STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us

RUSSELL J. HARDING, Director

September 8, 1999

Mr. Rick Shaffer, Chairperson
St. Joseph County Board of Commissioners
125 West Main Street
Centerville, Michigan 49032

Dear Mr. Shaffer:

The Department of Environmental Quality (DEQ) received the locally approved update to the St. Joseph County Solid Waste Management Plan (Plan) on February 25, 1999.

This Plan provides for more than ten years of disposal capacity by relying on capacity at the Westside Landfill in St. Joseph County. In addition, the Plan authorizes a substantial expansion of the Westside Landfill to ensure future disposal capacity. The Plan authorizes waste to be imported from any other county in the lower peninsula and authorizes waste to be exported to all other Michigan counties whose plans authorize importation of waste from St. Joseph County. As a result, St. Joseph County has chosen not to include a siting process in its Plan.

By this letter, this Plan is hereby approved and St. Joseph County now assumes responsibility for the enforcement and implementation of this Plan. The DEQ would like to thank the St. Joseph County Board of Commissioners for its efforts in addressing the solid waste management issues in St. Joseph County.

If you have any questions, you may contact Mr. Seth Phillips, at 517-373-4750.

Sincerely,

Russell J. Harding
Director
517-373-7917

cc: Senator Harry Gast
Representative Cameron Brown
Ms. Judy West, St. Joseph County Administrator
Mr. Arthur R. Nash Jr., Deputy Director, DEQ
Ms. Cathy Wilson, Legislative Liaison, DEQ
Mr. Jim Sygo, DEQ
Ms. Joan Peck, DEQ
Mr. Tomas Leep, DEQ - Plainwell
Mr. Seth Phillips, DEQ
Mr. Jim Johnson, DEQ

St. Joseph County Solid Waste Management Plan

(revised and updated 1998)

As required by section 11539a of part 115,
Solid Waste Management, of the Natural Resources and
Environmental Protection Act 1994 PA 451, as amended

Printed on Recycled Paper

1997 PLAN UPDATE COVER PAGE

The Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA), Part 115, Solid Waste Management, and its Administrative Rules, requires that each County have a Solid Waste Management Plan Update (Plan) approved by the Michigan Department of Environmental Quality (DEQ). Section 11539a requires the DEQ to prepare and make available a standardized format for the preparation of these Plan updates. This document is that format. The Plan should be prepared using this format without alteration. Please refer to the document entitled "Guide to Preparing the Solid Waste Management Plan Update" for assistance in completing this Plan format.

DATE SUBMITTED TO THE DEQ:

If this Plan includes more than a single County, list all counties participating in this Plan.

The following lists all the municipalities from outside the County who have requested and have been accepted to be included in the Plan, or municipalities within the County that have been approved to be included in the Plan of another County according to Section 11536 of Part 115 of the NREPA. Resolutions from all involved County boards of commissioners approving the inclusion are included in Appendix E.

Municipality	Original Planning County	New Planning County

DESIGNATED PLANNING AGENCY PREPARING THIS PLAN UPDATE:
St. Joseph County Administrator

CONTACT PERSON: Ms. Judy West, St. Joseph County Administrator

ADDRESS: County Courthouse, 125 W. Main
P.O. Box 277
Centreville, MI 49032-0277

PHONE: 616-467-5617 FAX: 616-467-5628

CENTRAL REPOSITORY LOCATION(S): St. Joseph County Courthouse Adminstrator's Office

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EXECUTIVE SUMMARY

The following summarizes the solid waste management system selected to manage solid waste within the County. In case of conflicting information between the executive summary and the remaining contents of the Plan update, the information provided in the main body of the Plan update found on the following pages will take precedence over the executive summary.

OVERALL VIEW OF THE COUNTY

Municipality Name	Population	Rural	Urban	Ag	For	Ind	Com	Other
St. Joseph County	58,913	95.23	4.77	3.6	0	51.7	23.4	21.3
Burr Oak Village	882	0	100	% Economic base not available for				
Burr Oak Township	1,660	100	0	individual municipalities.				
Centreville Village	1,516	0	100					
Colon Village	1,224	0	100					
Colon Township	1,993	100	0					
Constantine Village	2,032	0	100					
Constantine Township	3,217	100	0					
Fabius Township	3,136	100	0					
Fawn River Township	1,571	100	0					
Florence Township	1,518	100	0					
Flowerfield Township	1,418	100	0					
Leonidas Township	1,171	100	0					
Lockport Township	3,250	100	0					
Mendon Village	920	0	100					
Mendon Township	1,775	100	0					
Mottville Township	1,501	100	0					
Nottawa Township	2,266	100	0					
Park Township	2,769	100	0					
Sherman Township	2,978	100	0					
Sturgis City	10,130	0	100					
Sturgis Township	1,965	100	0					
Three Rivers City	7,464	0	100					
White Pigeon Village	1,458	100	0					
White Pigeon Township	2,196	0	100					

*Ag = Agriculture; For = Forestry; Ind = Industry; Com = Commercial; Oth = All Other Economic Bases

CONCLUSIONS

St. Joseph County has a very good system for managing its solid waste. The County has one type II and one type III privately owned and operated landfills that currently have 12 years licensed capacity and an additional 280 acres available for expansion. The County has an established and well used recycling drop off box system, a household hazardous waste collection center and an excellent recycling education program.

The Solid Waste Management Planning Committee reviewed the existing system during the planning process and after evaluating the present system came to the conclusion that the present system should be continued with the refinements outlined in this plan.

The plan calls for the continued use of Westside Landfill for primary disposal, continuation of the recycling drop off box system, the household hazardous waste collection program, the recycling educator and support staff positions as well as the encouragement of municipalities and private waste haulers within the county to explore curbside recycling programs. The plan also has, an emphasis on expanding commercial and industrial recycling by working with the individual Chambers of Commerce within the county, the refinement of the solid waste and recycling data base and the exploration of expanded materials recovery from the waste stream.

SELECTED ALTERNATIVES

The selected alternatives are recomended as follows:

1. Continued reliance on landfilling for the 5 and 10 year planning period.
2. Continuation of the present drop off recycling boxes throughout the County.
3. Continuation of the household hazardous waste collection system.
4. Continuation of the recycling educator and support staff positions.
5. Encouragement of the public and private sector to explore curbside recycling.
6. Increase commercial and industrial recycling education by working with the Chambers of Commerce.
7. Improve the data collection system for tracking solid waste and recycling.
8. Explore the feasibility of expanded materials recovery from the waste stream.

INTRODUCTION

GOALS AND OBJECTIVES

To comply with Part 115 and its requirements, each Plan must be directed toward goals and objectives based on the purposes stated in Part 115, Sections 11538.(1)(a), 11541.(4) and the State Solid Waste Policy adopted pursuant to this Section, and Administrative Rules 711(b)(i) and (ii). At a minimum, the goals must reflect two major purposes of Solid Waste Management Plans:

(1) To prevent adverse effects on the public health and the environment resulting from improper solid waste collection, transportation, processing, or disposal, so as to protect the quality of the air, the land, and ground and surface waters.

(2) To utilize to the maximum extent possible the resources available in Michigan's solid waste stream through source reduction, source separation, and other means of resource recovery.

GOALS AND OBJECTIVES CONT.

This Solid Waste Management Plan works toward the following goals through actions designed to meet the objectives described under the respective goals which they support:

Goal 1: To have an informed public and to maintain and improve the existing recycling, waste reduction and recycling education programs.

Objective 1a: Continuation of the recycling educator and support staff positions.

Objective 1b: Continuation of the present recycling drop off box program.

Goal 2: Improve recycling opportunities within the County.

Objective 2a: Strongly encourage the public and private sectors to explore opportunities for curbside recycling programs.

Objective 2b: Work with the Chambers of Commerce to increase commercial and industrial recycling.

Goal 3: Continuation of the household hazardous waste collection program.

Objective 3a: Work with the Southwest Michigan Solid Waste Consortium to explore the possibilities of a regional household hazardous waste collection program.

Objective 3b: Explore the possibilities of private household hazardous waste collection programs for the County.

Goal 4 Improve the solid waste and recycling data base for the County.

Objective 4a: Improve the recycling, composting, reuse and waste reduction reporting program.

Objective 4b: Explore statistical methods for estimating solid waste generation rates, recycling, reuse, waste reduction and composting within the County.

DATA BASE

Identification of sources of waste generation within the county, total quantity of solid waste generated to be disposed, and sources of the information.

The generation rates for solid waste were calculated using two documents. The generation rates for residential, commercial and institutional waste were taken from the OSWER 1994 and 1996 surveys and amounts to 4.4 pounds per person per day. The industrial generation rates were taken from the "Recycling Feasibility Study for St. Joseph County" 1986 and amounts to 10.6 pounds per employee per working day. The numbers generated from these formulas were then compared to Westside Landfill's annual total for waste received from St. Joseph County, other private haulers that haul waste to out of county landfills and annual materials recovery figures generated from the drop off recycling boxes and other material recovery operations. The population of the County was estimated using 1990 census data and adjusted to 1998 using a historical growth rate of 0.00875% per year. The industrial population figures were taken from the St. Joseph County Master Plan 1997.

The population projected for the county in 1998 is 63,165. For 2003 is 66,550 and for 2008 is 69,518. The industrial employees for 1998 are estimated at 10,653. 2003 equals 11,127 and for 2008 is estimated at 11,623 employees.

TOTAL QUANTITY OF SOLID WASTE GENERATED:
197,967☐Tons or ☒Cubic Yards in1997 (identify unit of time)

TOTAL QUANTITY OF SOLID WASTE NEEDING DISPOSAL:
121,500☐Tons or ☒Cubic Yards in 1997 (identify unit of time)

FACILITY DESCRIPTIONS

Facility Type: Type II landfill.

Facility Name: Westside Landfill R.D.F.

County: St. Joseph Location: Town:6 SRange: 12 WSection(s): 22,23, 26,27
Map identifying location included in Attachment Section: ☒ Yes ☐ No

If facility is an Incinerator or a Transfer Station, list the final disposal site and location for Incinerator ash or Transfer Station wastes:

☐ Public ☒ Private Owner: Waste Management of Michigan

Operating Status (check)		Waste Types Received (check all that apply)	
☒	open	☒	residential
☐	closed	☒	commercial
☒	licensed	☒	industrial
☐	unlicensed	☒	construction & demolition
☐	construction permit	☒	contaminated soils
☐	open, but closure pending	☒	special wastes *
		☐	other:

* Explanation of special wastes, including a specific list and/or conditions: Non-hazardous, non-liquid industrial waste. Such as contaminated soils, foundry sand, asbestos and ash.

Site Size:

Total area of facility property:	640	acres
Total area sited for use:	490	acres
Total area permitted:	85	acres
Operating:	51	acres
Not excavated:	34	acres
Current capacity:	6,430,000	☒ tons or ☐ yds^3
Estimated lifetime:	12	years
Estimated days open per year:	300+	days
Estimated yearly disposal volume:	1,200,000	☐ tons or ☒ yds^3

(if applicable)
Annual energy production:

Landfill gas recovery projects:	2	megawatts
Waste-to-energy incinerators:	N/A	megawatts

FACILITY DESCRIPTIONS

Facility Type: Type III landfill

Facility Name: Westside Landfill R.D.F.

County: St. Joseph Location: Town:6 SRange: 12 WSection(s):, 23
Map identifying location included in Attachment Section: ☒ Yes ☐ No

If facility is an Incinerator or a Transfer Station, list the final disposal site and location for Incinerator ash or Transfer Station wastes:

☐ Public ☒ Private Owner: Waste Management of Michigan

Operating Status (check)		Waste Types Received (check all that apply)	
☒	open	☐	residential
☐	closed	☒	commercial
☒	licensed	☒	industrial
☐	unlicensed	☒	construction & demolition
☐	construction permit	☐	contaminated soils
☐	open, but closure pending	☐	special wastes *
		☐	other:

Site Size:

Total area of facility property:	35	acres
Total area sited for use:	35	acres
Total area permitted:	18	acres
Operating:	6	acres
Not excavated:	12	acres
Current capacity:	Included in type II numbers	
Estimated lifetime:	12	years
Estimated days open per year:	300+	days
Estimated yearly disposal volume:	Unavailable	☐ tons or ☐ yds^3

(if applicable)
Annual energy production:

Landfill gas recovery projects:	0	megawatts
Waste-to-energy incinerators:	N/A	megawatts

SOLID WASTE COLLECTION SERVICES AND TRANSPORTATION INFRASTRUCTURE

The following describes the solid waste collection services and transportation infrastructure that will be utilized within the County to collect and transport solid waste.

All waste hauling within the county is conducted by private industry with the exception of municipal yard waste pick up in certain municipalities. The following is a list of private refuse hauling firms that operate within the county.

Service Provider	Service Area	Payment	Disposal Facility
Bell and Sons Disposal	County	Customer	Westside Landfill
Browning Ferris Industries	County	Customer	Westside Landfill
Hands & Sons Disposal	County	Customer	Westside Landfill
Nissley's Disposal	County	Customer	Westside Landfill
Town & Country Disposal	County	Customer	Out of Co. Landfill
National Servall	County	Customer	Out of State Landfill
Waste Management of MI	County	Customer	Westside Landfill

EVALUATION OF DEFICIENCIES AND PROBLEMS

The following is a description of problems or deficiencies in the existing solid waste system.

Overall St. Joseph County is in excellent shape for managing its solid waste. Westside Landfill currently has 12 years of licensed disposal capacity as well as enough property for another 20 years of expansion capabilities.

The county has an established and well used recycling drop off box system that allows the opportunity for all the citizens of the county to recycle and an excellent recycling education program.

Deficiencies in the present solid waste and recycling systems are: not having a well defined waste generation and recycling rate data base, the recycling education efforts should be expanded to involve commercial and industrial generators and the encouragement of recycling opportunities through curbside recycling.

Problems expected are: the ending of the recycling drop off box and household hazardous waste collection program at the end of 1998 by Westside Landfill. These problems are addressed in the plan by recommending that the County, under the contract agreement, or request for proposals continue the recycling drop off box program and either provide household hazardous waste collection through the Southwestern Solid Waste Management Consortium or contract with a private hauler when the existing program ends.

DEMOGRAPHICS

The following presents the current and projected population densities and centers for five and ten year periods, identification of current and projected centers of solid waste generation including industrial solid waste for five and ten year periods as related to the Selected Solid Waste Management System for the next five and ten year periods. Solid waste generation data is expressed in tons or cubic yards, and if it was extrapolated from yearly data. It was calculated by using 365 days per year, or another number of days as indicated.

LAND DEVELOPMENT

The following describes current and projected land development patterns, as related to the Selected Solid Waste Management System for the next five and ten year periods.

There are no areas within the county with unexpected growth that would have a significant impact on the solid waste stream in the planning period. Below are exerts from the St. Joseph County Master Plan, dated 1997.

"In 1990 there were 58,913 in the County of whom 3,011 or 51.1 per cent were female. The median age in 1990 was 32 years. Persons over 65 years of age made up 13.1 per cent of the County population, while persons under 18 years of age made up 28.8 per cent of the population. Persons of racial minorities make up 3.8 per cent of the County population.

In 1990 there were 21,579 households in the county of which 16,070 were family households. Of the total households 60.9 per cent (13,141) were married couple families. Family households with a female head of household numbered 2,190 or 10.1 per cent. The average number of persons per household was 2.7 persons. There were 2,228 householders over 65 years of age. The county has 740 persons living in group quarters.

The growth of the population within the county has not been even. Between 1980 and 1990 four communities grew at a rate of increase twice the County average (5.1%). These were:

Centreville Village	26.1%
Constantine Village	21.0%
Constantine Township	13.9%
Lockport Township	11.4%

On the other extreme there were six communities which lost population during the decade. These were.

Leonidas Township	- 6.2%
Mendon Township	- 4.4%
Fawn River Township	- 4.2%
White Pigeon Village	- 1.4%
Park Township	- 0.1%"

SOLID WASTE MANAGEMENT ALTERNATIVES

The following briefly describes all solid waste management systems considered by the County and how each alternative will meet the needs of the County. The manner of evaluation and ranking of each alternative is also described. Details regarding the Selected Alternatives are located in the following section. Details regarding each non-selected alternative are located in the Appendix.

The following solid waste management systems were discussed and evaluated by the Committee. The Committee then selected the most appropriate solid waste management system for the county by consensus.

Alternate System No. 1.

Sanitary Landfill

- Continue the use of Westside Landfill for primary disposal for St. Joseph County solid waste.

Waste Reduction/Pollution Prevention

- Maintain the current public education and informational programs on waste reduction through the Recycling Educator.
- Maintain a Household Hazardous Waste Collection program for local residents.

Resource Recovery: Recycling & Composting

- Maintain the current recycling drop off box system.
- Continue commercial and industrial source separation and recycling efforts.
- Continue local public and private yard waste collection.

Collection Processes and Transportation

- Continue the use of private industry to collect solid waste throughout the county.

Volume Reduction

- Continue existing volume reduction techniques currently practiced in the county.

Institutional Arrangements

- Maintain the current institutional arrangements between counties and private industry.

Alternate System 2.

Sanitary Landfill

- Continue the use of Westside Landfill for primary disposal within the county.
- Expand disposal options for private industry by allowing the free flow of solid waste between Michigan counties.

Waste Reduction/Pollution Prevention

- Maintain the current public education and informational programs on waste reduction through the Recycling Educator.

- Maintain a Household Hazardous Waste Collection program for local residents.
- Increase commercial and industrial opportunities by working with the individual Chambers of Commerce.

Resource Recovery: Recycling & Composting
- Maintain the current recycling drop off box system.
- Continue commercial and industrial source separation and recycling efforts.
- Continue local public and private yard waste collection.
- Encourage the public and private sectors to explore the potential of curbside recycling pick up.

Collection Processes and Transportation
- Continue the use of private industry to collect solid waste throughout the county.

Volume Reduction
- Continue existing volume reduction techniques currently practiced in the county.

Institutional Arrangements
- Maintain the current institutional arrangements between counties and private industry.
- Allow for the free flow of solid waste to all lower peninsula counties in Michigan that wish to participate.

Alternate System 3.

Sanitary Landfill
- Continue the use of Westside Landfill for primary disposal for St. Joseph County solid waste.
- Build a new type landfill or solid waste incinerator in the county.

Waste Reduction/Pollution Prevention
- Maintain the current public education and informational programs on waste reduction through the Recycling educator.
- Maintain a Household Hazardous Waste Collection program for local residents.
- Expand the county's recycling education program and the Household Hazardous Waste Collection program.

Resource Recovery: Recycling & Composting
- Maintain the current recycling drop off box system.
- Continue commercial and industrial source separation and recycling efforts.
- Continue local public and private yard waste collection.
- Institute a mandatory curbside recycling program.

Collection Processes and Transportation
- Continue the use of private industry to collect solid waste throughout the county.

Volume Reduction

- Continue existing volume reduction techniques currently practiced in the county.

Institutional Arrangements

- Maintain the current institutional arrangements between counties and private industry.

Alternative System Evaluation

The Alternatives were evaluated on a ranking system of 1 to 5. With 1 being the least desirable and 5 being the most desirable.

ALTERNATIVE SYSTEM EVALUATION

PARAMETERS	System 1.	System 2.	System 3.
Technical Feasibility	5	5	4
Economic Feasibility	5	5	1
Access to Land	5	5	2
Access to Transportation	4	4	4
Effects on Energy	3	3	4
Environmental Impacts	3	4	4
Public Acceptance	5	5	1
Total	30	31	20

System 2. Scored the highest on the rating system. The advantages and disadvantages of System 2. are discussed in the appendix.

THE SELECTED SOLID WASTE MANAGEMENT SYSTEM

The Selected Solid Waste Management System (Selected System) is a comprehensive approach to managing the County's solid waste and recoverable materials. The Selected System addresses the generation, transfer and disposal of the County's solid waste. It aims to reduce the amount of solid waste sent for final disposal by volume reduction techniques and by various resource conservation and resource recovery programs. It also addresses collection processes and transportation needs that provide the most cost effective, efficient service. Proposed disposal areas locations and capacity to accept solid waste are identified as well as program management, funding, and enforcement roles for local agencies. Detailed information on recycling programs, evaluation, and coordination of the Selected System is included in the Appendix. The following is an overall description of the Selected System:

Alternate System 2.

Sanitary Landfill

- Continue the use of Westside Landfill for primary disposal within the county.
- Expand disposal options for private industry by allowing the free flow of solid waste between Michigan counties.

Waste Reduction/Pollution Prevention

- Maintain the current public education and informational programs on waste reduction through the Recycling Educator.
- Maintain a Household Hazardous Waste Collection program for local residents.
- Increase commercial and industrial opportunities by working with the individual chambers of commerce.

Resource Recovery: Recycling & Composting

- Maintain the current recycling drop off box system.
- Continue commercial and industrial source separation and recycling efforts.
- Continue local public and private yard waste collection.
- Encourage the public and private sectors to explore the potential of curbside recycling pick up.

Collection Processes and Transportation

- Continue the use of private industry to collect solid waste throughout the county.

Volume Reduction

- Continue existing volume reduction techniques currently practiced in the county.

Institutional Arrangements

- Maintain the current institutional arrangements between counties and private industry.
- Allow for the free flow of solid waste to all lower peninsula counties in Michigan that wish to participate.

IMPORT AUTHORIZATION

If a licensed solid waste disposal area is currently operating within the County, disposal of solid waste generated by the EXPORTING COUNTY is authorized by the IMPORTING COUNTY up to the AUTHORIZED QUANTITY according to the CONDITIONS AUTHORIZED in Table 1-A.

Table 1-A

CURRENT IMPORT VOLUME AUTHORIZATION OF SOLID WASTE

IMPORTING COUNTY	EXPORTING COUNTY	FACILITY NAME	AUTHORIZED QUANTITY/ DAILY	AUTHORIZED QUANTITY/ ANNUAL	AUTHORIZED CONDITIONS
St. Joseph	All lower Peninsula Counties	Westside Landfill	None	1,750,000 yards	None

Table 1-B

FUTURE IMPORT VOLUME AUTHORIZATION OF SOLID WASTE

CONTINGENT ON NEW FACILITIES BEING SITED

IMPORTING COUNTY	EXPORTING COUNTY	FACILITY NAME	AUTHORIZED QUANTITY/ DAILY	AUTHORIZED QUANTITY/ ANNUAL	AUTHORIZED CONDITIONS

NOT APPLICABLE

EXPORT AUTHORIZATION

If a Licensed solid waste disposal area is currently operating within another County, disposal of solid waste generated by the EXPORTING COUNTY is authorized up to the AUTHORIZED QUANTITY according to the CONDITIONS AUTHORIZED in Table 2-A if authorized for import in the approved Solid Waste Management Plan of the receiving County.

Table 2-A

CURRENT EXPORT VOLUME AUTHORIZATION OF SOLID WASTE

EXPORTING COUNTY	IMPORTING COUNTY	FACILITY NAME	AUTHORIZED QUANTITY/ DAILY	AUTHORIZED QUANTITY/ ANNUAL	AUTHORIZED CONDITIONS

Since all Michigan counties have not completed their solid waste plans St. Joseph County may export solid waste to all Michigan counties, providing those counties list St. Joseph County as an exporting county in their Solid Waste Management Plan. The counties listed below are the counties that have responded as of this date.

St. Joseph	Barry	Hasting Landfill	up to 500,000 G.C.Y.
St. Joseph	Ottawa	Autumn Hills	1,500,000 T.
St. Joseph	Ottawa	Ottawa County Farms	1,500,000 T.

Table 2-B

FUTURE EXPORT VOLUME AUTHORIZATION OF SOLID WASTE

CONTINGENT ON NEW FACILITIES BEING SITED

EXPORTING COUNTY	IMPORTING COUNTY	FACILITY NAME	AUTHORIZED QUANTITY/ DAILY	AUTHORIZED QUANTITY/ ANNUAL	AUTHORIZED CONDITIONS

NOT APPLICABLE

* NOTE: Export authorizations from other counties will be incorporated as their solid waste plans become available.

SOLID WASTE DISPOSAL AREAS

The following identifies the names of existing disposal areas which will be utilized to provide the required capacity and management needs for the solid waste generated within the County for the next five years and, if possible, the next ten years. Additional facilities within the County with applicable permits and licenses may be utilized as they are sited by this Plan, or amended into this Plan, and become available for disposal. If this Plan update is amended to identify additional facilities in other counties outside the County, those facilities may only be used if such import is authorized in the receiving County's Plan. Facilities outside of Michigan may also be used if legally available for such use.

Type II Landfill: - Westside Landfill

Type III Landfill: - Westside Landfill

SOLID WASTE COLLECTION SERVICES AND TRANSPORTATION:

The following describes the solid waste collection services and transportation infrastructure which will be utilized within the County to collect and transport solid waste.

St. Joseph County solid waste is collected by private haulers that contract with individuals or municipalities for service. Almost all waste is hauled to Westside Landfill, which is located on a Class A road. A small amount of St. Joseph County's solid waste is collected by private haulers and hauled to transfer stations located in Coldwater and Kalamazoo.

RESOURCE CONSERVATION EFFORTS:

The following describes the selected system's proposed conservation efforts to reduce the amount of solid waste generated throughout the County. The annual amount of solid waste currently or proposed to be diverted from landfills and incinerators is estimated for each effort to be used, if possible. Since conservation efforts are provided voluntarily and change with technologies and public awareness, it is not this Plan update's intention to limit the efforts to only what is listed. Instead citizens, businesses, and industries are encouraged to explore the options available to their lifestyles, practices, and processes which will reduce the amount of materials requiring disposal.

Effort Description	Est. Diversion Yards/Yr	Current	5th yr	10th yr
Recycling Education & Drop off System		19,052	21,035	23,224
City of Sturgis Curbside Recycling	Proposed	0	2,880	3,180
Commercial & Industrial Education Efforts.	Proposed	0	2,300	3,000
Retired Engineers Technical Assistance	Proposed	0	1,000	1,500

WASTE REDUCTION, RECYCLING, & COMPOSTING PROGRAMS:

Volume Reduction Techniques

The following describes the techniques utilized and proposed to be used throughout the County which reduces the volume of solid waste requiring disposal. The annual amount of landfill air space not used as a result of each of these techniques is estimated. Since volume reduction is practiced voluntarily and because technologies change and equipment may need replacing, it is not this Plan update's intention to limit the techniques to only what is listed. Persons within the County are encouraged to utilize the technique that provides the most efficient and practical volume reduction for their needs.

VOLUME REDUCTION TECHNIQUES

Technique Description	Est. Air Space Conserved Yds^3/Yr	Current	5th yr	10th yr
Recycling Drop Off Box Collection System		19,052	21,035	23,224
City of Sturgis Curbside Collection.	Proposed	0	2,880	3,180
Municipal Composting Programs.		22,216	23,407	24,450
Commercial and Industrial Recycling.		33,554	40,724	46,468

Overview of Resource Recovery Programs:

The following describes the type and volume of material in the County's waste stream that may be available for recycling or composting programs. How conditions in the County affect or may affect a recycling or composting program and potential benefits derived from these programs is also discussed. Impediments to recycling or composting programs which exist or which may exist in the future are listed, followed by a discussion regarding reducing or eliminating such impediments.

The following list represents the per cent of materials present in the waste stream. From the Office of Solid Waste and Environmental Response Division of the Environmental Protection Agency. The study was conducted from 1994 to 1996.

Paper = 22.4 %
Cardboard = 16.4 %
Plastics = 9.5 %
Rubber = 2.2 %
Glass = 6.3 %
Yard Waste = 14.6 %
Wood = 7.0 %
Mixed Metals = 7.6 %

All categories of these materials have availability to be recycled in St. Joseph County although specific types of materials such as plastic wrapping may not be accepted for recycling. The main impediments to recycling of materials is market availability, sorting and transportation costs and price. Markets for recycled material fluctuate bringing uncertainty to the economics feasibility of collection and marketing of these materials.

The established markets for the materials being presently collected justifies the continued collection of these materials. Periodic market evaluation for expanded material collection is part of this Solid Waste Plan. If stable markets appear to become available the collection of expanded material will be considered to be added to the present system.

Yard Waste, brush and leaf composting has become more important since the ban on landfilling of these materials. All communities with the exception of one within the county have leaf and yard waste collection or site availability. The Recycling Educator is currently working with the only community not offering this service to see if it can be provided. The two larger communities of Sturgis and Three Rivers share composting equipment that includes a windrow turner and a tub grinder. The smaller communities have lower tech programs that include leaf dumps and sheet composting.

There are also five major recycling industries located within the county. These are: Entech Tire Recycling, Oxender Wood Waste Recycling, Sturgis Iron and Metal, Simplex Paper Company and White Pigeon Paper Company.

X Recycling programs within the County are feasible. Details of existing and planned programs are included on the following pages.

X Composting programs within the County are feasible. Details of existing and planned programs are included on the following pages.

X Programs for source separation of potentially hazardous materials are feasible and details are included on the following pages.

RECYCLING AND COMPOSTING

The following is a brief analysis of the recycling and composting programs selected for the County in this Plan. Additional information on operation of recycling and composting programs is included in Appendix A. The analysis covers various factors within the County and the impacts of these factors on recycling and composting. It is not this Plan's intent to prohibit additional programs or expansions of current programs to be implemented beyond those listed.

Recycling - The continuation of recycling drop off program is recommended in the plan. This program has been well used by the citizens of the county. There are currently 8 drop off boxes

located throughout the county providing recycling opportunities for all the public. The only improvements to the existing systems recommended are providing permanent locations where there are currently rotating boxes and clearly marked signs which explain the materials that are accepted. The current utilization rate of the boxes is approximately 60 pounds of recycled material per capita per year.

The City of Sturgis has taken bids on curbside recycling for residents of the City. This program be voted on November 3rd. Experience with Coldwater's curbside recycling program shows a utilization rate of 96 pounds of recycled materials per capita per year without an educational effort. The program in Sturgis is expected to exceed this amount. The program is scheduled for biweekly pickup of recycled materials. As part of the Solid Waste Management Plan the County will encourage municipalities and private haulers to explore curbside recycling opportunities.

Another aspect of the Solid Waste Management Plan is to work with the individual Chambers of Commerce to institutionalize a recycling education program within the County. The program has intentions of keeping businesses informed of recycling and cost saving opportunities.

Composting - All communities within the county except for one offer leaf and yard waste composting opportunities. The two larger communities have more sophisticated composting programs and access to windrow turners and tub grinders. The smaller communities have less sophisticated programs and limited access to equipment but they also have less volume to contend with. These programs will be addressed in the County by providing expertise to the smaller communities through the St. Joseph County Cooperative Extension Service.

The major impediments to recycling and composting systems again are costs and markets. There are limited funds available to subsidize these systems and without stable markets for the materials only moderate increases in collection are expected.

RECYCLING:

Program Name	Service Area	Public or Private	Collection Point	Collection Frequency	Materials Collected	Program Management	Evaluation
Recycling Drop Off Boxes	County	5	d	d	A,B,C,E,F	W.M.	County

[1] Identified by where the program will be offered. If throughout the planning area, then listed by planning area; if only in specific counties, then listed by county; if only in specific municipalities, then listed by its name and respective county.

[1] Identified by 1 = Designated Planning Agency; 2 = County Board of Commissioners; 3 = Department of Public Works; 4 = Environmental Group 5 = Private Owner/Operator; 6 = Other (Identified on page

[1] Identified by c = curbside; d = drop-off; o = onsite; and if other, explained.

[1] Identified by d = daily; w = weekly; b = biweekly; m = monthly; and if seasonal service also indicated by Sp = Spring; Su = Summer; Fa = Fall; Wi = Winter.

[1] Identified by the materials collected by listing of the letter located by that material type. A = Plastics; B = Newspaper; C = Corrugated Containers; D = Other Paper; E = Glass; F = Metals; P = Pallets; J = Construction/Demolition; K = Tires; L1, L2 etc. = as identified on page

[1] Identified by where the program will be offered. If throughout the planning area, then listed by planning area; if only in specific counties, then listed by county; if only in specific municipalities, then listed by its name and respective county.

COMPOSTING:

Program Name	Service Area	Public or Private	Collection Point	Collection Frequency	Materials Collected	Program Management.	Evaluation
Burr Oak	Village	3	c,d	Fa	G,L,W	B.O.	B.O.
Centreville	Village	3	c,d	Fa	G,L,W	Cent.	Cent.
Colon	Village	3	c,d	Fa	G,L	Colon	Colon
Constantine	Village	3	c,d	b,Fa	G,L,W	Const	Const.
Sturgis	City	3	c,d	m,Fa	G,L,W	City	City
Three Rivers	City	3	c	Fa	L	City	City
White Piegeon	Village	3	c	w,Fa	G, L	W.P.	W.P.

[1] Identified by where the program will be offered. If throughout the planning area, then listed by planning area; if only in specific counties, then listed by county; if only in specific municipalities, then listed by its name and respective county.

[1] Identified by 1 = Designated Planning Agency; 2 = County Board of Commissioners; 3 = Department of Public Works; 4 = Environmental Group

5 = Private Owner/Operator; 6 = Other (Identified on page

[1] Identified by c = curbside; d = drop-off; o = onsite; and if other, explained.

[1] Identified by d = daily; w = weekly; b = biweekly; m = monthly; and if seasonal service also indicated by Sp = Spring; Su = Summer; Fa = Fall; Wi = Winter.

[1] Identified by the materials collected by listing of the letter located by that material type. G = Grass Clippings; L = Leaves; F = Food; W = Wood; P = Paper;

S = Municipal Sewage Sludge; A = Animal Waste/Bedding; M = Municipal Solid Waste; L1, L2 etc. = as identified on page

SOURCE SEPARATION OF POTENTIALLY HAZARDOUS MATERIALS

Since improper disposal of non-regulated hazardous materials has the potential to create risks to the environment and human health, the following programs have been implemented to remove these materials from the County's solid waste stream.

Program Name	Service Area	Public or Private	Collection Point	Collection Frequency	Materials Collected	Program Management.	Evaluation
Westside Landfill H.H.W.	County	Private	Westside	d	all	W.M.	W.M.

. [1] Identified by c = curbside; d = drop-off; o = onsite; and if other, explained.

[1] Identified by d = daily; w = weekly; b = biweekly; m = monthly; and if seasonal service also indicated by Sp = Spring; Su = Summer; Fa = Fall; Wi = Winter.

[1] Identified by the materials collected by listing of the letter located by that material type. AR = Aerosol Cans; A = Automotive Products except Used Oil, Oil Filters & Antifreeze; AN = Antifreeze; B1 = Lead Acid Batteries; B2 = Household Batteries; C = Cleaners and Polishers; H = Hobby and Art Supplies; OF = Used Oil

Filters; P = Paints and Solvents; PS = Pesticides and Herbicides; PH = Personal and Health Care Products; U = Used Oil

PROPOSED RECYCLING:

Program Name	Service Area	Public or Private	Collection Point	Collection Frequency	Materials Collected	Program Management.	Evaluation
City of Sturgis	Sturgis	5	c	b	A,B,C ,E,F	City	City

OT = Other Materials and identified.

[1] Identified by where the program will be offered. If throughout the planning area, then listed by planning area; if only in specific counties, then listed by county; if only in specific municipalities, then listed by its name and respective county.

[1] Identified by 1 = Designated Planning Agency; 2 = County Board of Commissioners; 3 = Department of Public Works; 4 = Environmental Group 5 = Private Owner/Operator; 6 = Other

[1] Identified by c = curbside; d = drop-off; o = onsite; and if other, explained.

[1] Identified by d = daily; w = weekly; b = biweekly; m = monthly; and if seasonal service also indicated by Sp = Spring; Su = Summer; Fa = Fall; Wi = Winter.

[1] Identified by the materials collected by listing of the letter located by that material type. A = Plastics; B = Newspaper; C = Corrugated Containers; D = Other Paper; E = Glass; F = Metals; P = Pallets; J = Construction/Demolition; K = Tires;

TABLE III-5

PROPOSED COMPOSTING:

Program Name, (if known)	Service Area[1] Materials Collected[5] Evaluation	Public or Private	Collection Program Management Point[3] Development	Collection Responsibilities[2] Frequency[4] Operation		
NONE		____	____	____	____	____

PROPOSED SOURCE SEPARATION OF POTENTIALLY HAZARDOUS MATERIALS:

Program Name	Service Area	Public or Private	Collection Point	Collection Frequency	Materials Collected	Program Management.	Evaluation
Southwest Michigan Solid Waste Management Consortium*							

Contract with Private Providers*

- Details of these proposed programs have not been worked out at this time.

MARKET AVAILABILITY FOR COLLECTED MATERIALS:

The following identifies how much volume that existing markets are able to utilize of the recovered materials which were diverted from the County's solid waste stream. Since the materials are commingled in the drop off boxes and the processing center does not keep records of individual items by county specific amounts for some materials cannot be identified.

Collected Material:	In-State Markets	Out-of-State Markets	Collected Material	In-State Markets	Out-of-St Markets
A. TOTAL PLASTICS:	No Data	_____	G. GRASS AND LEAVES:	7,402	
B. NEWSPAPER:	1,404	_____	H. TOTAL WOOD WASTE:	No Data	
C. CORRUGATED CONTAINERS:	678	_____	I. CONSTRUCTION AND DEMOLITION:	No Data	
D. TOTAL OTHER PAPER:	No Data	_____	J. FOOD AND FOOD PROCESSING	No Data	
E. TOTAL GLASS:	No Data	_____	K. TIRES:	912	
F. OTHER MATERIALS:			L. TOTAL METALS:		
F1._____	No Data	_____	F3._____	815	
F2._____	_____	_____	F4._____	_____	

IDENTIFICATION OF RESOURCE RECOVERY MANAGEMENT ENTITIES:

The following identifies those public and private parties, and the resource recovery or recycling programs for which they have management responsibilities.

There are three active environmental groups within the county. None have management responsibility for solid waste management within the county.

The St. Joseph County Administrator is responsible for the oversight and implementation of the solid waste management plan and is the Designated Solid Waste Planning Agency.

The St. Joseph County Board of Commissioners is responsible for approving and appropriating funds for the various solid waste management programs within the county.

The St. Joseph County Cooperative Extension Agency is responsible for recycling education within the county.

The St. Joseph County Solid Waste Management Planning Committee is responsible for solid waste planning within the county.

Waste Management of Michigan is responsible for Westside Landfill operations and is presently responsible for the recycling drop off box and household hazardous waste collection systems within the county.

Private refuse haulers are responsible for all collection of solid waste within the county.

PROJECTED DIVERSION RATES:

The following estimates the annual amount of solid waste which is expected to be diverted from landfills and incinerators as a result of the current resource recovery programs and in five and ten years. Since the materials are commingled in the drop off boxes and the processing center does not keep records according to county specific amounts for some materials are not available.

Collected Material:	Projected Annual: Tons Diverted	Current	5th Yr	10th Yr
A. TOTAL PLASTICS:		No data	No data	No data
B. NEWSPAPAER:		1,404	1,550	1,711
C. CORRUGATED:		678	749	826
D. OTHER PAPER:		No data	No data	No data
E. TOTAL GLASS:		No data	No data	No data
F. OTHER MATERIALS:		No data	No data	No data
G GRASS AND LEAVES:		7,402	7,802	8,150
H. WOOD WASTE:		No data	No data	No data
I. CONSTRUCTION AND DEMOLITION:		No data	No data	No data
J. FOOD RESIDUALS:		No data	No data	No data
K. TIRES:		912	962	1,005
L. TOTAL METALS:		815	900	993

TIMETABLE FOR SELECTED SYSTEM IMPLEMENTATION

This timetable is a guideline to implement components of the Selected System. The Timeline gives a range of time in which the component will be implemented such as "1995-1999" or "On-going." Timelines may be adjusted later, if necessary.

