Western North Carolina
Solid Waste Task Force Report

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Edited by Susan M. Smith
Natural Resources Coordinator
Western North Carolina Tomorrow
P.O. Box 222
Cullowhee, NC 28723
1-800-621-0008

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Reports, data, and materials were collected and summarized by Mr. Joe Harley and Ms. Robin Sexton, serving as Social Research Assistants at Western Carolina University's Center for Improving Mountain Living. Draft recommendations and materials were edited by Mr. Bruce Boggs, Director of the Regional Economic Strategy Project, and Ms. Susan Smith, serving as the Natural Resources Coordinator for Western North Carolina Tomorrow.
SOLID WASTE TASK FORCE RECOMMENDATIONS SUMMARY

The Western North Carolina Solid Waste Task Force recommends that North Carolina establish a state policy supporting integrated solid waste management and develop a Solid Waste Minimization and Management Act which comprehensively outlines and organizes all current regulations and establishes new regulations supporting waste minimization and integrated solid waste management.

SUMMARY OF RECOMMENDED IMPLEMENTATION STRATEGIES

- Create effective and equitable mechanisms for funding statewide adoption of integrated solid waste management planning and practices;

- Expand and strengthen the role of the state level solid waste office to include promoting solid waste minimization, planning, reuse, recycling and efficient management;

- Create a state cost-share and incentives program encouraging local governments to adopt integrated waste management practices in compliance with state standards by:
  - requiring local governments to submit integrated waste management plans
  - providing incentives and requirements for local governments to implement integrated waste management plans

- Implement legislative initiatives within the proposed Solid Waste Minimization and Management Act to promote use of recycled materials and source separation, and to minimize disposal of recyclable or hazardous materials in "new" EPA sanitary landfills;

- Initiate a comprehensive program of education on solid waste minimization and effective management, and develop a state solid waste resources clearinghouse;

- Develop practical information by creating a state fund for research on management and technical problems associated with solid waste management in rural regions;

- Promote an increase in Federal government role and involvement in solid waste management through increased funding and technical assistance.
The importance of effective waste minimization and management strategies to protect ground water has risen rapidly as the requirements in siting, operating, and closing a sanitary landfill have become much more comprehensive and costly.

The Environmental Protection Agency's proposed landfill regulations designed to protect groundwater are projected by many to increase the cost of landfill operation by as much as six times the present cost. New requirements call for two liners below all stored wastes and one impermeable liner above a closed landfill to prevent rainwater infiltration. Leachate collection and treatment is required during operation and after closure, either at a treatment site to be built at the landfill or by transporting the liquid to another treatment plant willing and able to treat the particular components found in that leachate. Both of these represent added costs not only during the life of the landfill but after landfill closure.

Managing solid wastes under the new regulations will also demand a much higher level of technical and administrative expertise and skill than previous landfill and solid waste collection systems operated primarily by local governments. (See Appendix B for specific cost discussion.)

The increasingly costly and complex technical systems required for proper minimization, processing, recycling, reuse and disposal of wastes have forced communities and citizens in western North Carolina to recognize the need for a stronger partnership between the federal, state, and local governments and citizens. No one group has the financial or technical resources to successfully undertake the job of managing solid wastes without the assistance of the other partners.

One of the most important steps needed to improve the existing partnership between the state, local governments and citizens in managing solid wastes is to strengthen the role and responsibility of the federal and state governments. This can be accomplished by each 1) providing a larger portion of the monetary resources needed for planning, technical assistance and location of solid waste facilities and 2) playing a larger and more active role in implementing laws and policies to promote waste minimization, reuse and recycling.

