969
R. C. Ladd	400 Molyneux Street Rockwood, TN 37854	N/A
Nancy Lee	223 Michael Drive Rockwood, TN 37854	376-5932

Attachment A
Comments Submitted at Public Hearing
Roane County Solid Waste Planning Region
April 4, 1994

Section	Page	Summary of Comment or Question	Response
General		If this hearing is required, then it was not adequately announced. Another may be needed.	Only one hearing on the draft plan is required. Portions of the plan were presented to the County Commission in January, and the entire plan will be presented in May. The April 4 public hearing was advertised in local newspapers on March 24, 30, 31, and on April 4, and received television coverage. A legal notice of the hearing is not required.
General		The County Commission thinks it must approve the plan; it probably needs some kind of a summary. Maybe some parts are approvable.	Executive Summary mailed to commission on April 5. Commission is scheduled to vote on May 9.
General		There is concern that transport of waste will hurt the end of the county near an out-of-county landfill.	The fate of that landfill is unrelated to the development of this plan. Increased traffic will result around any landfill location.
General		What is the big "rift" between this board and the S.W.A.?	1. The two different boards were given different tasks.
General		Who will really make the final decision transfer station or landfill? Need to have hearing on 40% of report not included. A second, well-advertised hearing on complete draft would be very helpful.	2. A consensus between the Board and County Commission. The general principles of the plan are complete. Only minor editing and comment adjudication will occur for final. Only one hearing on the draft plan is required. The April 4 public hearing was advertised in local newspapers on March 24 and 30, and on April 4. A legal notice of the hearing is not required.
General		Will there be a deadline for written comments? I would be interested in offering written comments. Thursday may not be long enough.	The written comment deadline was extended until Monday, April 11, at 6 p.m.
General		Very good plan. Will move Roane County into the 1990's. Like recycling, reduction, and education components.	Comment noted.
General		Thanked board for efforts. Concerned about dying vegetation and stormwater runoff from landfill. Favors transfer station option.	Comment noted.
General		Appreciates hard work of Board and will review plan carefully.	Comment noted.

Attachment A
Comments Submitted During Public Comment Period
Roane County Solid Waste Planning Region
April 4, 1994

Section	Page	Comment	Response
General		Many responsibilities are given the SWA. Have they accepted these?	Some responsibilities are mandated by 1991 Solid Waste Act, others reassigned from draft plan.
General		"Roane County" sometimes means the county government, sometimes the waste region, and sometimes everybody in sight. These cases need to be distinguished.	All text was reviewed and changes were made to clarify.
General		Sources of information need to be always identified. Otherwise, if anybody wants to make serious use of the data, they must start over. That defeats the purpose.	In general, much of data were obtained from Needs Assessment (ETDD, 1992) and verified and updated where possible. Sources were added to the tables, and "Works Cited" section was added to the plan.
General		Since FY 1993 is often the base year, much of the material on budgets is useless. At least attach a note to such material.	The state guidelines require that FY 1993 budget be presented as base year. Footnotes added to tables and figures clarified.
General		The tables contain categories that are uncertain in many cases. These headings must be explained. Many impossible figures are included. For instance, often the region and the county are taken to yield equal values. They cannot be equal unless you define them to be, but that distinction is not handled.	Categories were dictated by state guidelines, but efforts were made to clarify. Text and figures were amended to describe distinction between region and county.
General		Isn't a major regional need to get all the boards working in one direction on solid waste? How can that be ignored?	Yes. Text added on page ES-1.
General		A dominant problem, how to fund convenience centers from rural taxpayers while not excluding city folk from those centers, is not mentioned. I had hoped the Board would solve the problem or recognize it.	Board feels this is an implementation issue that either the Solid Waste Committee of the County Commission or the proposed Solid Waste Coordinator should resolve.
3.2	ES-2	Second Bullet - Consider county curbside recycling in addition to curbside pickup.	Agreed. Text will be changed to consider feasibility of curbside recycling as well. Change also made in Chapter 5.