TABLE III-7

Management Components	Timeline
Landfilling	On-going
Recycling Drop Off Boxes	On-going
Recycling Education	On-going
Composting	On-going
Commercial & Industrial Education Program	1999-2000
Data Base refinements	1999 -
Household Hazardous Waste Collection	On-going

EDUCATIONAL AND INFORMATIONAL PROGRAMS:

It is often necessary to provide educational and informational programs regarding the various components of a solid waste management system before and during its implementation. These programs are offered to avoid miscommunication which results in improper handling of solid waste and to provide assistance to the various entities who participate in such programs as waste reduction and waste recovery. Following is a listing of the programs offered or proposed to be offered in this County.

Program Topic	Delivery Medium2	Targeted Audience3	Program Provider4
3	O	P	FRIENDS OF ST. JOE RIVER
1,5	O,F	P	GREEN SCENE CLUB
5(SCHOOL PROGRAMS)	W	S	EXTENSION SERVICE
1(SCHOOL PROGRAMS)	W	S	EXTENSION SERVICE
4(SCHOOL PROGRAMS)	W	S	EXTENSION SERVICE
1(CONSERVATION TOUR)	T	P	EXTENSION SERVICE
3	F	P	REGIONAL GROUP
1(MERF VIDEO)	T	P	EXTENSION SERVICE
1	N,R,T	P	EXTENSION SERVICE
1(LIBRARY DISPLAYS)	R	P	EXTENSION SERVICE
1(FAIR DISPLAYS)	E	P	EXTENSION SERVICE
1(RECYCLING GUIDE)	F	P	EXTENSION SERVICE
5(BAG RECYCLING)	R,OT	P+	EXTENSION SERVICE
1(SMASH &BIN)	OT	P	EXTENSION SERVICE
1(PARADE)	E,OT (FLOAT)	P	EXTENSION SERVICE
2(NO BURN)	N,R	P	EXTENSION SERVICE
1,5 (QUARTERLY)	O	P,B,I	EXTENSION SERVICE
2(COMPOSTING)	W	P	EXTENSION SERVICE
1,2,3,4,5(EARTH DAY)	E,OT,R	P,B	EXTENSION SERVICE
5(MUG REUSE)	OT	P	EXTENSION SERVICE
5(PAPER REUSE)	O	B,P	EXTENSION SERVICE
3(PAINT)	O,R	P	EXTENSION SERVICE
3(SEWER CAMPAIGN)	OT	P	EXTENSION SERVICE
3(HHW COLLECTION)	OT	P	REGIONAL GROUP
2(TWP. PROGRAM)	F,W	P	EXTENSION SERVICE
1,5(BUSINESS SURVEY)	OT	B,I	EXTENSION SERVICE
1,4,5(CLUB , PRES.)	W	P	EXTENSION SERVICE
1(WASTE REDUCTION)	W	B,I	EXTENSION SERVICE
1(RECYCLE DAYS)	R,E	P,S	EXTENSION SERVICE
2,	O,E,OT	P	CONSERVATION DIST.
0(PESTICIDE COLL.)	F,O	I-FARM	CONSERVATION DIST.
4(CONSER. TOURS)	W,OT	P	CONSERVATION DIST.
1,2,3,4,5(HOME A SYST)	W	P,S	EXTENSION SERVICE

1 Identified by 1 = recycling; 2 = composting; 3 = household hazardous waste; 4 = resource conservation; 5 = volume reduction; 6 = other which is explained.

2 Identified by w = workshop; r = radio; t = television; n = newspaper; o = organizational newsletters; f = flyers; e = exhibits and locations listed; and ot = other which is explained.

3 Identified by p = general public; b = business; i = industry; s = students with grade levels listed. In addition if the program is limited to a geographic area, then that county, city, village, etc. is listed.

SITING REVIEW PROCEDURES

Not Appicable

AUTHORIZED DISPOSAL AREA TYPES

The locally approved 280 acre expansion of Westside Landfill.

The continuation of the existing Westside Type III facility.

Unlicensed transfer stations, less than 200 yards per day if located in industrial or light industrial zoning..

A Licensed Solid Waste Transfer Station located at Westside Landfill only in the event of the landfills closure.

NON - AUTHORIZED DISPOSAL TYPES.

Licensed Solid Waste Transfer Station.

Licensed Solid Waste Processing Plant.

Solid Waste Incinerator

SITING CRITERIA AND PROCESS

The following process describes the criteria and procedures to be used to site solid waste disposal facilities and determine consistency with this Plan

St. Joseph County has at least ten years of certified capacity and therefor St. Joseph County is not required to have a siting process in its Plan.

SOLID WASTE MANAGEMENT COMPONENTS

The following identifies the management responsibilities and institutional arrangements necessary for the implementation of the Selected Waste Management System. Also included is a description of the technical, administrative, financial and legal capabilities of each identified existing structure of persons, municipalities, counties and state and federal agencies responsible for solid waste management including planning, implementation, and enforcement.

Solid Waste Management Plan Implementation and Enforcement: St. Joseph County Administrator. The Administrator acting on behalf of the County Board of Commissioners is responsible for the implementation and enforcement of the plan. The Administrator has all the technical, administrative, financial and legal power vested in the position by the County Board of Commissioners.

Solid Waste Management Planning: The St. Joseph County Solid Waste Management Planning Committee has responsibility for solid waste management planning. They are appointed by the St. Joseph County Board of Commissioners. They serve as an advisory board and have technical expertise in solid waste management. They have no legal, administrative, or financial capabilities.

IDENTIFICATION OF RESPONSIBLE PARTIES

Document which entities within the County will have management responsibilities over the following areas of the Plan.

Resource Conservation: St. Joseph County Cooperative Extension Office, Resource Recovery Agent.

Source or Waste Reduction: St. Joseph County Cooperative Extension Office, Resource Recovery Agent.

Product Reuse: St. Joseph County Cooperative Extension Office, Resource Recovery Agent.

Reduced Material Volume: St. Joseph County Cooperative Extension Office, Resource Recovery Agent.

Increased Product Lifetime: St. Joseph County Cooperative Extension Office, Resource Recovery Agent.

Decreased Consumption: St. Joseph County Cooperative Extension Office, Resource Recovery Agent

Composting: Individual municipalities.

Recycling: For the Drop Off Boxes, County Board of Commissioners in cooperation with Westside Landfill. For the proposed City of Sturgis curbside program, the Sturgis City Commission.

Energy Production: Westside Landfill.

Volume Reduction Techniques: Private haulers and Westside Landfill.

Collection Processes: Private haulers.

Transportation: Private haulers.

Disposal Areas: Westside Landfill.

Processing Plants: Not applicable.

Incineration: Not applicable.

Transfer Stations: Not applicable.

Sanitary Landfills: Waste Management of Michigan.

Ultimate Disposal Area Uses: Waste Management of Michigan.

Local Responsibility for Plan Update Monitoring & Enforcement: County Administrator.

Educational and Informational Programs: St. Joseph County Cooperative Extension Office, Resource Recovery Agent.

LOCAL ORDINANCES AND REGULATIONS AFFECTING SOLID WASTE DISPOSAL

This Plan update's relationship to local ordinances and regulations within the County is described in the option(s) marked below:

☐ 1. Section 11538.(8) and rule 710 (3) of Part 115 prohibits enforcement of all County and local ordinances and regulations pertaining to solid waste disposal areas unless explicitly included in an approved Solid Waste Management Plan. Local regulations and ordinances intended to be part of this Plan must be specified below and the manner in which they will be applied described.

None

CAPACITY CERTIFICATIONS

Every County with less than ten years of capacity identified in their Plan is required to annually prepare and submit to the DEQ an analysis and certification of solid waste disposal capacity validly available to the County. This certification is required to be prepared and approved by the County Board of Commissioners.

☒ This County has more than ten years capacity identified in this Plan and an annual certification process is not included in this Plan.

☐ Ten years of disposal capacity has not been identified in this Plan. The County will annually submit capacity certifications to the DEQ by June 30 of each year on the form provided by DEQ. The County's process for determination of annual capacity and submission of the County's capacity certification is as follows:

APPENDIX

ADDITIONAL INFORMATION REGARDING THE SELECTED SYSTEM

EVALUATION OF RECYCLING

The following provides additional information regarding implementation and evaluations of various components of the Selected System.

The present solid waste management system in St. Joseph County has improved and evolved over the last decade. The drop off box recycling system started with one box twelve years ago and presently has grown to 9 drop off boxes presenting recycling opportunities for all the residents of the county. It is expected that recycling systems will continue to evolve over the next ten years providing even greater opportunities for resource recovery from the waste stream. The Committee deemed its responsibility to facilitate this evolution by encouraging cooperative efforts between the public and private sectors.

Although the present system has worked well within the county the addition of curbside recycling, commercial and industrial educational efforts, enhanced data collection and the examination of expanded materials recovery will improve the system.

The major impediments to recycling are the costs associated with recycling systems and market stability. The costs associated with recycling are conservatively estimated at twice the cost of landfill disposal. This added to abundant landfill space, fluctuations and uncertainty in the markets for recycled materials are the main impediments to increased resource recovery efforts. With limited financial resources economics is a primary consideration in solid waste management systems.

DETAILED FEATURES OF RECYCLING AND COMPOSTING PROGRAMS:

The recycling drop off system has been established in the county for the last 12 years. It has expanded from 2 drop off boxes to the present system of 9 boxes that serve 9 locations. Since its inception the system has been voluntarily run by Westside Landfill as a community service. This will change as of January 1, 1999. Under the agreement signed by the County and Westside the County will take responsibility for the program. The agreement further states that Westside will carry on the program at a cost not to exceed $75,000 per year. The county may wish to issue requests for proposals for continuation of the system or they can contract with Westside Landfill to operate the system.

The current system consists of 9, 40 yard recycling drop off boxes at 9 locations. There are two locations in the City of Sturgis. Each location has two drop off boxes. Three Rivers has one location where one or two boxes are located depending on demand. The Village of Centreville has one location with one box. Mendon, Colon, Burr Oak, Constantine, and Three Rivers all have one location with one box. These locations are served on a rotating basis with the box being present approximately one out of every three weeks. Westside Landfill in conjunction with the Recycling Educator systematically refine the system based on demand and historical data.

The materials collected at these sites are newspaper, #2 plastics, kitchen metal, clear and colored glass. The per capita use of the boxes is approximately 60 pounds per year. The materials are hauled to Waste Management's processing facility located in Battle Creek for processing and shipment to markets.

The selected alternative proposes this system be retained and refined by exploring the market potential for new materials. Other aspects of this plan to increase recycling are educational efforts directed through the Chambers of Commerce to increase commercial and industrial recycling and, the encouragement of both the public and private

sectors to explore the potential of curbside recycling within the county. Both of these efforts will be conducted by the Recycling Educator in conjunction with the Solid Waste Planning Committee.

There are also five major private recycling industries located within the county. These are: Entech Tire Recycling, Oxender Wood Waste Recycling, Sturgis Iron and Metal, Simplex Paper Company and White Pigeon Paper Company.

Composting programs located within the county are run by the individual municipalities. All cities and village except for one have composting programs. These programs range from sophisticated in the larger cities to lower technology in the smaller villages. There have been no reported problems associated with these program and the operation and maintenance is left up to the individual municipalities.

The Recycling Educator also has programs aimed at the individual composter. With the ban on yard waste disposal in landfills this has become an important part of the solid waste management plan. The selected alternative advocates the continuation of this educational effort through the continuation of the Recycling Educator funding.

The following briefly describes the processes used or to be used to select the equipment and locations of the recycling and composting programs included in the Selected System.

Equipment Selection

Recycling Drop off Boxes: Nine, 40 yard recycling drop off boxes are located within the county. These service all the communities within the county with some being provided on a rotating basis.

Composting: The Cities of Sturgis and Three Rivers both are part of the southwestern Michigan composting program that shares a windrow turner and a tub grinder between four communities. The smaller village use equipment that available in their respective departments of public works.

Private industry has effective managed the solid waste collection, transportation, and disposal in the County. They are responsible for their own equipment selection.

Site Availability & Selection

Recycling: The recycling drop off boxes all have established locations within the communities throughout the county.

Landfill: Westside Landfill has 280 additional acres available for expansion. See attached map.

Licensed Solid Waste Transfer Station: Only in the event of Westside Landfills closure.

Unlicensed Solid Waste Transfer Station: May be located in an area that is zoned industrial or light industrial.

Composting Operating Parameters:

The following identifies some of the operating parameters which are to be used or are planned to be used to monitor the composting programs.

Existing Programs:

Program Name:	pH Range	Heat Range	Other Parameter	Measurement Unit
Left up to the individual municipalities				

Coordination Efforts:

Solid Waste Management Plans need to be developed and implemented with due regard for both local conditions and the state and federal regulatory framework for protecting public health and the quality of the air, water, and land. The following states the ways in which coordination will be achieved to minimize potential conflicts with other programs and, if possible, to enhance those programs.

It may be necessary to enter into various types of agreements between public and private sectors to be able to implement the various components of this solid waste management system. The known existing arrangements are described below which are considered necessary to successfully implement this system within the County. In addition, proposed arrangements are recommended which address any discrepancies that the existing arrangements may have created or overlooked. Since arrangements may exist between two or more private parties that are not public knowledge, this section may not be comprehensive of all the arrangements within the County. Additionally, it may be necessary to cancel or enter into new or revised arrangements as conditions change during the planning period. The entities responsible for developing, approving, and enforcing these arrangements are also noted.

Solid waste management coordination in the County is a cooperative effort between the public and private sectors. The Solid Waste Management Committee has taken an important role in evaluating alternatives and recommending actions to the County Administrator and the County Board of Commissioners. The Planning Committee works closely with the Recycling Educator to determine which management components are best suited to the County.

The County Administrator is responsible for enforcement of the plan and works closely with the Recycling Educator and the County Board of Commissioners.

Private industry including haulers and Westside Landfill have worked cooperatively with the Solid Waste Planning Committee, the Recycling Educator, the County Administrator, and the County Board of Commissioners. This has made possible a cooperative and problem solving atmosphere within the County.

The St. Joseph County Board of Commissioners has entered into agreements with Waste Management of Michigan. The agreement is referenced is certain sections of this plan and is available for review at the St. Joseph County's Administrators Office.

The County is also an active member of the Southwest Michigan Solid Waste Management Consortium. The county is currently working with the Consortium to explore the feasibility of a regional Household Hazardous Waste Collection service that would serve member counties.

COSTS & FUNDING:

The following estimates the necessary management, capital, and operational and maintenance requirements for each applicable component of the solid waste management system. In addition, potential funding sources have been identified to support those components.

System Component[1]	Estimated Costs	Potential Funding Sources
Resource Conservation Efforts	Included in Education Budget	Host Community Fees
Resource Recovery Programs	$75,000.00 / year $35,000.00 / year	Host Community Fees Household Hazrdous Waste Collection
Volume Reduction Techniques	Included in Educational & Informational Budget	Host Community Fees
Collection Processes	Unknown	Private Haulers
Transportation	Unknown	Private Haulers
Disposal Areas	Unknown	Waste Management
Future Disposal Area Uses	Unkown	Waste Management
Management Arrangements	Unknown	Administrators Budget
Educational & Informational Programs	$35,000.00 / year	Host Community Fees

1 These components and their subcomponents may vary with each system.

EVALUATION SUMMARY OF THE SELECTED SYSTEM:

The solid waste management system has been evaluated for anticipated positive and negative impacts on the public health, economics, environmental conditions, siting considerations, existing disposal areas, and energy consumption and production which would occur as a result of implementing this Selected System. In addition, the Selected System was evaluated to determine if it would be technically and economically feasible, whether the public would accept this Selected System, and the effectiveness of the educational and informational programs. Impacts to the resource recovery programs created by the solid waste collection system, local support groups, institutional arrangements, and the population in the County in addition to market availability for the collected materials and the transportation network were also considered. Impediments to implementing the solid waste management system are identified and proposed activities which will help overcome those problems are also addressed to assure successful programs. The Selected System was also evaluated as to how it relates to the Michigan Solid Waste Policy's goals. The following summarizes the findings of this evaluation and the basis for selecting this system:

The selected system is a gradual refinement of the existing solid waste management system that has worked well for the County. Analysis of the existing data indicates that approximately 40% of the solid waste in the county is presently being recovered from the waste stream and that approximately 60% of the waste stream is being landfilled. This is consistent with the State's goals of having 40% - 60% of the waste stream recovered by reduction, reuse, composting and recycling by the year 2005.

The potential impacts of the Selected Alternative are discussed below.

Public Health - The Selected system relies heavily on the use of landfills for final disposal. Because of recent improvements in landfill design the public health is safe guarded much better than in the past. The disadvantage is there is a long term liability associated with the placement of refuse in landfills. Since the State is responsible for enforcement of landfill regulation adequate staffing and enforcement must remain in place to protect the public health.

Economics - The Selected Alternative represents only a modest cost increase over the present system of approximately $100,000. This cost increase is proposed to be funded through host community fees. The public user cost estimates, that include capital, operational, and maintenance, for the alternatives are estimated as follows: System 1. $8.8M, System 2. $8.9M, and System 3. $28.9 M. Economics is one of the primary factors that decide solid waste management alternatives. As long as other systems do not favorable compare to landfills they will continue to be the primary source for disposal.

Environmental Effects - The environmental effects of the selected system include a gradual improvement over the present system. Increased material recovery from the waste stream is expected. There is also the major benefit of having an environmental education program in effect in the county. The major disadvantage of the system is it does not maximize the recovery of materials from the waste stream. This is mainly an issue of economics due to comparatively high costs of material recovery.

Energy Use - The selected system is efficient in collection of solid waste due to short hauling distance to the disposal area. Westside Landfill is also in the process of producing pipe line quality natural gas from the methane generated at the landfill. The disadvantage of the selected system is

incineration may be more efficient at energy production. Costs is the major factor that inhibits incineration.

Siting Problems - The selected system major advantage is that it is existing and Westside Landfill has a site large enough to accommodate the County for the next 32 years. With this system there are no problems with siting.

The selected system is described below accompanied by a brief description of the approach that will be relied on. Specific actions and responsibilities are described in the Educational and Informational Programs and Identification of Responsible Parties.

Alternate System 2.

Sanitary Landfill

- Continue the use of Westside Landfill for primary disposal within the county. Westside Landfill has made a commitment to the county to provide primary disposal. This commitment is document in this plan.
- Expand disposal options for private industry by allowing the free flow of solid waste between Michigan counties. This Solid Waste Plan lists all lower peninsula counties as importing counties and recognizes all counties that list St. Joseph County as an exporting county in their plans.

Waste Reduction/Pollution Prevention

- Maintain the current public education and informational programs on waste reduction through the Recycling educator. It is recommended in this plan that the Recycling Educator position be maintained in this plan. The position will be financed in part by host community fees.
- Maintain a Household Hazardous Waste Collection program for local residents. This plan recommends that the Household Hazardous Waste Collection be continued in the county. This program will also be financed by host community fees. The County is currently working with Southwest Michigan Solid Waste Consortium on providing this service after December 31st.
- Increase commercial and industrial opportunities by working with the individual chambers of commerce. This educational effort will be coordinated through the Cooperative Extension Office's Recycling Educator.

Resource Recovery: Recycling & Composting

- Maintain the current recycling drop off box system. This program is recommended to be continued through contract with private industry. It is proposed to be financed through host community fees.
- Continue commercial and industrial source separation and recycling efforts. This aspect will be part of the Recycling Educators efforts.
- Continue local public and private yard waste collection. This is a continuation of the status quo.

Collection Processes and Transportation

- Continue the use of private industry to collect solid waste throughout the county. This is continuation of the status quo.

Volume Reduction

- Continue existing volume reduction techniques currently practiced in the county. This is currently being practiced by private industry.

Institutional Arrangements

- Maintain the current institutional arrangements between counties and private industry. This is a continuation of the status quo.
- Allow for the free flow of solid waste to all lower peninsula counties in Michigan that wish to participate. This aspect is incorporated into this agreement.

ADVANTAGES AND DISADVANTAGES OF THE SELECTED SYSTEM:

Each solid waste management system has pros and cons relating to its implementation within the County. Following is an outline of the major advantages and disadvantages for this Selected System.

ADVANTAGES:

1. Established solid waste management systems that are working well.
2. Gradual refinements to the system that allow for improvements and evolution.
3. Cost effective.
4. Cooperative partnership between the public and private sectors.
5. Technically feasible .
6. Politically and socially acceptable.
7. Encourages rather than forces action.
8. Presents gradual expanded opportunities for recycling to the public.

DISADVANTAGES:

1. It doesn't recover all potentially recoverable material from the waste stream.
2. Not the most convenient for recycling opportunities.

NON-SELECTED SYSTEMS

Before selecting the solid waste management system contained within this Plan update, the County developed and considered other alternative systems. The following section provides a brief description of these non-selected systems and an explanation why they were not selected. Complete one evaluation summary for each non-selected alternative system.

Alternative System 1.

SYSTEM COMPONENTS:

The following briefly describes the various components of the non-selected system

Sanitary Landfill

- Continue the use of Westside Landfill for primary disposal for St. Joseph County solid waste.

Waste Reduction/Pollution Prevention

- Maintain the current public education and informational programs on waste reduction through the Recycling Educator.
- Maintain a Household Hazardous Waste Collection program for local residents.

Resource Recovery: Recycling & Composting

- Maintain the current recycling drop off box system.
- Continue commercial and industrial source separation and recycling efforts.
- Continue local public and private yard waste collection.

Collection Processes and Transportation

- Continue the use of private industry to collect solid waste throughout the county.

Volume Reduction

- Continue existing volume reduction techniques currently practiced in the county.

Institutional Arrangements

- Maintain the current institutional arrangements between counties and private industry.

EVALUATION SUMMARY OF NON-SELECTED SYSTEM:

The non-selected system was evaluated to determine its potential of impacting human health, economics, environmental, transportation, siting and energy resources of the County. In addition, it was reviewed for technical feasibility, and whether it would have public support. Following is a brief summary of that evaluation along with an explanation why this system was not chosen to be implemented.

Alternative System 1. is maintenance of the existing solid waste management system within the County. The Committee felt that this system has worked well for the County but residents could benefit from improvements. Negative effects on public health have been minimal. The system is economically sound since it relies on private industry to charge user fees for services rendered. User cost for disposal is relatively low in St. Joseph County. The transportation network is well established and the landfill is located on a class A road. There are no siting problems with this system since Westside Landfill has adequate room for expansion at the existing site. Energy is being recovered at the landfill in the form of methane gas and they are in the process of expanding this system. The system is technically feasible and has public support within the County.

ADVANTAGES AND DISADVANTAGES OF THE NON-SELECTED SYSTEM:

Each solid waste management system has pros and cons relating to its implementation within the County. Following is a summary of the major advantages and disadvantages for this non-selected system.

ADVANTAGES:

1. Is well established within the County.
2. Provides for the opportunity for citizens to recycle.
3. It is lowest cost system of those evaluated.

DISADVANTAGES:

1. Does not maximize material recovery from the waste stream.
2. Does not take into account changes in private and public waste management..
3. Does not allow for the free flow of waste to all lower peninsula counties.

Alternative System 3.

SYSTEM COMPONENTS:

The following briefly describes the various components of the non-selected system

Alternate System 3.

Sanitary Landfill

- Continue the use of Westside Landfill for primary disposal for St. Joseph County solid waste.
- Build a new type landfill or solid waste incinerator in the county.

Waste Reduction/Pollution Prevention

- Maintain the current public education and informational programs on waste reduction through the Recycling educator.
- Maintain a Household Hazardous Waste Collection program for local residents.
- Expand the county's recycling education program and the Household Hazardous Waste Collection program.

Resource Recovery: Recycling & Composting

- Maintain the current recycling drop off box system.
- Continue commercial and industrial source separation and recycling efforts.
- Continue local public and private yard waste collection.
- Institute a mandatory curbside recycling program.

Collection Processes and Transportation

- Continue the use of private industry to collect solid waste throughout the county.

Volume Reduction

- Continue existing volume reduction techniques currently practiced in the county.

Institutional Arrangements

- Maintain the current institutional arrangements between counties and private industry.

EVALUATION SUMMARY OF NON-SELECTED SYSTEM:

The non-selected System 3 was evaluated to determine its potential of impacting human health, economics, environmental, transportation, siting and energy resources of the County. In addition, it was reviewed for technical feasibility, and whether it would have public support. Following is a brief summary of that evaluation along with an explanation why this system was not chosen to be implemented.

Alternative System 3. Has the major component of siting and building a new facility that would either be another landfill or incinerator. This option was deemed be the least desirable due to lack of need, lack of interest by the private sector, and economic feasibility. The impacts on public health were considered to be approximately the same as the Selected Alternative although there are some concerns regarding the emissions from an incinerator. The economic feasibility of this system are prohibitive. It is estimated that the cost to build a new landfill or an incinerator would be in the order of $20M. Transportation needs would be the same as the other alternatives while siting and public acceptance would be considerable more negative. Energy recovery would be enhance by siting an incinerator but the benefits would not out weight the costs.

ADVANTAGES AND DISADVANTAGES OF THE NON-SELECTED SYSTEM:

Each solid waste management system has pros and cons relating to its implementation within the County. The following is a summary of the major advantages and disadvantages for this non-selected system.

ADVANTAGES:

1. Increased energy recovery with incineration.
2. Provides for the opportunity for citizens to recycle.

DISADVANTAGES:

1. Costs are the highest for this alternative.
2. There is no need for another disposal facility in the County.
3. Public acceptance would be lowest for this alternative.
4. Siting would create problems.
5. Lack of interest by the private sector.

PUBLIC PARTICIPATION AND APPROVAL

The following summarizes the processes which were used in the development and local approval of the Plan including a summary of public participation in those processes, documentation of each of the required approval steps, and a description of the appointment of the solid waste management planning committee along with the members of that committee. (See Attachments)

PUBLIC INVOLVEMENT PROCESS: A description of the process used, including dates of public meetings, copies of public notices, documentation of approval from solid waste planning committee, County Board of Commissioners, and municipalities.

Public Notice with meeting dates, times and locations were sent to all municipalities within the county early in the planning process at least ten days before the meeting dates. In addition news releases were sent to all news agencies within the county where the public was made aware of the meetings and invited to attend. Public meetings had time reserved for questions and comments from the general public. Meetings were held monthly during the planning process.

The plan approval process was followed according to the legislation. The draft plan was submitted to the Designated Planning Agency by the Solid Waste Planning Committee and at least three months were allowed for review and comments on the proposed Plan. A copy of the Plan was sent to the Director, to each municipality, to adjacent counties and the designated regional solid waste planning committee.

All of these comments were submitted with the Plan to the governmental unit that filed the notice of intent.

A notice was published at the time the Plan was submitted for review as to the availability of the Plan during the public comment period. The DPA published notice in a paper with major circulation in the county not less than 30 days before such a hearing, which included a location where the public could inspect copies of the Plan and the time and place of the public hearing.

The DPA prepared a transcript, recording, or other complete record of the public hearing proceedings, and this record could be copied or inspected by the general public upon request after the public hearing.

If necessary, the DPA revised the Plan in response to public hearing comments and submitted the Plan to the planning committee. A list of the meeting locations and dates, along with the dated notice as published in the newspaper. The Plan was then submitted to the County Board of Commissioners for their approval.

The plan was then submitted to all municipalities within the county for approval.

PLANNING COMMITTEE APPOINTMENT PROCEDURE:

Candidates to fill positions on the Solid Waste Planning Committee are recommend to the St. Joseph Board of Commissioners. The Commissioners review candidates credentials and then vote on the appointment to the Solid Waste Planning Committee,

PLANNING COMMITTEE

Committee member names and the company, group, or governmental entity represented from throughout the County are listed below.

Four representatives of the solid waste management industry:

1. Glenn Nissley, Nissley's Disposal
2. John Smits, Sturgis Iron and Metal
3. Tom Wilson, Westside Landfill
4. Vacant

One representative from an industrial waste generator:

1. Frank Kalasky, Sturgis Foundry

Two representatives from environmental interest groups from organizations that are active within the County:

1. Jackie Heinrich
2. John Summey

One representative from County government. All government representatives shall be elected officials or a designee of an elected official.

1. Cameron Brown

One representative from township government:

1. Robert Wright

One representative from city government:

1. Richard Lakey

One representative from the regional solid waste planning agency:

1. Carl Holsinger

Three representatives from the general public who reside within the County:

1. Danny Kaiser
2. Michael McCarthy
3. Robert L. Robinson

Plan Implementation Strategy

The following discusses how the County intends to implement the plan and provides documentation of acceptance of responsibilities from all entities that will be performing a role in the Plan.

The County Administrator is responsible for the oversight and implementation of the Solid Waste Management Plan. Representatives from the County Board of Commissioners, in conjunction with Waste Management, and the Recycling Educator carry out the responsibility for the recycling drop off box and household hazardous waste collection systems.

The St. Joseph County Cooperative Extension Agency, in cooperation with Michigan State University, the County Board of Commissioners, and the County Administrator are responsible for recycling education, waste reduction, waste reuse and materials recovery education within the county.

Resolutions

The following are resolutions from County Board of Commissioners approving municipality's request to be included in an adjacent County's Plan.

Not Applicable

Listed Capacity

Documentation from landfills that the County has access to their listed capacity.

See attached letter.

Maps

Maps showing locations of solid waste disposal facilities used by the County.

See attached Maps.

Inter-County Agreements

Copies of Inter-County agreements with other Counties (if any). None at present.

Special Conditions

Special conditions affecting import or export of solid waste.

None.

ATTACHMENTS

PUBLIC MEETING NOTICE

WESTSIDE LETTER

BARRY COUNTY LETTER

OTTAWA COUNTY LETTER

COUNTY ADMINISTRATOR

Telephone: (616) 467-5617
FAX: (616) 467-5628

125 W. Main St.
P.O. Box 277
Centreville, MI 49032-0277

January 30, 1998

St. Joseph County
Township Clerks
Village Clerks
City Clerks

Dear Clerk:

St. Joseph County is in the process of updating the St. Joseph County Solid Waste Management Plan as required by the State of Michigan. The Solid Waste Management Planning Committee is presently in the data collection and review phase of the plan update in cooperation with our consultant Craig Laurent.

I am forwarding a copy of the 1998 meeting schedule. We would welcome attendance and input at any of the meetings. Upon completion of the update, a public hearing will be held. The update will also be forwarded to all local municipalities for their approval before submitting to the State of Michigan.

If you have any questions, please feel free to call my office.

Sincerely,

Judy West
County Administrator/Controller
Designated Planning Agency

Encl.

PLANNING COMMISSION Telephone: (616) 467-5617

125 W. Main St.
P.O. Box 277
Centreville, MI 49032-0277

ST. JOSEPH COUNTY
SOLID WASTE MANAGEMENT PLANNING COMMITTEE
MEETING DATES

1998

FEBRUARY 5, 1998*

MARCH 5, 1998

APRIL 2, 1998

MAY 7, 1998

JUNE 4, 1998

JULY 2, 1998

AUGUST 6, 1998

SEPTEMBER 3, 1998

OCTOBER 1, 1998

NOVEMBER 5, 1998

DECEMBER 3, 1998

Meetings will be held at 7:30 p.m. in the Lake and Prairie Rooms, lower level, Courts Building, Centreville, Michigan.

*The February meeting will be held in the Parks and Recreation Building, 602 E. Main St., Centreville, Michigan.

Public is welcome. If you need special assistance or accommodations to attend, please call Administration at 467-5617.

11/10/97

WESTSIDE RECYCLING AND DISPOSAL FACILITY
A WASTE MANAGEMENT COMPANY

P. O. Box 392
14094 M-60 West
Three Rivers, MI 49093
(616) 279-5444
(616) 273-1662 Fax

October 22, 1998

Ms. Judy West
St. Joseph County Administrator
County Courthouse
125 W. Main st.
Centreville, MI 49032

Re: Landfill Capacity Certification and Commitment

Dear Ms. West:

Westside RDF has approximately 14,800,000 gate cubic yards of disposal capacity at the present time. This will allow for 12 years of operation at the present licensed facility. The projection is based on current disposal rates. In addition, Westside has 280 acres of property available for expansion adjacent to its present facility. It is estimated that expansion on to this property will allow for at least 20 years after the current licensed facility is closed.

Waste Management and the county have entered into an agreement that states that we will give first priority for disposal of waste generated in St. Joseph County. Waste Management is, therefore, committed by our agreement to provide at least 19 years of disposal capacity to St. Joseph County.

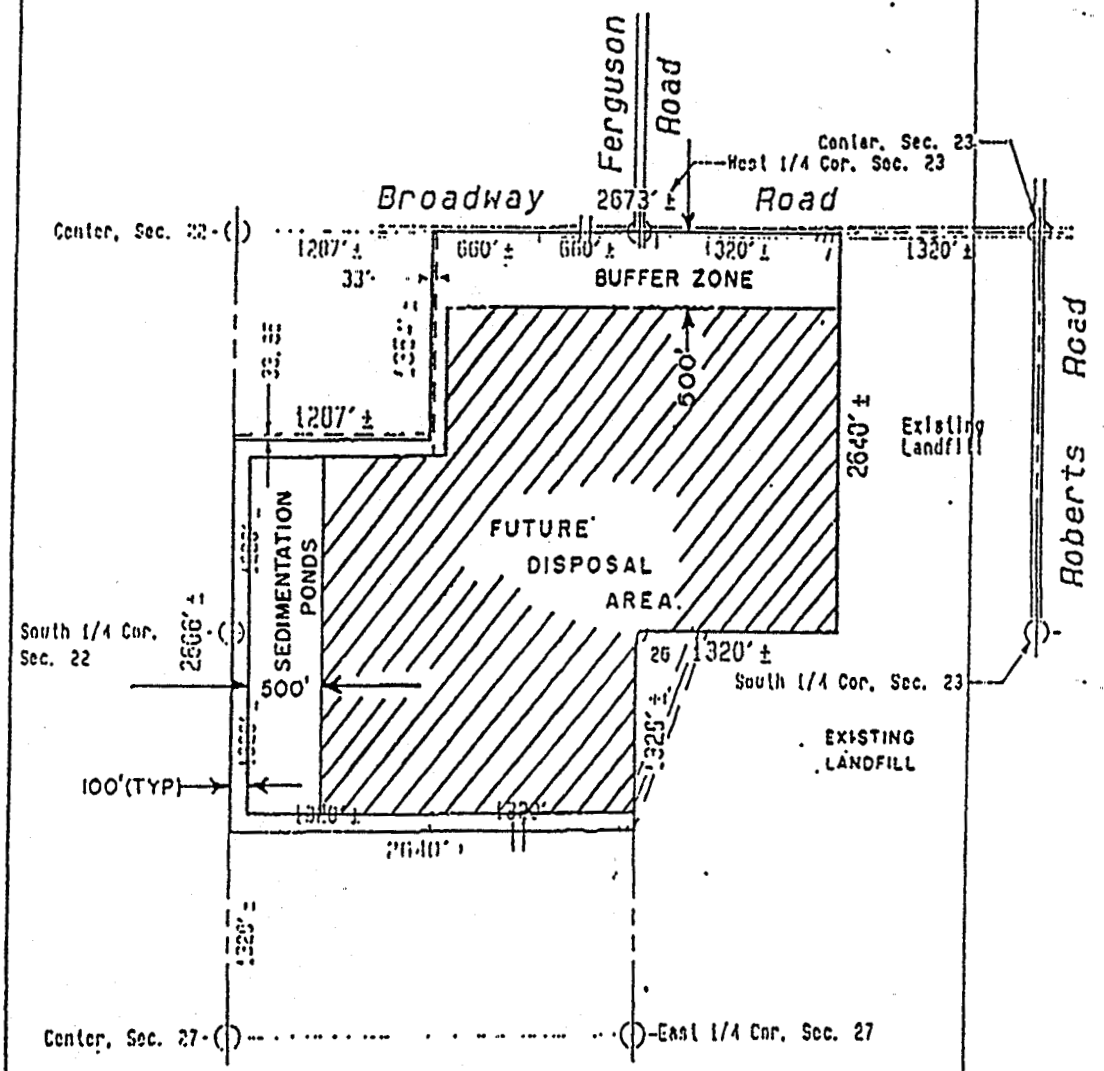
If you have any questions, please give me a call.