There is a need for the state to play a more aggressive role in developing the mechanisms required to implement policies and

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\(^1\) Environmental Protection Agency Solid Waste Disposal Facility Criteria; Proposed Rule (40 CFR Parts 257 and 258).
laws and provide technical assistance now unavailable to many local governments. The foundation of an effective solid waste management system is the existence of both a framework of policies and programs and trained, skilled professionals working within this system to carry them out. Without this framework, funding and policy decisions cannot be fully effective. At the state level, this framework should include the creation of an office to promote effective planning and coordinate state efforts to reduce, reuse, and recycle wastes. Additional personnel are needed to handle landfill permitting and to provide technical assistance both for landfill siting and for waste management planning. The state should provide guidance and resources for local governments to complete integrated waste management plans as a part of the process of determining future landfill needs and selecting appropriate options to reduce the costs of future landfill siting, operation, monitoring and closure.

Building an effective and sound solid waste management system should also include education and research. Programs such as the existing Pollution Prevention Pays ("PPP") program which emphasizes hazardous wastes should be extended to include solid waste as well. A solid waste clearinghouse organized by the state to provide information, materials, and contacts to both the public and private sector is needed. Research results on a number of topics, including landfill siting criteria and potential air quality problems, are needed to provide accurate information to insure effective decision making.

The state can enhance the ability of local governments, businesses and industry to handle the minimization and management of solid wastes in an efficient and effective manner by creating a Solid Waste Management Act for North Carolina to:

1. Promote the adoption of sound solid waste management practices based on principles of Integrated Waste Management (IWM);
2. Provide guidance through state laws and policies;
3. Provide cost sharing funds;
4. Provide incentives and technical assistance in addition to needed regulations.

The preceding brief summary of recommendations and attached Western North Carolina Solid Waste Task Force Report (including detailed recommendations) are an attempt to enhance North Carolina's ability to address solid waste minimization and management in a manner which enhances both the future economy and quality of life in the rural and urbanizing regions of Western North Carolina.
SOLID WASTE MANAGEMENT NEEDS AND RECOMMENDATIONS

The Western North Carolina Solid Waste Task Force recommends that North Carolina establish a state policy supporting integrated solid waste management and develop a Solid Waste Minimization and Management Act that comprehensively outlines and organizes all current regulations and establishes new regulations supporting waste minimization and integrated solid waste management.

Recommended implementation strategies to accomplish this objective are:

1. Set up a state authority, either legislative or administrative, to determine the necessary combination of funds to successfully implement integrated solid waste planning, management, and strategies in North Carolina using a variety of funding possibilities. Sources for funding consideration should include but not be limited to:

   A. State sources
   1) General state revenues (Calif., Fla.)
   2) The sale of bonds (Minn.)
   3) Trust funds established from fees and fines (Fla.)
   4) Permit application fees
   5) Pre-disposal fees paid by manufacturers of non-recyclable products (plastics, etc.)
   6) Surcharges on the purchase of tires and oil (Ore.)
   7) Littering fines (Fla.)
   8) Corporate franchise tax (Ohio)
   9) Tipping fee surcharges (Minn., N.J.)

   B. New local sources
   1) Permits or stickers sold to each county resident to authorize use of waste management facilities
   2) Tipping fees may be instituted in areas not already using this system, with a waiver or reduction of fees for those who separate out and bring recyclables
   3) The solid waste system may be treated as a utility, with monthly bills based on amounts of solid waste generated
   4) Other funding sources as identified

2. Expand, consolidate, and adequately fund state administrative functions to promote effective planning, reduction and management of solid waste statewide. The chief functions of this office would be to:
A. Coordinate and facilitate state efforts to:
1) Reduce wastes at the source;
2) Reuse and recycle wastes;
3) Handle the reduced waste stream to the best degree of efficiency available to defer future avoidable costs;

B. Exercise regulatory review and provide technical assistance, training, and education for local governments, communities, and officials. To perform these functions the office should have:
1) Sufficient additional personnel within next two years to handle landfill permits and technical assistance for landfills on a timely basis;
2) Sufficient additional personnel within next two years to initiate:
   a. statewide waste management planning
   b. review of local Integrated Waste Management plans before new landfills are permitted
   c. increased technical assistance on waste reduction
   d. a statewide educational program to promote solid waste reduction
3) Sufficient funding for staff travel to provide technical assistance;

C. Initiate action to support federal funding for solid waste management and recycling programs. Funding sources may include the following:
1) EPA grant funds similar to those used for wastewater treatment systems;
2) Economic Development Administration funds;
3) Appalachian Regional Commission funds;
4) Federal Farmers Home Administration bonds or loans for solid waste management facilities similar to current funding for water and sewer facilities for small communities;

3. Create a state cost-share and incentives program encouraging local governments to adopt integrated waste management practices in compliance with state standards.