**Attachment A
Comments Submitted During Public Comment Period
Roane County Solid Waste Planning Region
April 4, 1994**

Section	Page	Comment	Response
Table ES-2 Chapter 5	ES-10 5-8	Under Operating Revenues, do the property taxes include city taxes?	A footnote will be added to clarify that property taxes include the cities. Property taxes also changed to "General Tax Revenue."
Table ES-2	ES-10	FY 2004 needs to be added to all budget tables to cover the entire planning period.	Done.
Table ES-2	ES-10	Source: Some of the table references are incorrect.	Corrected.
Chapter 4	4-5	Is your analysis on p. 4-5 true that the county will automatically reach its 25% reduction goal when IMCO builds its own landfill and diverts its waste there?	The state has indicated that diversion to a Class II Landfill counts towards the waste reduction goal. However, because the Board could not guarantee IMCO's future actions, it found other means to reach the goal.
Chapter 4	4-7	Statement is inaccurate: The SWA does not "own" the county's landfill. They manage the landfill and its operations for the county.	Corrected.
Table 4-2	4-8	If the Class IV Landfill receives tipping fees, an additional line under Operating Revenues is needed to reflect this revenue. Therefore, property taxes shown on this table will decrease.	Tip fee revenues added under Operating Revenues, with explanatory footnotes.
Chapter 5		Consider adding the option of the county supplying a box for private homeowners to use for C&D waste. Shingles and C&D waste are major problems with illegal dumping.	Text added in Sections 2.10.2, 5.3.1, and 3.2 of Executive Summary.
Chapter 5		Control out-of-county trash taken to convenience centers by making sure that car has a Roane County license tag or has a valid drivers license with an address located in Roane County.	Board supports this idea, but believes it is an implementation issue. Text added to identify it as a collection goal in Section 5.3.1 and Executive Summary Section 3.2.

Attachment A
Comments Submitted During Public Comment Period
Roane County Solid Waste Planning Region
April 4, 1994

Section	Page	Comment	Response
Chapter 6 Section 6.3.8.1	6-8	Have mandatory recycling ordinances been implemented in any southeastern states? If so, how has the public reacted to forced recycling with penalties for noncompliance?	Several counties in Florida, such as Dade and Indian River Counties, have mandatory recycling. Mandatory recycling is interpreted to mean that the haulers provide the service, but residents do not have to participate. Penalties for noncompliance are typically small fines (\$30 to \$50) that are not enforced because it is not worth the bad publicity and costs to collect the fines. Generally, education is the primary focus rather than enforcement. The public's reaction to mandatory recycling varies with severity of the penalty. Generally, the public does not favor trash police for enforcement.
Chapter 6 Section 6.3.12	6-19	Why would the Solid Waste Board determine what percentage in revenue under an incentive program should be returned to a convenience center operator. Is this not a function and duty of the County Commission who oversees this budget?	Sentence has been deleted.
Chapter 8.3.1	8-2	Please provide your definition of the term "an environmentally responsible manner."	Solutions that have the least adverse environmental impact on the environment and that meet the environmental regulations.
		Appreciate the professionalism and hard work encompassed in compiling this report!	Comment noted.

Attachment A
Comments Submitted During Public Comment Period
Roane County Solid Waste Planning Region
April 4, 1994

Section	Page	Comment	Response
		<p>Explain why a central transfer station would be needed if, for example, Roane County had a contract for disposal with Chambers in Oliver Springs and Harriman wanted to transfer directly to Oliver Springs to save transportation costs.</p> <p>How would use of a central transfer station be enforced? Is flow control constitutional?</p>	<p>The plan recommends a transfer system, which may consist of a central transfer station or satellite facilities. The nature of this comment is an implementation issue, which would be resolved during plan implementation. The best enforcement is an economic incentive (such as lowest price) to use the central transfer station. Once the plan is approved, the Solid Waste Authority has flow control powers provided by the 1991 Solid Waste Act. Flow control is currently being challenged in the Supreme Court.</p>
Chapter 8	8-5	What survey was used to determine that Roane County citizens were opposed to importing wastes from outside of the county? How was the question phrased and were citizens given information on various costs?	No survey was conducted. Opposition to imported waste was based on the 400-signature petition coordinated by Howard Jones, phone calls received by Board members, and audience comments at Commission meetings.
Chapter 8	8-6	"Securing imported waste will be particularly difficult because of the current surplus of landfill disposal capacity in adjacent counties." Did the Board contact Rhea and Morgan Counties to determine if they were interested in shipping a certain amount of tonnage to Roane County rather than to Chestnut Ridge, etc., if the price per ton was competitive?	No, because the Board was not entertaining the idea of imported waste in its plan. The current surplus had been documented by the State Division of Solid Waste Assistance.
Table 8-1	8-9	Should the high cost tip fee be \$28 instead of \$18?	Yes, a typo. Change made.
Table 8-1	8-9	Is this \$18 tipping fee number correct in the High Cost Scenario? From which counties accepting out-of-county waste did the \$24 to \$20 tipping fee estimates come from?	No, the typo has been corrected. See Table 8-2 for tip fee cost ranges without naming particular disposal sites.
Table 8-1	8-9	Are the tipping fees a realistic number? Could you please identify the counties or private landfill companies that are currently offering these prices per ton and how far away?	Yes. See Table 8-2.