Yours Truly,

Tom Wilson
Landfill Manager

EXHIBIT 'A'

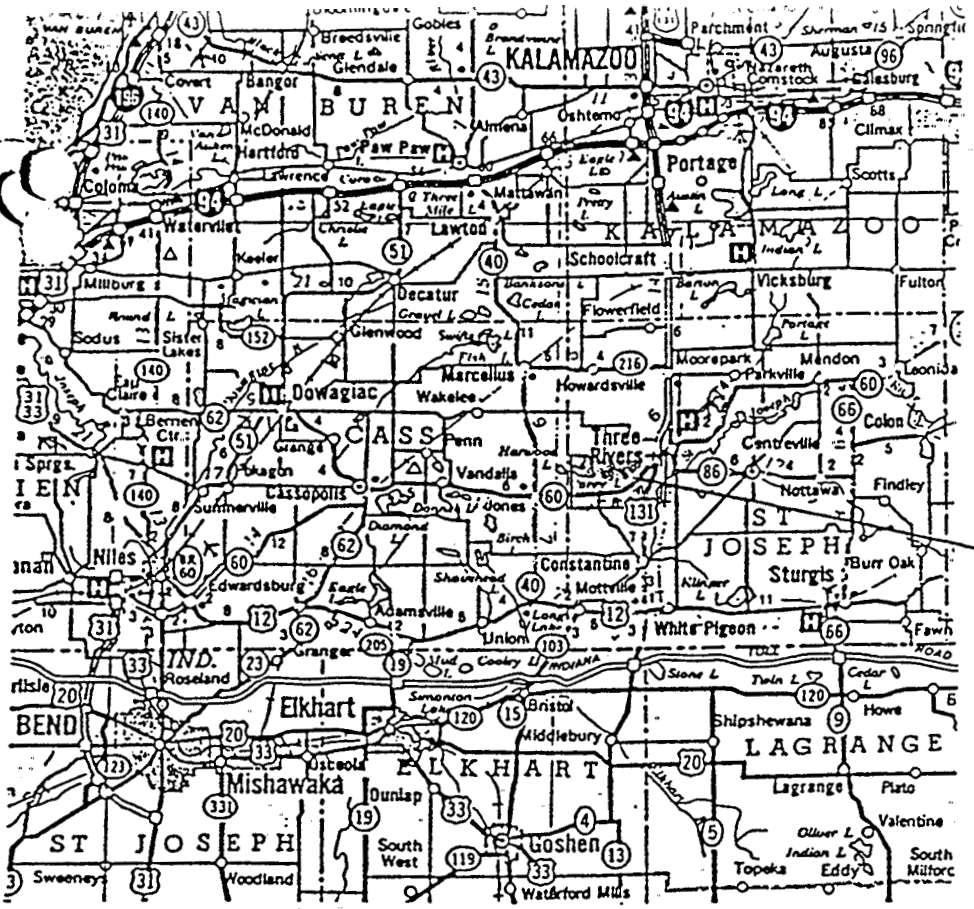
Bowman to Waste Management of Michigan, Inc.
Located in Sections 22, 23, 27, Fabius Township,
St. Joseph County, Michigan

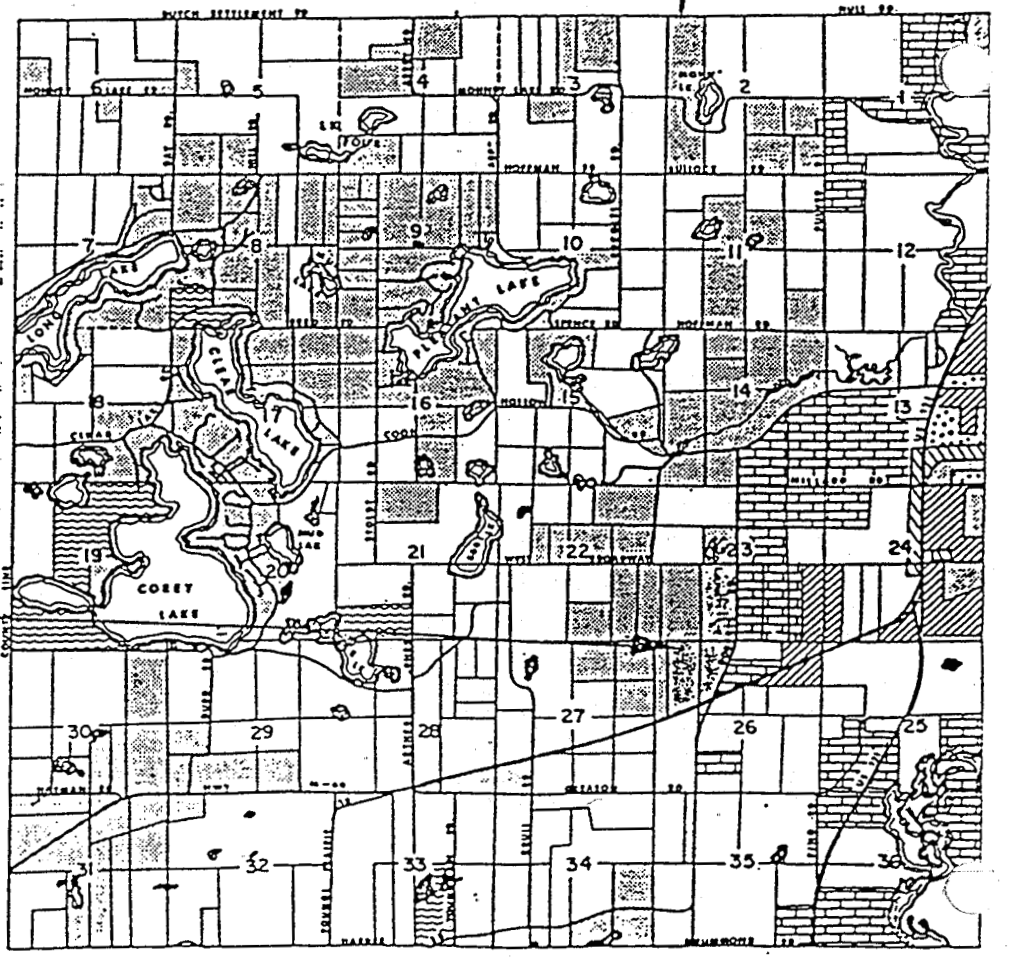


Located in the Township of Fabius, St. Joseph County, Michigan.

The East half of the East half of the Southeast quarter of Section 22;
The West half of the East half of the Southeast quarter of Section 22;
The Southwest quarter of the Southeast quarter and the East two rods of the Northwest quarter of the Southeast quarter except the North two and two thirty-ninths rods of the West 76 rods of the Southwest quarter of the Southeast quarter of Section 22;
The West half of the Southwest quarter of Section 23;
The Northeast quarter of the Northeast quarter of Section 27;
And the Northwest quarter of the Northeast quarter of Section 27.

All in Township 6 South, Range 12 West.

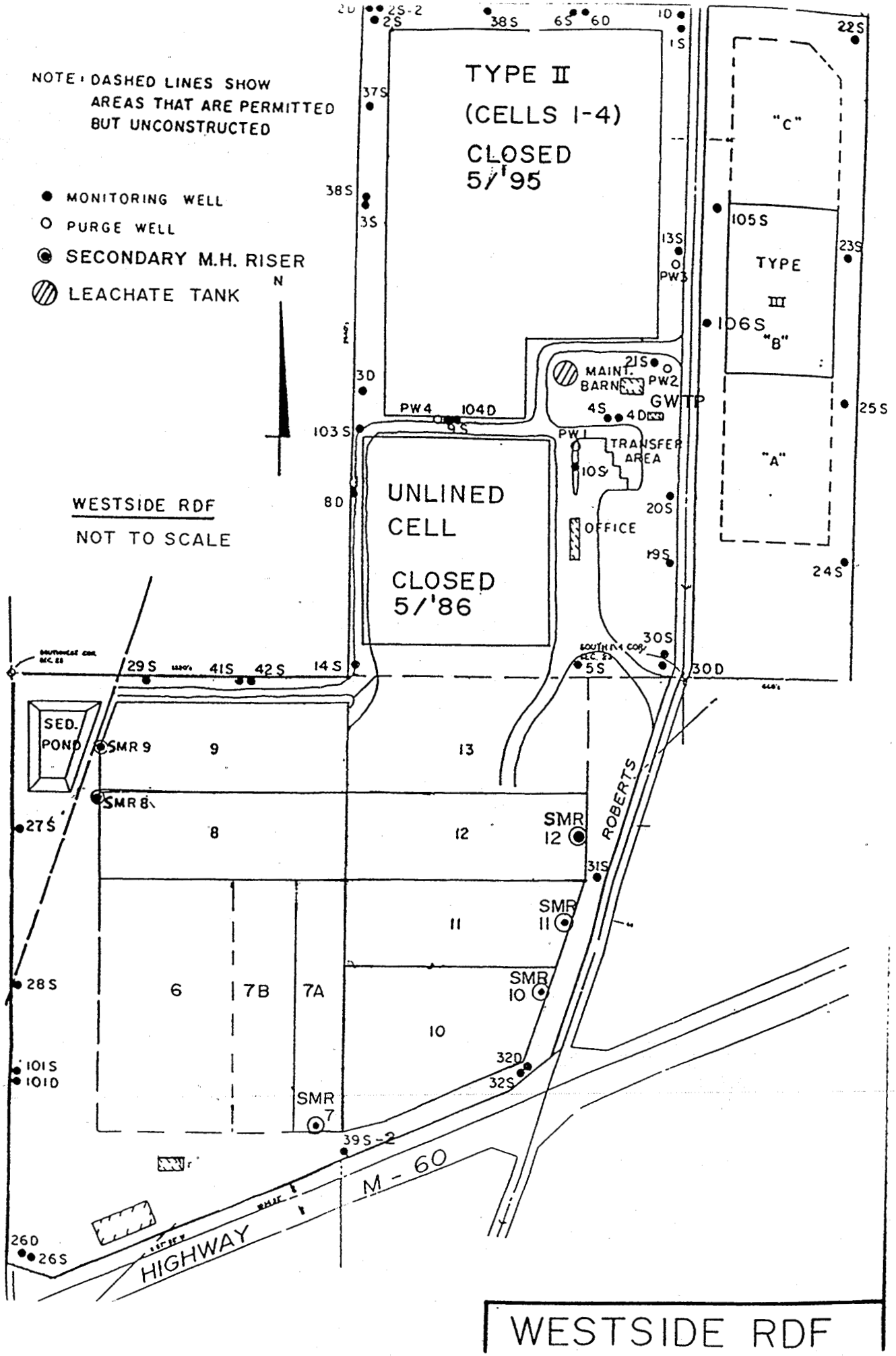




WESTSIDE LANDFILL

2-3

FIGURE 1


NOTE: DASHED LINES SHOW AREAS THAT ARE PERMITTED BUT UNCONSTRUCTED
MONITORING WELL
PURGE WELL
SECONDARY M.H. RISER
LEACHATE TANK
N
WESTSIDE RDF
NOT TO SCALE
TYPE II (CELLS 1-4) CLOSED 5/'95
UNLINED CELL CLOSED 5/'86
TYPE III
"A"
"B"
"C"
MAINT. BARN
GWTP
TRANSFER AREA
OFFICE
SED. POND
SMR 9
SMR 8
SMR 12
SMR 11
SMR 10
SMR 7
ROBERTS
M-60
HIGHWAY
WESTSIDE RDF

BARRY
COUNTY
COURTHOUSE
220 W. STATE STREET
HASTINGS, MICHIGAN 49058

May 27,1998

Carl Holsinger - Chairman
Solid Waste Planning Committee
P.O. Box 277
Centreville, Mi. 49032

Dear Mr. Holsinger,

Last year, the Department of Environmental Quality approved amendments to the Barry County Solid Waste Plan authorizing export of Solid waste from Barry County to all 82 counties in Michigan, and primary disposal at our landfill in Hastings from 19 Michigan counties - one of which is St. Joseph County.

We respectfully request you take whatever actions are necessary to provide explicit authority for the exportation of solid waste from St. Joseph County to Barry County. We realize you are commencing the process of updating your solid waste management plan and inclusion of our request in that update would be timely for our purposes.

If there is any further information you may need or if you would like to discuss this matter further, please do not hesitate to contact me at (616) 945-9516.

Sincerely,

V. Harry Adrounie, Ph.D
Chairman

cc: Ms. Judy West

SELECTED SYSTEM

FACILITY DESCRIPTIONS

Facility Type: TypeII Landfill

Facility Name: City Environmental Services Landfill Inc., of Hastings

County: Barry Location: Town: 3w Range: 8n Section(s): 6

Map identifying location included in Attachment Section: X Yes _____ No

If facility is an incinerator or a transfer station, list the final disposal site and location for incinerator ash or transfer station wastes : N.A.

___ Public X Private Owner: _____

Operating Status (check)		Waste Types Received (check all that apply)	
X	open	X	residential
	closed	X	commercial
X	licensed	X	industrial
	unlicensed	X	construction & demolition
X	construction permit	X	contaminated soils
	open, but closure	X	special wastes *
	pending	X	other: Asbestos

* Explanation of special wastes, including a specific list and/or conditions:

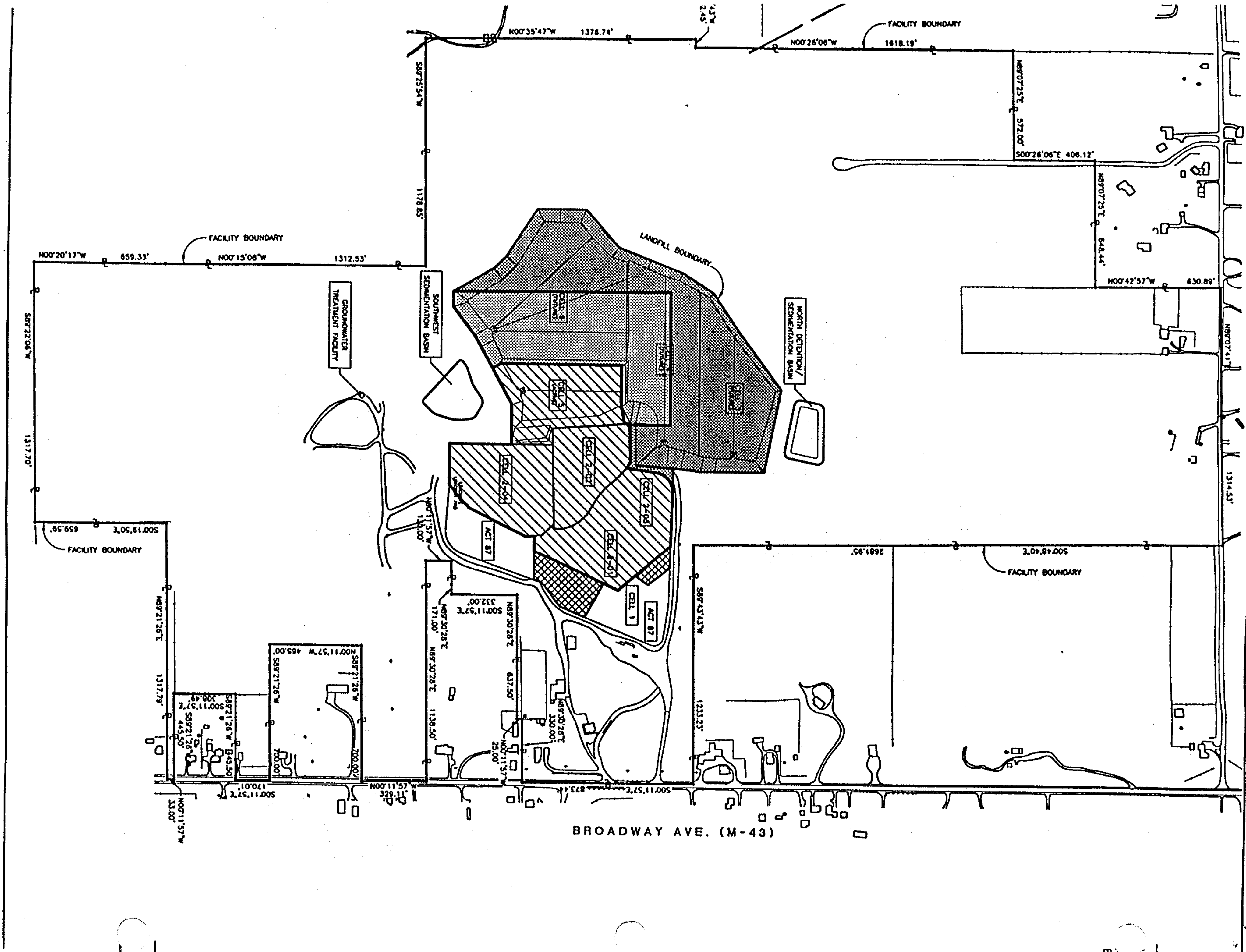
Foundry Sand, Fly Ash, Waste Water Sludges, Trees & Stumps

Site Size:

Total area of facility property:	330	acres
Total area sited for use:	330	acres
Total area permitted:	48	acres
Operating:	19.5	acres
Not excavated:	28.5	acres
Current capacity:	5,000,000	yds^3
Estimated lifetime:	10+	years
Estimated days open per year:	308	days
Estimated yearly disposal volume:	175,000	tons

(if applicable)
Annual energy production:

Landfill gas recovery projects:	N.A.	megawatts
Waste-to-energy incinerators:	N.A	megawatts



FACILITY BOUNDARY
LANDFILL BOUNDARY
NORTH DETENTION/ SEDIMENTATION BASIN
SOUTHWEST SEDIMENTATION BASIN
GROUNDWATER TREATMENT FACILITY
CELL 1
CELL 2-01
CELL 2-02
CELL 2-03
CELL 2-04
CELL 5 (ACTIVE)
CELL 6 (FUTURE)
CELL 7 (FUTURE)
ACT 87
BROADWAY AVE. (M-43)
N00°35'47"W 1376.74'
N00°26'06"W 1618.19'
N89°07'25"E 572.00'
S00°26'06"E 406.12'
N89°07'25"E 648.44'
N00°42'57"W 630.89'
N89°07'41"E 1314.53'
S89°25'54"W 1178.85'
N00°20'17"W 659.33'
N00°15'06"W 1312.53'
S89°22'06"W 1317.70'
S00°19'06"E 659.59'
S00°48'40"E 2681.95'
S89°43'43"W 1233.23'
S00°11'57"E 873.44'
N89°30'28"E 330.00'
N00°11'57"W 25.00'
N89°30'28"E 637.50'
S00°11'57"E 332.00'
N89°30'28"E 171.00'
N89°30'28"E 1138.50'
N00°11'57"W 130.00'
N00°11'57"W 329.11'
S89°21'26"W 700.00'
N00°11'57"W 465.00'
S00°11'57"E 170.01'
S89°21'26"W 345.50
S00°11'57"E 308.49'
S89°21'26" 445.50'
N00°11'57"W 33.00'
N89°21'26"E 1317.79'

Ottawa County Environmental Health

Solid Waste Management Program

Memorandum

To: *Solid Waste Management Planning Committees/Designated Planning Agencies for:*

Allegan, Barry, Berrien, Branch, Calhoun, Cass, Clare, Clinton, Eaton, Gratiot, Ionia, Isabella, Kalamazoo, Kent Lake, Mason, Mecosta, Muskegon, Montcalm, Newago, Oceana, Osceola, St. Joseph, Van Buren Counties.

From: *Darwin J. Baas, Solid Waste Management Coordinator* Darwin J. Baas

Date: *Monday, June 22, 1998*

Subject: *Ottawa County Import/Export Authorizations for Type II/III Solid Waste*

In preparing the Solid Waste Management Plan Update, Ottawa County has recognized 24 counties within the disposal region for import and export authorization.

Importation of Out-of-County Solid Waste

Ottawa County has approved the counties listed above for disposal of Type II/III solid waste and authorizes solid waste from these counties to be deposited in licensed facilities located in Ottawa County. Solid waste may be imported from one or any combination of the above listed counties if explicitly authorized by the exporting county's Solid Waste Management Plan. Disposal of solid waste in licensed Type II facilities in Ottawa County is subject to an annual cap of 1,500,000 tons annually.

Exportation of Ottawa County Solid Waste

Ottawa County will authorize the exportation of up to 100 percent of the Ottawa County solid waste stream to any of the counties listed above whose Solid Waste Management Plan specifically authorize the acceptance of Ottawa County's solid waste.

Enclosed are copies of facility descriptions for the Type II landfills located in Ottawa County. We are requesting that you provide a facility description for each Type II and Type III landfill located within your county, provided the importation of Ottawa County solid waste will be authorized by your Plan. I will be calling you shortly regarding this information.

In the mean time, if you have any questions regarding the enclosed material, please feel free to call me at 616/393-5638.

II.1.3.2 Facility Type: Type II Solid Waste Landfill/Processing Plant

Facility Name: Autumn Hills Recycling & Disposal Facility

County: Ottawa **Location:** *Town:* 5N *Range:* 14W *Section(s):* 36

Map identifying location included in Attachment Section: ☒ Yes ☐ No

If facility is an incinerator or a transfer station, list the final disposal site and location for incinerator ash or transfer station wastes: NA

_____Public x ___Private Owner: Autumn Hills RFD - A Division or Waste Management of Michigan, Inc.

Operating Status		Waste Types Received	
☒	open	☒	residential
☐	closed	☒	commercial
☒	licensed	☒	industrial
☐	unlicensed	☒	construction & demolition
☒	construction permit	☒	contaminated soils
☐	open, but closure Pending	☒	special wastes*
		☐	other:_____

*Explanation of special wastes, including a specific list and/or conditions:
exhausted oak wood trays, minor first aid waste, contaminated pharmaceuticals manufacture, paint booth filters, dewatered waste water treatment sludge, out of spec/out of date food supplements, spent epoxy powder coatings, sand blasting sand, woodchips/dust from production, shot blast, construction and demolition materials, foundry sand, filter press cake, incinerator ash, saw dust, contaminated soils, auto fluff, asbestos, grinding sludge, carwash sand pit/traps, and food materials.

Site Size:

Total area of facility property:	314	acres
Total area sited for use:	197	acres
Total area permitted:	99.3	acres
Operating:	35.1	acres
Not excavated:	64.2	acres

Current capacity:	20.75 mil	☒ tons or ☐ yds^3
Estimated lifetime:	30.2	years
Estimated days open per year:	286	days
Estimated yearly disposal volume:	500,000	☒ tons or ☐ yds^3

Annual energy production:

Landfill gas recovery projects:	NA	acres
Waste-to-energy incinerators:	NA	acres

II.1.3.4 Facility Type: Type II Landfill

Facility Name: Ottawa County Farms Landfill

County: Ottawa **Location:** *Town:* 8N *Range:* 14W *Section(s):* 26 & 27

Map identifying location included in Attachment Section: ☒ Yes ☐ No

If facility is an Incinerator or a Transfer Station, list the final disposal site and location for Incinerator ash or Transfer Station wastes: NA

☐ Public ☒ Private Owner: Allied Waste Systems

Operating Status		Waste Types Received	
☒	open	☒	residential
☐	closed	☒	commercial
☒	licensed	☒	industrial
☐	unlicensed	☒	construction & demolition
☒	construction permit	☒	contaminated soils
☐	open, but closure pending	☒	special wastes*
		☐	other:_____

*Explanation of special wastes, including a specific list and/or conditions:

Site Size:

Total area of facility property:	240	acres
Total area sited for use:	197	acres
Total area permitted:	240	acres
Operating:	37	acres
Not excavated:	125	acres
Current capacity:	16,500,000	☐ tons or ☒ yds^3
Estimated lifetime:	25-30	years
Estimated days open per year:	286	days
Estimated yearly disposal value:	500,000	☒ tons or ☐ yds^3

Annual energy production:

Landfill gas recovery projects:	4,565	megawatts
Waste-to-energy incinerators:	NA	megawatts

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

RUSSELL J. HARDING, Director

November 20, 1995

Mr. Art Renner, Chairman
St. Joseph County Board of Commissioners
125 West Main Street
P.O. Box 277
Centreville, Michigan 49032-0277

Dear Mr. Renner:

The Department of Environmental Quality received a locally-approved Amendment to the updated St. Joseph County Solid Waste Management Plan (Plan) on August 15, 1995. The Amendment modifies the Plan's language to authorize expansion of the Westside Landfill, provides for a transfer station at the landfill if needed, deletes requirements for inter-county agreements for importation of solid waste, specifically allows disposal of solid waste from 14 other counties at the Westside Landfill, establishes an overall annual disposal cap, and authorizes export of St. Joseph County solid waste to any county in Michigan if consistent with the receiving county's solid waste management plan.

I am pleased to inform you that, by this letter, the proposed Amendment dated May 2, 1995 to the updated St. Joseph County Solid Waste Management Plan is approved.

Sincerely,

Russell J. Harding
Director
517-373-7917

cc: Senator Harry Gast
Representative Glenn Oxender
Westside Landfill
St. Joseph County Administrator
Ms. Leslie Bender, DEQ
Ms. Joan Peck, DEQ
Mr. Tomas Leep, DEQ - Plainwell
Mr. Seth Phillips, DEQ
Mr. Jim Johnson, DEQ
St. Joseph County File

Proposed 1994 Amendment
to the
St. Joseph County Solid Waste Management Plan

The St. Joseph County Solid Waste Management Planning Committee (with the assistance of their consultant), have attempted to identify as many of the changes necessary in the body of the existing Plan to be consistent with this Amendment. Nevertheless, there may be some necessary changes which have been inadvertantly overlooked. The intent, purpose, and direct language of this Amendment (if finally approved) shall supersede any remaining conflicting elements in the 1989 St. Joseph County Solid Waste Management Plan.

Proposed text changes are double underlined. Pages 3.1, 3.5, 5.16, 5.18, 5.18a, 5.19, 5.19a, 5.21, and 5.21a are revised to read as follows.

CHAPTER 3 - DATA BASE

A. INVENTORY OF EXISTING FACILITIES

1. Private Facilities

a. The most important solid waste management facility in St. Joseph County is **Westside Landfill.** This is currently the only licensed disposal site in the County. It is one of only a handful of disposal sites remaining in southwest Michigan.

Westside Landfill is located in Sections 22, 23, 26, and 27 of Fabius Township. It is a licensed, privately owned and operated Type II and Type III sanitary landfill. The preferred means of access to the site is from M-60 south of the landfill, turning north onto Roberts Road and then onto one of the access drives.

The landfill currently is sited on two areas of land, on about 180 acres west of Roberts Road and on about 30 acres east of Roberts Road.

Westside at this time receives somewhere between 705 and 1,155 tons per day. At this rate of usage (which is very susceptible to change), the landfill has sufficient capacity to last until [Delete: 1992 and potentially through 1994. See Appendix H for these calculations.] about 2008.

Hours of operation are 10 hours per day, Monday through Friday, and 8 hours on Saturday.

Some groundwater contamination from an old (prior to Act 641) landfill cell has been documented. Voluntary initiation of remedial action addressing this problem is in operation.

The landfill also has an agreement with the City of Three Rivers for final disposal of leachate at the city sewage treatment plant.

b. Westside Recycling Satellite Centers are located at the Westside Landfill site, next to the D & W Food Center on the west side of Three Rivers, and next to the E & H Friendly Market on the west side of Sturgis. The villages of Centreville, Constantine, Mendon and Colon are served by a third recycling box.

B. EVALUATION OF THE EXISTING SOLID WASTE MANAGEMENT SYSTEM

1. Existing Solid Waste Management System

Most of the County's 345 ton per day (TPD) solid waste stream is handled by a privately operated system. Haulers contract with individual residences, businesses and industries for the collection, transportation and disposal of their solid waste. These haulers in turn then pay the tipping fee and dump their solid waste loads at Westside Landfill. Some industries haul their own solid waste to the landfill. Residences also have the option of hauling their own solid waste to the landfill, but this is an insignificant portion of the waste stream.

A significant amount of solid waste at this time is also transported to Westside Landfill from Kalamazoo County. This amount falls somewhere in the range of 50 to 500 tons per day (TPD). While this volume contributes to the landfill being filled at a faster rate, it does ensure the economic survival of the operation.

Solid waste is also currently transported to Westside Landfill from Cass, Branch, Van Buren, Calhoun, LaGrange (IN), and Elkhart (IN) Counties. The amounts currently being received from each are estimated below.

County	Tons Per Day
Branch County	20 TPD
Cass County	50 TPD
Kalamazoo County	360 TPD
Van Buren County	35 TPD
Elkhart & LaGrange Counties (IN)	30 TPD
Calhoun County	175 TPD

Delete: The amount, if any, allowed to be brought into St. Joseph County in the future from surrounding Michigan counties is controlled by inter-county agreements incorporated into this document. These inter-county agreements also specify certain terms and conditions. In the absence of an inter-county agreement, a Michigan county is not legally eligible to have their solid waste transported into St. Joseph County. Michigan law does not currently address importation of solid waste from out of state.

E. TIMETABLE FOR PLAN IMPLEMENTATION

1. Short Term Plan Timetable

Consistent with the selection of Alternative #2, it is expected that up to 9% of the County's waste stream will be recycled and up to 4% will be composted at the end of 5 years.

a. Westside has expanded on approximately 100 acres north of M-60 and south of the earlier landfill area in Section 23 of Fabius Township. The new landfill area is immediately adjacent to the old. The new landfill area has 67 acres currently permitted.

b. Westside Landfill currently has capacity to last approximately another 14 years (covering the County's needs through 2008.

Delete: During the life of this five year updated plan, Westside intends to expand on approximately one hundred acres north of M-60 and south of the existing landfill in Section 26 of Fabius Township. This additional land is adjacent to the existing facility. It is expected that expansion will pertain to landfill and recycling operations. It appears this acreage meets the siting criteria of this plan. In addition to meeting the siting criteria, extending capacity and enhancing recycling operations, expansion on the acreage noted above will contain expansion of the landfill on the north side of M-60.

Westside Landfill is currently filling about 6% to 8% of available air space per year. At this rate of usage, the permitted acreage will provide approximately 14 years of capacity (covering the County's needs through 2008.

Westside Landfill is committed to expanding in response to market demand and has demonstrated the ability to do so while fully complying with applicable State laws and regulations.

c. To meet the County's recycling goals as chosen in the selected plan alternative, the following steps have either already been taken or are committed to be taken.

As called for in the County's recycling feasibility study, steps 1, 2, & 3 have already been initiated.

(1) Operation of a multi-material recycling and processing center at Westside Landfill.

(2) Salvaging of scrap metals and corrugated containers from commercial waste loads at Westside Landfill.

(2) The County Planning Dept. will encourage and provide assistance to all interested parties, especially local municipalities, in applying for appropriate State and other assistance to promote, expand, develop new, or otherwise improve their composting operations.

2. **Long Term Plan Timetable.** The above described short term plan timetable covers the County's solid waste management needs for approximately 14 years (through 2008). The remaining 6 years of the 20 year long term planning period will be covered by the following steps, consistent with the selection of Long Term Alternative #2.

a. Waste Management of Michigan, Inc. (WMM) (owner of Westside Landfill) has contractually committed to providing St. Joseph County with either,

(1) 20 years disposal capacity at the existing permitted landfill space, or

(2) The land shown on Exhibit "A" as future disposal area is included in the plan as an area for expansion of Westside Landfill. This "future disposal area" is included in and is consistent with this solid waste plan. This landfill area requires no review under the solid waste plan's siting criteria. Should the landfill be unable to provide 20 years of disposal capacity to St. Joseph County, then a transfer facility will be constructed at the site. This transfer facility is included in and consistent with this solid waste plan. This transfer facility requires no review under the solid waste plan's siting criteria. Waste transported from any such transfer station would need to go to one or more facilities recognized in St. Joseph County's solid waste management plan.

b. Westside Landfill will be encouraged to further expand on contiguous properties.

c. If this is not feasible or is determined in future 5 year plan updates not to be part of the chosen alternative, then when 4 years landfill capacity is left, the County shall:

(1) Solicit proposals for solid waste disposal capacity from the private sector.

(2) If (1) is unsuccessful, seek to site a disposal facility in the County, or by means of an inter-county agreement, establish the option to use a facility in another county.

(3) If (1) and (2) are unsuccessful, develop and submit to the County Board a proposal to advance to the ballot sufficient millage to fund a solid waste disposal facility with sufficient capacity to meet the County's needs for the balance of the 20 year planning period.

d. The County's long term commitment to recycling and composting can only be fulfilled through implementation of the County's short term commitments in this area. Through the regular 5 year plan updating process, the attainment of these long term goals (25% to 30% recycling / 10% to 15% composting) can be monitored.

Attainment of these goals will also be contingent on advances in solid waste reduction, packaging technology advances, improvements in recycling and composting economics and additional legislative initiatives.

According to the alternative selected, it is consistent to expect that 10% to 15% of the volume of the County's waste stream will be handled through the use of composting. Likewise, it is anticipated that 25% to 30% of the County's waste will be handled through recycling.

F. SITING REQUIREMENTS

1. Westside Landfill is sited in St. Joseph County. The facility with the approved 100 acre expansion has sufficient capacity to meet the County's and portions of surrounding counties' needs for approximately 14 years. Changes in regional market conditions can lengthen this estimate.

2. DELETE: Westside does have significant acreage upon which it potentially could expand. However, such expansions will be treated the same as any other new proposed solid waste management facility. Therefore, the following siting procedure and criteria were developed.

   ADD: All newly proposed solid waste management facilities which fall under the jurisdiction of Public Act 641, as amended, and thereby fall under this Plan are required to comply with the following siting procedure and criteria, with the exception of those specifically authorized under F.3. immediately below.

3. The expansion of Westside Landfill into the area indicated as "future disposal area" or a transfer facility at Westside Landfill are specifically included in and consistent with the solid waste plan and require no further review under these siting procedures and criteria.

G. PROCEDURE FOR RECEIVING NEW SOLID WASTE MANAGEMENT FACILITIES

Applicants wishing to develop a new solid waste management facility (transfer station, landfill - Type II or III, incinerator or waste-to-energy plant, solid waste processing facility) in St. Joseph County shall first come before the County Solid Waste Management Planning Committee. The Committee will hear the applicant's proposal and shall require documentation that the proposal is consistent with the County's officially adopted "siting criteria".

The applicant, upon request, will be placed on the Solid Waste Planning Committee's agenda within 30 days. The Committee with such advice and professional assistance as may deemed necessary, if any, shall first determine if it has an administratively complete proposal (i.e. all necessary pertinent information regarding the criteria are presented in a clear for-

mat that can be readily understood). An incomplete proposal shall be returned to the applicant without action. The Solid Waste Planning Committee will have 60 days, from the presentation to the Committee, for consideration before making its recommendation to the designated planning agency. Such recommendation shall be in writing and shall include the basis for their recommendation covering all items from the "siting criteria" appropriate to the proposal.

Upon receiving the recommendation of the Solid Waste Management Planning Committee, the designated solid waste management planning agency shall within 60 days:

1. Approve the proposal, or

2. Deny the proposal.

DELETE: I. INTER-COUNTY AGREEMENTS

ADD:

I. IMPORTATION OF SOLID WASTE

1. Authorized Importation of Solid Waste. Import of solid waste to St. Joseph County from the following counties is explicitly recognized in this Amendment. Up to one hundred (100%) percent of the solid waste from these counties may be brought into St. Joseph County for disposal.

Allegan County.	Calhoun County.	Ionia County.
Barry County.	Clinton County.	Kalamazoo County.
Branch County.	Eaton County.	Ottawa County.
Berrien County.	Hillsdale County.	Van Buren County.
Cass County.	Ingham County.	

2. Limitations.

a. At all times, Westside Landfill shall provide first priority for disposal for St. Joseph County residents.

b. Westside Landfill shall not accept more than 1,560,000 gate yards per calendar year, which cap shall include both solid waste (as such term is defined in Michigan Public Act 641 of 1978) including special waste, (as such term is defined in Exhibit "B" attached hereto). Should Westside Landfill exceed such volume cap, Waste Management of Michigan, Inc. shall provide a payment to the County of $10.00 per gate cubic yard for all gate cubic yards disposed of in excess of 1,560,000 gate cubic yards in any one calendar year.

c. The Plan recognizes that certain volumes of solid waste are received in St. Joseph County from Elkhart and LaGrange Counties, Indiana. However, solid waste from these counties and any other out of state solid waste is subject to the overall annual Westside Landfill cap of paragraph I.2.b. above.

3. Inter-County Agreements. The previously signed or proposed inter-county agreements for regular daily solid waste flows are rescinded in the case of those signed or abandoned in the case of those proposed. The signed contingency agreements with Berrien and Calhoun Counties are maintained.

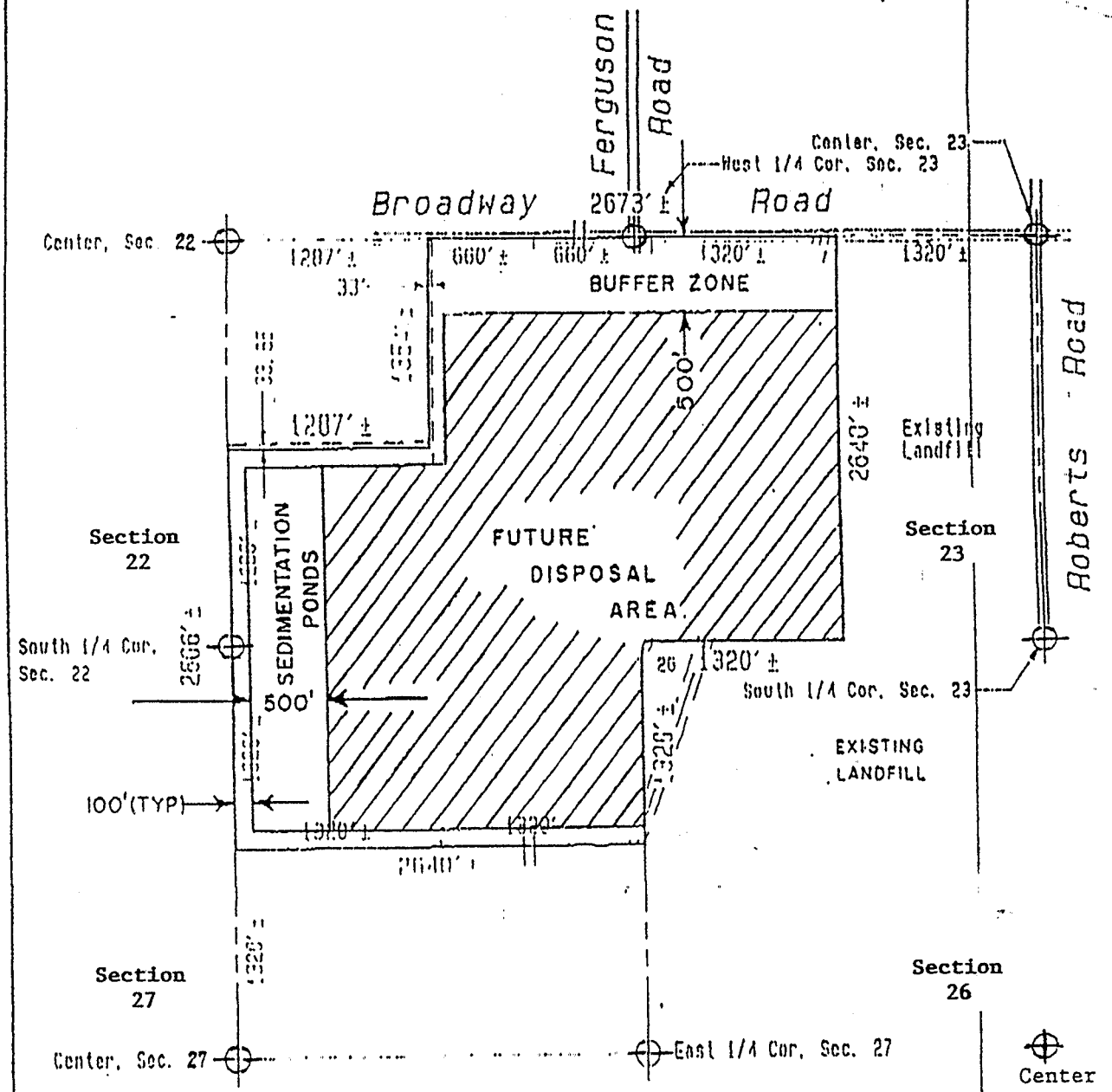
J. EXPORTATION OF SOLID WASTE

St. Joseph and Calhoun Counties have had a reciprocal agree-

ment (10/4/90) for daily solid waste flows (import & export) of up to 200 tons per day. This amendment eliminates this agreement and all other existing or proposed agreements for daily solid waste flows. The intent is to replace the import provisions of the agreements with those above under section I. The intent of this section (J) is to authorize solid waste export from St. Joseph County to all Michigan counties, consistent with the receiving county's solid waste management plan.

EXHIBIT 'A'

Bowman to Waste Management of Michigan, Inc.
Located in Sections 22, 23, 27, Fabius Township,
St. Joseph County, Michigan



Located in the Township of Fabius, St. Joseph County, Michigan.

The East half of the East half of the Southeast quarter of Section 22;
The West half of the East half of the Southeast quarter of Section 22;
The Southwest quarter of the Southeast quarter and the East two rods of the Northwest quarter of the Southeast quarter except the North two and two thirty-ninths rods of the West 70 rods of the Southwest quarter of the Southeast quarter of Section 22;
The West half of the Southwest quarter of Section 23;
The Northeast quarter of the Northeast quarter of Section 27;
And the Northwest quarter of the Northeast quarter of Section 27.

All in Township 6 South, Range 12 West.

CONTRACTOR'S DEFINITION OF SPECIAL WASTE

EXHIBIT "B"

WASTE PROFILE CODE

1. **"Special Waste"** means Type A special waste or Type B special waste.

2. **"Type A Special Waste" means any waste from a commercial or industrial activity meeting any of the following descriptions:**

___ a. Containerized waste (e.g., a drum, portable tank, lugger box, roll-off box, pail, bulk tanker, etc.) listed in b.-h., below.
___ b. Waste containing free liquids.
___ c. Sludge waste.
___ d. Waste from an industrial process.
___ e. Waste from a pollution control process.
___ f. Residue from a spill of a chemical substance or commercial product or a waste listed in a.-e. or g.-h.
___ g. Contaminated residuals from the cleanup of a facility generating, storing, treating, recycling or disposing wastes, chemical substances or commercial products listed in a.-f. or h.
___ h. Any waste which is non-hazardous as a result of treatment pursuant to **RCRA** Subtitle C.