A. North Carolina standards for integrated waste management should reflect the following waste minimization priorities: 1) Reduction and waste minimization, 2) Reuse, 3) Recycling, 4) Energy recovery, and 5) Landfilling of residues. (These should be included in the new Solid Waste Minimization and Management Act);
B. The state should require local governments to submit completed integrated waste management plans prior to new landfill permit approval;

1) Integrated waste management plans should include the following components:
   a. A waste stream inventory to give the local government accurate information on which to make decisions; the inventory should include weight (tonnage) and composition of materials entering the landfill (comparable waste inventory procedures should be used statewide);
   b. An analysis of markets and vendors for reusable and recyclable materials, completed prior to designing the materials collection system;
   c. A feasibility study of waste minimization options such as recycling and composting;
   d. An analysis of cooperative projects between local governments for equipment purchases (e.g. mobile tub grinders, tire shredders);
   e. Evaluations of feasibility of collection alternatives;
   f. A plan for a local fee structure for solid waste management costs (e.g. a tipping fee or permit system);
   g. Analysis of feasibility of a center for sorting and storage of reusables and recyclables (Calif.);

2) Costs of completing integrated waste management plans should be eligible for state cost-share funds;

C. The state should provide incentives and requirements for regional or local governments to implement integrated waste management plans. Actions should include:

1) Creating loan funds or grants for purchase of new landfill sites and/or recycling facilities sites;

2) Creating incentives for each county or for multicounty groups to hire a waste reduction coordinator;

3) Providing loan funds or grants for purchase of waste reduction equipment (e.g. tub grinders);

4) Providing loan funds or grants to operate recycling centers at landfills, county collection sites, or other locations in the county;
4. Adopt a Solid Waste Minimization and Management Act
Regulating and Reducing the Wastes Entering North Carolina
Landfills and Promoting Waste Reduction in the Public Sector

A. To reduce sanitary landfill liability, closure costs, and meet federal requirements when North Carolina is required to adopt the Environmental Protection Agency's proposed landfill regulations (40 CFR Parts 257 and 258) developed to protect groundwater, the state should incorporate regulations in a proposed Solid Waste Minimization and Management Act requiring:

1) The establishment of the state statutes necessary for the authorization of county or regional solid waste boards or authorities with enforcement and bonding powers;

2) Waste separation and removal of specific materials such as yard waste and brush, commercial and industrial cardboard, and demolition materials before waste materials enter lined sanitary landfills;

3) Construction and demolition materials be removed from the waste stream and placed in separately regulated demolition landfills;

4) Yard waste, brush, and wood waste be diverted from lined sanitary landfills to alternative disposal methods such as grinding or composting for reuse as a mulch or soil amendment;

5) Recyclables, including but not limited to metals (aluminum, steel, white goods), glass, newspaper and other grades of paper, some plastics, and industrial and commercial cardboard be removed from the waste stream either by separation at the source or by some type of processing facility and not be allowed in the sanitary landfill;

6) An inspection program to insure that radioactive wastes, agricultural pesticides, and chemicals listed as hazardous by the EPA are not allowed to enter sanitary landfills;

7) Liquid wastes and homogeneous, high moisture wastes not be allowed in sanitary landfills;

8) Reduction of the heavy metals introduced to sanitary landfills by requiring:
   a. The diversion of household batteries from the solid waste stream, particularly in communities that rely on incineration for much of their solid waste disposal needs;
   b. Collection of batteries that can be recycled;
   c. In the absence of federal government action, the legislature should also consider requiring manufacturers of rechargeable products to design products so that the rechargeable
battery can be easily removed for collection and recycling;

d. Financial incentives to consumers encouraging the use of rechargeable batteries;