Attachment A
Comments Submitted During Public Comment Period
Roane County Solid Waste Planning Region
April 4, 1994

Section	Page	Comment	Response
Chapter 8	8-13	Please explain how a phased approach would be fairly apportioned in costs among cities and county residents.	If phasing was selected during plan implementation, it would occur over a short period (3 to 4 months), which would alleviate the need for apportionment.
Table 8-3	8-14	Using \$40/ton, this table seems to be based on annual tonnages exceeding 51,000 tons. Should the tonnage in this table be changed?	The tonnages in Table 8-3 match the tonnages shown in Table III-3. However, the tonnages shown on Table III-8 more accurately reflect the anticipated tonnages during the planning period. Table 8-3 will be recalculated based on Table III-8 data. Also, it should be \$41/ton per change made in text.
Table 8-3	8-14	Need to add another line under Operating Revenue to indicate the tip fee received from industries and other sources.	Done.
Chapter 11	11-9	Estimate cost of program. A perhaps necessary \$10M plan.	The total cost of the program is shown in Table 11-3 and Table ES-2.
Chapter 13	13-1	Is not flow control considered contrary to general law?	No. See T.C.A. 68-211-814, 906 and 907.

Roane County Solid Waste Region Kickoff Meeting Minutes

Meeting Date: July 22, 1993

Meeting Place: Roane County Courthouse, Kingston, Tennessee

Meeting Attendees: Lorraine Choate/Roane County Board
Ann Cook, Secretary/Roane County Board
Una Coffman, Roane County Commissioner
John M. Thompson/Solid Waste Authority
Ronnie Boring/Roane County Board
G. L. Long/Roane County Board
R. C. Ladd/Roane County Board
Arthur Rivers/Roane County Board
Michael Easter/Roane County Board
Pete Malmquist/Solid Waste Authority
Debbie Gibson/*Roane County News*
Libby Reel/*The Standard*
Patsy Blount/Harriman
Ryan Blount/Boy Scout Troop 101
Henry Hornsby/CH2M HILL
Ralph Wilson/CH2M HILL
Leslie Shannon/CH2M HILL

Minutes Prepared By: Leslie Shannon/CH2M HILL

The Kickoff Meeting for the Roane County 10-Year Solid Waste Plan was held in the Kingston Courthouse on July 22, 1993, from 7:00 to 9:30 p.m. Representatives from the Roane County Solid Waste Board, Solid Waste Authority, County Commission, *Roane County News*, *The Standard*, and CH2M HILL were in attendance. Leslie Shannon provided a brief review of the requirements for the 10-year solid waste plan, by chapter. Henry Hornsby led the discussion on the eight chapters that were revisited. Direction from the Board was sought on the issues that CH2M HILL should focus on.

Chapter IV – Waste Reduction

Roane County generated 1.29 tons/person/year in the 1989 base year, and must reduce that to 0.97 tons/person/year by 1995. This equates to 14,851 tons per year. Strategies for meeting the 25% waste reduction goal were discussed, and included determining if any credit could be taken for waste reduction efforts during the period 1985 through 1989, source reduction, and diversion to a Class IV landfill.

It was mentioned that one industry currently contributing 50 tons/month would no longer be using the Class I landfill. That would account for only 600 tons of the 14,800 necessary.

The Board was interested in forming a focus group for industries in the county, and have the UT Center for Industrial Services run the focus group. The Board was also interested in inviting cities to the Focus Group. CH2M HILL was directed to concentrate on the industries for most of the waste reduction goal.

It was mentioned that household hazardous waste was only several percent of the waste stream.

Pallets and newspapers were specifically mentioned as items that could be reduced. If a recycler was found to take the pallets, the owner should insist that they take even the broken ones.

Economic incentives were mentioned as a key to the solution, but a ticklish one. Discussion ensued about how economic incentives could be provided for homeowners. Economic incentives for the individual industries would be discussed in the Focus Groups.

Chapter V--Waste Collection

The Board is very interested in restarting recycling at the convenience centers. They would also like to find a way to monitor out-of-county wastes going to the convenience centers. It was suggested that users of convenience centers be required to view a videotape on their use, after which they would be issued cards that allowed them to use the centers.

The Board was interested in seeing a proposed plan to eliminate the remaining green boxes in the county. However, it was noted that elimination of green boxes would increase the amount of illegal dumping. Given that 13 convenience centers already exist, CH2M HILL will try to find a compromise choice.

The issue of county-wide pickup was also raised, along with the cost to achieve it. The question of how the county controls the right to pick up solid waste was raised.