3. **Incidental Amounts of Special Waste**
The Contractor recognizes that many customers will produce some "Type B Special Waste," as defined below. Incidental quantities of "Type B Special Waste," do not require a Generator's Type B Special Waste Profile Sheet (Form WMNA-0089B) to be signed by the customer. However, the customer must identify the type and amount of Type B Special Wastes which will be provided to the Contractor in incidental amounts by completing the box in the lower right corner.

4. **"Type B Special Waste" means any waste from a commercial or industrial activity meeting the descriptions which follow:**

___ a. **Friable asbestos waste from building demolition or cleaning;** wall board, wall spray coverings, pipe insulation, etc. Nonfriable asbestos is a special waste if it has been processed, handled or used in such a way that asbestos fibers may be freely released. Asbestos-bearing industrial process waste is a Type A Special Waste.

___ b. **Commercial products or chemicals which are off-specification, outdated, unused or banned.** Outdated or off-specification, uncontaminated food or beverage products in original consumer containers are not included in this category; however, containers which once held commercial products or chemicals are included unless the container is empty. A container is empty when:

All wastes have been removed that can be removed using the practices commonly employed to remove materials from the type of container, e.g., pouring, pumping or aspirating, and an end has been removed (for containers in excess of 25 gallons), and no more than 1 inch (2.54 centimeters) or residue remains on the bottom of the container or inner liner, or no more than 3% by weight of the total capacity of the container remains in the container (containers $\leq$ 110 gallons), or no more than 0.3% by weight of the total capacity of the container remains in the container (containers $>$ 110 gallons). Containers which once held **ACUTELY HAZARDOUS WASTES** must be triple rinsed with an appropriate solvent or cleaned by an equivalent method. Containers which once held substances regulated under the Federal Insecticide, Fungicide, and Rodenticide Act must be empty according to label instructions or triple rinsed.

___ c. **Untreated bio-medical waste - Any waste capable of inducing infection due to contamination with infectious agents from a bio-medical source including but not limited to a medical practitioner, hospital, medical clinic, nursing home, university medical laboratory, mortuary, taxidermist, veterinarian, veterinary hospital or animal testing laboratory.** Any sharps from these sources must be rendered harmless or placed in needle puncture-proof containers.

___ d. **Treated bio-medical wastes - Any waste from a bio-medical source including but not limited to a hospital, medical clinic, nursing home, medical practitioner, mortuary, taxidermist, veterinarian, veterinary hospital, animal testing laboratory, or university medical laboratory which has been autoclaved or otherwise heat treated or sterilized so that it is no longer capable of inducing infection.** Any sharps from these sources must be rendered harmless or placed in needle puncture-proof containers. Incinerated bio-medical wastes are "Type A Special Wastes."

___ e. **Liquids and sludges** from septic tanks, food service grease traps, or washwater and wastewaters from commercial laundries, laundromats, and car washes unless these wastes are managed at commercial or public treatment works.

___ f. **Chemical-containing equipment removed from service.** Examples, filters, cathode ray tubes, lab equipment, acetylene tanks, fluorescent light tubes, etc.

___ g. **Waste produced from the demolitiion or dismantling of industrial process equipment or facilities contaminated with chemicals from the industrial process.** Note: Chemicals or wastes removed or drained from such equipment or facilities are also "Type A Special Wastes."

CUSTOMER ACKNOWLEDGES THAT HE HAS READ THE FOREGOING DEFINITION AND HAS IDENTIFIED THE TYPES OF SPECIAL WASTES GENERATED, IF ANY, BY CHECKING THE APPLICABLE CATEGORIES ABOVE.

INCIDENTAL WASTE TYPES AND AMOUNTS:

CUSTOMER

AUTHORIZED SIGNATURE DATE

General Manager of WMNA Division concurs that the above amounts of "Type B Special Wastes" are incidental to the load.

Signature:

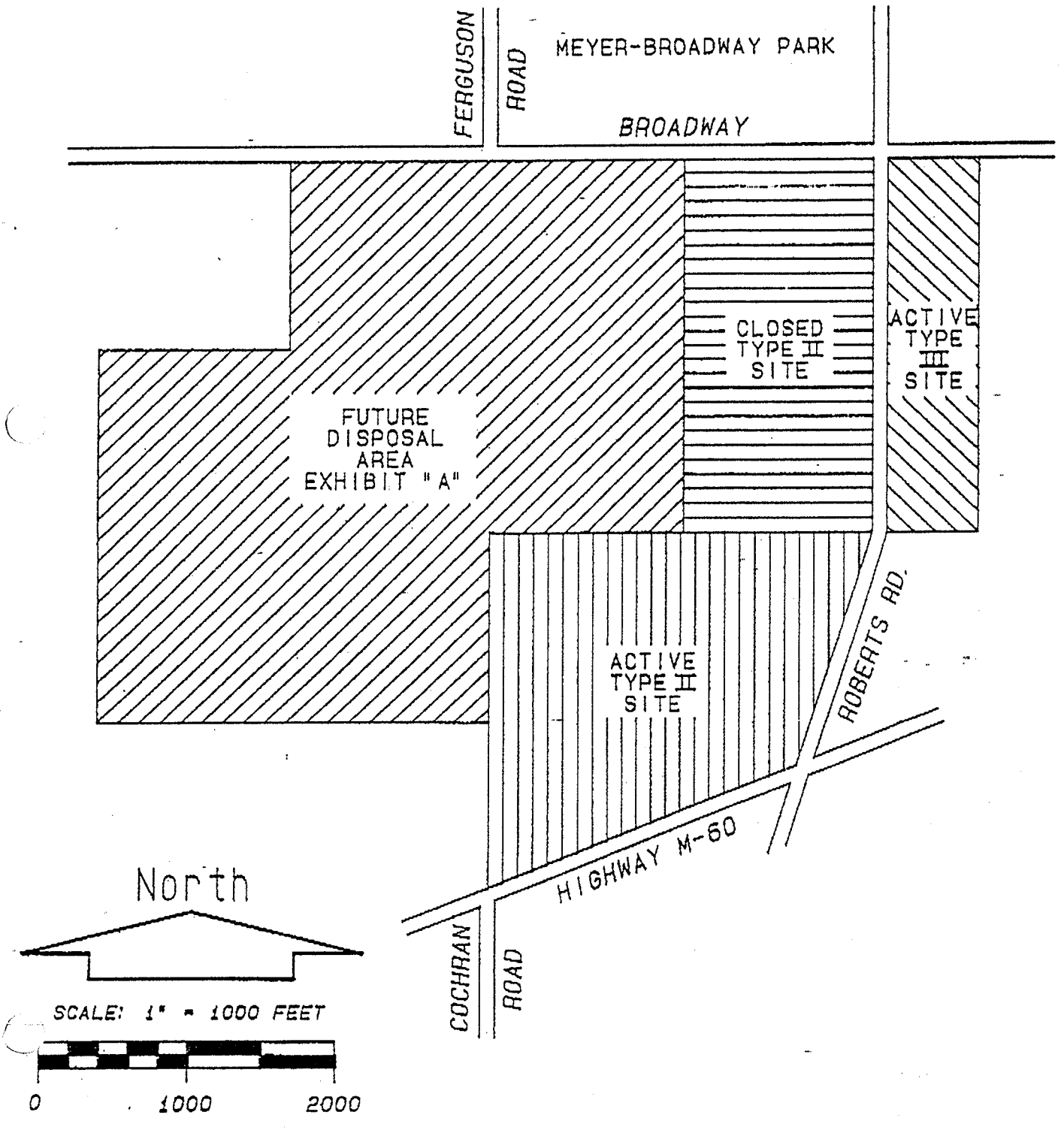
WMNA DIVISION

Form WMNA-0038AD (2/89) Waste Management of North America
White - WMNA Division Canary - Customer

Revised 10/90

EXHIBIT "C"

WESTSIDE R. D. F.
THREE RIVERS, MICHIGAN



STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
P.O. BOX 30028
LANSING, MI 48909

DAVID F. HALES, Director

OCT 3 1990

Ms. LaVenia Stevens, Chairperson
St. Joseph County Board of Commissioners
P. O. Box 277
Centreville, Michigan 49032

Dear Ms. Stevens:

In accordance with the Solid Waste Management Act, 1978 P. A. 641, as amended, the Department of Natural Resources (DNR) by this letter, hereby approves the updated St. Joseph County Solid Waste Management Plan received by the DNR on June 12, 1990, with the following clarification. The isolation distance criteria for wetlands applies only to wetlands regulated under the Goemaere-Anderson Wetland Protection Act, 1979 P. A. 203.

We congratulate your efforts and commitment in addressing the solid waste management issues in St. Joseph County. I look forward to working with you on the implementation of both the St. Joseph County and the State of Michigan Solid Waste Management Plans.

Sincerely,

David F. Hales
Director
517-373-2329

cc: Senator Harmon Cropsey
Representative Glenn Oxender
Mr. Tomas Leep, DNR
Mr. Seth Phillips, DNR

July 19, 1990

CONTINGENCY AGREEMENT
FOR SOLID WASTE MANAGEMENT

St. Joseph County agrees to receive solid waste from Calhoun County in the event that one or more of Calhoun County's current solid waste disposal facility(ies) listed below closes or otherwise becomes unusable either temporarily or permanently.

1. C & C Landfill
name
4800 P Drive North
address
Marshall, Michigan 49068
(Section 28, Convis Twp.)

Jeff Harris
Browning Ferris Industries
10690 6 Mile Rd.
Northville, MI 48167

7-10 years
current expected number of years capacity

2. _____ *
name
_____
address
_____

_____
_____
_____
_____

_____
current expected number of years capacity

Calhoun County in turn agrees to receive solid waste from St. Joseph County in the event that one (or more) of St. Joseph County's current solid waste disposal facility(ies) listed below closes or otherwise becomes unusable either temporarily or permanently.

1. Westside Landfill
name
59762 Roberts Road
address
Three Rivers, MI 49093
(Section 23, Fabius Twp.)

Tom & Leo Meyer
Meyer Enterprises
P. O. Box 350
Three Rivers, MI 49093

18 years
current expected number of years capacity

2. _____ *
name
_____
address
_____

_____
_____
_____
_____

_____
current expected number of years capacity

*Attach additional listing if needed.

Amendment to this agreement including the addition of disposal facilities shall require approval by both counties using the same procedure used for making determinations of consistency.

This agreement shall be an appendix to both counties' solid waste management plans. This agreement shall run no longer than the period of each county's (5 year) solid waste management plan and in the event that one plan expires prior to the other, this agreement will expire with which ever plan expires first.

Each county agreeing hereto shall provide the other with copy(ies) of all other contingency agreements which they may enter into.

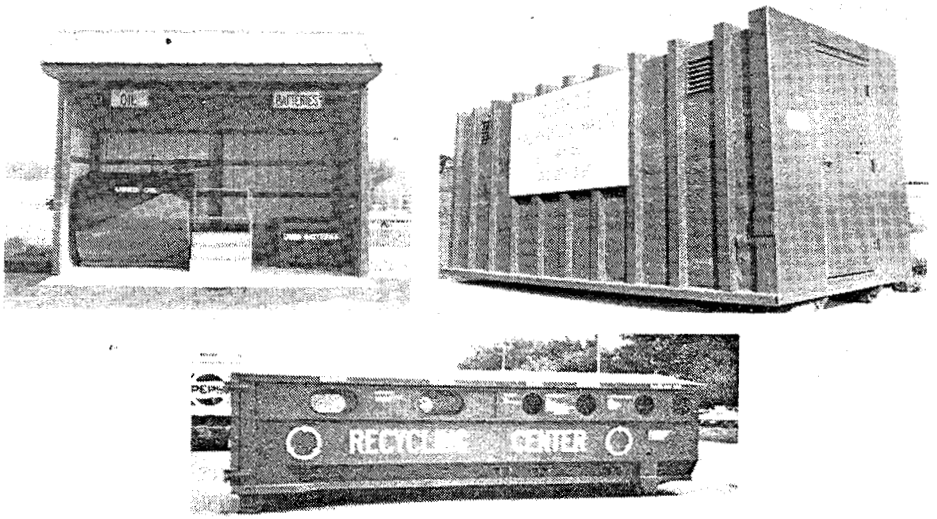
Linda Baker July 19, 1990
Chairperson, St. Joseph (date)
County Solid Waste Management
Planning Agency

George A. Zollner July 19, 1990
Chairperson, Calhoun (date)
County Solid Waste Management
Planning Committee

(One of two copies with original signatures.)

ST. JOSEPH COUNTY SOLID WASTE MANAGEMENT PLAN

(REVISED & UPDATED) 1989



(Photo's of Westside Entrance
Recycling & Landfill Operations)

Prepared By: St. Joseph County Solid Waste Management Committee
With Assistance From:
Department of Planning & Economic Development

CONSIDERATIONS

- Continue to Meet Requirements
- Enhance Recycling and Composting
- Promote Education
- Expand Landfill to Extend Capacity
- Contain Landfill to the North Side of M-60
- Retain Private Sector Management and Operation
- Cooperate with Other Counties
- Inform all Local Units of Recycling Opportunities
- Keep the Plan Clear and Readable

PREFACE

We are pleased to present the 1989 Revised and Updated St. Joseph County Solid Waste Management Plan. To attain results which are satisfying as well as effective and economically feasible, the St. Joseph County Solid Waste Management Planning Committee has worked meticulously to meet or exceed the numerous legal requirements regarding solid waste management, while applying common sense to our 5 year and 20 year goals in order to make them realistic and attainable.

The 1989 Revised and Updated Plan places new emphasis on recycling and composting while maintaining the present landfill operation, containing its expansion to the north side of M-60 in proximity to its present location. These components are included in our selected alternative.

With respect to future solid waste management facilities and the protection of the general public, this Plan addresses siting criteria such as isolation distance and containment issues which meet or exceed current State requirements. This Plan may be amended in accordance with Public Act 641 of 1978.

We're proud of the accomplishments and dedicated efforts of the St. Joseph Solid Waste Management Planning Committee and ask for your approval of this updated and responsive plan.

Carl Holsinger, Chairman
Solid Waste Management Planning Committee
St. Joseph County, Michigan
December 1989

CHAPTERS

1. Introduction
2. Goals and Objectives
3. Data Base
4. Alternatives
5. Plan Selection
6. Responsibilities
7. Dissemination

CHAPTER 1

INTRODUCTION

St. Joseph County is fortunate to have committed private sector involvement in the solid waste management and recycling efforts effecting our citizens. Current capacity at the landfill and recycling center located in Fabius Township of St. Joseph County will allow for 3-5 more years of use, that is, if nothing significant changes.

During the revision process of the 5 year plan, however, the Solid Waste Management Planning Committee has addressed a variety of issues and alternatives which have begun to extend the life of the existing solid waste management and recycling facilities.

In addition to complying with the standards set forth in Act 641, a new emphasis has been placed on recycling. It is anticipated that the current goal of 12-15% recycling of total solid waste coming to the Westside facility will be achieved by means implemented and underway as identified in this update. Notably, recycling centers or satellites in the form of steel fabricated drop boxes have been established in the County's two largest population centers. A third box is being used to serve four smaller communities on a scheduled basis.

Likewise, it is desirable to keep the existing landfill operation contained to the north of M-60, within the immediate area of operations, while allowing for expansion of both landfill capacity and recycling operations.

CHAPTER 2

A. INTRODUCTION

Michigan's Solid Waste Management Act, P.A. 641 of 1978, provides the framework for regulation and management of solid waste in Michigan. Act 641 creates local planning committees to develop county solid waste management plans. The plans are required to provide for management of non-hazardous and non-toxic solid waste and the protection of the public and the environment in the handling of non-hazardous and non-toxic solid waste. This stage was finished in 1982, when St. Joseph County adopted its Solid Waste Management Plan. Said Act mandates an update of the Plan every five years.

B. GOALS AND OBJECTIVES

GOAL 1: Prevent significant adverse effects on the public health and on the environment.

OBJECTIVES:

1a. Surface and groundwater quality, air quality, land, vegetation, animal and human health shall be protected by ensuring that all municipal solid waste is collected, transported, processed and disposed of in a manner in keeping with P.A. 641 of 1978, as amended.

1b. The County solid waste management plan shall establish and maintain procedures for receiving and considering new solid waste management facilities, including specific criteria for siting such facilities.

1c. The County solid waste management plan shall establish and maintain a contingency plan in the event that its existing solid waste management options become unusable.

GOAL 2: Promote to the greatest extent practical and economical use of resource recovery in the County's solid waste management system.

OBJECTIVES:

2a. Support State efforts to create resource recovery of and source reduction of solid waste and educational efforts to accomplish the same.

2b. Promote citizen opportunity for recycling and composting participation in the County.

2c. Promote citizen awareness of the difficulties and opportunities present in solid waste management.

GOAL 3: Evaluate solid waste technologies on an on-going basis to determine those which are most appropriate and usable in the County.

OBJECTIVES:

3a. Through private and public sources, stay appraised of solid waste management options and technologies available.

3b. Through local contacts with the solid waste management industry and other local contacts including public officials, receive input on the practical application of solid waste management options and technologies.

GOAL 4: Promote an integrated solid waste management system.

OBJECTIVE:

Through regular consultation among the active parties in solid waste management, ensure the smooth and effective overall operation of the various solid waste management components.

GOAL 5: Encourage private sector participation in meeting the goals and objectives of this plan.

OBJECTIVE:

The private sector shall be given, to the greatest extent practical, opportunity to implement or to participate in the implementing measures of this plan.

GOAL 6: Promote regional cost-effective solutions for solid waste management.

OBJECTIVES:

6a. Participate in intercounty cooperative efforts toward regional solid waste management solutions.

6b. Consider reciprocal relationships between counties wherein individual counties may contain different portions of a regional solid waste management system.

CHAPTER 3 - DATA BASE

A. INVENTORY OF EXISTING FACILITIES

1. Private Facilities

a. The most important solid waste management facility in St. Joseph County is **Westside Landfill**. This is currently the only licensed disposal site in the County. It is one of only a handful of disposal sites remaining in southwest Michigan.

Westside Landfill is located in Section 23 of Fabius Township. It is a licensed, privately owned and operated Type II and Type III sanitary landfill. The preferred means of access to the site is from M-60 south of the landfill, turning north onto Roberts Road and then onto one of the access drives.

The landfill currently is sited on two parcels of land, on about 80 acres west of Roberts Road and on about 30 acres east of Roberts Road.

Westside at this time receives somewhere between 450 and 650 tons per day. At this rate of usage (which is very susceptible to change), the landfill has sufficient capacity to last until 1992 and potentially through 1994. See Appendix H for these calculations.

Hours of operation are 10 hours per day, Monday through Friday, and 8 hours on Saturday.

Some groundwater contamination from an old (prior to Act 641) landfill cell has been documented. Voluntary initiation of remedial action addressing this problem is in operation.

The landfill also has an agreement with the City of Three Rivers for final disposal of leachate at the city sewage treatment plant.

b. Westside Recycling Satellite Centers are located at the Westside Landfill site, next to the D & W Food Center on the west side of Three Rivers, and next to the E & H Friendly Market on the west side of Sturgis. The villages of Centreville, Constantine, Mendon and Colon are served by a third recycling box.

At the landfill site corrugated is sorted from selected loads, shredded, baled, stored and then marketed. About 3 to 5 tons per day are handled through this facility at this time. Recycling of aluminum and some plastics are being experimented with. Mixed metal is separated from loads hauled by indivudals. Newspapers, glass, tin cans and plastic containers from the drop off centers are also processed here. It is planned to eventually handle significantly more volume through this facility. Used motor oil and auto batteries are accepted at the landfill site during business hours.

At six locations, three roll-off recycling boxes are used. It is hoped these easy access sites will help allow broader community participation in recycling. Newsprint, clear glass, tin and plastic milk containers may be placed in these specially designed containers for recycling.

Some revenue is generated from the sale of these recycled materials, with the greater benefit being the saving of landfill space.

Westside also uses methane gas from the landfill to heat their recycling center and to generate electrical power for their operation.

c. Sturgis Iron & Metal Company is headquartered with its principal facility on the south side of Sturgis. They salvage and recycle a significant volume of materials, especially metals. They have a small salvage yard in Three Rivers. Their service area extends across southwest Michigan and northern Indiana.

d. Backhaulers, Inc. is a solid waste hauler with a recycling operation in LaGrange, Indiana. Corrugated is the primary item handled which is processed into bales and then marketed. Newspaper, glass and metals are also handled. A portion of Backhaulers' materials are collected in St. Joseph County.

e. Squier Distributing Company of Sturgis is the only beverage distributor in the County. This firm recycles and sells its own scrap aluminum, bottle glass and paper products.

f. Other Private Companies: Several manufacturers located in St. Joseph County use secondary materials. Among these local businesses is Simplex Products in Constantine. They manufacture building product sheathing using secondary fibers.

White Pigeon Paper in White Pigeon produces clay-coated boxboard. Their product is used in such items as cereal boxes. The mill buys several grades of waste paper, including newspaper, double-lined kraft clippings and computer printout. In Three Rivers, Progressive Paper buys large sheets of paper products for manufacturing package dividers. Materials purchased include various types of boxboard, corrugated cartons and other heavy paper stock. The company also rebuilds pallets for resale. There are a number of pallet recyclers in the County. In Three Rivers in the recent past Crocker Limited bought used plastic milk jugs for use in a product. The contract for this product has since run out.

g. Camp Eberhart in Fabius Township, approximately six miles west of Three Rivers, has an on-site recycling program. Materials from the camp itself are recycled and materials from the surrounding area are dropped off. The following materials are handled: cardboard, bottle glass (all colors), tin cans, aluminum and plastic milk containers. Please consult Table 1 for the drop-off point.

h. Several churches in the County have newspaper recycling projects with drop-off sites. Please consult Table 1 for specific information.

2. **Public Facilities**

a. Sherman Township leases property for a transfer site on Featherstone Road. A hauler is contracted to provide a truck for pick up on Saturdays. This site handles approximately 30 cubic yards per week.

b. The Village of Mendon and Mendon Township jointly provide a transfer site. Here roll-off containers from a private hauler and a packer truck on Saturdays are used at a site owned by the Village. It is located east of the Village on M-60 on the south side of the road. About 30 cubic yards are handled here per week also.

c. The County 4-H Clubs, in conjunction with the Cooperative Extension Service, previously provided 16 used oil collection tanks throughout the County. Due to the lack of market and staff cut backs, it was necessary to discontinue this project. Westside Landfill has taken over a couple of the tanks for residents to deposit their used oil at no cost.

The 4-H program handled about 18,000 gallons per year of waste lubrication oil.

Used oil is not classified as a municipal solid waste. It is classified when received from residences as an unregulated household hazardous waste.

A relatively very small portion of the total municipal waste stream has been identified as hazardous, only 0.06%; that is six hundredths of one percent. However, 5/6's of this has been shown to be used oil (0.05% of the total).

B. EVALUATION OF THE EXISTING SOLID WASTE MANAGEMENT SYSTEM

1. Existing Solid Waste Management System

Most of the County's 160 ton per day (TPD) solid waste stream is handled by a privately operated system. Haulers contract with individual residences, businesses and industries for the collection, transportation and disposal of their solid waste. These haulers in turn then pay the tipping fee and dump their solid waste loads at Westside Landfill. Some industries haul their own solid waste to the landfill. Residences also have the option of hauling their own solid waste to the landfill, but this is an insignificant portion of the waste stream.

A significant amount of solid waste at this time is also transported to Westside Landfill from Kalamazoo County. This amount falls somewhere in the range of 160 to 240 tons per day (TPD). While this volume contributes to the landfill being filled at a faster rate, it does ensure the economic survival of the operation.

Solid waste is also currently transported to Westside Landfill from Cass, Branch, Van Buren, LaGrange (IN) and Elkhart (IN) Counties. The amounts currently being received from each are estimated below.

County	Tons Per Day
Branch County	20.0 TPD
Cass County	30.0 TPD
Kalamazoo County	200.0 TPD
Van Buren County	170.0 TPD
Elkhart County (IN)	125.0 TPD
LaGrange County (IN)	10.0 TPD
Calhoun Country	20.0 TPD

The amount, if any, allowed to be brought into St. Joseph County in the future from surrounding Michigan counties is controlled by inter-county agreements incorporated into this document. These inter-county agreements also specify certain terms and conditions. In the absence of an inter-county agreement, a Michigan county is not legally eligible to have their solid waste transported into St. Joseph County. Michigan law does not currently address importation of solid waste from out of state.

It is the philosophy of St. Joseph County that the private sector to the greatest extent possible should be allowed to address the solid waste needs and opportunities in St. Joseph County. In its agreements with other counties, St. Joseph County will be looking for terms and conditions which likewise present a level field for the private sector to act on. More specifically, imposition of minimal or no stumbling blocks to private sector action will be looked for.

It should also be noted that the 125 tons per day from Elkhart County is almost wholely foundry sand. This sand, which amounts to about four truck loads, can be used for daily cover at the landfill. Therefore, the impact of this waste on landfill capacity is negligible.

Westside Landfill has developed a recycling center and a Type III landfill. (See Inventory.) Both of these measures serve to help preserve valuable Type II landfill space, with a liner and leachate collection system.

A small amount of waste food (only) is collected in Sturgis by a private hauler under contract with the city.

Municipal sewage sludges are handled on a regular basis only by the Village of Constantine, the City of Sturgis and the City of Three Rivers. In all three cases, the sludges are land applied under separate Michigan Department of Natural Resources regulation. These solid wastes therefore will not be addressed further in this plan.

Recycling systems handle a small portion of the County's waste stream, probably less than 6 to 8 tons per day. The volume recycled by Sturgis Iron & Metal is not considered here because their sources are regional (southwest Michigan/northern Indiana) in scope.

2. Problems

The existing County solid waste management system operates very consistently and economically. One problem which has developed was the maintenance of approximately one mile of Roberts Road which is the primary access to Westside Landfill. With the heavy truck traffic this gravel road was taking a severe pounding. This section of Roberts Road is being reclassified to become part of the County's primary road system which will allow it to be upgraded to a paved road. This will greatly reduce maintenance costs on this section of road and will provide better access to the landfill.

There are isolated cases of illegal dumping around the County. The district health department reports that the nature of illegal dumping in southwestern Branch County and southeastern St. Joseph County might indicate a need for a Type III landfill in this area.

Recycling in the county is rather limited in scope. Part of this is due to the County's rural nature with relatively low population densities. Recycling here, as in many places, is limited by lack of adequate and consistent markets. This limits private sector response. Finally, public sector resources to coordinate, subsidize, or otherwise assist with recycling are very limited.

C. DEMOGRAPHICS

1. Current and Projected Population

An understanding of current and projected levels of population is essential in determining expected quantities of domestically generated solid waste. Table 2 shows the 1970 and 1980 populations and 1990 estimates by civil division (local government) within the County and for the County as a whole. Table 3 shows projections for 1985, 1990, 1995, 2000 and 2010 for the County provided by the Office of Revenue & Tax Analysis, Michigan Department of Management Budget (1985). This Office originally estimated the County's 1985 population at 57,500. More recent estimates put the County's 1985 population at 58,300, 1986 at 59,600 and 1987 at 59,200. The 1985 estimates, therefore, can be considered conservative.

The 1980 population of the County was 56,083 with the City of Sturgis contributing 16.9% or 9,468. The City of Three Rivers constituted 12.5% of the County's population with 7,015.

The population of St. Joseph County is expected to increase in both the short run (1990 & 1995) and in the long run (2010). Between 1980 and 1990 the projected increase is 9.5% From 1990 to 1995 another 6.0% increase is projected. The total increase from 1980 to 1995 (9,017) represents a healthy 16.1% increase. Between 1980 and 2010 the projected increase (19,917) would be 35.5%.

In the last 10 year census period (1970-1980) the County's population growth clearly occurred in the townships with the villages and cities barely holding their own. The townships' aggregate population increased 37.1% while the total for the villages and cities actually decreased by 39 people (0.16%). Only the Village of Centreville had a significant increase - 15.1%. It will be interesting to see if the 1990 census shows this rural growth continuing.

It will not be surprising if this trend actually increases. Villages and cities largely have not expanded their boundaries in recent years. Another factor working against population growth in the villages and cities with their largely established housing stock is the continuing trend of smaller household size (i.e., fewer persons per household). Meanwhile, new residential and commercial growth has occurred largely beyond the villages and cities.

In the countryside, the trend of larger and fewer farms has been more than off-set by rural residential development; rural individual home sites, rural subdivisions and mobile home parks and river and lake front home developments. New commercial development has largely occurred in outlying shopping centers and strip commercial development. There has even been significant industrial growth in the outlying areas.

2. Population Densities

Only local government level information is currently available to calculate population densities. Densities for County local units, St. Joseph County, surrounding counties and the State are shown in Table 4 and use 1970 and 1980 census statistics.

Given the County's projected population growth, the County's projected population densities would be as follows (persons per square mile):

1970	1980	1985	1990	1995	2000	2005	2010
91	108	111	119	126	133	140	147

If the County's population growth continues to occur almost exclusively in the (more rural) townships, little or no intensification of the County's population centers (villages and cities) will be anticipated. In the absence of any information to the contrary, the County's population centers are expected to remain the same for both the short and long terms; no new centers added, no existing centers disappearing, all centers remaining relatively the same in density.

3. Centers of Solid Waste Generation

As discussed in Subsection 2 above, the residential centers of solid waste generation are projected to remain the same for both the short and long terms. The commercial solid waste generation is also projected to remain centered in or near the existing villages and cities (short and long term). To some degree, the commercial waste generation is shifting with the businesses to the outside edges of the villages and cities. This shift is especially noteworthy in the cases of the two cities.

The location and concentration of industries in the County are shown in Table 5 and Figure 1. Sturgis has the highest concentration of industry followed by Three Rivers and then White Pigeon and Constantine. About a quarter of the County's industry is located well outside any of the existing villages and cities. The only concentrations in the outlying areas are in Mottville (an unincorporated community) and the Franklin Drive (unofficial) industrial park north of Three Rivers.

The only other significant characteristic of note is a pattern of industrial development all along US-131.

Short term, the industrial waste generation centers are expected to remain the same with some expansion and some basically holding steady. It should be noted that circumstances regarding the prospects for industrial location and waste generation can change very rapidly. A few years ago the Schoolcraft area just north of the County was the runner-up site for the massive General Motors Saturn Project. Such a project would have had major industrial (and solid waste management) implications for the entire region, including St. Joseph County. In contrast, the Hydramatic operations in the County have gone from 2,000 employees to 700 in the last few years. This reduction entailed the closing of their smaller Constantine plant. The Three Rivers plant remains open but with reduced production and employment.

Overall, the United States and Michigan have been losing manufacturing employment in recent years. St. Joseph County has been part of this trend of gradual loss. Only the Sturgis area has basically remained even in manufacturing employment.

Optimistically, in the short term, expansion might be looked for:

- First, in the Sturgis area (including Burr Oak)
- Second, in the Three Rivers area, particularly in the Franklin Drive and US-131 north areas
- Third, in the White Pigeon, Constantine, Mottville area triangle

These have all been areas of recent industrial expansion or new locations. In Mendon, two existing plastic manufacturers have expanded. However, only one new small industry has located in this village in recent years and there is very limited opportunity at this time for any new industries to locate in the village. It is not known why, but Centreville and Colon have had the least amount of new industrial activity.

Pessimistically, (probably as a result of something like a national recession), the whole County would probably lose industry and related employment. Predicting recessions is something clearly beyond the scope of this plan.

In the long term, there seems to be a strong trend of industrial development along US-131, including the communities of Three Rivers, Constantine and White Pigeon. Sturgis has the longest history in the County in promoting and developing industry and therefore can be expected to continue this trend. Whether the County will have a net gain or loss of industry in the long term is unknown.

In the long term, development of US-131 as a limited access freeway is anticipated. This is expected to help the County's industrial development prospects.

Another long term factor is the enrollment of thousands of acres into the Michigan Farmland Preservation Program (PA-116). The preservation agreements under this program last from 10 to 90 years and prohibit non-farm development. This program may reduce industrial growth or simply shift it to other sites. Many of the best industrial sites in the County are included in this program.

4. **Relationship of Current and Projected Land Development Patterns and Solid Waste Management**

New residential land use development is occurring largely outside the existing villages and cities. This is projected to continue in the short and long term.

This trend will tend to increase the cost of residential solid waste collection. However, it seems to be a price that homeowners are entirely willing to pay. This trend will also tend to work against residential recycling. An increasing portion of the County's population may have to travel farther to recycling drop-off sites.

Patterns of commercial land use development in and near existing villages and cities are projected to continue short and long term. This is not expected to create any problems in relation to solid waste management.

Industrial land use development generally in or near existing communities or along major highways is not expected to create any significant problems in relation to solid waste management. This is projected for both the short and long term.

In agriculture, significant increases in irrigated land and enrollment in the Michigan Farmland Preservation Program (PA 116) are projected to continue for the short and long term. Neither of these is expected to have any direct bearing on the County's solid waste management system.

5. Relationship of Environmental Conditions to Solid Waste Management

The only environmental circumstances of note in St. Joseph County that would have a somewhat unique bearing on solid waste management are:

(a.) the County's generally sandy or otherwise highly permeable soils, and

(b.) the County's expansive and prolific aquifers.

These characteristics imply that any solid waste management system (particularly any landfill portion of the system) for the County should be especially well constructed, operated, maintained and monitored to try to prevent groundwater pollution.

TABLE 1

ST. JOSEPH COUNTY RECYCLING OPPORTUNITIES FOR CITIZENS

RECYCLING CENTERS	WHAT IS RECYCLED	LOCATION
Westside Recycling Center	Newsprint, tin cans, clear bottle glass, motor oil & batteries.	Roberts Road Fabius Township
Westside Satellite Recycling Centers	Newsprint, tin cans, clear bottle glass & plastic milk containers.	Village Market Centreville Village Market Colon Dan's Market Constantine E & H Friendly Store Sturgis D & W Food Center Three Rivers
Camp Eberhart Marc Miller (Open 9 to 5 Daily) Phone: 244-5125	Cardboard, tin cans, aluminum, bottle glass (all colors) & plastic milk containers.	10300 Corey Drive Three Rivers (Western Fabius Township)
Church of the Nazarene Sturgis (Call 651-1724 for pick up)	Newsprint	410 S. Clay Sturgis (Semi Trailer for drop off)
Trinity Lutheran Church Sturgis	Newsprint	406 S. Lakeview Sturgis (Semi Trailer for drop off in rear off Congress)
First Presbyterian Church Sturgis	Newsprint	Drop off at Kick Stand Bike Shop 1301 E. Chicago (Semi Trailer in Rear)
St. Paul's Lutheran Church Centreville	Newsprint	600 W. Burr Oak Centreville (Drop off in church garage)

Continued on Next Page

TABLE 1

ST. JOSEPH COUNTY RECYCLING OPPORTUNITIES FOR CITIZENS

RECYCLING CENTERS	WHAT IS RECYCLED	LOCATION
United Methodist Church Constantine (Open to Constantine Residents)	Newsprint	Front Porch of Wesley Hall 265 E. Third Street Constantine
St. Johns Evangelical Lutheran Church Burr Oak Inez Ultz 489-5161	Newsprint	Drop off at Parsonage Garage 124 N. 5th Street Burr Oak
Burr Oak United Methodist Church	Clear glass, newsprint & tin cans	Corner of 4th & Main Burr Oak
Westside Recycling	Household hazardous waste. No industrial or farming operations.	Roberts Road Three Rivers Call for appointment 278-8129

TABLE 2

POPULATION CHANGE & PROJECTIONS FOR LOCAL MUNICIPALITIES

Villages Cities	1970	± Pop.	± % 70-80	1980	± Pop.	1990 est.	± % 80-90
Burr Oak	873	-20	-2.3%	853	-12	841	-1.4%
Centreville	1,044	+158	+15.1%	1,202	+97	1,299	+8.1%
Colon	1,172	+18	+1.5%	1,190	+11	1,201	+0.9%
Constantine	1,733	-53	-3.1%	1,680	-32	1,648	-1.9%
Mendon	949	+2	+0.2%	951	+1	952	+0.1%
White Pigeon	1,455	+23	+1.6%	1,478	+14	1,492	+0.9%
Sturgis	9,295	+173	+1.9%	9,468	+106	9,574	+1.1%
Three Rivers	7,355	-340	-4.6%	7,015	-208	6,807	-3.0%
Subtotal	23,876	-39	-0.2%	23,837	-23	23,814	-0.1%
% of County	(50.4%)			(42.5%)		(38.8%)	
Townships (1)							
Burr Oak	1,316	+333	+25.3%	1,649	+204	1,853	+12.4%
Colon	1,408	+435	+32.2%	1,843	+266	2,109	+14.4%
Constantine	1,363	+604	+44.3%	1,967	+370	2,337	+18.8%
Fabius	2,080	+1,073	+51.6%	3,153	+657	3,810	+20.8%
Fawn River	1,471	+168	+11.4%	1,639	+103	1,742	+6.3%
Florence	1,125	+278	+24.7%	1,403	+170	1,573	+12.1%
Flowerfield	850	+440	+51.8%	1,290	+269	1,559	+20.9%
Leonidas	935	+314	+33.6%	1,249	+192	1,441	+15.4%
Lockport	1,870	+1,078	+57.6%	2,948	+659	3,607	+22.4%
Mendon	1,116	+753	+67.5%	1,869	+460	2,329	+24.6%
Mottville	1,288	+202	+15.7%	1,490	+123	1,613	+8.3%
Nottawa	1,396	+826	+59.2%	2,222	+505	2,727	+22.7%
Park	2,208	+564	+25.5%	2,772	+345	3,117	+12.4%
Sherman	2,101	+655	+31.2%	2,756	+401	3,157	+14.6%
Sturgis	1,449	+422	+29.1%	1,871	+258	2,129	+13.8%
White Pigeon	1,540	+585	+38.0%	2,125	+358	2,483	+16.8%
Subtotal	23,516	+8,730	+37.1%	32,246	+5,340	37,586	+16.6%
% of County	(49.6%)			(57.5%)		(61.2%)	
St. Joseph	**47,392**	**+8,691**	**+18.3%**	**56.083**	**+5,317**	**61,400**	**+9.5%**

(1) Village populations within townships were deleted from township populations.

Attached is the methodology for the 1990 estimates for local governmental units. The County 1990 figure was taken from the 1985 projections of the Office of Revenue & Tax Analysis, Michigan Department of Management & Budget.