9) Other potentially dangerous sources of solid waste such as lead acid batteries, used motor oil, used tires, animal carcasses, and infectious wastes be separated out of the waste stream and not be allowed in the sanitary landfill: the proper management and handling of the preceding items should be covered by a Solid Waste Minimization and Management Act;

10) Pass legislation requiring a deposit on beverage containers made of glass, aluminum, and plastic (a "bottle bill") to discourage the public from discarding these containers (Del., Fla.);

B. To promote statewide waste reduction at the source and reuse and recycling in the public sector, North Carolina should:
1) Set forth a policy requiring state agencies, institutions, and governing bodies to prepare and implement waste minimization plans and programs emphasizing reduction, reuse, and recycling (Fla., Conn., Minn., R.I., Wisc., Ore., N.J.);

2) Require all state agencies and institutions to source separate a given percentage of their total waste stream to meet limits preset by a solid waste authority or board (in Wisc., state agencies are required to recycle at least 50% of their wastepaper);

3) Require all state agencies and institutions to initiate procurement of recycled paper and other recycled materials such as tires and oil (Wisc., Fla., Conn., and Mass. have procurement programs for the purchase of products with recycled materials);

4) Encourage military installations in North Carolina to formulate strategies for waste minimization and reduction, and to conform with local ordinances;

C. To enhance the development of recycling markets and operations the state should:

a. Continue to provide property tax exemptions for waste reduction and recycling equipment;

b. Allow rapid amortization, depreciation, or first year expensing of the cost of the equipment (Wisc.);

c. Provide technical assistance and low-interest loans for recycling operations;
5. Direct and Promote Solid Waste Management Education and Research Priorities in North Carolina

A. To promote educational initiatives, North Carolina should:
   1) Initiate funding a state-wide waste minimization education program: this program should include development of a waste awareness and minimization curriculum to be used in all public schools in North Carolina;
   2) Develop and organize a solid waste resources clearinghouse network throughout North Carolina to provide solid waste information, materials, and contacts to the public and private sector, emphasizing working with existing trade associations and organizations. Two distinct functions should be served:
      a. A technical branch should address processes, methods, procedures, case studies, innovations, and rules and regulations of solid waste management and include performance studies of various brands and types of waste management systems;
      b. A business branch should provide information on dealers, distributors, and markets;
   3) Extend the existing Pollution Prevention Pays ("PPP") Program to also include promotion of solid waste minimization emphasizing both the public and private sector;
   4) Create a state institute and information program covering up-to-date solid waste management issues and methods. This would be for all officials dealing with solid waste management in their region, such as county commissioners, planners, and legislators. Programs would include providing an instruction manual updated when necessary;
   5) Recognize a certification and training program for managers and operators of solid waste management systems;

B. To develop needed practical information, North Carolina should create a state fund from which monies can be allocated to evaluate practical problems associated with solid waste management in rural areas of the state. The purpose of this fund would be to provide much needed information to state, regional, and county agencies on such issues as those listed below:
   1) Landfill siting criteria and their suitability in rural mountain regions;
   2) Potential air quality problems and the implications of using different waste reduction processes in rural mountain regions; issues
include incineration, composting, and landfill gas emissions;
3) Transportation constraints in rural mountain regions;
4) Identification of incentives for industries, businesses and individuals to reduce waste generation and separate waste streams;
5) Economic factors and practical comparisons of different waste reduction processes when applied in rural mountain regions;
6) The potential of expanding markets for recyclables, including volume and transportation costs;
7) Incentives to encourage further research into metal recovery from household batteries.
Appendix A

SOLID WASTE STRATEGIES CONFERENCE

Specific Comments on Solid Waste Task Force Draft Recommendations

Proposed by participants in the five small group sessions held during the November 2, 1988 conference.

FUNDING ISSUES

1. Solid waste management requirements are too expensive for local government. A central office is needed to coordinate efforts and provide funds.