A discussion concerning the economics of supporting a Class I landfill ensued, including the pros and cons of sending waste to another county versus finding ways (intra-region flow control) to keep the waste within Roane County. The impact of a county landfill on economic development and attraction of new industries to the county were also discussed.

Chapter VI--Recycling

CH2M HILL will have to start from scratch on this issue. The Volunteer Recyclers organization is no longer in business.

Recycling at the convenience centers is desired; however, the problem with night dumping at these centers needs to be addressed.

Recycling at the Michael Dunn center could also be investigated.

Chapter VII—Composting, Waste Processing, Waste-to-Energy, and Incineration Capacity

Composting options were discussed, such as composting part of the waste and sending the rest to another county. Composting options ranged from a facility like Sevierville (although it was acknowledged that Roane County did not have enough waste) to some more low tech ways. The concern was raised that if a composting operation was put in place, the volume of waste to the landfill would be reduced.

The Board indicated that they would not consider incineration for now, but would consider it in the next 10 years if it was supported and managed by TVA.

Chapter VIII—Disposal Capacity

The county has given away 51 of the 100 acres adjacent to the existing landfill. Therefore, the conclusion that the landfill has excess capacity for the next 10 years needs to be confirmed. The county seems to be at a crossroads concerning whether they will continue to use their own landfill or go to another county's. The Board was also concerned about capacity beyond 10 years.

The 6-in. layer of daily cover was mentioned as a mechanism that was rapidly filling the landfill. Suggestions for reducing the amount of fill in the landfill included keeping the landfill open longer on each day, but reducing the number of days it is open and scraping the layer off at the beginning of each day. It was also suggested that if 2 counties shared their landfills by decade, then more waste could go in a single landfill on a given day, and the proportion of cover material would be less.

Chapter IX—Public Education and Information

In addition to the school-age program that is already in place, CH2M HILL will focus on ways to achieve adult education. Suggestions from the Board members include bringing literature to road races, donating recycling boxes for events and parades, placing ads in newspapers, setting up a litter hotline, working with the local Channel 7 (local cable) to get them involved, taking a test or watching a video before getting a convenience center pass, and preparing a pamphlet on recycled resources.

Chapter X—Problem Wastes

Household Hazardous Wastes (HHW)—It is necessary to designate one area in the county that may be used to collect HHW. At first the Board recommended that the site be designated at the landfill, but the need for paving the road to the landfill was

acknowledged. A truck-washing facility is also needed. One of the convenience centers was suggested as another alternative, or possibly the land behind the county services building.

The collection site for the waste tires, waste oil, and lead acid batteries should be at the landfill.

There needs to be coordination between the litter grant program and this planning process. The county has a litter crew, but it is unable to manage the large tree stumps that are dumped along the road side. The Adopt-A-Highway Program is also losing popularity.

Other problem wastes include shingles, brush, and construction waste that are discarded along the roadsides.

On the issue of infectious waste, the Board is not interested in taking wastes from other counties. The current plan of having in-county waste incinerated is acceptable to the Board.

Other Issues

IMCO Recycling is in the process of constructing a new landfill. The Board questioned whether IMCO had to get their permission before opening the new landfill. Most Board members were in favor of limiting the amount of out-of-state waste that IMCO would bring into their new landfill.

A five-day notice is needed in the local papers to announce the working meeting of the Board, scheduled a few days before the public meeting on August 26, 1993.

The meeting adjourned at 9:30 p.m.

**Roane County Kickoff Meeting
July 22, 1993
Attendance List**

Name	Address	Phone
Lorraine Choate	P. O. Box 878 Kingston, TN 37763	W: 594-6533 H: 376-9690
Ann Cook	P. O. Box 1015 Kingston, TN	W: 354-4215 H: 376-5470
Una Coffman	304 Windswept Lane Kingston, TN	376-5842
John M. Thompson	602 Clinton Street Harriman, TN 37748	882-3210
Ralph Wilson	CH2M HILL 599 Oak Ridge Turnpike Oak Ridge, TN 37830	483-9032
Henry T. Hornsby	CH2M HILL 115 Perimeter Center Place Suite 700 Atlanta, GA 30346	(404) 604-9182
Ronnie Boring	Rt. 1, Box 476 Harriman, TN 37748	882-0557
G. L. Long	518 Trenton Street Harriman, TN 37748	882-9642
R. C. Ladd	400 Molyneux Street Rockwood, TN 37854	354-0907
Arthur H. Rivers	1148 Brentwood Point Kingston, TN	376-5437
Michael Easter	Rt. 3, Box 1056 Loudon, TN	376-1266

Appendix D
Exports and Imports



CHAMBERS
Development Company, Inc.
ATLANTA REGIONAL OFFICE
3300 HIGHLANDS PARKWAY • SUITE 130 • SMYRNA, GEORGIA 30082
(404) 438-7770

March 23, 1994

Ms. Nancy Lee, Chairperson
Roane County Solid Waste Regional Board

Dear Ms. Lee:

Remote Landfill Services, Inc., a wholly owned subsidiary of Chambers Development Company, Inc., does formally offer to dispose of all acceptable waste stream from Roane County, at our landfill located in Oliver Springs, Tennessee.