TABLE 3

ST. JOSEPH COUNTY & SURROUNDING COUNTY POPULATION PROJECTIONS

County	1980	1985	1990	1995	2000	2010
St. Joseph	56,083	57,500	61,400	65,100	68,900	76,000
Kalamazoo	212,378	217,200	217,000	218,800	219,700	217,100
Cass	49,499	48,300	50,700	52,600	54,300	56,700
Branch	40,188	39,300	40,200	41,000	41,600	42,200
Van Buren	66,814	68,100	73,000	77,200	81,300	88,700
Calhoun	141,557	139,300	137,000	136,700	135,800	132,300
LaGrange, IN	25,550	27,700			37,100 (2005)	
Elkhart, IN	137,330	145,500	149,800		158,000	162,050

PERCENT POPULATION INCREASES SHORT & LONG TERM

County	1980-90	1990-95	1980-2010
St. Joseph	9.5%	6.0%	35.5%
Kalamazoo	2.2%	0.8%	2.2%
Cass	2.4%	3.7%	14.5%
Branch	---	2.0%	5.0%
Van Buren	9.3%	5.8%	32.8%
Calhoun	-3.2%	-0.2%	-6.5%
LaGrange, IN	8.4% (85)	---	(2005) 45.2%
Elkhart, IN	9.1%	---	18.0%

Sources:

Population Projections for Michigan to the Year 2010, Office of Revenue & Tax Analysis, Michigan Department of Management & Budget, Lansing, MI 1985

LaGrange County, Region 3A Development District

Elkart County, Elkart County Planning & Development Department

TABLE 4

POPULATION DENSITIES BY COMMUNITY
(Population Per Square Mile)

Community	Approximate Area Square Miles	1970 Population Square Miles	1980 Population Square Miles
City of Sturgis	4.9	1,897	1,932
City of Three Rivers	4.5	1,634	1,559
Village of White Pigeon	1.0	1,455	1,478
Village of Constantine	1.5	1,155	1,120
Village of Burr Oak	1.0	873	853
Village of Centreville	1.5	696	801
Village of Colon	1.5	781	793
Village of Mendon	1.5	633	634
Townships			
Sturgis	18.0	81	104
Lockport	30.3	62	97
Fabius	35.6	58	89
White Pigeon	26.4	58	80
Fawn River	20.5	72	80
Sherman	35.0	60	79
Park	35.7	62	78
Mottville	19.7	65	76
Nottawa	35.7	39	62
Constantine	34.0	40	58
Colon	34.3	41	54
Mendon	35.0	32	53
Burr Oak	34.7	38	48
Florence	33.4	34	42
Flowerfield	36.1	24	36
Leonidas	36.2	26	35
St. Joseph County	518.0	91	108
Kalamazoo County	572	352	371
Cass County	496	87	100
Branch County	508	75	79
Van Buren County	612	92	109
Calhoun County	712	199	199
LaGrange County, IN	381	55	67
Elkhart County, IN	468	270	293
Michigan	56,954	155.9	162.6

TABLE 5

ST. JOSEPH COUNTY
INDUSTRY CONCENTRATIONS

Community	In Town	Adjacent	Out of Town	Totals
Burr Oak	7		1	8
Centreville	10			10
Colon	3	1	4	8
Constantine	11	2	3	16
Mendon	3	1	3	7
White Pigeon	10		6	16
US-131 South			6	6
Mottville	4		1	5
M-103	3			3
Three Rivers	27		5	32
Franklin Drive			8	8
US-131 North			2	2
Sturgis	60	4	12	76
Marcellus			1	1
Totals	138	8	52	198

Refer to Section 3.13 & 3.14 for Additional Recycling Sites

*Satellite Recycling Centers:

Centreville
Colon
Constantine
Mendon
Sturgis
Three Rivers

Approximate Location of Westside Landfill & Recycling Center

Camp Eberhart Recycling

Simplex Products

White Pigeon Paper Company

Mendon Village/Township Transfer Site

Sherman Township Transfer Site

Sturgis Iron & Metal Salvage Yard

Backhaulers Recycling Site

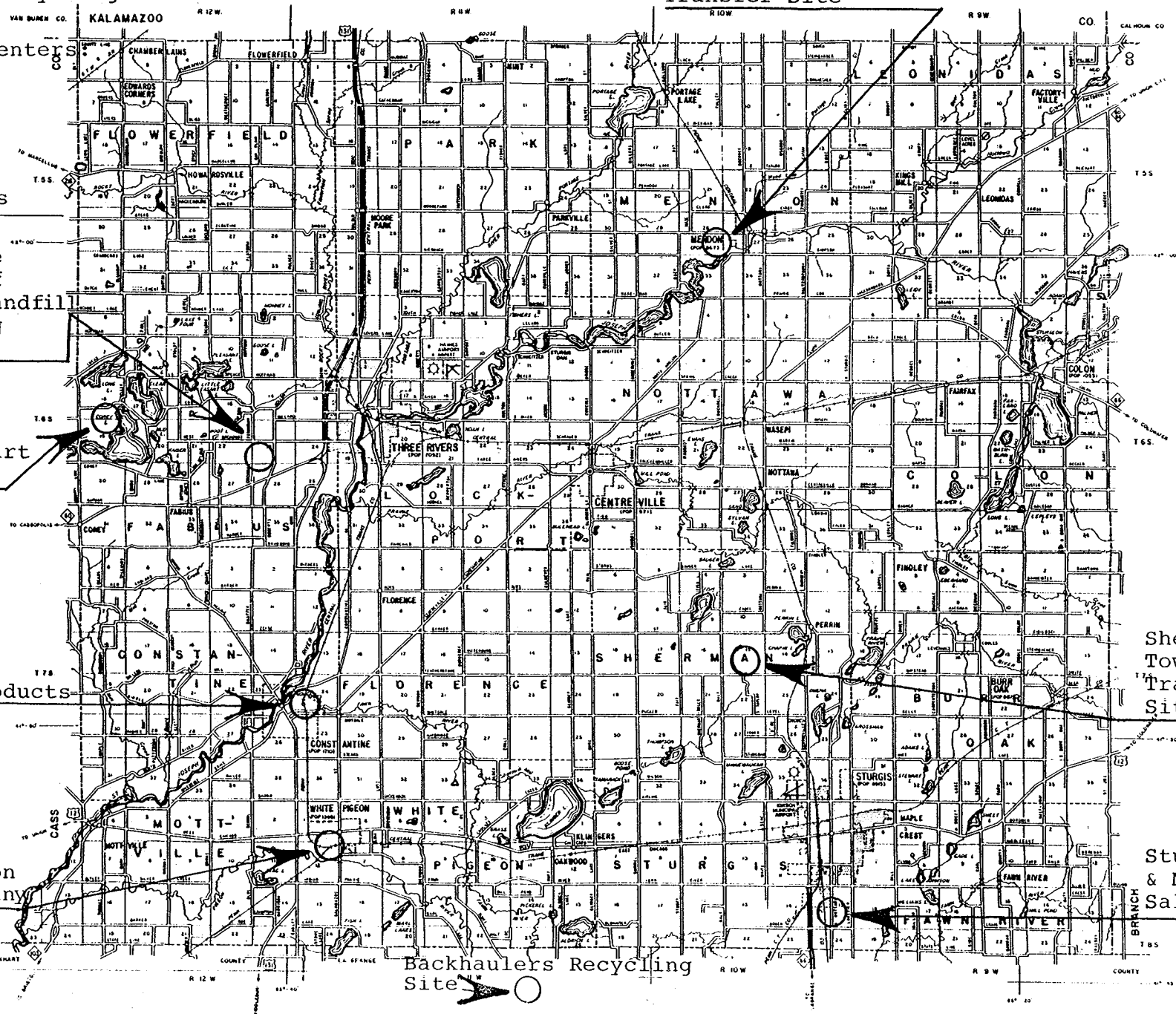


FIGURE 1

ST. JOSEPH COUNTY

CHAPTER 4 - ALTERNATIVES

In this chapter we will address solid waste management system components, short term scenarios and long term scenarios.

A. SOLID WASTE MANAGEMENT SYSTEM COMPONENTS

1. Resource Conservation

Resource conservation in its broadest definition addresses how we as citizens of this planet acquire, develop, use and dispose of natural resources with the intent of having as little negative impact as possible. There are a number of issues surfacing regarding resource use which are increasingly becoming global in scope: global warming from long term burning of fossil fuels (coal, oil, etc.), depletion of the ozone layer in the atmosphere, effects of acid rain on forests and lakes, elimination of forests (especially tropical rain forests) which will have global effects, massive erosion of top soils (especially in third world countries), and pollution affecting entire lakes and massive areas of oceans and seas.

In this context then, resource conservation as it relates to solid waste management implies a number of things. It implies source reduction - designing products with a long useful life, that are reparable, that are reusable for other purposes, or that are recyclable. It may imply reduced use of resources per product (e.g., smaller, more fuel efficient cars after the OPEC oil embargo). It implies a consuming public that is well informed enough to buy these products. It implies a public that buys with conservation in mind (i.e., don't buy a gallon when a quart will do). It implies recycling and reuse of products. It may imply development and use of waste-to-energy plants depending on local circumstances, technological and environmental developments, and economic and social decisions. It definitely implies a few well built, well run and well monitored landfills somewhere.

In short, we are being forced by negative consequences to move away from an attitude of exploitation of Earth's resources, toward more of an attitude of stewardship of Earth's resources. Resource conservation as applied to solid waste management is part of this stewardship.

2. Resource Recovery

Under this heading, three types of resource recoveries will be discussed in general: waste-to-energy plants, recycling and composting. Recycling will also be addressed in some detail as St. Joseph County had a recycling feasibility study completed in 1986.

a. **Waste-to-Energy Plants.** Nationally, as the amount of landfill space continues to decrease while solid waste volumes increase, increased use of waste-to-energy plants (W-to-E) is sometimes used as a solid waste management tool.

There are significant advantages to W-to-E plants:

- o Volumes of solid waste are reduced by 70% to 90%.
- o Weight of solid waste is reduced by 60% to 70%.
- o Energy can be recovered in the form of electricity, steam, hot water or mechanical power.
- o Many toxic substances are destroyed through controlled burning.
- o As less total landfill space is needed because of the volume reduction mentioned above, the risk of groundwater pollution is also reduced.

There also are liabilities involved with W-to-E plants:

- o Capital and operational costs are significantly higher than other waste management options.
- o Energy recovery benefits are often tied to the availability of other forms of energy (i.e., back-up energy, traditionally fired boilers are often necessary).
- o Air pollutants will be produced that escape the facility. Cancer risks for those with long term exposure to W-to-E plant emissions may increase by 1/10,000 to 1/1,000,000. Many other life risks are much higher than this. The point is that there is a trade-off of somewhat more air pollution for a reduction of risk in groundwater pollution.
- o Residual Ash: Bottom ash and fly ash may contain significant levels of toxic metals. This may require the ash to be disposed of at a hazardous waste landfill or a specially constructed landfill (a monofill) for just ash.
- o Higher states of technology are more subject to breakdown.

- o A landfill is still required for non-toxic ash, for non-combustibles and for by-pass solid waste when the W-to-E plant is shut down for maintenance or due to breakdown.

The costs per ton for processing solid waste through a W-to-E plant at this time start at about $30 per ton and go up from there. A number of feasibility studies for W-to-E plants have been conducted for various localities around the State of Michigan. One W-to-E plant in Jackson, Michigan has been built and operated for a short time. At the time St. Joseph County representatives visited this facility, the price charged per ton was approximately $29. Larger facilities are under construction in Grand Rapids and Detroit.

b. **Recycling.** Recycling is another solid waste management alternative. Although it can complement other management alternatives, it cannot be a sole waste management option. Many solid wastes are not recyclable at all. Of those that are recyclable, usually only a fraction is technically recyclable, and a smaller fraction still is economically recyclable.

Recycling is the best publicly accepted alternative. A survey (unscientific) conducted at the St. Joseph County Fair in 1986 showed that 85% of the public favored recycling.

One of the major obstacles to the initiation of recycling projects is that other systems such as landfills and W-to-E plants have been institutionalized much longer and their funding mechanisms are well established either by user fees or taxes.

The main materials that are currently recycled are: aluminum, scrap iron, newsprint, glass, corrugated paper, tin, plastic milk jugs and used motor oil.

The major advantages of recycling are:

- o It saves natural resources. One ton of recycled aluminum may reduce the need to excavate several tons of raw bauxite ore.

- o It generally saves energy. Less energy is used to recycle newsprint than to cut, process and produce the same from raw pulp wood.

- It conserves landfill space. In the future, as landfill space becomes more scarce, this recycling value may become a high priority.

- It gives the individual more control of their solid waste management options.

- It involves the individual personally and daily in solid waste management. Because of this, recycling has the potential to be of great value in educating the public generally about solid waste management.

The major disadvantages to recycling are:

- Markets fluctuate significantly for recycled materials. This introduces uncertainty which makes it sometimes difficult to finance recycling programs. Further, prices sometimes go down and stay down long enough that recycling particular materials is not practical.

- It can compete with W-to-E plants for materials that have a high BTU value such as newsprint or corrugated.

- Funding mechanisms are not well established.

- It should also be recognized that while many people may voice support for recycling, usually a smaller percentage will actually commit support in the form of using recycling opportunities, volunteering time or voting taxes for it.

There are four main recycling systems:

1. **Drives, such as Paper Drives.** These are often sporadic and usually only function well when the economic incentives are high.

2. **Established Drop-Off Centers.** These are generally inexpensive to build and moderately expensive to operate. They have the advantage of permanence and therefore are more reliable. But, they typically are not self-supporting so a subsidy funding mechanism is usually needed. Drop-off centers at transfer stations are a natural location as an immediate cost avoidance can be realized.

3. **Curbside Pickup.** This system will work in a high density population area that has a high participation rate. This system is not currently self-supporting and will have to be subsidized.

4. **Recycling at a Landfill.** Here, again, an immediate cost avoidance can be realized. However, solid waste at this point is mixed. Therefore, only industrial or commercial loads with a high percentage of one recyclable material are likely to be handled. Typical municipal waste loads are too mixed with non-recyclable materials to be practical.

St. Joseph County's recycling feasibility study (1986) provided a basic cost analysis for two levels of recycling. At the low participation level, it was estimated that a drop-off program would reduce County residential and commercial waste volumes by less than one percent. A salvage project at the landfill, together with this, would decrease landfill volumes (including out of County wastes) by half of one percent.

If the high participation level were attained, waste reduction would be increased to 3% of the County residential and commercial waste stream through drop-off center usage. The salvage project at Westside Landfill would increase to 2% of their disposal volume.

The cost per ton for the low participation level was calculated to be $62.50; for the high participation level $18.40.

See **Table 1** for the current listing of recycling opportunities in St. Joseph County.

c. **Composting.** Typically, successful composting programs are launched as costs of waste collection and disposal increase. Yard wastes are typically light, bulky materials (leaves, grass clippings, brush, small tree branches) which are costly to transport.

Materials for composting are often placed in windrows and then turned at least twice a year. Sometimes forced air is used in the composting materials to help ensure timely biological breakdown of the materials. Water may also be added as needed. The end result of the composting process is the production of a humus, a typically dark colored material that looks like soil. However, this humus is nearly all organic. When added to more commonly occurring soils such as sandy or clay soils, it enriches them and makes them more fertile.

Composting can be an organized municipal activity for an entire community or an individual practice in one's own back yard or on the farm as part of normal farming practices.

One concern with composting to be aware of is the extent to which lawn chemicals (pesticides, weed killers, etc.) are used and then to some extent are made a part of compost. The more such chemicals are used the more careful one should be about using the resulting humus in special applications such as in flower beds where a weed killer may stunt or otherwise harm flowers, or in a vegetable garden.

The Cities of Portage and Three Rivers have composting programs. Three feasibility studies for municipal compost programs estimated costs per ton ranging from about $30 per ton to $160 per ton.

The supply of compost humus from a municipal program typically far exceeds any local market for the material. So, it is usually given free to municipal residents for their home usage. Three Rivers has a local business market for their production.

3. **Volume Reduction**

Volume reduction is a necessary part of any solid waste management system. Natural economics drives the need for volume reduction causing it to occur almost automatically wherever it is possible throughout a solid waste management system. Packer garbage trucks compact their loads in order to transport more. Landfills use heavy compactor vehicles to move the waste on site and compact it all in the same process. Some landfills compact the solid waste in bales which are then stacked in place. Recycling operations compact and bale corrugated boxes and break glass into cullet with the intent of reducing transportation costs.

The only volume reduction that does not appear to come naturally to the solid waste system is that reduction which the consuming public could achieve by simply not producing (buying) so much waste in the first place. As the price of solid waste disposal has gone up, commercial and industrial businesses do appear to have reduced their own solid waste volumes through reuse and recycling of waste materials. Grocery stores bale their corrugated. Plastics manufacturers grind or chip and then reuse their plastic scrap. Foundries reuse their casting sand. Machine shops have the metal shavings and scrap picked up separately for recycling. In the long run, it can be hoped that the consuming public will follow suit due to price impact and educational efforts.

4. Sanitary Landfill

Landfills are a necessary part of any waste management system. There are wastes that simply cannot be dealt with in any other practical way. Foundry sand, once it has reached a certain point, can only be disposed of. Many plastics are not currently recyclable. Most materials, once they have been mixed in the solid waste collection system, can only be landfilled or, in some cases, burned in waste-to-energy plants. As discussed under the waste-to-energy plant section above, a landfill somewhere must go hand in hand with any such plant.

Act 641 has established two types of landfills:

Type II landfills that can accept municipal, commercial and industrial (non-hazardous) waste.

Type III landfills that can accept building demolition material, tree stumps, brush and other waste that has been declared Type III waste by the Michigan Department of Natural Resources.

Type II landfills have to be lined with clay and/or PVC to protect the groundwater. Although these landfills cannot accept regulated quantities of hazardous waste, they do accept as part of the normal waste stream household hazardous wastes and small quantities of non-regulated hazardous waste from industry. This, together with the regulated constituents of the waste stream, makes the Type II landfill a potential risk to nearby residents. Various measures have been built into the Type III facility to minimize this risk. Additional measures can be expected to be added in the future. Increasingly, landfill operators are exercising the practice of buying up nearby residences to reduce as much as possible this risk. Nevertheless, some risk does remain.

Type III landfills do not have to be lined because the materials that they accept have minimal potential to contaminate groundwater. Potential problems could develop if material disposed of at these landfills is not closely regulated to make sure that it remains only Type III. Type III landfills, like Type II, do pose some risk to nearby residences, although the risk here would be expected to be less.

Landfill Advantages. They are presently the most cost effective method of dealing with solid waste. This keeps disposal costs low to the public, businesses and industry. They are also the most reliable method of waste disposal. The technology is mainly in the site engineering, construction and monitoring of the site. The operation is done with standard or slightly modified excavation equipment.

Landfill Disadvantages. The landfill site must be maintained long after closure. Leachate collection and disposal will have to be maintained for an unknown time. Settlement, possible liner failure, and methane gas control are also long term potential problems.

The cost per ton (converted from cubic yards) currently charged at Westside Landfill is $18.

5. Collection

Almost the entire solid waste collection system in St. Joseph County is privately owned and operated. There are a number of private solid waste haulers operating in the County. Most have standard packer trucks. At least one has just an old pickup truck. There are three publicly owned or contracted solid waste collection services in the County. There are two small transfer stations and one (food) garbage collection route.

Sherman Township has a small transfer station for township residents. The Village of Mendon and Mendon Township have a jointly provided small transfer station. These were discussed in Chapter 3, A. Inventory of Existing Facilities, 2. Public Facilities. In both cases, the municipalities contract with a private hauler to transport the solid waste received.

If a large transfer station is ever needed in St. Joseph County, the cost for this operation alone might run as high as $30 per ton.

A small amount of waste food (only) is collected in Sturgis by a private hauler under contract with the city.

6. Transportation

Virtually all solid waste transportation in the County is by private haulers using trucks of various sizes. Nearly all transportation occurs over State highways. Figure 1 shows a near square within the County of State highways with highway legs reaching outward. M-216, which is not highlighted on this map, occurs in an east-west

orientation running nearly through the middle of Flowerfield Township.

7. **Ultimate Disposal Area Uses**

The ultimate end use of Westside Landfill after closure will be for a recreational or open space use to be determined in cooperation with St. Joseph County, Fabius Township and possibly other nearby local governments.

As closure of this facility is not anticipated within the period of this (5 year) plan, ultimate end use will not be addressed further at this time. It may be noted that Meyer Brothers (owners of Westside Landfill) are currently cooperating with the County for the development of a County park on land which they own just north of the landfill.

8. **Institutional Arrangements**

a. **For the General Solid Waste Stream**

Currently, in St. Joseph County the private sector is responsible for daily pickup and disposal of solid waste.

The public sector role (with the minor exceptions noted above) is limited to monitoring, oversite and regulatory enforcement actions as needed. The primary public sector actor involved is the Michigan Department of Natural Resources (MDNR). The MDNR acts through the District Health Department to fulfill some of these responsibilities.

St. Joseph County has in the past and is anticipated in the future to play the limited role of maintaining a County solid waste management plan.

b. **For Recycling**

The institutional arrangements here are still evolving. A number of private non-profit organizations (See Table 1) have provided limited recycling drop-off opportunities in the County. Westside Landfill, Sturgis Iron & Metal and Backhaulers perform recycling at their own facilities. Westside Landfill also recently has provided roll-off boxes for multi-material drop-off of recyclable items in Three Rivers, Centreville, Colon, Constantine, Mendon and Sturgis. St. Joseph County received a Clean Michigan Fund resource recovery educational

grant. Under this grant a recycling promotional brochure was developed, a number of presentations on recycling and solid waste management were made and advertising of recycling opportunities has been conducted.

Westside Landfill's voluntary involvement in providing the public a new and significant recycling opportunity is encouraging. Recent advertisements and promotion of recycling opportunities and locations likewise are encouraging. The potential impact of new State funds in this area is unknown, but will hopefully help.

c. **For Any Future Multi-County Solid Waste Management Initiative (Including Any Waste-to-Energy Facility)**

Here, a whole new set of institutional relationships would probably be needed. If flow control is necessary to any such multi-county effort:

1) a whole new level of government (local villages, townships and cities) would be brought into the picture in a significant new role, and

2) private sector relationships would probably have to be altered significantly.

The counties of southwest Michigan, at this time, do not have any institutionalized means of even addressing the subject of a multi-county initiative.

B. SHORT TERM SCENARIOS

In this section, three short term scenarios and one contingency alternative are presented. The first scenario is essentially an extension of current solid waste management practices. The second scenario assumes a significant though modest new source of funds become available to promote and support recycling and to begin a composting effort. The third scenario makes the same assumptions as the second and adds the assumption that by one or more means, the waste-to-energy option becomes a real possibility for St. Joseph Country. All three scenarios assume that markets for recycled materials either remain the same or marginally improve. Finally, the contingency alternative assumes that Westside Landfill, for whatever reason, is shut down, no new significant disposal option presents itself within the County and the bulk of the County's solid waste stream must then be shipped out of the County.

1. Short Term Scenario #1

There are two parts to this scenario: one that addresses landfilling and one that addresses a low participation level in recycling.

a. Landfilling

Given the current estimate of Westside Landfill capacity (See Chapter 3), this facility nearly covers the County's and a portion of neighboring counties' solid waste disposal needs for the short term period. Because circumstances in the solid waste management industry are potentially subject to a great deal of change and to ensure disposal capacity, Westside Landfill is authorized to expand as market and application of MDNR regulations may allow. Such expansion(s) shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in this plan.

The current cost for disposal at Westside Landfill is $18.00 per ton ($6.00 cubic yard). This is only projected to increase modestly over the short term.

The County remains open to considering new landfills (Type II and III), but few, if any, new additional ones are expected. New landfills shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in this plan.

b. **Recycling - Low Level Participation**

It is estimated that approximately 4%-5% of St. Joseph County's solid waste is recycled. The County's recycling feasibility study (1986) estimated that local paper drives and grocery stores recycle 1,500 tons annually. This provides an established recycling base of about 4 tons per day. Additionally, Westside Landfill (landfill site & roll-off boxes) and Backhaulers, as a result of new investments, together now recycle another 3 to 4 tons per day from within the County.

$$\frac{7 \text{ or } 8 \text{ (above total)}}{160 \text{ (County total)}} = 4\%\text{-}5\%$$

The percentage of solid waste recycled in the County is projected to increase by 2%-3% over the short term for an eventual total of 6%-8%.

The investments already made by Westside Landfill in recycling approximate those suggested in the County's feasibility study for a low participation level. The net cost for this level of recycling is therefore estimated to be $62.50 per ton. Some of this cost is recaptured by Westside Landfill through preservation of landfill space. Backhaulers recapture some of this cost through avoidance of landfill tipping fees.

Additional new recycling and composting efforts will be looked at favorably, but only marginal increases are expected. New recycling facilities, which fall under MDNR's definition of a solid waste processing facility, shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in this plan.

2. **Short Term Scenario #2**

There are three parts to this scenario that address landfilling, recycling and composting. The assumed new significant, though modest, funding to promote and support recycling and to begin a composting effort can plausibly come from either or all of three sources:

- o Local taxes (local governments and/or County commitments from their general funds or a specially approved millage).
- o New State money resulting from the passage of Michigan's Quality of Life Bond Proposal C.
- o New Private Sector Investment. (Further significant private sector investment probably will only be triggered by one of the above new public commitments or a significant improvement in markets for these materials.)

a. **Landfilling**

Same as Scenario #1.

b. **Recycling - High Level Participation**

Building on Scenario #1, it is estimated that there is a current base of approximately 4%-5% of the County's solid waste that is now and will continue to be recycled. The County's recycling feasibility study (1986) estimated that with significant new investments in recycling and a high level of participation, approximately 5% more recycling might be achieved. With this scenario then, 9%-10% of the County's waste stream might be recycled.

The percentage of solid waste recycled in the County then would be projected to increase by another 3%-5% over the short term for an eventual total of 12%-15%.

The net cost for this level of recycling as estimated in the feasibility study would be $18.40 per ton.

Additional new recycling efforts will be looked at favorably, significant increases are expected. New recycling facilities which fall under MDNR's definition of a solid waste processing facility shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in this plan.

c. **Composting**

New composting efforts are started in the County. Home backyard composting is encouraged and education materials for this are made available. Cities and villages begin organized municipal composting programs.

Based on the State's feasibility studies, the cost for these composting efforts are expected to range from $30 to $160 per ton. (It should be noted that while these cost per ton figures may seem high, a ton of leaves and grass clippings constitutes a much greater volume than standard municipal solid waste. In this case particularly, a cost per cubic yard might be a more meaningful way to measuring impact on the waste stream.)

3. **Short Term Scenario #3**

There are four parts to this scenario which address landfilling, recycling, composting and use of a waste-to-energy facility(ies). Use of a waste-to-energy facility(ies) by St. Joseph County might occur by a variety of means. Here, only a few options will be suggested. The impact on Westside Landfill could be to either decrease or possibly increase use of this particular facility. (In southwest Michigan it would be assumed that there would be a net decrease in total landfill usage as the result of the development of a regional waste-to-energy plant.) The effect on Westside Landfill would depend on the specific circumstances at the time. It is assumed that any waste-to-energy plant would be required to have a new positive impact on recycling.

a. **Landfilling**

Same as Scenario #1.

b. **Recycling**

Same as Scenario #2.

c. **Composting**

Same as Scenario #2.

d. **Waste-to-Energy**

- A firm known as Something of Value Inc. originally proposed a waste-to-energy plant of regional scale on the south side of Sturgis. More recently they have discussed the development of a tire-to-energy plant in the Sturgis area patterned after an existing plant in California. At the very least this plant could be asked, maybe required, to also burn used motor oil. It was also mentioned that at a future stage waste-to-energy plant might still be incorporated to some degree.

- A RENCO Resource Recovery Project is currently proposed for Calhoun County. It is proposed that this be a regional waste-to-energy facility.

- A number of other possible waste-to-energy proposals have been discussed to varying degrees in St. Joseph County and in southwest Michigan. Mass burn facilities with capacities of 300 tons per day or more seem to come up more frequently and to proceed a bit farther than most.

The major components which appear to be necessary for any waste-to-energy facility would appear to be the following:

- A power purchase agreement from a major utility company or an equivalent long term institutional or industrial energy customer.

- Flow control agreements in order to insure an adequate supply of waste fuel.

- Long term financing with possible public subsidies.

- One or more transfer stations may be needed in St. Joseph and other counties participating in a regional waste-to-energy plant.

Negotiations are continuing at the State level regarding power purchase agreements. The authority for flow control would appear to continue to reside with individual villages, cities and townships which presents a practical difficulty for rural areas. Waste from two or more rural counties might be necessary for one waste-to-energy plant. Larger, more urban areas would appear to have a more likely prospect of developing a waste-to-energy plant. It is possible that St. Joseph County, if it chose to do so, might be able to piggyback a waste-to-energy option for some or a major portion of its waste as

part of a more urban regional facility. The amount of County solid waste handled through a waste-to-energy option (if any) could range from a very small to a very large percentage depending on circumstances and County and local governmental choices.

The potential costs and the uncertainties are greatest with this option. Based on the State feasibility studies, the costs per ton at this time could be expected to range from about $30 to $60 per ton.

A new W-to-E plant(s), other major solid waste processing facility(ies) or a transfer station(s) within the County or use of the same in other counties will be considered openly though cautiously. Any new such plant(s), facility(ies) or station(s) proposed within the County shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in this plan.

4. **Contingency Scenario**

For reasons that are not foreseeable at this point, Westside Landfill is closed within the short term five year planning period. Westside Landfill is the County's primary solid waste management facility. With this facility closed and no new significant disposal option having presented itself within the County, the County must now export the bulk of its waste.

To provide for this event, St. Joseph County has authorized in this Plan that the County's designated solid waste planning agency shall make one or more contingency agreement(s) with other Michigan county(ies) and/or other units of government outside of Michigan. It is assumed that other counties or units of government shall authorize their designated solid waste planning agencies or other appropriate bodies to enter into such contingency agreements.

The planning agencies (or other bodies) by mutual consent shall approve, amend and/or terminate inter-county (intergovernmental) contingency agreements. St. Joseph County shall accomplish this using the same procedure used for making "determinations of consistency."

All contingency agreements shall become an appendix to this plan.

With an option (or options) in place for final disposal of St. Joseph County's solid waste outside of the County, the practical necessity of getting our waste to this outside option (landfill, waste-to-energy plant, etc.) presents itself. If the disposal option is relatively close, maybe 30-40 miles or less, regular solid waste collection vehicles may well be able to economically make this trip. What happens to fuel

costs may significantly effect the determination of an economical distance.

In all likelihood, the County's outside disposal options are going to be a distance beyond the economical range of regular solid waste collection vehicles. Therefore, it is assumed that if the contingency scenario comes to pass, St. Joseph County will need at least one transfer station. It is quite probable that two transfer stations might be needed, one near Sturgis and one near Three Rivers. The number and location of transfer stations will be left to the discretion of the party(ies) (private or public) who may propose such a facility. Any new such transfer station(s) proposed within the County shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in this plan.

The cost of accomplishing this scenario is unknown. Introducing the use of a transfer station, however, during the next 5 years, may add a cost of $25-30 per ton by itself. The costs of transportation and of the final disposal facility must also be added. The contingency agreements included in the appendix of this plan do provide known starting points for pursuing this scenario; known useable disposal facility(ies) with currently known costs (prices), with known distances. (The loss of a facility such as Westside Landfill would probably significantly affect the prices at any of the contingency facilities.)

Because of the high cost of this scenario and the direct opportunity of capturing avoidable costs at a transfer station, recycling options will probably prove very feasible.

C. LONG TERM SCENARIOS

In this section, three long term scenarios will be presented. The first long term scenario is essentially an extension of the first (#1) short term scenario. This scenario assumes that the current circumstances continue or worsen, that landfilling remains the most economical means of solid waste disposal, that recycling continues to be of marginal and limited impact and that the waste-to-energy plant option, because of costs, environmental and other considerations, fails to catch on. This scenario might be the most likely to occur if the National economy were to go into a prolonged recession.

The second scenario is an extension of the second (#2) short term scenario. This scenario assumes that the currently perceived trends of significantly increasing landfill costs and by comparison relatively stable recycling and composting costs, in fact, become long term trends. It must also be assumed that the markets for recycled materials in the long term either remain the same or marginally improve over the years. It is also assumed that long term public educational efforts in behalf of recycling and composting begin to pay off significantly.

The third scenario parallels the third (#3) short term scenario. The third long term scenario makes the same assumptions as the second and adds the assumption that by one or more means the waste-to-energy option (or some other new major disposal option) becomes a real possibility for St. Joseph County.

1. Long Term Scenario #1

This scenario, like its counterpart short term scenario, has two parts: one that addresses landfilling and one that addresses a continuing low level of participation in recycling.

a. Landfilling

Westside Landfill continues to serve St. Joseph County and portions of neighboring counties through moderate expansions. The cost per ton at this facility increases modestly over the long term.

The County remains open to considering new landfills (Type II and Type III), but few, if any, new additional ones are expected. New landfills shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in the County's plan as it is updated from time to time.

b. **Recycling - Low Level Participation**

Limited recycling continues in the County primarily due to the limited markets for these materials. Goodwill in terms of volunteered efforts, significant though marginal State assistance and markets that provide some return keep recycling efforts going.

Additional new recycling and composting efforts will be looked at favorably, but only marginal increases, if any, are expected. New recycling facilities which fall under MDNR's definition of a solid waste processing facility shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in the County's plan as it is updated from time to time.

2. **Long Term Scenario #2**

There are three parts to this scenario that address landfilling, recycling and composting. Based on the assumptions discussed above, moderate but steady increases in use of recycling and composting are projected with this scenario.

a. **Landfilling**

Westside Landfill expansions are limited in scope. The facility continues to serve St. Joseph County and portions of surrounding counties. Due primarily to additional tougher and tougher regulations, the costs of landfilling increase significantly.

The County remains open to considering new landfills (Type II and Type III), but few, if any, new additional ones are expected. New landfills shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in the County's plan as it is updated from time to time.

b. **Recycling - High Level Participation**

Recycling continues to catch on at the local, state and national levels. The amount of recycling in the County continues to rise steadily due to the favorable economics. State, local and private efforts find financial and political rewards promising. The percent of the County's waste handled through recycling increases to 25% to 30%.

Additional new recycling efforts will be looked at favorably; significant increases are expected. New recycling facilities which fall under MDNR's definition of a solid waste processing facility shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in the County's plan as it is updated from time to time.

c. **Composting**

The comparatively increasing cost of landfilling and growing public acceptance and participation in composting efforts leads to a 10% to 15% volume through use of this management tool (both municipal and homeowner backyard approaches).

3. **Long Term Scenario #3**

There are four parts to this scenario which address landfilling, recycling, composting and use of a waste-to-energy facility(ies). Use of a waste-to-energy facility(ies) by St. Joseph County might occur by a variety of means. Here, only the most likely option is suggested.

a. **Landfilling**

Same as Scenario #2.

b. **Recycling**

Same as Scenario #2.

c. **Composting**

Same as Scenario #2.

d. **Waste-to-Energy**

A major waste-to-energy plant is built primarily serving larger nearby counties. St. Joseph County is a minor participant in this facility. Westside Landfill, which has continued expanding its recycling operations, now finds it economical to also divert a second portion from the landfill. This second portion is relatively high in BTUs but is of insufficient market quality for recycling. Westside Landfill, together with others in the region, maintains a defined capacity for W-to-E plant overflows and bypass and is compensated for this.

One or more transfer stations may be needed in St. Joseph and other counties participating in a regional waste-to-energy plant(s).

A new W-to-E plant(s), other major solid waste processing facility(ies) or a transfer station(s) within the County or use of the same in other counties, will be considered openly, though cautiously. Any new such plant(s), facility(ies) or station(s) proposed within the County shall be subject to the procedure for receiving new solid waste management facilities and siting criteria specified in the County's plan as it is updated from time to time.

CHAPTER 5 - PLAN SELECTION

In the previous chapter, three solid waste management scenarios (short & long term) for St. Joseph County were presented. For the purposes of this chapter, these scenarios will be considered as sets of solid waste management practices (plan alternatives) among which the County must choose to implement.

It is important to note that the plan alternatives presented are not mutually exclusive. Rather, Scenario #2 may be built upon Scenario #1. Likewise, Scenario #3 may be built upon Scenario #2. The evaluation process of this chapter helps determine the degree of investment to which the County is prepared to commit itself in addressing our solid waste management needs.

The solid waste management scenarios presented largely presume a predominant role of the private sector in addressing our solid waste management needs. The important point is that the County is viewed by the State as being responsible for instituting its chosen solid waste management plan alternative whether the private sector is able to fulfill it or not. Considering the County's limited resources, some caution in choosing a plan alternative is appropriate.

A. EVALUATION CRITERIA

According to the rules of Act 641, the solid waste management plan alternatives (scenarios of Chapter 4) for St. Joseph County are to be evaluated and ranked on the basis of the following criteria:

- Technical Feasibility
- Economic Feasibility
- Site-Ability. Access to Land, Transportation and Other Siting Considerations
- Energy Consumption and Production
- Environmental Impacts
- Public Health
- Capacity to be Implemented According to a Timetable

These criteria are discussed in some detail below. The advantages and disadvantages of the various solid waste management practices (which are used as parts of a plan alternative) are discussed at some length, also. It is hoped that this will help provide a consensus of understanding on the definition of these criteria.

1. **Technical Feasibility.**

- o Can the plan alternative be implemented using presently available technology?

- o If not, is the needed technology likely to be commercially available in the immediate future (one year)?

Advantages / Disadvantages

a. **Landfilling Advantages.** Landfilling uses long proven existing technology for disposing of solid waste. This practice is also flexible and able to handle large fluctuations in volumes and composition. A breakdown in any one part of a landfill operation does not usually shut it down entirely. If a spreader/packer breaks down, a bulldozer might be temporarily used its place. Importantly, landfilling is not dependent on other solid waste management practices (recycling, composting, waste-to-energy).

Landfilling Disadvantages. The long term technical ability of landfill liners to stand the test of time is not conclusively proven. Good or poor landfill management can significantly affect the facility's ability to contain its solid wastes.

b. **Recycling Advantages.** Source separated recycling operations typically use simple machines and predominantly unskilled labor. Fluctuations in volumes are not usually a problem. Breakdowns are easily fixed and do not affect the entire operation. If a baler breaks down, materials can still be collected, sorted and stored. Existing bales can still be marketed.

Larger, more sophisticated recycling operations that receive mixed materials tend to loose some of the advantages above in trade-off for higher volume goals.

Recycling Disadvantages. Fluctuations in composition are sometimes a problem for recycling operations. Uncertainty in market prices make the economics difficult for recycling.

c. **Composting Advantage.** Uses simple historic technology.

d. **Waste-to-Energy Advantages.** Most waste-to-energy plant technology is well developed and proven. This practice reduces solid waste volumes by 70%-80% and solid waste weight by about 50%.

d. **Waste-to-Energy Advantages.** This practice recovers some costs through the sale of energy.

Waste-to-Energy Disadvantages. This practice currently appears to be the least likely to be financially self-supporting. Shutdowns have serious financial implications. If this practice fails there very likely will be millions or tens of millions of dollars lost.

3. **Site-ability. Access to Land, Transportation and Other Siting Considerations**

- o How easy is it going to be to site a new facility or maintain an existing site?
- o To what extent is land available or obtainable?
- o To what extent is the facility accessible via major transportation routes?
- o What other siting considerations may make it easy or difficult to establish a new facility or maintain an existing facility?

Advantages / Disadvantages

a. **Landfilling Advantages.** Siting criteria for landfills are well defined. New landfills can easily be checked against the criteria for compliance.

Westside Landfill Advantages. Westside has the advantage of already being sited and through the efforts of the operators the site has been brought into compliance with all State laws. The site has access to a State highway and considerable additional land.

Landfilling Disadvantages. While siting criteria are well defined, it is almost always going to be fairly expensive to obtain, analyze and present adequate information to determine that a proposed landfill site will be in compliance. It may sometimes be difficult to find a site that meets all siting criteria.