2. Local sources of funding should include funds provided to counties by the state on a revolving loan basis that convert to a grant contingent upon a reduction of the solid waste stream.

3. Encourage a simplification of the funding process and liberalization of EPA/FHA funding.

4. Expense of landfill scales and other equipment may be too great for counties.

5. Provide sufficient funding for state staff travel and materials to provide technical assistance to local governments, communities, and officials.

6. Tennessee Valley Authority (TVA) should be considered among the federal funding possibilities.

7. In addition to the option of treating the solid waste system as a utility, with monthly bills based on amounts of solid waste generated, provisions should be made for a flat rate alternative.

8. Local governments should be exempted from permit application fees as a state source of funding.

9. Decisions on funding recycling should concentrate first on the materials easiest to recover/process.
WASTE MINIMIZATION, REUSE, AND RECYCLING ISSUES

1. a) State contracts should provide recycled paper (or other materials) for state agencies.
   b) Use National Recycling Coalition guidelines in requiring all state agencies to initiate procurement of a given amount of recycled paper and other materials.
   c) Include a timetable in requiring the state to set forth a policy requiring state agencies to prepare waste minimization plans.

2. Have mandatory source separation at home and in businesses.

3. The state should create mechanisms encouraging business to practice waste reduction at the source and reuse and recycling.

4. Encourage the private sector to provide convenient containers and receptacles for collecting household recyclables.

5. Have more incentives to encourage businesses to produce recyclables rather than non-recyclables.

6. Set a 60% reduction/recycling/composting goal for the state.

7. Place more emphasis on recycling even though it's not the "one answer".

8. Streamline permitting for recycling.

9. Utilization of sewage sludge should be encouraged as recycling (for uses such as composting). Small jurisdictions need help with funding and technology.

10. Charge by a "variable can rate" as a waste reduction incentive (charge depending on amount produced).

11. Provide tax incentives for recycling industries to operate in the state.

12. Large scale recycling requires elimination of green box system. (Could eliminate some green box sites and consolidate others as recycling centers).

13. Change "bottle bill" to "Container Legislation" that would ease landfill use but not hinder recycling efforts (i.e. aluminum).

14. Consider making "bottle bill" more comprehensive to include non-beverage containers and non-recyclable containers.
15. Change "bottle bill" to legislation requiring a fee (similar to Florida's 1 cent tax) on all recyclable food and beverage containers (glass, metal, and plastic) not attaining a 75% recycling rate in the previous one year period.

STATE POLICY AND STATE AGENCY ISSUES

1. A central theme of promoting Integrated Waste Management (IWM) as state policy is the way to go. Counties have not progressed in the past because of focus on only one technology.

2. The state should establish performance standards and then provide the counties with authority to enforce and achieve these standards (in lieu of incentives).

3. Establish a cabinet level solid waste coordinator.

4. Emphasize consolidation of planning, regulation, and technical assistance.

5. Set up one state agency to do all functions required for permits.

6. The state should encourage multi-county purchases of equipment.

PLANNING NEEDS AND INTEGRATED WASTE MANAGEMENT

1. Develop a model methodology for waste stream inventories to standardize efforts.

2. A regional approach to completing waste inventories and analyzing placement of recycling centers for rural counties should be considered and utilized if found to be more efficient than a state approach.

3. The state should require local governments to submit completed Integrated Waste Management plans prior to new landfill permit approval...
   - Collaboration should be expressly allowed.
   - Provisional permits should be granted without IWM plan.
   - Provisional arrangement should phase out by 1992.
   - Only after increased staffing addressed.


5. Emphasize composting.
6. Encourage businesses to formulate strategies for waste minimization and reduction.

7. Have enforcement mechanisms for county plans for feasibility studies.

CITIZEN INVOLVEMENT ISSUES

1. Encourage citizen committees at the county level to use local expertise.

2. Create a county citizens board for conflict resolution and arbitration mechanism.

3. The state should set up regional authorities to take pressure off counties in involving the public.

4. Require public involvement in local decision process before counties receive grants or loans.

5. Work through existing state and local agencies to tap into pool of retirees.

EDUCATION AND INFORMATION ISSUES

1. Emphasize knowledge of total solid waste costs to individuals and the county to provide impetus to reduce/recycle/minimize wastes.