All disposal arrangements are subject to mutually agreed terms and conditions.

Sincerely,

CHAMBERS DEVELOPMENT COMPANY, INC.

A handwritten signature in cursive script that reads "Don Aucoin" with a small circular mark at the end.

Don Aucoin
Assistant Area Marketing Manager

DA/sa

Diversified
Systems, Inc.



Post Office Box 1109 • Athens, Tennessee 37371-1109 • (615) 745-5900 • Fax (615) 744-0221

January 26, 1994

The Honorable James W. Harmon
Route 5, Box 139
Harriman, TN 37748

Subject: Landfill expansion approval

Dear Commissioner Harmon,

It is with pride that Diversified Systems' Inc. announces the Tennessee Department of Environment and Conservation's decision to approve Diversified's Class 1 permit modification for the operation of the Mine Road Sanitary Landfill and its expansion.

The expansion for 2.1 million cubic yards of air space was approved on December 3, 1993. The site will meet all Subtitle D requirements including a composite liner system and a leachate collection system.

As waste management professionals, Diversified Systems, Inc. will continue its compliance with all regulatory agencies; providing assurance to the community that its health and welfare is not compromised. We look forward to being able to serve your industry and your community in the future. If we can be of assistance in your quest to manage waste properly, safely, and economically, please give us a call at (615)745-5900.

Sincerely,

George C. Randi
President
Diversified Systems, Inc.

GR/ahw

Chestnut Ridge Landfill & Recycling Center
P.O. Box 139
McKaskle, Tennessee 37754
615/525-6575 • 457-7810



A Waste Management Company

Date: March 24, 1994
TO: Nancy Lee
From: Carl Cressler *CC*
Re: Roane County Garbage Disposal

Per our telephone conversation, on March 23, 1994, concerning the disposal of Roane County garbage, I have spoken with the Anderson County Commissioner. He has agreed to our accepting the waste from Roane County.

If you are in need of any additional information, please contact me at 615/525-6575.

Appendix E
Review by Appropriate Municipal or Regional
Planning Commission

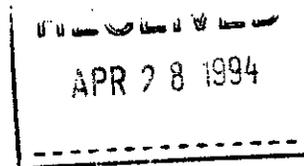


ROANE COUNTY ZONING OFFICE

P. O. Box 643, Kingston, TN 37763
Phone: 615/376-5505, Fax: 615/376-4318



April 25, 1994



Ms. Nancy Lee
Roane County Regional Solid Waste Board
P.O. Box 557
Rockwood, TN 37854

Dear Ms. Lee,

Subject: Review of Roane County 10-year Solid Waste Plan

Thank you for the opportunity to review Roane County's 10-year Solid Waste Plan, in accordance with T.C.A. 13-3-105 and/or T.C.A. 13-04-104. However the Roane County Regional Planning Commission has no comment on the document.

Sincerely,

Allen Williams
Mr. Allen Williams, Chair
Roane County Regional Planning Commission

cc:
Ken Yager, County Executive

JOYCE NALL
Roane County Zoning Officer
Monday--Wednesday: 8:30 a.m.--3:30 p.m.

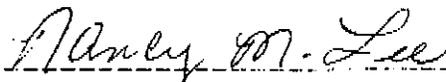
RESOLUTION

WHEREAS;The Roane County Solid Waste Regional Board is made up of a single county region;

WHEREAS; The Roane County Solid Waste Regional Board is responsible for development of a ten year solid waste plan in accordance with the Solid Waste Act of 1991

WHEREAS; The Roane County Solid Waste Regional Board has met on a regular basis since July, 1993, conferred with an Advisory Committee, completed extensive research into the regions solid waste needs, and monitored public response,

Now therefore it is resolved that: The Roane County Solid Waste Regional Board does formally adopt the Municipal Solid Waste Regional Plan as the official plan for the Roane County Region.



Nancy M. Lee, Chairman
Roane County Regional Solid Waste Board

March 10, 1994

date