Westside Landfill Disadvantages. The ideal landfill site has large, thick beds of impermeable clay. Westside does not have this. Westside is also some distance from most of the population centers it serves.

b. **Recycling Advantages.** Siting criteria for recycling facilities are less well defined. However, recycling is usually viewed as a fairly harmless operation or, at worst, comparable to other industrial operations. Siting criteria for recycling, therefore, are apt to be minimal.

Recycling Disadvantages. Siting criteria may be less than adequate, particularly if the recycling facility is poorly maintained and operated (i.e., trash allowed to collect, flow, smell, etc.).

c. **Composting Advantages.** The siting for this type of solid waste management practice is probably the least restrictive. Composting simply requires very little ground for the home owner or perhaps several open acres for a municipality. No special site preparation is usually required.

Composting Disadvantages. There occasionally may be some odor from a municipal composting operation. This can be addressed by siting it in isolation from other land uses or by applying technical applications to the compost (e.g., aeration).

d. **Waste-to-Energy Advantages.** Compared to landfills, these facilities are more commonly considered industrial. Thus, they have been developed within urban areas while landfills are almost always developed further out in the countryside. These facilities then can be developed closer to the population center(s) which are the primary source of solid waste.

Waste-to-Energy Disadvantages. The siting criteria for these facilities to some extent is still evolving. In terms of siting, these facilities appear to be increasingly considered more like landfills than distinct from landfills.

4. **Low Energy Consumption (Positive Net Production)**

- How much fuel is consumed in the collection and transportation for solid waste?
- How much energy is saved or produced?

Advantages / Disadvantages

a. **Landfilling Advantages.** Some landfills have methane recovery systems in which the gas is put to practical use.

Westside Landfill Advantages. Westside is located within St. Joseph County resulting in comparatively very short hauling distances for County solid wastes. Westside also has a small methane recovery system.

Landfilling Disadvantages. A large amount of potential fuel is buried. Landfills are becoming very few and far between resulting in longer and longer hauling distances before waste is finally disposed of. Previously unheard of distances are now becoming common.

b. **Recycling Advantages.** The amount of energy used in producing a product from recycled materials is usually significantly less than if the same product were produced from raw materials.

Recycling Disadvantages. Recycled materials typically must be hauled some distance for comparatively low economic return values.

c. **Composting Advantages.** Composting requires very little energy itself. The most important energy value of composting is that it saves transporting large, bulky materials the distance to the landfill.

Composting Disadvantages. The only disadvantage we can think of would be associated with transportation costs to a central location and we do not anticipate this being necessary.

d. **Waste-to-Energy Advantages.** Waste-to-energy plants, as the name implies, produce useful energy from waste materials. In terms of energy consumption, they are ideal because they are net energy producers. Also, because the solid waste burned is greatly reduced in volume and weight, additional energy savings are obtained in landfilling the remaining ash. Waste-to-energy plants usually can be located closer to population centers, thereby reducing hauling distances.

Waste-to-Energy Disadvantages. If the remaining ash is determined to be toxic, it may have to be transported a considerable distance to a hazardous waste landfill.

5. **Environmental and Public Health Impacts**

o To what extent will a proposed or existing solid waste management facility create or maintain an adverse environmental or public health impact on the area where it is located?

- Will it affect the air, water, soil, plants, animals or humans?

- Does or will the facility comply with all applicable Federal and State laws?

Advantages / Disadvantages

Landfilling Advantages. Landfilling under the best circumstances will have minimal odor, very little blowing debris, no rats or other vermin, no noticeable noise, no groundwater or surface water (i.e., lake, river, stream) pollution, minimal dust created, no air pollution, no methane gas migrating to undesirable locations causing explosion hazards, no traffic impact on residential neighborhoods and very little adverse impact of any kind beyond its borders. Further, the solid waste disposal cost will be provided at a low cost which will discourage bootlegged dumping in remote areas of the countryside. Finally, upon closure, a former landfill site might be used in a number of environmentally desirable manners.

Landfilling Disadvantages. Under the best circumstances, it is still not possible to guarantee that something adverse, someday, won't leak from a landfill. The best of circumstances do not always prevail.

b. **Recycling Advantages.** Recycling under the best circumstances will have minimal odor, very little blowing debris, no rats or other vermin, no noticeable noise, no groundwater or surface water (i.e., lake, river, stream) pollution, minimal dust created, no air pollution, minimal traffic impact on residential neighborhoods and very little adverse impact of any kind. Recycling further positively affects the environment by reducing the amount of raw materials (including energy resources) that must be extracted from the earth, generally thereby reducing adverse environmental impacts. The personal participation in recycling also fosters a positive stewardship attitude toward the environment generally.

Recycling Disadvantages. The best of circumstances do not always prevail. People sometimes dump where recycling is intended. Recycling programs often entail hand sorting of materials which does present some health risks that would not occur otherwise.

c. **Composting Advantages.** Composting makes use of natural materials in a natural process where things biodegrade (rot).

Under the best circumstances there is minimal or no odor, no blowing materials, no rats or other vermin and very little adverse impact of any kind.

Composting Disadvantages. Where food wastes might be included in a composting effort, particular caution and additional measures would be needed to avoid vermin and other public health problems. Residential use of pesticides and herbicides may present environmental pollution risks and potentially health risks depending on how and where finished compost is used. For most composting programs limited primarily to leaves, grass clippings and brush, the above risks would generally be very minimal.

d. **Waste-to-Energy Advantages.** Waste-to-energy plants under the best circumstances will have minimal odor, no blowing debris, no rats or other vermin, no noticeable noise, no groundwater or surface water (i.e., lake, river, stream) pollution, no external dust created, limited and monitored air pollution, no traffic impact on residential neighborhoods and very little adverse impact of any kind beyond the building. The amount of solid waste to be landfilled is greatly reduced. From an environmental point of view, even if the remaining ash is determined to be toxic requiring disposal at a hazardous waste landfill, this would be a positive result because adverse elements would be more carefully and completely isolated than they would be otherwise. Finally, because the solid waste is burned, its pathogenic (disease causing) risk is destroyed immediately.

Waste-to-Energy Disadvantages. The high solid waste disposal cost of waste-to-energy plants may encourage bootlegged dumping in remote areas of the countryside. Under the best circumstances, some air pollution, limited as it may be, will be created.

6. **Public Acceptability**

- To what degree will the public accept the proposed solid waste management practice?

- To what degree will the public meaningfully support it (i.e., taxes, user fees, volunteer time, etc.)?

Acceptance and support are two entirely different matters.

Advantages / Disadvantages

a. **Landfilling Advantages.** Landfills, in general, are becoming much better facilities environmentally and otherwise, which might be expected to eventually lead to greater public acceptance. Unintentional as it may be, landfills receive by far the most public support in the form of user fees (and taxes in the case of public landfills).

Westside Landfill Advantages. Westside is locally owned and operated. This may have something to do with the fact that it is well designed, operated and managed. Even the old, unlined solid waste cell is being very responsibly addressed. Further, Westside's existing site is a matter of long standing public knowledge.

Landfilling Disadvantages. Historically, landfills have a poor record of public acceptance. Public reactions to siting landfills strongly support this contention.

Westside Landfill Disadvantages. Westside Landfill is a regional facility. The local public generally does not understand this economic necessity.

b. **Recycling Advantages.** Recycling enjoys widespread public acceptance verbally. Recycling generally appears to be immune to the "not in my backyard" (NIMBY) syndrome. In contrast, landfilling and waste-to-energy plants seem to be doggedly plagued with the NIMBY reaction. Further, recycling is generally associated with environmental responsibility, community spirit and other positive public attitudes. For these reasons, recycling's popularity is expected to steadily increase (perhaps in proportion to the decrease in an area's solid waste disposal capacity).

Recycling Disadvantages. When it comes to more concrete support measures such as long term financial commitments, public support, to date, has been rather apathetic, though steadily growing.

c. **Composting Advantages.** Composting shadows recycling in the public mind in terms of acceptance.

Composting Disadvantages. Like recycling, composting requires intentional commitment and financial support over apathy. Not a small hurdle to overcome.

d. **Waste-to-Energy Advantages.** Waste-to-energy has a high technology image which has an appeal. Solid waste put into a waste-to-energy plant, like a log in a fireplace, is generally apt to be thought of as gone, eliminated: a clean, simple and final solution. With the exception of air pollution, a good case can be made for containing all potential adverse effects from a waste-to-energy plant.

Waste-to-Energy Disadvantages. Waste-to-energy requires both overcoming the NIMBY syndrome (negative acceptance) and establishing tremendous public support (political for flow control and financial). The recent experiences of Jackson County and the City of Detroit also bring into question in the public mind whether this option is even workable. The same high technology image that invites awe, also invites fear.

7. **Timetable**

- o If a timetable for establishing a solid waste practice is established, how likely is that timetable apt to be kept?

- o How important is it for a proposed practice to be kept on schedule?

Advantages / Disadvantages

a. **Landfilling Advantages.** In terms of technological matters, landfilling is fairly simple and straight forward and can be scheduled accordingly. A landfill can also be developed in stages, a cell at a time. Certain stages of development can be delayed without great difficulty to the overall operation.

Westside Landfill Advantage. Westside has already been authorized to and has committed space and resources to cover St. Joseph County's (and portions of surrounding counties') solid waste disposal needs for 3 to 5 years. Further, Westside has land available for potential expansion(s) and the County with this plan will have procedures and criteria for considering such potential expansion(s) if deemed necessary and appropriate.

Landfilling Disadvantages. In terms of adverse public acceptance and resulting setbacks, scheduling problems can be significant, even insurmountable. Most stages of landfill development do require significant financial investments and delays do put those investments at risk.

b. **Recycling Advantages.** Recycling can be developed gradually. Capital investments can be made as demand develops.

Recycling Disadvantages. The uncontrollable element for recycling is the market for materials. This can make month-to-month operational scheduling somewhat unpredictable. Long term public commitments necessary for long term development plans, to date, have generally not been made.

c. **Composting Advantages.** If the resources are committed, composting can be done simply.

Composting Disadvantages. We have considered this and are aware of none.

d. **Waste-to-Energy Advantages.** We have considered this and are aware of none.

Waste-to-Energy Disadvantages. Scheduling delays due to public acceptance issues, technical problems and cost overruns have been witnessed. Furthermore, these delays have significant financial consequences because:

(1) the facility requires a very large capital outlay which must be financed, and

(2) the facility must be committed to as a whole.

B. RATING PROCEDURE FOR PLAN ALTERNATIVES

To evaluate the plan alternatives for the short and long terms, a detailed numerical rating system was developed. The rating system consists of two sets of numbers. The first set is called the Decision Importance Value and represents the subjective importance (on a scale of 1 to 10) that has been assigned to each of the Evaluation Criteria. Following is an explanation of why these values were assigned to each.

1. **High Technical Feasibility.** This evaluation criteria was assigned a Decision Importance Value of 8. It was felt that this criteria was quite important. However, all three plan alternatives include significant usage of landfilling and recycling, both of which are likely to be considered quite high in technical feasibility. Therefore, this criteria will be of somewhat lesser importance than some of the other criteria.

2. **High Economic Feasibility.** This criteria was assigned a 10. The County's financial resources for implementing its chosen solid waste management plan alternative is extremely limited. Therefore, the importance of this criteria to the County's decision making is critical.

3. **High Site-Ability.** This criteria was assigned an 8. Having solid waste management facilities that are siteable is a prerequisite to having a workable plan alternative. However, the County already has a major facility sited so this criteria was discounted slightly.

4. **Low Energy Consumption/Energy Saved-Produced.** These criteria were assigned very low values of 1 each (for a total of 2) because the importance of energy conservation is primarily economic, which is already weighted heavily above.

5. **Minimal Environmental & Public Health Impacts.** This criteria was assigned a 10. The entire exercise of solid waste management planning is primarily for the purpose of achieving the minimization of these impacts.

6. **Positive Public Acceptance/Positive Public Support.** Because no major controversies are anticipated in the short term, this criteria was assigned a more modest value of 5. In future solid waste plan updates, this criteria may well take on more importance.

7. **Positive Timetable Reliability.** This criteria was also assigned a modest value of 5. This was because the County does not anticipate any solid waste disposal shortage in the short term. In the future, if adequate disposal (processing) capacity becomes more questionable, then this criteria will become more important.

The second set of numbers is a rating on a scale from 1 to 10. Here, a subjective decision was made comparing a plan alternative to a given evaluation criteria. A rating of 10 indicates that a plan alternative compares most favorably with a criteria and a 1, least favorably.

Example: A plan alternative may include composting. Therefore, the alternative may be rated 1 or 2 points higher when compared to Technical Feasibility as composting technology is simple and proven. This same alternative (with composting), when compared to Economic Feasibility, may be rated 1 or 2 points lower as composting markets are usually very limited or non-existent.

For each plan alternative, each criteria's Decision Importance Value is multiplied by the rating. The results for all/each criteria are then added to determine the plan alternative and compared.

SHORT TERM PLAN
EVALUATION CRITERIA & DECISION IMPORTANCE VALUES

	Evaluation Criteria	Decision Importance Values
A.	High Technical Feasibility	8
B.	High Economic Feasibility	10
C.	High Site-Ability	8
D.	Low Energy Consumption (Positive Net Production)	
	o Low Energy Consumption in Collection & Transportation	1
	o Energy is Saved or Produced	1
E.	Minimal Environmental & Public Health Impacts	10
F.	Positive Public Acceptance/Positive Public Support	5
G.	Positive Timetable Reliability	5

C. RATINGS FOR SHORT TERM PLAN ALTERNATIVES

Evaluation Criteria	Plan Alt. Ratings (1-10) Alt.1	Alt.2	Alt.3	Dec. Imp. Val.	Plan Alternative Rankings by Criteria Alt.1	Alt.2	Alt.3
High Technical Feasibility	[ ]			x 8 =[ ]			
		[ ]		x 8 =		[ ]	
			[ ]	x 8 =			[ ]
High Economic Feasibility	[ ]			x10 =[ ]			
		[ ]		x10 =		[ ]	
			[ ]	x10 =			[ ]
High Site-Ability	[ ]			x 8 =[ ]			
		[ ]		x 8 =		[ ]	
			[ ]	x 8 =			[ ]
Low Energy Consumption (Transportation & Collection)	[ ]			x 1 =[ ]			
		[ ]		x 1 =		[ ]	
			[ ]	x 1 =			[ ]
Energy Saved / Produced	[ ]			x 1 =[ ]			
		[ ]		x 1 =		[ ]	
			[ ]	x 1 =			[ ]
Minimal Environmental & Public Health Impacts	[ ]			x10 =[ ]			
		[ ]		x10 =		[ ]	
			[ ]	x10 =			[ ]
Positive Public Acceptance/Support	[ ]			x 5 =[ ]			
		[ ]		x 5 =		[ ]	
			[ ]	x 5 =			[ ]
Positive Timetable Reliability	[ ]			x 5 =[ ]			
		[ ]		x 5 =		[ ]	
			[ ]	x 5 =			[ ]
Cumulative Evaluation Ratings:		Plan Alt. 1			[ ]		
		Plan Alt. 2				[ ]	
		Plan Alt. 3					[ ]

The Solid Waste Management Planning Committee members individually ranked the plan alternatives according to the rating procedure described. The choices by the eleven (11) committee members present are summarized below.

Alternative #1	Selected Alternative #2	Alternative #3
2 First Choices	9 First Choices	0 First Choices
9 Second Choices	2 Second Choices	0 Second Choices
0 Third Choices	0 Third Choices	11 Third Choices

D. RATINGS FOR LONG TERM PLAN ALTERNATIVES

Evaluation Criteria	Plan Alt. Ratings (1-10) Alt.1	Alt.2	Alt.3	Dec. Imp. Val.	Plan Alternative Rankings by Criteria Alt.1	Alt.2	Alt.3
High Technical Feasibility	[ ]			x 8 =[ ]			
		[ ]		x 8 =		[ ]	
			[ ]	x 8 =			[ ]
High Economic Feasibility	[ ]			x10 =[ ]			
		[ ]		x10 =		[ ]	
			[ ]	x10 =			[ ]
High Site-Ability	[ ]			x 8 =[ ]			
		[ ]		x 8 =		[ ]	
			[ ]	x 8 =			[ ]
Low Energy Consumption (Transportation & Collection)	[ ]			x 1 =[ ]			
		[ ]		x 1 =		[ ]	
			[ ]	x 1 =			[ ]
Energy Saved / Produced	[ ]			x 1 =[ ]			
		[ ]		x 1 =		[ ]	
			[ ]	x 1 =			[ ]
Minimal Environmental & Public Health Impacts	[ ]			x10 =[ ]			
		[ ]		x10 =		[ ]	
			[ ]	x10 =			[ ]
Positive Public Acceptance/Support	[ ]			x 5 =[ ]			
		[ ]		x 5 =		[ ]	
			[ ]	x 5 =			[ ]
Positive Timetable Reliability	[ ]			x 5 =[ ]			
		[ ]		x 5 =		[ ]	
			[ ]	x 5 =			[ ]
Cumulative Evaluation Ratings:	Plan Alt. 1				[ ]		
	Plan Alt. 2					[ ]	
	Plan Alt. 3						[ ]

The Solid Waste Management Planning Committee members individually ranked the plan alternatives according to the rating procedure described. The choices by the eleven (11) committee members present are summarized below.

Alternative #1	Selected Alternative #2	Alternative #3
3 First Choices	7 First Choices	1 First Choice
5 Second Choices	4 Second Choices	2 Second Choices
3 Third Choices	0 Third Choices	8 Third Choices

E. TIMETABLE FOR PLAN IMPLEMENTATION

1. Short Term Plan Timetable

Consistent with the selection of Alternative #2, it is expected that up to 9% of the County's waste stream will be recycled and up to 4% will be composted at the end of 5 years.

a. Westside Landfill currently has capacity to last approximately another 3 to 5 years (covering the County's needs through 1992 or 1994).

b. During the life of this five year updated plan, Westside intends to expand on approximately one hundred acres north of M-60 and south of the existing landfill in Section 26 of Fabius Township. This additional land is adjacent to the existing facility. It is expected that expansion will pertain to landfill and recycling operations. It appears this acreage meets the siting criteria of this plan. In addition to meeting the siting criteria, extending capacity and enhancing recycling operations, expansion on the acreage noted above will contain expansion of the landfill on the north side of M-60.

Westside Landfill is currently filling about 4 to 5 acres per year. At this rate of usage, the additional acreage will provide approximately 10 to 15 years of additional capacity (covering the County's needs through 2002 or 2009).

Westside Landfill is committed to expanding in response to market demand and has demonstrated the ability to do so while fully complying with applicable State laws and regulations.

c. To meet the County's recycling goals as chosen in the selected plan alternative, the following steps have either already been taken or are committed to be taken.

As called for in the County's recycling feasibility study, steps 1, 2 and 3 have already been initiated.

(1) Operation of a multi-material recycling and processing center at Westside Landfill.

(2) Salvaging of scrap metals and corrugated containers from commercial waste loads at Westside Landfill.

(3) Establishment of multi-material drop-off recycling centers in Sturgis and Three Rivers. These are provided by Westside Landfill with their roll-off greenboxes for this purpose.

Westside has further expanded their recycling operations by providing service at locations in area villages.

To ensure successful attainment of the County's recycling goals, the County commits to the following additional steps.

(4) Backhaulers and other recycling operations of the County will be encouraged to expand their operations.

(5) The County Planning Department will advertise all drop-off recycling opportunities in the County.

(6) A recycling educational program will be continued by Westside Landfill, the County Planning Department and through the annual 5th grade conservation tour. Local publications will be asked to print in a conspicuous space "RECYCLE THIS PAPER". Also, slide shows which educate the public will be shown throughout the County.

(7) The County Planning Department will encourage and provide assistance to all interested parties in applying for appropriate State or other assistance to promote, expand, develop new, or otherwise improve their recycling operations.

(8) If the above steps are not successful in achieving a 9%-10% recycling of the County's solid waste stream by the end of the third year (1991) of the County's short term plan, a ballot proposal to finance and support recycling in the County may be proposed and put before the County board for consideration.

d. To meet the County's commitment to composting as called for in the chosen alternative, the following steps will be taken.

(1) The County Planning Department will make educational materials on home backyard composting available. This will be done in cooperation with the County Cooperative Extension Service which already has brochures available.

(2) The County Planning Department will encourage and provide assistance to all interested parties, especially local municipalities, in applying for appropriate State and other assistance to promote, expand, develop new, or otherwise improve their composting operations.

2. **Long Term Plan Timetable.** The above described short term plan timetable covers the County's solid waste management needs for 11 to 15 years (through 2000 or 2004). The remaining 5 to 9 years of the 20 year long term planning period will be covered by the following steps, consistent with the selection of Long Term Alternative #2.

a. Westside Landfill will be encouraged to further expand on contiguous properties.

b. If this is not feasible or is determined in future 5 year plan updates not to be part of the chosen alternative, then when 4 years landfill capacity is left, the County shall:

(1) Solicit proposals for solid waste disposal capacity from the private sector.

(2) If (1) is unsuccessful, seek to site a disposal facility in the County, or by means of an inter-county agreement, establish the option to use a facility in another county.

(3) If (1) and (2) are unsuccessful, develop and submit to the County Board a proposal to advance to the ballot sufficient millage to fund a solid waste disposal facility with sufficient capacity to meet the County's needs for the balance of the 20 year planning period.

c. The County's long term commitment to recycling and composting can only be fulfilled through implementation of the County's short term commitments in this area. Through the regular 5 year plan updating process, the attainment of these long term goals (25% to 30% recycling / 10% to 15% composting) can be monitored.

Attainment of these goals will also be contingent on advances in solid waste reduction, packaging technology advances, improvements in recycling and composting economics and additional legislative initiatives.

According to the alternative selected, it is consistent to expect that 10% to 15% of the volume of the County's waste stream will be handled through the use of composting. Likewise, it is anticipated that 25% to 30% of the County's waste will be handled through recycling.

F. SITING REQUIREMENTS

1. Westside Landfill is sited in St. Joseph County. While it is felt that this existing facility has sufficient capacity to meet the County's and portions of surrounding counties, needs for the next 3 to 5 years, regional market conditions may change such that this is significantly increased or decreased.

2. Westside does have significant acreage upon which it potentially could expand. However, such expansions will be treated the same as any other new proposed solid waste management facility. Therefore, the following siting procedure and criteria were developed.

G. PROCEDURE FOR RECEIVING NEW SOLID WASTE MANAGEMENT FACILITIES

Applicants wishing to develop a new solid waste management facility (transfer station, landfill - Type II or III, incinerator or waste-to-energy plant, solid waste processing facility) in St. Joseph County shall first come before the County Solid Waste Management Planning Committee. The Committee will hear the applicant's proposal and shall require documentation that the proposal is consistent with the County's officially adopted "siting criteria."

The applicant, upon request, will be placed on the Solid Waste Planning Committee's agenda within 30 days. The Solid Waste Planning Committee will have 60 days, from the presentation to the Committee, for consideration before making its recommendation to the designated planning agency. Such recommendation shall be in writing and shall include the basis for their recommendation covering all items from the "siting criteria" appropriate to the proposal.

Upon receiving the recommendation of the Solid Waste Management Planning Committee, the designated solid waste management planning agency shall within 60 days:

1. Approve the proposal, or

2. Deny the proposal.

3. If the designated solid waste management planning agency fails to act on the proposal within 60 days, the proposal will be considered approved.

Public notice shall be published that the solid waste committee will consider a proposal for siting a solid waste management facility. The chief elected official in the municipality where the facility is proposed will be notified by the committee.

The designated solid waste management planning agency's action shall be in writing and shall also give the basis for their action from the "siting criteria". The agency may, if they so choose, accept the Committee's findings as basis for their action.

Approval by the designated solid waste management planning agency shall provide a "determination of consistency" with the County's Solid Waste Management Plan. This determination of consistency shall provide a one year period wherein the applicant is eligible to pursue an administratively complete Department of Natural Resources construction permit application. After receiving this determination, the applicant is directed to pursue the approval of the Michigan Department of Natural Resources for a construction permit.

H. SITING CRITERIA

Following are the required isolation distances for siting new solid waste management facilities. A variance from these criteria may be granted if the applicant can demonstrate that the variance will provide equal or greater protection provided by these isolation distances. Isolation distances shall only apply to protected areas in existence at the time an application for determination of consistency is applied for.

All solid waste management facilities addressed below shall be located on a paved road. If a proposed facility site is not located on an existing Class "A" road, a written agreement shall be reached between the applicant, the township, if participating, and the Board of County Road Commissioners to provide for upgrading and/or maintenance of the access road or roads. In the case of an incinerator, waste-to-energy plant, solid waste processing facility or licensed transfer station, the above mentioned agreement might need to read incorporated village or city rather than the Board of County Road Commissioners.

Any Public Act 641 variances that a proposed facility might need that are apparent at the time of application for a determination of consistency shall also be considered in making this determination.

I. INTER-COUNTY AGREEMENTS

A LIST OF THE INTER-COUNTY AGREEMENTS AND CONTINGENCIES ARE LOCATED IN APPENDIX D.

SITING CRITERIA - ISOLATION DISTANCES

SOLID WASTE MANAGEMENT FACILITIES

PROTECTED AREAS		Type II Landfill	Type III Landfill	Incinerator Solid Waste Procession Facility	Licensed Transfer Station
Municipal Wells		2,000 ft.	2,000 ft.	500 ft.	500 ft.
Type II Wells		800 ft.	800 ft.	300 ft.	300 ft.
Type III		500 ft.	500 ft.	300 ft.	300 ft.
Three Rivers State Game Area @		1/2 mile	1/4 mile	1/2 mile	1/2 mile
Leidy Lake State Game Area @		1/2 mile	1/4 mile	1/2 mile	1/2 mile
Spring Creek Minigame Area		1/2 mile	1/4 mile	1/2 mile	1/2 mile
Fabius Minigame Area		1/2 mile	1/4 mile	1/2 mile	1/2 mile
Great Blue Heron Rookery +		1/2 mile	1/4 mile	1/2 mile	1/2 mile
Navigable Rivers & Streams		750 ft.	750 ft.	300 ft.	300 ft.
County & State Parks		750 ft.	750 ft.	750 ft.	750 ft.
Lakes	100 acres or more	1,500 ft.	1,500 ft.	1,500 ft.	1,500 ft.
	50 - 99 acres	1,000 ft.	1,000 ft.	1,000 ft.	1,000 ft.
	5 - 49 acres	750 ft.	750 ft.	750 ft.	750 ft.
Wetlands	100 acres or more	1,500 ft.	1,500 ft.	1,500 ft.	1,500 ft.
	50 - 99 acres	1,000 ft.	1,000 ft.	1,000 ft.	1,000 ft.
	5 - 49 acres	- - - - Not Allowed Within - - - -			
100 Year Flood Plain		- - - - Not Allowed Within - - - -			
Platted Residential Subdivision *		1,000 ft.	1,000 ft.	500 ft.	500 ft.
A Residence *		500 ft.	500 ft.	500 ft.	500 ft.
Incorporated Villages & Cities		1/2 mile	1/4 mile	Allowed Within Corporate Boundaries	

@ Isolation distances are from the designated game area boundaries, not simply State owned land.

\+ See appendix for property description.

* Nothing in this required isolation distance shall prevent a facility developer from acquiring a residence or residences and removing it (them) in order to meet this requirement.

CHAPTER 6

RESPONSIBILITIES FOR SOLID WASTE MANAGEMENT INCLUDING RECYCLING

Responsibility for handling the solid waste of St. Joseph County is shared by the private and public sector. Westside Landfill Inc. and Recycling Center located in Fabius Township is the private sector component of the Solid Waste Management equation. The St. Joseph County government, represented by the office of the Director of Planning and Economic Development, has been designated to coordinate operations and actions amongst interested parties. This includes: The Solid Waste Management Planning Committee comprised of citizens and the private sector participants cited above.

The landfill operations in our County are owned and operated as a private business. The principal operating capital comes from tipping fees generated from within the County and by agreement with neighboring counties which presently rely on our landfill space for handling a portion of their solid waste.

In order to keep the landfill in operation, the stipulations in Act 641 continue to be complied with and a recycling center is in operation. The recycling center gathers and compacts cardboard and newsprint and separates and handles other potentially profitable recyclables such as plastic milk containers, clear glass and tin cans.

In recent months, two satellite recycling centers have been located within our County's major population centers. The first such box fabricated at the expense of the private sector is located in Three Rivers at the D & W Store on US-131. A second box has been located in Sturgis at the E & H Store on US-12. A third box serves the villages of Centreville, Constantine, Colon and Mendon.

The use of these locations required the cooperation of store managers and property owners. Public acceptance and participation has been enhanced by the interest and coverage of local media.

To reinforce the recycling effort in St. Joseph County, attention was drawn to the opening of these centers and brochures printed with State of Michigan grant funds for this purpose have been distributed to residences within the areas where these boxes are located. This was done as an insert in the Three Rivers Commercial News and Sturgis Journal.

Both papers ran front page and feature stories to highlight the significance of this private sector initiative and public participation. Local radio stations WLKM in Three Rivers and WMSH in Sturgis supported and reinforced this education effort by including news of the recycling boxes in respective broadcasts.

In addition to the basic information included in the brochures used as inserts, all of the local media provided companion stories which updated the public with accurate information about what to recycle, how to recycle and where to recycle.

Similar brochures have been distributed through other County agencies, such as the Parks Department, in packets prepared for environmental educational purposes.

A slide show prepared by the Department of Natural Resources to acquaint the public with the significant solid waste issues has been presented in the schools, cities, villages and townships of St. Joseph County to draw a favorable response. Another slide presentation prepared by Westside Inc. depicts landfill and recycling operations specific to St. Joseph County. The former slide show acquaints viewers with the general solid waste and recycling efforts and provides a good history of the related issues involved. The St. Joseph County slide show produced by Westside identifies the specific activities within our County to manage solid waste.

The public education and information activities detailed above serve to raise public awareness and to plant the seed for recycling education amongst the youth of our population. This is an investment well worth the effort wherever our population may go. The issue being addressed in our County today will serve the public good for the life of each educated person.

So, weaved into our plan for solid waste management and recycling is an ongoing commitment to educate the public by the methods mentioned in this Chapter.

The citizens who comprise the Solid Waste Management Planning Committee participate in and oversee the creation and drafting of the plan you are reading. They have also expressed an interest in taking to the general public the information now being received through schools and service groups.

Chapter 7 indicates the method St. Joseph County Solid Waste Management Planning Committee members will employ to reach the greatest number of citizens with information about the landfill operation, recycling, composting and expectations in meeting this plan.

CHAPTER 7

The political jurisdictions contained within St. Joseph County include:

16 Townships
6 Villages
2 Cities

Over the life of this plan, the Solid Waste Management Planning Committee members expect to reach officials and citizens who reside in each of these municipalities with the best information available about landfill use and recycling operations.

At present, members of the committee are interested in participating in the public education and information process. Eventually, each participant will be involved in providing educational information and answering questions about what we are doing to address these significant issues.

The process outlined by the Department of Natural Resources for approval of this updated solid waste management plan will include visits with the responsible and voting members of the municipalities within our County.

It is envisioned that between five-year updates, the educational effort will continue throughout the school year cycles. Likewise, the many service clubs, church groups, business associations and interested parties will receive information through the Office of the Director of Planning and Economic Development.

Opportunities to present slide shows to appraise the Solid Waste Management Planning Committee of new developments and to coordinate activities amongst all interested entities, agencies and parties will continue in the purview of the Director of Planning and Economic Development for St. Joseph County.

APPENDIX INDEX

APPENDIX "A"

Recycling Feasibility Study

Clean Michigan Fund

Recycling Feasibility Study

for

St. Joseph County

September 1986

Prepared for the Michigan Department of Natural Resources

by Resource Conservation Consultants with E & A Environmental Consultants, Franklin Associates Limited, Resource Integration Systems, and Resource Recycling Systems

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P. O. Box 10540
Portland, Oregon 97210
(503) 227-1319

September 12, 1986

Memorandum

TO: Richard Smith, St. Joseph County Planner

FROM: Judy Roumpf, RCC Project Manager

RE: Salvaging at the Westside Landfill

After the research for the recycling feasibility study was completed, a new development occurred. The operator of the Westside Landfill now provides a building and contracts with Waste Recovery Service to sort recyclable materials from selected waste loads. Waste Recovery Service supplies equipment and personnel and initially is targeting old corrugated containers. No differential fee is offered presently for loads of separated wastes.

This activity basically implements a portion of the proposed program. So that the County can decide whether to go forth with the proposed drop-off centers, the following information is provided. We assume that Waste Recovery Service will expand its salvaging to include scrap metals. We deleted all of the projected costs as well as revenues from the proposed salvaging program and downsized the processing center to arrive at the results below.

Capital and startup costs would be cut 37 percent, to $131,000, which could be reduced further by sharing processing equipment with the salvaging operation. Net annual program costs for the drop-off centers in Sturgis and Three Rivers plus a drop-off center and smaller processing facility at the Westside Landfill would be about $41,300 at the low participation rate and $38,100 at the higher usage level. This equates to $30 to $176 per ton of recovered material, with the higher figure for lower recovery rates. Per household costs would range from 8 to 16 cents monthly.

At the high participation levels, the drop-off recycling program would compare favorably with current waste management costs. Yet recycling program costs could be reduced by the donation of land and use of an existing truck as well as contribution of in-kind services. Employing just the first two items, cost per ton would drop by $12.90 at low recovery rates and $2.39 at high participation levels.

CHAPTER 1

INTRODUCTION AND EXECUTIVE SUMMARY

INTRODUCTION

The State of Michigan has appropriated $10 million through its Clean Michigan Fund to help finance solutions to the state's solid waste problems. The fund assists communities in establishing disposal alternatives such as recycling, composting and waste-to-energy projects. The State's overall solid waste management strategy calls for an 81 percent reduction in the use of landfills. Recycling and composting programs are expected to reduce wastes by 31 percent.

To help accomplish this, the Department of Natural Resources awarded the services of a consulting team to ten communities for the assessment of the feasibility of recycling and composting in their area. The following report presents a recycling feasibility analysis for the applicant St. Joseph County. This study examines the potential viability of recycling options in the county; however, it is not a final design for a particular recycling program. This report should allow the applicant to decide whether to pursue recycling and offers suggestions for the actions required if St. Joseph County decides to implement a recycling program.

Eleven recycling and composting program options are described in the technical background report to this study. The feasibility of any of these options is dependent on the particular conditions that exist in a community or region. The following report evaluates the applicability of these program alternatives to St. Joseph County, taking demographic, solid waste system and institutional features into account. The analysis includes several elements:

- a description of local conditions in St. Joseph County
- an evaluation of recycling program options in light of these local conditions
- selection and detailed description of those options most appropriate to the County
- an assessment of the cost effectiveness of the selected options and their impact on the solid waste management system
- final recommendations and preliminary implementation program.

It should be emphasized that this report is intended to be used in conjunction with the Background Report to Recycling Feasibility Studies, Volume I and II. Recycling options, market alternatives, and institutional and financial arrangements that can aid recycling in St. Joseph County are discussed in detail in that report.

EXECUTIVE SUMMARY

Municipal waste recycling programs vary in success. Among the conditions that are shared by many successful programs are relatively dense housing, access to nearby, stable recycling markets, and an enlightened public that is aware of local landfill shortages. Programs that are especially successful occur in communities characterized by high education and income levels.

Some of the local conditions in St. Joseph County bode well for a recycling program, particularly the demographic features of Sturgis and Three Rivers. Too, the county's only disposal site will reach capacity in approximately six years. There is a high degree of interest in recycling as reflected by the numerous newspaper drives operating in the county.

On the other hand, waste collection, recycling and disposal basically operates outside of the control and management of the County and local governments. Only the City of Sturgis and Sherman Township contract for wet garbage collection and transfer services, respectively. The county's residents and businesses are primarily served by a number of independent haulers and one landfill -- the Westside site located in Fabius Township. With the exception of waste management planning, the County has no major role in solid waste control or utilization.

To select the recycling options most suitable to these conditions, five criteria were applied to a list of known alternatives: convenience to users, cost effectiveness, applicability to St. Joseph County, waste reduction potential and ease of implementation. From this evaluation, a three-part recycling program was described, consisting of small drop-off and processing center at the Westside Landfill, and a salvaging area at the landfill recycling operation.

Unstaffed centers that accept newspaper, corrugated containers, tin cans, glass bottles and plastic milk containers would be established in the county's two major cities. Materials deposited at these sites would be taken to a processing center at the landfill, which would incorporate a paper baler and glass bottle crusher. To maximize convenience to residents, the landfill recycling facility would also accept materials, including those recyclables noted above, plus scrap metals. In addition, bins would be placed outside the entry of the landfill for use by residents when the landfill is closed.

The third element of the proposed program involves the manual sorting of commercial waste loads rich in corrugated containers and scrap metals. Waste haulers would dump selected loads in a special area of the processing center where a crew would extract cartons and metals.

The drop-off sites would consist of a small overhang and bins placed on a paved lot. Improvements at the landfill recycling center include a processing building with an overhang for the salvage operation, a paved storage yard and fencing.

Materials would be sold to local, regional and out-of-state buyers. Those items sold locally include scrap metals and plastic containers, with baled fibers going to paperboard mills in the region, and tin cans and glass containers shipped to consumers in Indiana.

The estimated fully allocated cost per ton of handling these materials as recyclables is on par with the cost of waste collection and disposal, given middle-range participation levels. At higher levels of recovery, program costs are well below waste management costs. It should be noted that there are ways to cut the projected recycling costs that have been used commonly throughout the U.S. In addition, waste management costs are not fully allocated to include items such as landfill closure and environmental monitoring. The

projected recycling program costs are summarized below for two participation levels.

SUMMARY OF ANNUAL RECYCLING PROGRAM COSTS

COSTS	Low Participation(1)	High Participation(1)
Direct Operating Costs		
Salaries and Wages	$ 39,000	$108,900
Fixed Overhead	2,700	2,700
Variable and Fees	13,700	27,900
Sub-Total Direct Costs	$ 55,400	$139,500
Annualized Capital, Start-Up Costs & Interest	$ 18,000	$ 18,000
Costs of Promotion and Education	$ 3,700	$ 3,700
TOTAL COSTS	$ 77,100	$161,200
REVENUES		
Sales of Materials		
TOTAL REVENUE	$ 28,100	$107,500
NET COSTS		
Annual Net Cost		
Cost	$ 77,100	$161,200
Revenues	28,100	107,500
ANNUAL NET COST	$ 49,000	$ 53,700
Net Cost Per Household ($/Yr)	$ 2.50	$ 2.70
Net Cost Per Ton of Recycled Material	$ 62.50	$ 18.40

(1) Low participation is 5 percent of targeted residents for the drop-off centers in Sturgis and Three Rivers and the targeted residents for the landfill drop-off center, and 10 percent recovery of targeted commercial wastes. High participation is 30 percent of those residents served by the centers in the two cities, 20 percent of the potential users of the landfill drop-off site, and 30 percent recovery of the targeted commercial wastes.

Residential and commercial waste volumes from the county would be reduced modestly through the use of drop-off centers, by 1 to 3 percent. Landfill volumes would decline an additional 1 to 2 percent by implementation of the salvage project.

The major impediments to program implementation are the need to define the roles of the public and private sectors and to establish a program financing mechanism. Successful implementation will therefore require new responsibilities by St. Joseph County in waste management, possibly including waste hauler licensing and imposition of disposal fees.

As well, promotion efforts must be undertaken in order to attain the participation levels that keep costs low. Once the institutional elements are assigned and a promotion campaign agreed upon, site design, construction, equipment procurement and worker selection can be undertaken.