2. Specify adoption of an existing waste minimization curriculum for public schools.

3. Create statewide ad campaigns to promote recycling and involvement in solid waste issues with the public.

4. Better education of the media is needed.

5. Develop a comprehensive list of all agencies and groups currently addressing solid waste problem - from federal, state, to community groups and others.

LANDFILL SITING AND OPERATIONS ISSUES

1. Bans on materials allowed in landfills should not be limited to EPA list.

2. Some participants were concerned about landfills that close prior to EPA deadline and are leaking but are not monitored (county liability).
3. Additional personnel needed by the state office to handle landfill permits and technical assistance for landfills should be generalized to include all solid waste facilities, not just landfills.

4. A permit or sticker system should be required for county residents using solid waste facilities, to stop waste dumping across county or state lines.

5. Consolidate and clarify the issue of hazardous wastes vs. solid wastes (specifically household hazardous wastes).

6. Surcharges on the purchase of products such as tires and oil should also be placed on lead acid batteries.

7. Delete animal carcasses and used tires as hazardous or dangerous: their inclusion takes away from more serious concerns.

8. Define liquid wastes/amounts.

LITTER PREVENTION ISSUES

1. Require biodegradable packaging to help solve the litter problem. Require paper, not foam, for fast food packaging.

2. Authorize counties to appoint a litter officer with enforcement powers including the power to issue tickets on the spot.

3. Some participants were concerned about enforcement of litter laws in rural areas after tipping fees are implemented.

4. Recognize the efforts of beautification committees in western North Carolina.
Appendix B

COST ANALYSIS

I. New EPA Guideline Cost Estimates for a 100 Acre Sanitary Landfill;
*Does not include land acquisition costs.

A. Hydrogeological study $0.2 million
B. Design engineer $0.05 million
C. Liners, monitoring systems, leachate collection $6.5 million
D. Final closure cover $2.5 million

subtotal capital costs $9.25 million

E. Lifetime costs per year for operation, monitoring, and leachate treatment for 20 year life $0.4 million \( \times 20 \text{ year life} \) $8.0 million
F. Post closure cost for maintenance, monitoring, and leachate treatment per year $0.24 million \( \times 20 \text{ year closure} \) $4.8 million

TOTAL COST $22.05 million over 40 years

G. Due to variations from region to region, consideration in dollar amounts have not been added for hauling costs, contingency action plans, high groundwater levels, or mountainous terrain which would cause problems for siting and maintaining landfills.

H. For purposes of this example, tipping fees (user fees at the point of dropoff) of $30.00 per ton excluding transportation have been considered nominal for non-deficit operation (tipping fees across the country have been found to range from $0 to $75.00 per ton.)
II. Cost estimates for waste-to-energy facilities (incineration) for purposes of this comparison are approximately $100,000 per design ton construction. [example: Buncombe County, producing approx. 500 tons/day = $50 million, not including operating costs.]

An ash disposal monofill (construction costs only) requiring 4 acres = $600,000.00

III. Comparison cost figures/ton:

A. Landfilling - $30.00/ton
B. Composting - $38.00/ton
C. Incineration - $60.00/ton

IV. References: Myrna Halbach, Minnesota Pollution Control, October 1987 and October 1988.

Florida Solid Waste Legislative Summary
May 1988

* All figures are in 1988 dollars and are in the process of being adjusted upward by the sources quoted.
Appendix C

WESTERN NORTH CAROLINA TOMORROW
SOLID WASTE TASK FORCE MEMBERS

Mr. Roosevelt Allen
Tennessee Valley Authority
2D44 Old City Hall Bldg.
Knoxville, TN 37902-1499
(615) 632-6419

Mr. Joe Beck
Environmental Health Program
School of Health Sciences
Western Carolina University
Cullowhee, NC 28723

Ms. LaRue Bolick
Quality Forward
PO Box 22
12 1/2 Church St.
Asheville, NC 28802
(704) 254-1776

Mr. Kevin Bunn
Community Facilities Coordinator
NC Rural Economic Development Commission
116 N. Person St.
Raleigh, NC 27601
(919) 821-1154

Hon. Marie Colton
392 Charlotte St.
Asheville, NC 28801
(704) 253-7350 (h)
(919) 733-5601 (w)

Ms. Claudine Cremer
1 North Pack Square
Suite 434
Asheville, NC 28801

Mr. Steve Eller
Southwestern Planning and Economic Development Commission
PO Drawer 850
Bryson City, NC 28713
(704) 488-9211

Mr. Bill Green
Cherokee County Manager
201 Peachtree St.
Murphy, NC 28906
(704) 837-5527

Mr. Jack Horton
County Manager
Macon County Courthouse
5 West Main St.
Franklin, NC 28734
(704) 524-6421

Mr. David Huskins
Linville Falls Motel
PO Box 182
Linville Falls, NC 28647
(704) 765-2658

Mr. Ron Lamb
Western North Carolina Alliance
PO Box 18087
Asheville, NC 28814
(704) 258-8737

Ms. Dot Mason
Executive Secretary
Cherokee County Chamber of Commerce
115 Highway 64 West
Murphy, NC 28906
(704) 837-2242

Ms. Sandi Maurer
Land-of-Sky Regional Council
25 Heritage Dr.
Asheville, NC 28806
(704) 254-8131

Mr. Robert Merrill
PO Box 1095
Brevard, NC 28712
(704) 883-2444
Ms. Veronica Nicholas  
Jackson County Board of Commissioners  
33 Cowan St.  
Sylva, NC 28779  
(704) 586-5647

Mr. John Norris  
Cullasaja River Campground  
860 Old Highlands Rd.  
Franklin, NC 28734  
(704) 524-2559

Mr. Glen Rhodes  
Isothermal Planning and Economic Development Commission  
306 Ridgecrest  
Rutherfordton, NC 28139

Mr. Teddy J. Rogers, II  
Chairman, Haywood County Board of Commissioners  
Waynesville, NC 28786  
(704) 452-6625

Mr. David Simpson  
Director, Macon County Health Dept.  
5 West Main St.  
Franklin, NC 28734  
(704) 369-9526

Mr. Charles Von Canon  
Avery County Commissioners  
PO Box 86  
Banner Elk, NC 28604  
(704) 733-5186
Appendix D

WASTE COLLECTION AND PROCESSING OPPORTUNITIES: DEFINITIONS AND PRINCIPLES

I. Separation of waste types

A. Waste separation may take place at any point between the generator and the landfill;

B. Source separation occurs at the origin of the waste stream, and is the most easily performed type of processing, since the recyclable wastes are never mixed with other components of the waste stream;

1. Residential wastes should be source separated in the home and taken to recycling centers for processing or picked up by a curbside service;
   a. Commercial and industrial wastes such as cardboard, paper, and some plastics should be sorted into separate containers for recycling as they are produced to avoid contamination of homogeneous materials;
   b. Wastes may be separated and processed after collection either mechanically or by hand;
   c. Separation can be encouraged by reduction or waiver of tipping fees for individuals and businesses who separate recyclables and bring them in;

II. Collection and transportation alternatives

A. The green box system utilizes roadside dumpsters placed at various locations throughout the county; while this system is less expensive than attended convenience centers, vandalism and littering are continuing problems at these sites;

B. Attended convenience centers, usually fenced and paved, solve the littering and vandalism problems found at unattended green box sites; the presence of an attendant makes possible collection of tipping fees and the addition of drop-off recycling centers at the site;

C. Door-to-door solid waste collection has been shown in one TVA study under way in rural Tennessee to be less costly than the convenience center system; careful study is needed of all costs involved in both systems before one is chosen.

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