CHAPTER 2

LOCAL CONDITIONS DESCRIPTION

INTRODUCTION

The feasibility of any recycling recommendation must consider past, current and expected future local conditions and institutional features. Careful documentation of this framework allows citizens to better understand the recommendation of a particular recycling option and implementation strategy.

Further, implementation of any option typically involves the coordinated effort of a number of institutions and organizations as well as the cooperation of the residents and businesses in the area. This chapter identifies those parties that may be involved in implementation of study recommendations.

For more information, a Background Report to this feasibility study has been prepared that describes and evaluates those community features that affect the viability of recycling. In addition, the Background Report portrays institutional arrangements, equipment technologies and implementation strategies that are common in municipal waste recovery programs. A detailed analysis of market conditions for recyclable materials in Michigan also is provided.

FEATURES OF THE STUDY AREA

Geographic Conditions

As noted in the Background Report, local geographic conditions affect the selection of appropriate recycling options and the final design of a recycling program. For example, communities characterized by steep terrain or by numerous dead-end streets may not be accessible to a standard recycling collection vehicle. Areas with extreme climates may experience sharp seasonal fluctua-

tions in volumes of recyclables recovered. The degree of access to transportation systems may be the deciding factor in whether a program is feasible or a particular material can be marketed.

Land Use. St. Joseph County, located in south central Michigan, covers approximately 516 square miles (see Figure 2-1). Sturgis, in the southeast corner, and Three Rivers, in the central western part, are the largest municipalities. Most industry exists in these municipalities or along major arteries. Seventy-two percent of the total county land is agricultural.

Weather. The St. Joseph County average temperature is 70 degrees in the summer and 27 degrees in the winter. Average annual precipitation is 34 inches and annual snowfall averages 34 inches. The heaviest recorded snowfall from a single storm was 18 inches and the greatest depth on the ground at one time was 27 inches in January 1978.

Regional Transportation. Arterial highways serve St. Joseph County. US-131 runs north-south through the western third of the county, connecting Kalamazoo (12 miles north of the county) to Three Rivers and to the Indiana Turnpike (1 mile south of the county). US-12 runs east and west near the south edge of the county connecting Sturgis to Coldwater.

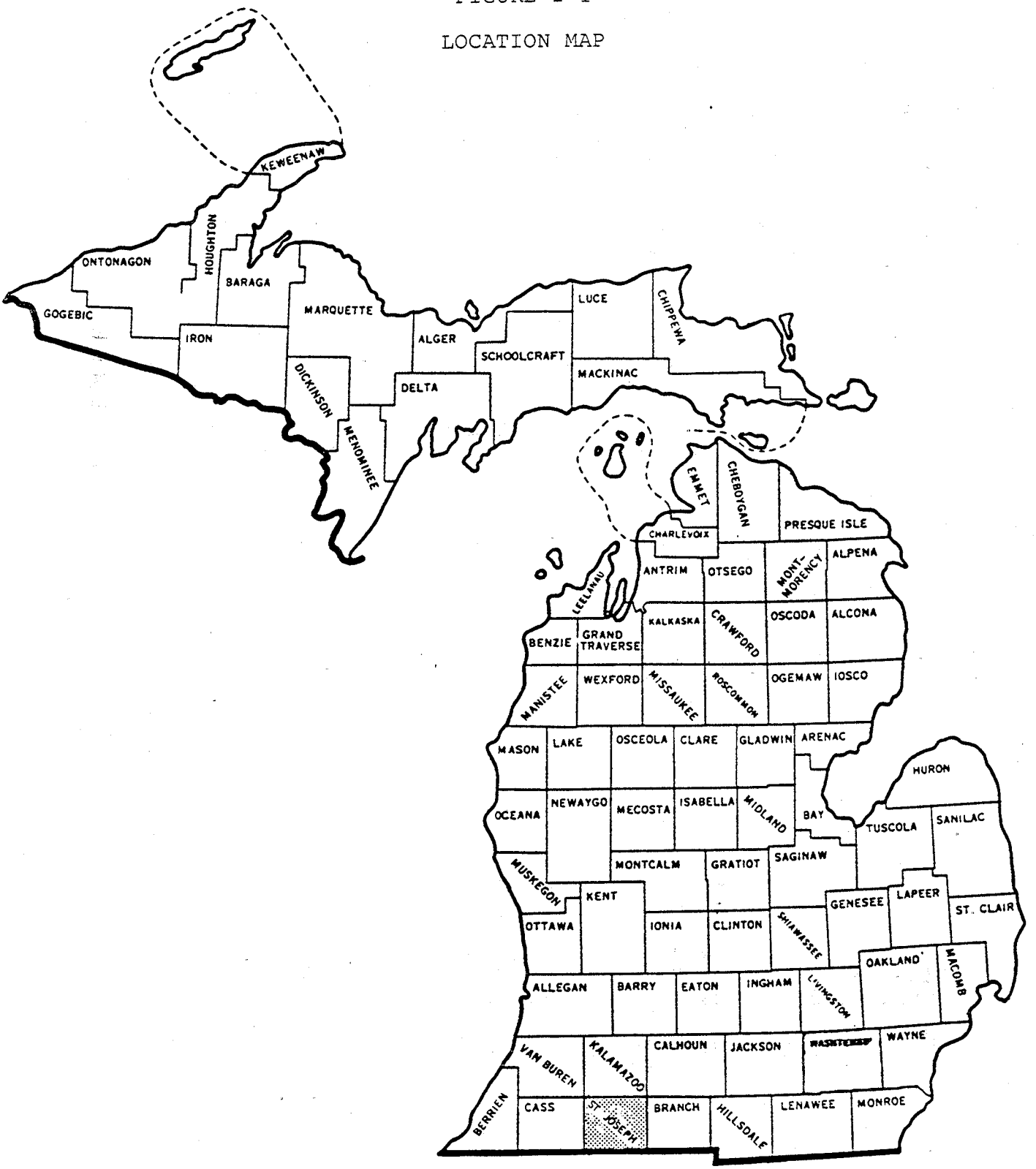
Three branches of the Penn Central Railroad cross the county, providing Three Rivers with north-south and east-west connections. The other section runs east-west through Sturgis.

Demographics

The Background Report also noted the influence of demographic factors on program selection and design. The placement of recycling centers and the feasibility of curbside recycling is largely determined by population distribution. Research also suggests that community characteristics such as average age, income level and education level influence the degree to which citizens will use a recycling program, the number of materials they will recycle and the quantities of each material they are likely to generate. For example, high program participation rates seem most likely to occur in affluent suburbs. Senior citizens seem to generate less newspaper per capita than others. Thus, estimates of materials volumes to be recovered by a proposed program or the design and content of a promotion program should take such characteristics into account.

FIGURE 2-1

LOCATION MAP



The population of St. Joseph County for 1985 was approximately 57,500. The County population grew 18.3 percent from 1970 to 1980 and is expected to grow 9.5 percent from 1980 to 1990. Thirty percent of the county population lives in the cities of Sturgis and Three Rivers. Four townships have populations between 2,000 and 3,000, but the remaining townships and villages have fewer than 2,000 people each.

Housing. As shown in Table 2-1, single-family housing predominates in the county.

TABLE 2-1

ST. JOSEPH COUNTY POPULATION
AND HOUSING PROFILE (1980)

	Population	Housing Units	Percent Single-Family Units
Sturgis	9,860	3,934	71
Three Rivers	7,015	2,868	75
Countywide	56,083	19,794	79

Source: 1980 U.S. Census.

Socio-economic Characteristics. A profile of selected demographics for the two main population centers is provided in Table 2-2.

TABLE 2-2

DEMOGRAPHICS OF POPULATION CENTERS (1980)

	Median Age	Median Household Income	High School Graduates (percent)
Sturgis	30.0	$15,313	66.7
Three Rivers	29.7	$13,282	60.0
Countywide	29.7	$15,958	66.0

Source: 1980 U.S. Census.

The 1980 average annual per capita income for St. Joseph County was $8,266, compared to the average for all Michigan residents of $9,872.

Government Structure

A description of institutional arrangements in an area is important in identifying which entities can become involved with a recycling program and what the role of each can be. In particular, it is important to locate responsibility for the various aspects of solid waste management and to characterize the relationship between local government and the collection of waste. For example, a municipality or independent firm may provide waste collection service. In the latter case, it may not be possible to require that recycling collection be provided.

This section describes the local institutional structure and the role of each governmental unit in ensuring the proper management of the community's solid wastes.

The St. Joseph County Board of Commissioners consists of a commissioner elected from each of seven districts with the commission chair elected by the members. Sturgis and Three Rivers each have a city manager under the direction of a commission and mayor who are elected by city residents.

Villages in St. Joseph County are each governed by six elected council members chaired by a village president. The townships are managed by a supervisor under the direction of two township trustees.

Solid Waste Management Roles. The County Board of Commissioners has ultimate authority on solid waste management issues. The Branch-Hillsdale-St. Joseph District Health Department serves as the enforcement agency, and the primary governmental planning unit for solid waste issues is the County Solid Waste Management Planning Committee. However, planning issues may originate from the County Planning Commission and the county planner, the Solid Waste Committee of the Board of Commissioners, or from municipalities within the county. The county planner has been directed to seek solutions to the solid waste problems of the county.

Any solid waste issue affecting Three Rivers or Sturgis would be handled by the city commissioners. The township trustees and supervisors make solid waste decisions relating to individual townships.

The 1982 St. Joseph County Solid Waste Management Plan recognized that the county will soon run out of existing landfill space. The alternatives recommended by the Solid Waste Planning Committee were, for the short term, to expand existing landfills and, for the long term, to develop incinerators in Three Rivers and Sturgis. Source separation was not viewed as a viable alternative by itself, but it was the consensus of the committee to emphasize source separation in the solid waste plan as an enhancement to the alternatives.

The County Board of Commissioners, in support of the Clean Michigan Fund application, passed a resolution in November 1985 recognizing recycling as:

- being of interest to citizens
- a solid waste education tool
- a means of significant waste reduction.

SOLID WASTE GENERATION

The St. Joseph County Solid Waste Management Plan is the major source of data on solid waste generation in the county. The plan relies on unit waste factors developed by the Michigan Department of Natural Resources and area population/economic activity data to estimate solid waste generation.

The following unit waste factors were used in the County waste management plan to calculate generation rates. These unit waste factors were not adjusted for local conditions.

TABLE 2-3

WASTE GENERATION SOURCES

Source	Factor
Residential	2.9 pounds/capita/day
Commercial/Inst.	5.75 pounds/employee/day
Industrial	10.6 pounds/employee/day

Source: St. Joseph County Solid Waste Management Plan, 1982.

The data in Table 2-4 are derived by employing the above factors.

TABLE 2-4

SOLID WASTE GENERATION BY AREA AND SOURCE
ST. JOSEPH COUNTY
(tons/year)

	Res.	Com.	Indus.	Total
Sturgis	5,011	4,084	10,081	19,176
Three Rivers	3,783	2,916	4,951	11,650
County Total	29,682	7,988	18,962	56,632

Source: St. Joseph County Solid Waste Management Plan, 1982. An adjustment to data provided in the plan was made to take into account an error in the population of Sturgis.

The above table shows that Sturgis and Three Rivers are the largest generators of commercial and industrial wastes, and are significant producers of residential discards.

Waste Composition

In developing the County solid waste management plan, the authors used waste composition estimates derived from previous waste stream analyses since there is not a detailed waste composition analysis for St. Joseph County. A summary of the studies used in preparing the plan is presented as Appendix A.

This waste composition breakdown was checked against waste composition studies available from across the state. These are summarized in Appendix B. For purposes of this study, the information generated in Ingham County is used to estimate residential and commercial waste composition in St. Joseph County since the Ingham County analysis focused on both rural and urban waste loads.

Table 2-5 presents estimates for residertial and commercial waste components, using waste volume totals from Table 2-4.

TABLE 2-5

COMPOSITION OF ST. JOSEPH COUNTY SOLID WASTE

Component	Percent of Waste(1)	Tons/Year
Paper		
Newsprint	11.9	4,483
Corrugated Containers	4.7	1,770
Office Paper	4.5	1,695
Other Waste Paper	24.2	9,116
Total Paper	45.3	17,064
Other Organics		
Plastics	6.8	2,562
Textiles	6.3	2,373
Wood	2.9	1,092
Food Wastes	8.5	3,202
Yard Wastes	12.8	4,822
Misc. Organics	1.5	565
Total Other Organics	38.8	14,616
Non-Organics		
Glass	6.3	2,373
Ferrous	3.6	1,356
Aluminum	1.3	490
Other Non-Organics	4.7	1,771
Total Non-Organics	15.9	5,990
Total	100.0	37,670

(1) Ingham County Solid Waste Stream Assessment, 1981.

The Michigan Department of Natural Resources has funded a series of waste composition assessments in six communities located throughout the state. When the data from this study are made available, they can be used to update and adjust the above composition estimate for St. Joseph County.

Volume of Recyclables in Waste Stream. The following table provides a further breakdown of the potential volume of selected secondary materials in the Sturgis and Three Rivers waste streams.

TABLE 2-6

RECYCLABLES IN THE MUNICIPAL WASTE STREAM

Material	Percent (1)	Sturgis Tons/Yr	Three Rivers Tons/Yr	County Tons/Yr
Newsprint	11.9	1,082	797	4,483
Corrugated	4.7	427	315	1,770
Office Paper	4.5	409	301	1,695
Plastics	6.8	618	456	2,562
Glass	6.3	573	422	2,373
Ferrous	3.6	327	241	1,356
Aluminum	1.3	118	87	490
Total	39.1	3,554	2,619	14,729

(1) Percentage of residential and commercial wastes.

SOLID WASTE MANAGEMENT PRACTICES

Collection Systems

With one exception, the governmental units of St. Joseph County have no contractual or franchise arrangements with waste haulers, preferring to allow households and businesses to choose a private hauler from a competitive marketplace. No local government operates a collection system.

The City of Sturgis has a contract with Currier's Disposal to provide collection of wet garbage, twice a week from April through September and weekly the rest of the year. This service is available to anyone in the city and is used primarily by people who have not arranged regular waste collection with a hauler. The city manager estimates that the collection program might have 1,000 regular users. The City of Sturgis pays approximately $12,000 per year from its general fund for the service.

The remainder of the County is served by a number of waste haulers. The largest number of homes are served by Currier's Disposal of Burr Oak. The firm's operating costs are shown in Appendix C. Table 2-7 summarizes the features of the major garbage hauling services in St. Joseph County.

TABLE 2-7

MAJOR RESIDENTIAL WASTE HAULERS
SERVING ST. JOSEPH COUNTY

Hauler	Monthly Rate	Service	Service Area
Currier's Disposal	$6.00	curbside; no limit	Sturgis
Currier's Disposal	$5.50	curbside; no limit	rest of county
Nissley's Disposal	$7.00 (varies)	curbside or garage; no limit	Sturgis, Burr Oak, White Pigeon
Carpenter Cartage	$7.00 $8.50	curbside; 1 barrel walkback; 1 barrel	Three Rivers, Mendon, and Fabius Twp.
Town & Country Disposal	$6.75	1 barrel or 3 cans	Three Rivers, Fabius Twp.
Bell & Sons Trash Removal	$7.00	no limit	Three Rivers, White Pigeon, Mottville, Constantine

In addition to the above list an unspecified number of individuals collect solid waste, mostly with pickup trucks, throughout the county.

The 1984 St. Joseph County Waste Plan; Resource Recovery Evaluation estimated the costs of waste collection and disposal. The estimates are provided in Table 2-8.

TABLE 2-8

ESTIMATED COSTS OF WASTE COLLECTION AND DISPOSAL IN ST. JOSEPH COUNTY

	Per Household Annual Cost	Per Ton Cost
Collection	$60.00	$28.57
Disposal	21.00	10.00
Total	$81.00	$38.57

Source: St. Joseph County Solid Waste Management Plan; Resource Recovery Evaluation, 1984.

Disposal Facilities

St. Joseph County has only one licensed disposal facility, Westside Landfill, Inc., located just west of the City of Three Rivers in Fabius Township. The facility is privately owned and operated and receives most, if not all, of the solid waste generated in St. Joseph County. The County waste management plan estimates this to be 160 tons per day. It also receives up to 100 to 200 tons per day of waste from outside the county. Westside Landfill is open six days per week, and the tipping fee is $2.75 per cubic yard. Landfill capacity is expected to last until 1992.

Two small waste transfer sites are operated in the county. Sherman Township leases a transfer site at which Currier's Disposal provides a truck each Saturday. After being filled with wastes received from township residents, the vehicle is taken to the Westside Landfill for unloading. The Township's annual costs for the transfer operation are between $7,000 and $8,000.

Many residents of Mendon and Mendon Township use the local transfer station that is operated by Michiana Solid Refuse Services, a subsidiary of Sturgis Iron and Metal. The facility consists of several roll-off containers in which residents place their wastes. The contract fee of approximately $3,500 per year for collection and disposal is shared by the Township and Village.

RECYCLING ACTIVITIES

A variety of waste recycling programs operate in St. Joseph County. Efforts by charitable and youth groups to collect newspapers, waste oil and other materials reduce the county's waste stream by more than 300 tons per year. In addition at least 1,200 tons of corrugated paper were recycled by local food stores (see Appendix D).

The following section describes the range of recycling activities sponsored by organizations in St. Joseph County.

Countywide Efforts. Five Lutheran churches in the county work together on paper drives in the spring, summer and fall of each year. St. Paul's in Centreville coordinates the shipping. The other churches are Trinity, St. John's and St. Timothy in Sturgis and St. John's in Burr Oak.

Each church undertakes its own collection system. For instance, Trinity Lutheran Church has a trailer in the parking lot where newspaper can be dropped off anytime. St. Paul's in Centreville stores papers collected between drives in a garage at the church. St. Paul's janitor picks up paper from residences one day each week if phone requests are made in advance. When the total volume from all five churches is near a semi-trailer load, the Centreville church arranges for the paper buyer (James River in Kalamazoo) to bring a trailer to the Centreville church parking lot. The paper from the other churches is brought to and loaded into the trailer. Three trailer loads of paper are shipped annually. Proceeds are used to provide assistance to people in need, with this year's funds to refurbish part of the Arch Workshop for the handicapped in Sturgis.

The County 4-H clubs in conjunction with the Cooperative Extension Service provide 16 used oil collection tanks throughout the county. The tanks are painted and marked with the 4-H emblem. Cam-Or of Westville, Indiana collects and buys the oil. The program handles 10,000-11,000 gallons per year of waste lubrication oil out of a total 15,000-16,000 gallons collected per year in the county. (The Extension Service estimates that a total of 62,000 gallons per year of waste oil is generated in St. Joseph County.)

At times when the price of ferrous scrap has been high, Westside Landfill has required haulers to unload ferrous materials in a pile located away from the area being compacted. About once a year a buyer picked up the ferrous scrap for recycling. One of the landfill owners indicated that between 50 and 100 tons were recycled per

year when this was done, with net annual income after shipping at $400. Currently, ferrous scrap is not being handled because the owners of the landfill believe that the price is too low to justify the additional efforts necessary to keep the material separate. The landfill operators have looked into recycling aluminum scrap and may develop a facility to sort and bale corrugated boxes.

Squier Distributing Company of Sturgis, which also owns Doe Distributing in the same community, is the only beverage distributor in the county. The firm sells scrap aluminum to Alcoa and glass bottles to Owens-Illinois in Charlotte (flint) and Midway Cullet in Dearborn (green and amber).

Backhaulers, Inc. collects corrugated containers from some industries in St. Joseph County and bales the material at their facility in Shipshewana, Indiana.

Sturgis. The Church of the Nazarene collects newspaper in a trailer at the church. When nearly full, church members transfer the paper from the storage container to the buyer's trailer. Approximately three loads of paper per year are sold.

The Kickstand bicycle store collects newspapers in a truck at the store for the First Presbyterian Church. When the truck fills, papers are transferred to a trailer supplied by the buyer. The operators of the bike shop estimate that a load of 12 to 13 tons is shipped twice annually.

Three Rivers and Fabius Township. Boy Scout Troop 414 sponsored by the Fabius Church of the Nazarene runs paper drives every two months, an activity provided for the last six or seven years. The program is promoted with ads in the local newspaper and on the area's major radio station. The youth group's principal recycling efforts focus on waste newspaper, which is acquired in a variety of ways. Residents may have their newspaper picked up by scouts or take it to the troop's storage facility, a barn at the scoutmaster's home. The troop also handles over-issue newspapers, with several delivery people dropping off material and the scoutmaster picking up over-issue papers from the Three Rivers Commercial News every week. Computer printout and shredded office paper from businesses in Three Rivers is also collected. The troop expects to collect 175 tons of waste paper in 1986 and has collected 150 tons in previous years. The buyer allows the youth group to put a variety of paper grades on each trailer.

Eight other scout troops operate in the Three Rivers area. None of these sponsor regular paper drives, but some will occasionally run a drive to raise funds for a particular project.

The National Honor Society at Three Rivers High School runs paper drives twice every year.

Camp Eberhart in Fabius Township, approximately six miles west of Three Rivers, has an on-site recycling program to collect and recycle materials from the camp kitchen. In 1985 the following materials were recycled:

TABLE 2-9

CAMP EBERHART COLLECTIONS FOR 1985

Material	Pounds	Revenue ($/Ton)
Glass	485	0
Tin Cans	---	0
Cardboard	1,190	5
Aluminum	90	360-500
Plastic Milk Jugs	900	.03 each

Source: Camp Director.

Camp Eberhart has been awarded Clean Michigan Fund grants totalling $800 to provide recycling education and a small drop-off center at the camp to serve the neighboring area.

Burr Oak. The Methodist Men of the United Methodist Church of Burr Oak collected glass containers for a number of years, ending the program in January 1986. The cullet was stored at a farm three miles north of Burr Oak, with 4.5 tons of scrap glass bottles sold in 1985 to Owens-Illinois in Charlotte. The program ended after Owens-Illinois stopped buying brown and green containers and the church could not get local residents to limit their materials to clear glass containers only.

The Village of Burr Oak sponsors a spring clean-up. The ferrous scrap metal collected is transported to Sturgis or Iron and Metal for recycling.

Constantine and White Pigeon. The United Methodist Church youth group collects newspaper year-round and stores the fiber at a local barn. The group usually sells one or two semi-trailer loads annually.

The Village of White Pigeon sponsors an annual spring clean-up the second week in May. At that time a number of roll-off containers are placed at the Village Works Yard by Sturgis Iron and Metal so that residents can bring old appliances and other scrap metal to the site.

Boy Scout Troop 410 of Constantine in the past has collected newspapers from Constantine and White Pigeon, usually on a semi-annual basis. The troop has not provided collections recently and may not collect this year.

Nottawa. Nottawa United Methodist Church provides a drop-off location for newspaper recycling.

Mendon. The United Methodist Church is provides a trailer for newspaper drop-off.

Several manufacturers located in St. Joseph County use secondary materials (see the background report to this study for a full listing of Michigan consumers of recyclable wastes). Among these local businesses is Simplex Products in Constantine, which manufactures sheathing using secondary fibers. White Pigeon Paper in White Pigeon produces clay-coated boxboard. The mill buys several grades of waste paper, including newspaper, double-lined kraft clippings and computer printout. In Three Rivers, Progressive Paper buys large sheets of paper products for manufacturing package dividers. Materials purchased include various types of boxboard, corrugated cartons and other heavy paper stock. The company also rebuilds pallets for resale. Also in Three Rivers, Crocker Limited buys used plastic milk jugs for use in some of its products.

A list of paper, metal and oil buyers in the area is listed as Appendix E.

TRENDS IN SOLID WASTE MANAGEMENT

Solid Waste Collection/Disposal Trends

In 1984 the County completed a resource recovery study which concluded that source separation and the development of a transfer station were not economically feasible. The study recommended the construction of a waste-to-energy facility, continued use of sanitary landfills, and formation of a solid waste authority to be responsible for waste collection and disposal in the county. The recommended site for the resource recovery facility was the White Pigeon Paper Company. The paper producer has not

considered building the facility on its own, but has indicated that it is willing to listen to proposals from potential developers. The County has left development to the private sector and as yet, there has been little interest in the project.

Sturgis Iron and Metal, one of the area's largest industrial waste haulers, is working with Something of Value, Inc. of South Bend, Indiana on an incineration facility to be built in Sturgis. The plant would process 560 tons of waste per day; 460 tons would be industrial waste, mostly from Indiana or Kalamazoo County, and 100 tons would be municipal waste, possibly from St. Joseph County. The plant would also recover scrap metals. The plan involves the City of Sturgis annexing a parcel of land next to Sturgis Iron and Metal, although the city manager indicated that the developer has not yet made the application to annex the land. Residents near the proposed plant are concerned about air quality and may oppose construction of the plant.

Recycling Trends

The only recycling project in St. Joseph County with definite growth plans is the Camp Eberhart drop-off center. With the aid the Clean Michigan Fund, this will be the first multi-material recycling program in the county available to the public.

Community Support and Commitment

The long list of organizations collecting paper is an indication that the citizens of St. Joseph County want to recycle. The following organizations and companies have indicated an interest or willingness to become involved in implementing a County recycling program.

The Arch Workshop in Sturgis provides employment for the handicapped. The workshop could provide a site in Sturgis for a drop-off recycling center, staffed with clients of the workshop who would receive and process materials. As a handicapped workshop, capital funds may be available as grants to aid in establishing facilities that employ clients. To make a recycling project attractive to the workshop, the project would have to generate enough income to pay the client-workers.

Camp Eberhart plans to expand its current on-site recycling to become a drop-off center for Fabius Township. The camp director has offered assistance in planning a recycling program in the Three Rivers area.

The Twin County Community Probation Center, Inc. in Three Rivers has clients required to volunteer time in public service. The director believes that a recycling center would provide a good place for many of his clients to volunteer. Most clients do not have transportation, but could get to a drop-off/processing center in Three Rivers.

Backhaulers of Shipshewana, Indiana has indicated an interest in transporting and processing recycled materials in St. Joseph County if such activity is profitable.

A representative of Sturgis Iron and Metal was interviewed and expressed a willingness to consider recycling proposals put forth by the County.

The Optimist Club of Three Rivers is looking for community projects. The club president indicated that the organization would consider involvement in a recycling program if it benefits the community and children. The Sturgis Jaycees president indicated that this group might have a similar interest in recycling in Sturgis.

CHAPTER 3

EVALUATION OF POTENTIAL RECOVERY SYSTEMS

A full range of recycling systems was presented in the Background Report. To determine which recycling options would best serve the area of St. Joseph County, criteria were developed for evaluating the options. These were:

1. Convenience. This criterion favors options most convenient to system users.

2. Cost effectiveness. This criterion favors those options whose costs are reasonable for the amount of material potentially recoverable in St. Joseph County.

3. Applicability to the community. This criterion favors those options that are best suited to the conditions that exist in St. Joseph County, based on reliability of use in similar communities.

4. Waste reduction potential. This criterion favors those options that provide the greatest potential reduction in the amount of waste landfilled.

5. Ease of implementation. This criterion favors those options that are most compatible with the county's existing solid waste system. In addition, it favors options that can be implemented in a short amount of time, yet have administrative stability for the long term.

Due to the limited scope of the feasibility studies, the criteria were used to select the one or two options that would best serve the local needs. Other recycling options might also become feasible and should not be overlooked in the final planning and design steps.

Given the largely rural nature of St. Joseph County, commercial recycling activities such as office paper collection were not deemed suitable for assessment in this feasibility study. Recovery efforts already exist to reclaim old corrugated containers. Curbside recycling collection, which is the most convenient recycling option for residents, was not selected for analysis due to the relatively small size of the communities and significantly higher costs associated with collection service in such communities versus that in larger cities. In addition, implementation of a curbside recycling collection system is often easier in communities where there is just one contracted, franchised or municipal operator for waste collection. This is not the case in St. Joseph County communities.

Drop-off centers are the option most suited to the conditions of St. Joseph County. They can target the small amounts of residential and commercial waste available. With minimal labor requirements, the operation of drop-off centers would not be costly. Although citizens would need to haul their recyclables to a center, there appears to be good community support for recycling and suitable sites can be found in both Sturgis and Three Rivers that would increase the convenience of the drop-off facilities. Too, the applicant has the necessary authority and resources to implement drop-off centers efficiently.

A second recycling option may be feasible in St. Joseph County. An additional drop-off area as well as salvaging site at the Westside Landfill could enhance the convenience of recovery for citizens as this recycling service provides an avenue for handling bulky items such as scrap metals and appliances. The landfill drop-off and salvage program would be used especially by citizens who haul their own trash to the landfill. The participation in a combined landfill drop-off/salvaging service by more people than might use the other drop-off sites would also increase the amount of materials recovered. In addition, bulk quantities of recoverable items from commercial establishments can be salvaged at the landfill. The applicant's organization and supportive community institutional structures could expedite initiation of the landfill salvage service.

The following table displays the findings of the evaluation.

TABLE 3-1

SUMMARY OF RECOVERY OPTIONS

Option	Convenience	Cost Effectiveness	Applica-bility	Waste Reduction	Ease of Implemen.
Drop-off Center	0	+	+	0	+
Buy-back Center	0	0	-	-	0
Curbside Collec.	+	-	-	+	-
Multi-Family	+	-	-	+	0
Office Paper	+	0	-	0	-
OCC Recovery	+	0	0	+	+
Salvaging	+	+	+	0	0
Tire Recovery	-	-	0	-	-
Wood Waste Recov.	0	-	0	-	0
Yard Waste Comp.	0	0	+	+	-

+ = positive
0 = neutral
- = negative

CHAPTER 4

RECYCLING SYSTEM DESCRIPTION

INTRODUCTION

The proposed recycling program for St. Joseph County has three elements:

1. Operation of a multi-material recycling drop-off and processing center at the Westside Landfill.

2. Salvaging of scrap metals and old corrugated containers from segregated commercial waste loads at the Westside Landfill.

3. Establishment of multi-material drop-off recycling centers in Sturgis and Three Rivers.

These specific operations are recommended for analysis for several reasons. For the landfill salvaging center, the principal motive is to reduce the amount of wastes received from inside and outside the county. As noted in the second chapter, the County estimates that 60 percent of wastes handled at the Westside facility is from out-of-county sources. A salvaging system would target those commercial waste loads rich in certain recoverable materials.

Further, it is likely that many local residents haul their wastes to the disposal site. St. Joseph County is largely rural, and waste collection service in the less populous areas is not highly utilized -- a profile typical of regions where self-hauling of wastes is popular. A drop-off recycling center at the landfill would target this group.

In addition, the landfill is near Three Rivers and a reasonable distance from Sturgis, making it a convenient location for processing and storing recyclables recovered by the drop-off projects in these towns. Finally, although the County does not have authority over the

disposal site, its operator has expressed an interest in potential recycling and salvaging activities.

Drop-off recycling centers in Three Rivers and Sturgis are chosen since the population base is in these communities. There is sufficient market demand and the availability of the processing and storage site at the landfill will reduce costs.

LANDFILL DROP-OFF AND PROCESSING CENTER

Processing System

The key component of the potential St. Joseph County recycling program is a central processing and storage facility at the Westside Landfill. Materials recovered at the landfill salvaging operation and the three on-site and off-site drop-off centers would be handled at this facility.

An area on the landfill property of approximately three-quarters of an acre would contain a processing building, office and storage yard. Site preparation would include paving, fencing and installation of utilities. A pole-barn structure of approximately 6,000 square feet would house processing equipment, fiber storage and a small office.

Processing equipment would include a downstroke baler and glass crusher; handling equipment consists of a pallet jack and heavy-duty forklift truck. In addition, hand tools, maintenance equipment and safety supplies would be acquired.

Processing would be limited to four of the materials received at the drop-off and salvage centers. Corrugated containers and newspaper would be baled and stored inside the building. Color-sorted glass containers would be fed into a crusher and the resulting cullet placed in nylon shipping bags to be stored in the paved yard. Composite metal scrap would be sorted and processed using hand tools and a cutting torch, then stored outside in containers.

Other materials would be stored in roll-off boxes in the yard, including tin cans and ferrous scrap. Non-ferrous scrap metal and plastic milk bottles would be stored in smaller metal bins.

Landfill Drop-Off Center

Citizens using the landfill would unload newspaper, glass bottles, corrugated containers, plastic milk jugs, tin cans and other scrap metals in a designated area of the storage yard. Bins would be provided and signs would instruct residents how to use the drop-off site. When full, bins would be emptied using a forklift rotator. Tin cans, milk jugs and most metal scrap would be directly unloaded into shipping containers.

In addition to the drop-off center at the processing facility, several bins would be placed at the landfill entrance each evening to serve those wanting to deliver materials (other than large ferrous scrap) after the disposal site is closed. These bins would be emptied each morning. A large sign at the landfill entrance would inform residents of the recycling opportunities provided at the site.

SALVAGING OPERATION

A semi-enclosed overhang would be attached to the processing building. Haulers carrying commercial waste loads rich in corrugated boxes and scrap metals would unload in this salvaging area. The wastes would be spread out and manually sorted, with cardboard containers and scrap metals tossed into bins set around the sorting floor. The remaining solid waste would be loaded into a roll-off box and taken to the disposal area.

The bins would be moved into the adjacent processing and storage areas for unloading. In addition to bins and a drop-box, the salvaging operation would require use of the forklift truck and a small front-end loader. A grapple attachment to the forklift truck would be used to pickup large pieces of scrap metal. As noted in the Background Report to the Recycling Feasibility Studies, Volume II, a number of waste salvaging operations are more mechanized, using conveyors, trommels and magnets. Material volume projected for the St. Joseph County program are insufficient to justify such capitalization.

DROP-OFF SITES IN STURGIS AND THREE RIVERS

Unstaffed drop-off centers would be established in Sturgis and Three Rivers and would be available for use at all times. Directional signs identifying the centers would be placed on nearby streets.

Center users would deposit newspaper, corrugated containers, tin cans, glass bottles and plastic milk jugs in separate metal bins. Signs at each site would instruct patrons on proper preparation of materials. For example, users would be asked to color separate glass bottles, remove labels and flatten cans, rinse and remove labels from plastic milk jugs, and flatten corrugated boxes.

A paved area of approximately 1,000 square feet would be required for each center. An overhang designed to protect patrons from inclement weather and to house storage bins is recommended. Fencing, though not required, would enhance site aesthetics.

Bins would be picked up on a scheduled basis by the landfill recycling operator's employees using a flat-bed truck with hydraulic liftgate. Site cleanup and maintenance would occur as needed.

MARKETS

In comparison to many Michigan communities, St. Joseph County is relatively blessed with secondary material markets. As noted in Chapter 2, several firms in the county utilize recyclable materials to produce new paperboard and plastic products. In addition, recycling consumers operate in nearby communities, such as Otsego and Kalamazoo. Too, several scrap processors in the county buy secondary materials from businesses and the public. St. Joseph County's location provides cost-effective opportunities to ship scrap metals and other materials to the industrialized cities on lower Lake Michigan, such as Gary, Indiana and Chicago, Illinois.

For the preparation of the preliminary feasibility analysis, the following markets were chosen. Scrap metals other than tin cans would be hauled from the recycling processing center at the Westside Landfill to the nearby Sturgis Iron and Metal operation. Tin cans would be transported 120 miles to a detinning plant in Gary, Indiana. Scrap plastic milk jugs would be taken to a buyer in nearby Three Rivers and glass containers would be sold to a bottle producer located in Marion, Indiana, approximately 110 miles from the processing center. For baled secondary fibers, two markets were used for purposes of analysis. Old corrugated containers would be shipped to the paperboard mills in Otsego and waste newspaper is destined for the James River Corp. mill in Kalamazoo (55 miles away).

A list of potential buyers of recyclable materials generated by the St. Joseph County recycling program is provided as Appendix E.

LABOR AND MANAGEMENT

The proposed program would be financed by the County and operated by Westside Landfill, Inc. The final distribution of management responsibilities between the two parties would be determined in the final design stage. This section identifies the labor and management elements of the full program.

Initial management and implementation responsibilities would include these tasks. Markets for the target materials would be selected and marketing arrangements established. Efforts to educate citizens and waste haulers about the new program would be planned, designed, implemented and evaluated. Working with officials from Three Rivers and Sturgis, potential sites would be listed and evaluated, with the result being the final site selection. Design of these centers and the landfill recycling facilities, selection and purchase of equipment, hiring of personnel, and contracting for site construction are tasks that need to be completed during the implementation phase. Finally, a data management system is needed in order to track volumes, participation, expenditures and revenues associated with each program element.

Ongoing management tasks include market monitoring, program promotion, personnel supervision, and program evaluation. Once the program is established, management activities will require approximately 0.4 FTE to 1.0 FTE effort.

The general labor requirements are as follows. The Sturgis and Three Rivers depots would be cleaned and materials removed to the landfill center weekly. This would require approximately six hours per week of labor time. Activities at the landfill processing center include:

1. Moving and unloading containers, including those on the route truck, in the salvage area, in the landfill recycling center, and those placed at the landfill entrance.

2. Sorting and processing materials, including operation of the baler and crusher, and manual separation of scrap metals.

3. Maintaining the site.

4. Maintaining and repairing equipment.

The salvaging operation would require sorters to process mixed wastes and load the recyclable and non-recyclable materials into containers. Depending on material volumes, labor requirements for the complete program range from 1.55 FTE to 4.35 FTE.

GOVERNMENT ROLE

The recycling program described above would involve several parties.

St. Joseph County. The principal role of the County would be to finance and promote the recycling program. As the County has no present involvement in waste collection or disposal, this recommendation to not have the County actually operate the recycling program is justified. On the other hand, the County has the legal authority to finance such a program and to contract for its operation. In light of the lack of waste management activities by local cities, townships and villages, and the existence of a number of independent waste haulers, a substantial countywide recycling effort can be established only with County involvement.

The County's major responsibilities would be to provide financial, institutional and promotional support. In Chapter 6, a discussion of financing options is provided, including the use of disposal surcharge monies and waste hauler license fees. The County would adopt necessary ordinances and approve a contract for private operation of the recycling program. County staff would manage and undertake the recycling promotion campaign.

Westside Landfill, Inc. The operator of the county's sole disposal site would enter into an agreement with St. Joseph County to establish the recycling drop-off, processing and salvaging systems. With the exception of promotional elements, Westside Landfill would manage and provide all operational aspects of the program, receiving a contract fee for such investment and activity.

Local Governments. Sturgis and Three Rivers officials would be asked to provide assistance in the siting of the drop-off centers. For example, municipal property might be dedicated to the project, such as unused park or public works sites. In addition, these local governments could aid the recycling effort by promoting the availability of the drop-off centers to residents.

State of Michigan. St. Joseph County could seek two forms of state assistance. Continuation of the Clean Michigan Fund may provide an opportunity for capital and operational grants to reduce program costs. State officials may also provide technical advice to the County.

COSTS AND REVENUES

In this section, the costs of providing the proposed recycling facilities are analyzed. The cost of such items as equipment, site improvements and labor are considered in full. The analysis does not take into account the potential savings from projected costs that could be achieved through the purchase of used equipment, use of in-kind property and services, and availability of volunteer labor. These factors will be considered as financing options and are discussed in Chapters 5 and 6.

The following tables provide estimates of the capital, start-up and annual costs for the proposed St. Joseph County recycling operation. Detailed calculations are provided in Appendix F.

TABLE 4-1

ST. JOSEPH COUNTY RECYCLING PROGRAM
CAPITAL AND START-UP COSTS

Category	Cost(1)
Site	$113,800
Administration/Office	2,100
Containers	24,000
Truck	12,000
Processing Equipment	11,600
Materials Handling Equipment	43,000
	$206,500

(1) Does not include taxes and financing costs.

TABLE 4-2

SUMMARY OF ANNUAL RECYCLING PROGRAM COSTS

	Low Participation(1)	High Participation(1)
Costs		
Direct Operating Costs		
Salaries and Wages	$ 39,000	$108,900
Fixed Overhead	2,700	2,700
Variable and Fees	13,700	27,900
Sub-Total Direct Costs	$ 55,400	$139,500
Annualized Capital, Start-Up Costs & Interest	$ 18,000	$ 18,000
Costs of Promotion and Education	$ 3,700	$ 3,700
TOTAL COSTS	$ 77,100	$161,200
Revenues		
Sales of Materials		
TOTAL REVENUE	$ 28,100	$107,500
Net Costs		
Annual Net Cost		
Cost	$ 77,100	$161,200
Revenues	28,100	107,500
ANNUAL NET COST	$ 49,000	$ 53,700
Net Cost Per Household ($/Yr)	$ 2.50	$ 2.70
Net Cost Per Ton of Recycled Material	$ 62.50	$ 18.40

(1) Low participation is 5 percent of targeted residents for the drop-off centers in Sturgis and Three Rivers and the targeted residents for the landfill drop-off center; and 10 percent recovery of targeted commercial wastes. High participation is 30 percent of those residents served by the centers in the two cities, 20 percent of the potential users of the landfill drop-off site, and 30 percent recovery of the targeted commercial wastes.

CHAPTER 5

IMPACT ASSESSMENT

INTRODUCTION

The recycling program under assessment was described in Chapter 4. This chapter analyzes the effect of the St. Joseph County program in three areas. First, potential waste reduction is estimated. The cost effectiveness of the recycling program is then evaluated in comparison to existing waste collection and disposal costs. Finally, the impact of the county recycling effort on the existing recycling and waste handling system is described.

WASTE STREAM IMPACT

Estimates of the amount of waste diverted by the recycling program described in the previous chapter are based on the following assumptions:

1. The Sturgis and Three Rivers centers serve 60 percent of the county population.

2. The landfill recycling center serves an additional 25 percent of county residents.

3. Including out-of-county wastes, the salvage operation will target the following commercial waste volumes:

   A. Corrugated containers: 3,000 tons per year

   B. Scrap metals: 2,500 tons per year.

The table below projects the potential recovery rate for each material in the St. Joseph County program. In addition to the above assumptions, these calculations are based on the waste quantity and composition estimates provided in the second chapter.

TABLE 5-1

ST. JOSEPH COUNTY RECYCLING PROGRAM
RECOVERY LEVELS
(tons per year)

Material	Low Participation(1)	High Participation(1)
Newspaper	153	827
Glass Containers	61	329
Tin Cans	17	92
Scrap Metal	250	750
Corrugated Containers	303	918
Plastic Milk Bottles	.1	.6
Total	784	2,916

(1) Low participation is 5 percent of targeted residents for the drop-off centers in Sturgis and Three Rivers and the targeted residents for the landfill drop-off center; and 10 percent recovery of targeted commercial wastes. High participation is 30 percent of those residents served by the centers in the two cities, 20 percent of the potential users of the landfill drop-off site, and 30 percent recovery of the targeted commercial wastes.

At the low participation level, the three-center drop-off program would reduce county residential and commercial waste volumes by less than 1 percent and the salvage project would decrease landfill volumes (including out-of-county wastes) by half of one percent. If the high partici- pation level is attained, waste reduction increases to three percent of the county residential and commercial waste stream through drop-off center patronage and two percent of the disposal volume at the Westside Landfill through salvaging.

The modest level of waste reduction is due to several reasons. From Table 2-5 and Appendix D, it appears that over 40 percent of the old corrugated containers from the county are already recycled. Too, the lack of waste composition data specific to St. Joseph County presents an analytical problem when wanting to provide a precise estimate of waste reduction impact. Finally, it is

expected that most residents will not avail themselves of the program's services (only 23 percent overall participation at the high level).

ECONOMIC EVALUATION

The Michigan Department of Natural Resources views recycling as a method of waste management. Thus, any analysis of the economics of a recycling program must include a portrayal of the costs of treating the recyclable materials as wastes. For analytical purposes, a recycling program is considered as economically viable if the costs of recycling are equal to or less than the costs of collecting and disposing of the recyclable materials as waste.

The next table compares the fully allocated cost of operating the St. Joseph County recycling program with the present cost of waste management.

TABLE 5-2

COMPARISON OF RECYCLING AND WASTE MANAGEMENT COSTS

	Recycling Program		Waste Collection and Disposal(2)
	Low Participation(1)	High Participation	
Cost/Ton	$62.50	$18.40	$38.57
Monthly Cost/Household	.21	.23	6.75

(1) Refer to Table 5-1 for listing of participation assumptions

(2) Not fully loaded to account for costs such as landfill closure and environmental monitoring.

There are several reasons why the estimates in Table 5-2 should be viewed cautiously. First, waste collection and disposal costs likely do not incorporate all cost factors. For instance, landfill closure costs may not be included in the present tipping fee at the Westside site. Also, state and local government expenditures to monitor and enforce environmental regulations are not accounted for.

In addition, recycling program cost estimates are fully allocated and do not take existing resources into account. For example, if an existing truck were used and

land donated for the drop-off centers, the costs would drop about 6 percent, down to $59 per ton for low recovery rates and $17 per ton for the high participation level. Capital and start-up costs would be lowered by $14,500.

The cost comparison indicates the following. As participation increases, recycling program costs remain relatively stable although cost per ton drops sharply. This indicates that the site and equipment need to be fully utilized to reduce costs, as the only major incremental cost is labor (see Table 4-2).

COMPATIBILITY WITH THE EXISTING SYSTEM

With the exception of the landfill operation, the proposed recycling program will have little impact on the manner in which wastes are collected and disposed. Independent waste haulers will not be required to alter their services, although disposal costs may rise modestly if a landfill surcharge is used to fund recycling efforts.

Should the proposed program be implemented, the operation of the Westside Landfill would change in several manners. An area will need to be dedicated for the processing and drop-off center, plus some space at the entrance will need to be set aside for the overnight drop-off center. Disposal site personnel will direct selected trucks to the salvage area and arrange for picking up and unloading of the waste container. The landfill operator will manage and staff the recycling program. Reduction in waste volumes through recycling should extend modestly the life of the disposal site.

If planned properly, the St. Joseph County recycling program should have no effect on existing recycling efforts, particularly the newspaper collection efforts of religious and youth organizations. As discussed in the next chapter, County efforts to promote recycling should encourage residents to use all locations and services, not just the County-sponsored facilities.

CHAPTER 6

RECOMMENDATION AND IMPLEMENTATION

INTRODUCTION

The feasibility assessment concludes with a program recommendation and basic implementation strategy.

RECOMMENDATION

St. Joseph County should consider implementing the recycling program described earlier. It employs proven technologies that suit local conditions, it is relatively cost effective, and it is not disruptive of the existing waste collection and recycling system.

IMPLEMENTATION STRATEGY

This last section is not intended as a final implementation plan. Data and analysis in this report are useful in determining the potential feasibility of a St. Joseph county recycling program. However, more detailed information is required for actual implementation, such as would occur during negotiations between the County, the landfill operator and others.

If St. Joseph County decides to establish a multi-material recycling program, the principal county efforts will focus on four issues. What institutional changes and actions are required? How can the program be financed and how should the service provider be paid? What needs to occur to make the program operational? Finally, how should the program be promoted to residents?

Role Definition/Institutional Support

Should St. Joseph County wish to consider implementing this program, the county planner or another designated official will need to undertake a variety of tasks.

The major planning and implementation need is to determine the appropriate public and private roles. This should include:

1. Determination of ongoing tasks to be assigned to the County and to Westside Landfill, Inc. This can include assignment of promotional, data collection and program management elements.

2. Determination of potential roles for local groups, including Workshop, Camp Eberhart, Twin County Community Probation and the Optimist Club of Three Rivers. For example, the proposed program could be modified to have Workshop and Twin County Community Probation clients work at the landfill recycling site. Also, Camp Eberhart's multi-material recycling center could be added to the County program by having the materials processed at the landfill recycling facility. The Optimist Club might sponsor, promote and maintain the Three Rivers drop-off center.

3. Also, the County must determine the potential role of other private firms, including Sturgis Iron and Metal and Backhaulers, Inc.

4. St. Joseph County staff will need to approach officials of Three Rivers and Sturgis to determine their willingness to aid the program. Included would be a request for center siting and program promotion assistance.

The County will need to draft, negotiate and approve an contract with one or more private firms, civic groups and local cities, given the final program design. Also, ordinances and regulations may need to be adopted, such as an anti-theft rule to minimize loss of materials from the drop-off sites. In cooperation with the landfill operator, the County can consider a requirement mandating the use of the recycling center by landfill customers.

Financing

A second critical component is program financing. This is actually two separate issues: how the St. Joseph County program can be funded and what form of financial arrangement should be used between the County and private parties.

Program Funding. In addition to traditional sources of funding such as County general tax revenues, the recycling program can be financed by waste management fees. For example, St. Joseph County could require waste haulers to purchase a special County license to operate within its boundary. License revenues could then be assigned to the recycling program fund.

A second funding option used by many local governments is to assess a fee or surcharge on wastes disposed within its jurisdiction. In this manner, St. Joseph County would levy a per-ton or per-cubic-yard fee on material entering the Westside Landfill. In this manner, out-of county waste generators would help pay for the recycling program that extends the life of this disposal site.

It should be noted that a secondary form of financing is an effort to reduce program costs by using existing resources. In-kind assistance in the form of free land, used equipment and volunteer labor can lower the projected program costs shown in Chapter 4 and Appendix F. Some cost savings are estimated in Chapter 5.

Each of these funding sources is described in some detail in the background report to the feasibility study.

Program Financial Arrangements. There are a variety of methods to pay private contractors for recycling services, including:

1. Fee for service, involving payments to a contractor who was selected through bidding or negotiation.

2. Payments to a service provider for each ton of material recovered.

3. Payments on a cost-plus basis, whereby the operator is paid for the actual costs of the recycling program plus an agreed-upon rate of return or profit.

4. Combinations of the above. For example, a number of private firms running community recycling programs are paid a fee for overhead and fixed costs plus a per-ton payment to encourage them to reclaim as much material as feasible.

Operational Design

A number of tasks will need to be undertaken to make the County recycling program operational, including:

1. Siting of drop-off centers in the two communities.

2. Selection of an appropriate area at the landfill for the processing center, salvage area, storage yard and overnight depot.

3. Preparation of site plans and drawings.

4. Contracting for (or undertaking) the necessary grading, paving, fencing, wiring and construction.

5. Selection and purchase of the route truck, baler, crusher, containers, forklift truck, skid loader and ancillary equipment.

6. Hiring and training of personnel.

7. Development of a data collection system for each element of the program.

8. Preparation of a marketing plan, including selection of primary and secondary markets for each material.

9. Design of a program schedule, particularly for servicing of the two off-site drop-off centers.

10. Preparation of an equipment maintenance plan.

Once the implementation tasks are completed, the County's efforts in recycling can begin operation. The County and the private contractor(s) should design a program monitoring and evaluation component to assure the early assessment and resolution of problems.

Promotion

Education and promotion must be a series of continuing activities in order to attain and keep both high levels of participation and awareness in a successful recycling program. As discussed in the Background Report to this feasibility study, a wide range of activities and printed materials can be used with varying degrees of success to promote recycling programs. These may include:

- brochures, information leaflets, newsletters
- broadcast and print media
- public presentations including speeches and slide shows
- telephone information service
- community events, parades and fairs.

Many combinations and variations of these activities can be used which will capitalize on the particular resources and characteristics of St. Joseph County.

Overall Coordination. One of the first and most important steps will be assigning a coordinator to budget, design, administer and implement the program. The County, the landfill operator or the cities of Sturgis and Three Rivers, or a combination of these could assume responsibility for the promotion program. Local artists may contribute their expertise to printed materials. Though outside planning and the use of public relations firms is often necessary for larger promotion projects, this may not be needed for the St. Joseph County program.

One of the most valuable assets to any recycling program is developing a central theme. The theme might link recycling activity with some characteristic of the area, thus building community pride. The theme should be used in all literature and promotion activities to continually emphasize and build on the central idea. A slogan and logo are also effective as ongoing reminders of the recycling program. A color scheme will be helpful in adding interest. Decals and bumper stickers are recommended for the recycling vehicles as well as for supporters' cars. Decals are also good publicity tools when placed in the windows of merchants who support the program.

Promotional Outreach. An attractive start-up flyer or brochure that describes the "who, what, where, how, when and why," of the program is essential to the introduction of both drop-off recycling and landfill salvaging. This can be distributed to each household through the mail. Flyers handed out at the landfill site as well as those posted on bulletin boards and businesses throughout the

county will reach additional people and serve as helpful remind Such promotion should be initiated prior to the start of the drop-off and landfill salvaging service to encourage citizens to begin storing their recyclable materials. In addition, the County promotion efforts should urge residents to use existing recycling services. A listing with a map showing drop-off sites would be useful.

Other printed materials proven effective in various promotion campaigns may be useful to St. Joseph County's program as well. Calendars with a recycling message, and phone book covers portraying the drop-off center as two examples.

Press releases and public service announcements are also useful promotional tools. Newsworthy events, especially start-up of the program and progress reports, might get coverage by local media. WIRX or WSJM Radio as well as Michigan CATC and Otsego of Michigan Cable TV may provide advertising free of charge as a community service. Local newspapers such as the Herald Palladium may also be inexpensive advertising options. Small communities similar to Sturgis and Three Rivers often have many low-cost opportunities to spread the recycling message. Newsletters of church, school and civic organizations are all potentially cost-free avenues to help promote the program.

In addition to promotional outreach, it is important to maintain an informational service that citizens can reach by telephone. Such a service should be able to respond to any question on recycling and is enhanced by an easily remembered number, for example 467-SORT.

Another key to the success of any recycling program is personal contact. This will be particularly effective at the drop-off centers in Sturgis and Three Rivers as well as at the landfill.

In summary, the key elements to St. Joseph County's successful drop-off/landfill salvaging promotion campaign will be:

- designating a coordinator and allocating resources to promotion
- developing an integrated design with a central theme or focal point
- personal contact
- designing a variety of on-going methods for the public to find out about recycling.

APPENDIX A

COMPOSITION OF PROCESSABLE WASTE BY CATEGORY

APPENDIX A

COMPOSITION OF PROCESSABLE WASTE BY CATEGORY

Component	EPA National Average[a]	Michigan Composition (1978)[a]	NEMCOG Study (1980)[c]	Cass County (1980)[d]
Paper	39.6	45.6	44.8	35.3
Plastics			9.2	4.0
Wood			3.5	17.2
Yard Wastes			4.1	10.5
Textiles			4.2	2.8
Food Waste			11.5	5.5
Rubber			2.2	1.5
Misc. Organic	39.2[b]	35.6[b]	3.0	1.0
Total Combustible	78.8	81.2	82.5	77.8
Glass	10.3	8.7 (1978)	5.3 (1980)	3.2
Ferrous	8.4	7.6	6.6	8.0
Aluminum	0.7	0.7	0.8	1.3
Other Non-ferrous	0.3	0.3	0.5	2.7
Misc. Inorganic	1.5	1.5	4.3	6.8
Total Non-Combustible	21.2	18.8	17.5	22.2

[a] From Michigan Energy and Materials Recovery State Plan, 1978
[b] Includes plastic, wood, yard waste, food
[c] Solid Waste Stream Assessment, Northeast Michigan Council of Governments
[d] Energy Feasibility Study of Local Solid Waste Streams in Cass County, Michigan, 1980

Source: St. Joseph County Solid Waste Management Plan, 1982.

APPENDIX B

WASTE COMPOSITION STUDIES

APPENDIX B

WASTE COMPOSITION STUDIES

Category	SEMCOG 1981	NEMCOG 1980	CWCSA 1979	CASS COUNTY 1981	ANNARBOR WINTER 1981	ANNARBOR SUMMER 1980	INGHAM COUNTY 1980	KENT COUNTY 1984	MDNR 1979	USEPA 1977
Paper										
Newsprint	9.0%	5.2%	10.3%	4.5%	10.2%	8.0%	11.9%	10.7%	9.5%	)
Corrugated	17.6	11.2	)	11.8	18.5	9.3	4.7	12.0	13.0	)
Office	5.5	2.5	)	1.4	8.9	5.4	4.5	)	3.4	)
Other	16.5	25.9	)38.4	17.7	22.3	25.6	24.2	23.0	21.8	)32.4
Total Paper	48.6	44.8	48.6	35.4	59.9	48.2	45.3	45.7	47.7	32.4
Other Organics										
Plastics	7.2	9.2	6.2	4.0	7.4	7.1	6.8	4.7	)	3.2
Textiles	5.5	4.2	4.3	2.9	5.1	8.0	6.3	0.8	)	1.5
Wood	4.0	3.5	1.8	17.2	4.5	3.4	2.9	7.8	)	3.5
Food Wastes	4.8	11.5	3.3	5.5	4.6	5.2	8.5	7.2	)	16.8
Yard Wastes	12.0	4.1	20.0	10.6	5.5	5.6	12.8	11.5	15.0	19.1
Misc. Organics	4.5	5.2	4.5	2.5	2.9	9.1	1.5	1.5	)22.3	2.6
Total Other Org.	38.0	37.7	40.1	42.7	30.0	38.4	38.8	33.5	37.3	46.7
Non-Organic										
Glass	4.5	5.3	3.4	3.2	4.9	4.0	6.3	8.1	5.9	10.1
Ferrous	4.5	6.6	4.0	8.1	3.8	6.8	3.6	9.6	6.8	8.3
Aluminum	0.4	0.8	0.3	1.3	1.0	1.0	1.3	1.6	0.5	0.7
Other	4.0	4.8	3.6	9.3	0.4	1.6	4.7	0.4	1.8	1.7
Total Non-Orgs.	13.4	17.5	11.3	21.9	10.1	13.4	15.9	19.8	15.0	20.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Comments										
Demographics	Urban	Rural	Urban	Rural	Urban	Urban	Urb/Rur	Urban	n.a.	n.a.
Waste Sources										
Residential	*	*	*	*	*	*	*	*	*	*
Commercial	*	*		*	*	*	*	*	*	*
Industrial				*	*	*			*	*
Type III		*								
Field Samples?	(1)	*	*	*	*	*	*	*	(2)	(2)

(1) The SEMCOG study is an analysis of studies from CWCSA, the two Ann Arbor Studies, and a 1975 Oakland County Waste Composition Study, all of which were based on field samples.
(2) Both the MDNR and the USEPA studies are generic averages for use throughout the State or Nation.

APPENDIX B (continued)

Sources for Waste Composition Studies

SEMCOG: Southeastern Michigan Council of Governments, Source Separation Studies for Southeastern Michigan Counties, 1981. Chapter III, the Waste Stream Composition Analysis, is an indepth critical analysis of three field sample based studies (CWCSA, Ann Arbor Landfill, and Oakland County) that proceeds to quantitatively adjust the figures for season, waste sources, recycling, and bottle bill implementation.

NEMCOG: Northeastern Michigan Council of Governments, Northeast Michigan Solid Waste Assessments, 1980. This study is based on summertime field samples taken at three landfills in the region. The landfills each serviced largely rural populations of 15,000 to 25,000. Alpena (with a population of 15,000) is the major population center included in the study.

CWCSA: Central Wayne County Sanitation Authority, A Comprehensive Municipal Refuse Characterization Program; Hollaner, H.I., et al., This study is based on two field sampling periods (April and August) and was adjusted for seasonal variation by SEMCOG Staff.

Cass County: Cass County Planning Commission and Health Departments, Energy Feasibility Study of Local Solid Waste Streams in Cass County; 1980. This study is based on summertime field samples taken from five landfills in a rural southern Michigan county.

Ann Arbor: City of Ann Arbor Solid Waste Department, Waste Stream Assessment Study; and SEMCOG, 1981 These two studies are based on field samples, one in the winter and one in the summer. SEMCOG Staff adjusted the fractions for seasonal variation, for special wastes that were part of the sample, but were removed from final fraction calculations, and for recycling activity during the study period.

Ingham County: Ingham County Board of Public Works, Ingham County Solid Waste Stream Assessment; 1981. This study is summertime field samples taken from two landfills serving both rural and urbanized areas of the county.

Kent County: Kent/Ottawa Resource Recovery Project, Kent County Department of Public Works, Verification of Waste Composition and Field Sampling and Laboratory Analysis of Grand Rapids Waste Stream; 1984.

MDNR: Michigan Department of Natural Resources, Resource Recovery in Michigan; 1979.

USEPA: United State Environmental Protection Agency, Fourth Report to Congress; 1977.

APPENDIX C

CURRIER'S DISPOSAL COMPANY COSTS FOR A FOUR-TRUCK OPERATION

APPENDIX C

CURRIER'S DISPOSAL COMPANY COSTS
FOR A FOUR-TRUCK OPERATION

Expense	$/Year
Labor	$18,000
Insurance	10,000
Maintenance	6,000
Tires	2,000
Fluids	1,000
Fuel	6,600
Capital	50,000(1)
Total	$93,600

(1) Based on an eight year life for each of four $100,000 vehicles.

APPENDIX D

CORRUGATED CONTAINER RECYCLING IN ST. JOSEPH COUNTY

APPENDIX D

CORRUGATED CONTAINER RECYCLING
IN ST. JOSEPH COUNTY

	Tons/Yr.
Sturgis	
Cattel's Supermarket	135
Hardings Market (2 stores)	187
Kroger	208
Three Rivers	
Big Wheel	237
Fred's Supermarket	55
Hardings Market	86
Village Market	101
Centreville	
County Seat Market	101
Colon	
Hardings	78
Constantine	
Hardings	31
	1,219

Hardings Markets and County Seat Market ship baled corrugated containers back to their grocery supplier, Spartan Stores. Kroger returns corrugated on company trucks to the regional Kroger warehouse. Big Wheel and Cattel's make their own sales arrangements.

In addition to the above, Back Haulers of Shipshewana, Indiana picks up a compactor container at the Sturgis K-Mart store and sorts the corrugated from the other refuse.

With special thanks to:

Marilyn Anderson
Rose Mericle
Judy Smoker

Each helped to create this plan and to make it presentable.

This document was printed on recycled paper by Litho Printers.

RECIPROCAL AGREEMENTS

INTER-COUNTY AGREEMENTS

Kalamazoo County - Signed
Cass County - Signed
Van Buren County
Branch County
Hillsdale County
Allegan County

CONTINGENCY AGREEMENTS

Berrien County
Calhoun County

APPENDIX "D"

List of Inter-County Agreements

PROPOSED PROCEDURE FOR RECEIVING NEW SOLID WASTE MANAGEMENT FACILITIES IN ST. JOSEPH COUNTY

Applicants wishing to develop a new solid waste management facility (transfer station, landfill - Type II or III, incinerator or waste-to-energy plant, solid waste procession facility) in St. Joseph County shall first come before the County Solid Waste Management Planning Committee. The Committee will hear the applicant's proposal and shall require documentation that the proposal is consistent with the County's officially adopted "siting criteria".

The applicant, upon request, will be placed on the Solid Waste Planning Committee's agenda within 30 days. The Solid Waste Planing Committee will have 60 days, from the presentation to the committee, for consideration before making its recommendation to the Designated Planning Agency. Such recommendation shall be in writing and shall include the basis for their recommendation covering all items from the "siting criteria" appropriate to the proposal.

Upon receiving the recommendation of the Solid Waste Management Planning Committee, the designated solid waste management planning agency shall within sixty (60) days:

1) Approve the proposal, or
2) Deny the proposal
3) If the designated Solid Waste Planing Agency fails to act on the proposal within 60 days, the proposal will be considered approved.

Public notice shall be published that the solid waste committee will consider a proposal for siting a solid waste management facility. The chief elected official in the municipality where the facility is proposed will be notified by the committee.

The designated solid waste management planning agency's action shall be in writing and shall also give the basis for their action from the "siting criteria". The agency may, if they so choose, accept the Committee's findings as basis for their action.

Approval by the designated solid waste management planning agency shall provide a "determination of consistency" with the County Solid Waste Management Plan. This determination of consistency shall provide a one year period wherein the applicant is eligible to pursue an administratively complete Department of Natural Resources construction permit application. After receiving this determination, the applicant is directed to pursue the approval of the Michigan Department of Natural Resources for a construction permit.

APPENDIX "C"

Proposed Procedure for Receiving New Solid Waste Management Facilities

APPENDIX "B"

The members rated the alternatives for the 5 year plan. The results were as follows:

SHORT TERM:

	Alternative 1	Alternative 2	Alternative 3
	2	1	3
	2	1	3
	1	2	3
	2	1	3
	2	1	3
	2	1	3
	2	1	3
	2	1	3
	2	1	3
	1	2	3
	2	1	3
TOTAL	20	13	33

LONG TERM:

	Alternative 1	Alternative 2	Alternative 3
	2	1	3
	1	2	3
	2	1	3
	1	2	3
	3	1	2
	3	2	1
	1	2	3
	3	1	2
	2	1	3
	2	1	3
	2	1	3
TOTAL	22	15	29

NOTE: Alternative 2 was chosen for the long and short term.

To fulfill the formal action requirements of Section 28 of Act 641 and Rule 708, the following should occur:

The Designated Planning Agency shall prepare a "Resolution of Plan Approval" to be distributed to each municipality within the County after approval by the County Board of Commissioners. Each governmental unit shall either approve or disapprove the resolution. At a minimum, the "Resolution for Plan Approval" shall indicate either approval or disapproval of the Plan by the governmental unit and shall be signed, witnessed and dated by appropriate members of that governmental unit.

EXAMPLE

Resolution for Plan Approval

By action of the Board/Council of _____
Township/Village/City

it is hereby resolved that we _____ the solid
approve/disapprove

waste management plan, prepared pursuant to Act 641 of 1978, as amended, and the rules promulgated thereunder, for _____ County.

_____
Appropriate Local Authority

_____
Witnessed By

_____
Dated

APPENDIX "K"

Model Resolution for Plan Approval

(Example)

STEPS TO FOLLOW FOR SOLID WASTE MANAGEMENT PLAN APPROVAL

ACTUAL

1) Designated Planning Agency submits draft Plan to Planning Committee. The Planning Committee may require the Designated Planning Agency to revise the Plan, or, if it is okay, will approve the draft Plan for a public hearing. Section 27(B), Rule 707(3).

2) Draft Plan is submitted to reviewing agencies and announces availability to the general public. Section 27(E).

3) Designated Planning Agency shall allow 90 days for review and comment. All comments shall be submitted to the governmental unit that filed the notice of intent along with the proposed Plan. Section 27(D), Rule 707(2).

4) Designated Planning Agency conducts a public hearing on the proposed Plan. A notice is to be published not less than 30 days before the hearing in a paper having major circulation. The Designated Planning Agency prepares a transcript or other type of complete record of the public hearing. The record is subject to inspection by the general public. Section 27(F), Rule 707(3).

5) Designated Planning Agency reviews the Plan and revises it in response to public comments, if necessary, then submits the plan to the Planning Committee. Section 28(3), Rule 707(4).

6) After approval by a majority of the Planning Committee and within 30 days of the closing of the public comment period, the Plan shall be submitted for formal action by the County Board of Commissioners. Section 28(3), Rule 707(5) and 708(1-2).

7) If the Plan is not approved by the County Board of Commissioners, the plan is returned to the planning committee with a statement of objections to the Plan. The Planning Committee then has 30 days to review and return the Plan to the County Board of Commissioners. Section 28(3), Rule 708(3).

8) 67% of all municipalities in the County must approve the Plan. Section 28(4), Rule 708(4).

9) Designated Planning Agency submits locally approved Plan, along with hearing record and responses, and all resolutions approving or disapproving the Plan to the DNR. Section 29(1), Rule 709(1).

10) DNR either approves or disapproves the submitted Plan within six months. Section 29(1), Rule 709(1).

11) Five year update and amendments occur later, if necessary. Section 29(2) and 25(2), Rule 709(3-4).

STEPS TO FOLLOW FOR SOLID WASTE MANAGEMENT PLAN APPROVAL

SUMMARY

1) Submit draft Plan to Planning Committee.

2) Submit draft Plan to reviewing agencies and announce availability to general public.

3) Begin 90 day review and comment period.

4) Conduct a public hearing on the proposed Plan.

5) Review and revise the Plan according to public comments, if necessary, and submit the Plan to the Planning Committee.

6) Submit the Plan to the County Board of Commissioners for action.

7) If not approved by the County Board, return it to the Planning Committee.

8) 67% of all municipalities in the County must approve the Plan.

9) Submit locally approved Plan, along with hearing record and responses, and all resolutions to the DNR.

10) DNR approves or disapproves.

11) Five year update and Amendments, later, if necessary.

APPENDIX "J"

Steps to Follow for Solid Waste Management Plan Approval.

- Summary

- Actual

GLOSSARY

Act 641	The Michigan Solid Waste Management Act of 1978, as amended. This law mandates planning for solid waste disposal and sets forth design standards and operating requirements for landfills, refuse processing plants and transfer facilities.
Composting	The biological breakdown of organic material; i.e., leaves, grass clippings, shredded trees and brush, into a humus-like material that has a value as a soil conditioner.
Incineration	The process of burning solid waste under controlled conditions. Sometimes incorporated with energy recovery, the heat being used to produce steam and electrical power.
Processing Plant	A building or tract of land used for the processing of solid waste or the separation of material for salvage or disposal, or both.
Recycling	The process of recovering materials from the waste stream to be used as raw material in the production of new products.
Reuse	The process of reusing materials instead of discarding them.
Solid Waste Disposal Facility	Means a transfer facility, incinerator, sanitary landfill or processing plant used in the disposal of solid waste.
Source Reduction	The process of reducing the amount of solid waste produced.
Transfer Station	A facility designed to collect smaller quantities of solid waste, then combine them for transportation in larger quantities to a solid waste disposal facility.
Type II Landfill	A lined landfill that can accept residential, commercial and municipal solid waste, but not regulated hazardous waste.
Type III Landfill	A lined or unlined landfill designed to accept trees, brush, stumps, building demolition debris and other materials that have a minimum potential to contaminate groundwater.

APPENDIX "I"

Glossary

LANDFILL CALCULATIONS*

Tons Per Day	650
Days Per Week	6
Number of Weeks	52
Remaining Capacity	600,000 Tons
Landfill Life Expectancy	3 Years

*The Common Conversion Factor Is 3 Yards Per Ton.

APPENDIX "H"

Life of Landfill Calculations

Appendix G

Great Blue Heron Rookery
Property Description

The west 1/2 of the southwest 1/4 of Section 10, Mottville Township T8S R12W.

APPENDIX "G"

Great Blue Heron Rookery
Property Description

MEETINGS

The Solid Waste Planning Commission meets the first Thursday of each month at 7:30 p.m. in the Lake Room lower level of the new courts building, Centreville, Michigan.

Meeting minutes are available for review in the office of Planning and Economic Development, St. Joseph County Courthouse. Copies of the minutes are sent each month to each governmental unit within the County, news media and other interested parties. Copies of the minutes are available, upon request, at the County established fee.

APPENDIX "F"

Committee Meeting
Time and Place

SOLID WASTE MANAGEMENT PLANNING COMMITTEE

Industry

1 September 1990	Leo E. Meyer	Westside Landfill, Box 350, Three Rivers
1 September 1990	Greg Seybert	RR#1, Box 305, Shipshewana, IN 46565
1 September 1991	William Currier	65974 Middle Colon Road, Burr Oak
1 September 1991	Glenn Nissley	64401 Leverence, Burr Oak

Environmental

1 September 1990		
1 September 1991	Valdis Arums	56825 Riga Drive, Three Rivers

General Public

1 September 1990	Danny Kaiser	12842 Spence Road, Three Rivers
1 September 1990	Dan Pulliam	67485 Spade Road, Burr Oak
1 September 1991		

Municipalities

1 September 1991	/Townships	
1 September 1990	Cameron Brown/County	29057 E. Lafayette, Sturgis
1 September 1990	Carl Holsinger/Regional	108 E. Main Street, Sturgis
1 September 1991	Michael McCarthy/Cities	

Industrial Waste

1 September 1989	Frank Kalasky	66515 N. M-66, Sturgis

APPENDIX "E"

Solid Waste Management Planning Committee Members

APPENDIX "B"

Committee Alternative Vote Tabulations

Component	Material	Generation TPY	Recovery Efficiency	Tons/Year Recovered 5%	30%
Drop-off Centers	Newspapers	2,700	.8	108	648
	Glass Containers	1,425	.6	43	257
	Tin Cans	480	.5	12	72
	Plastic Milk Jugs	3	.5	> 1	> 1
	Corrugated Containers	160	.3	2	14
				5%	20%
Landfill Center	Newspapers	1,120	.8	45	179
	Glass Containers	600	.6	18	72
	Tin Cans	200	.5	5	20
	Plastic Milk Jugs	2	.5	> 1	> 1
	Corrugated Containers	70	.3	1	4
				10%	30%
Salvage Operation	Corrugated Containers(1)	3,000	1.0	300	900
	Scrap Metals(1)	2,500	1.0	250	750
Total				784	2,916

(1) 50 percent generated in-county; 50 percent from outside the county.

8. Summary

The total expense for each item, including cost, sales tax and financing charges, is divided by the useful life of the item to determine an annualized cost.

Item	Cost	Tax & Financing	Useful Life	Annualized Cost
Sites	$113,813	$22,307	20	$ 6,806
Admin/Office	2,070	406	5	495
Containers	24,025	4,709	10	2,873
Truck	12,000	2,352	5	2,870
Baler	8,000	1,568	15	638
Crusher/Torch	3,600	706	5	861
Materials Hand.	43,000	8,428	15	3,429
	$206,508	$40,476		$17,972

C. Costs of Promotion & Education

The following promotion and education costs are direct expenses and do not include labor costs, which are accounted for in the recycling program management position in Salaries and Wages (I.A.1.a.).

16,825 brochures x $45/K + $25		$ 782
mailing - 16,825 x .125 + $50		2,153
bumper stickers and decals (1,000)		250
Yellow Page ad		348
slide show		200
	TOTAL	$ 3,733

II. REVENUES

	Low Participation	High Participation
Newspaper 153 - 827 T x $35/T =	$ 5,355	$ 28,945
Glass Containers 61 - 329 T x $53/T =	3,233	17,437
Tin Cans 17 - 92 T x $50/T =	850	4,600
Plastic Milk Jugs 250 - 1,300 lbs. x $.15/lb =	38	195
Corrugated Containers 303 - 918 T x $45/T =	13,635	41,310
Scrap Metals 250 - 750 T x $20/T	5,000	15,000
	$ 28,111	$107,487

III. NET COSTS

A. Annual Net Cost	Low Participation	High Participation
Cost	$ 77,076	$161,186
Revenue	28,111	107,487
Net	$ 48,965	$ 53,699

B. Net Cost/Household/Year
Low: $48,965 divided by 19,794 = $2.47 (or $.21/mo)
High: $53,699 divided by 19,794 = $2.71 (or $.23/mo)

C. Net Cost/Ton Recycled Material
Low: $48,965 divided by 784T = $ 62.46
High: $53,699 divided by 2,916T = $ 18.42

MATERIALS RECOVERY

The quantity of materials which may be handled by the drop-off centers and salvage project is portrayed below. A generation rate, or the amount of material in the waste stream, is provided by material. The recovery efficiency indicates the degree that program participants recover materials from the total available amount.

The quantity of materials potentially recoverable is shown for two levels of participation. The low participation rate is 5 percent of the targeted residents that might use the drop-off centers (60 percent of county residents) and the landfill recycling center (an additional 25 percent of county residents). Low participation for the salvage operation is 10 percent of the selected materials received at the site. High participation is 30 percent for drop-off centers use, 20 percent for landfill recycling center use, and 30 percent of targeted commercial wastes through salvaging.

e. Transportation Costs

Material	Low	High
Newspapers	$ --	$ --
Glass Containers	578	3,273
Tin Cans	630	3,150
Plastic Milk Jugs	--	--
Corrugated Containers	1,313	4,025
Scrap Metal	2,520	7,520
	$5,041	$17,968

VARIABLE AND FEES TOTAL $13,679 - 27,854

Transportation Calculations

1. Newspaper would be picked up by the buyer, FOB Westside Landfill.

2. Glass Containers: 61 - 329 TPY
   Shipment Capacity: 20 Tons
   Market: Marion, IN 110 miles
   61T divided by 20 = 3.05 or 3 trips
   329T divided by 20 = 16.45 or 17 trips
   3 to 17 trips x 110 miles x $1.75/mi = $578 to $3,273

3. Tin Cans: 17 - 92 TPY
   Shipment Capacity: 6 Tons
   Market: Gary, IN 120 miles
   17T divided by 6 = 2.83 or 3 trips
   92T divided by 6 = 15.33 or 15 trips
   3 to 15 trips x 120 miles x $1.75/mi = $630 to $3,150

4. Plastic milk jugs would be delivered to Crocker Limited by the route truck when serving drop-off centers.

5. Corrugated Containers: 303 - 918 TPY
   Shipment Capacity: 20 Tons
   Market: Otsego, MI 50 miles
   303T divided by 20 = 15.15 or 15 trips
   918T divided by 20 = 45.9 or 46 trips
   15 to 46 trips x 50 miles x $1.75/mi = $1,313 to $4,025

6. Scrap Metal: 250 - 750 TPY
   Shipment Capacity: 4 Tons
   Market: Sturgis, MI
   250T divided by 4 = 62.5 or 63 trips
   750T divided by 4 = 187.5 or 188 trips
   63 to 188 trips x $40/trip = $2,520 - $7,520

B. Annualized Capital, Start-Up Costs & Interest

1. Site for Landfill Center (1)		
Paving - 1,000 sq ft concrete for drop boxes		$ 5,000
2,000 sq ft paving salvage area		2,000
10,000 sq ft paving yard		10,000
Fencing - 450 linear ft + gate		8,513
Pole Barn with overhang (6,000 sq ft)		65,000
Modular Office		8,000
Bathroom		6,000
Electrical		1,500
Signs - 1 large, 5 small		900
	Sub =	$106,913
(1) Assumes free land		
2. Drop-off Center Sites		
Land (2 at 1,000 sq ft at $1.25/sq ft)		$ 2,500
Paving (1,000 sq ft per center)		2,000
Overhang (two)		1,000
Signs (2 large, 6 small)		1,400
	Sub =	$ 6,900
3. Administrative/Office		
Telephone Installation		$ 90
Typewriter		900
Furniture		1,080
	Sub =	$ 2,070
4. Containers		
Bins (35)		$ 13,125
Polypropylene Bags (48)		1,100
Drop Boxes		
1 - 30 yd. tin		2,450
2 - 30 yd. scrap metal		4,900
1 - 30 yd. waste from salvage		2,450
	Sub =	$ 24,025
5. Truck		
Used (16' flatbed with liftgate)		12,000
6. Processing Equipment		
Cutting Torch		$ 500
Baler (60" downstroke)		8,000
Glass Crusher		3,100
	Sub =	$ 11,600
7. Materials Handling		
Pallet Jack		$ 500
Forklift - 3-ton with rotator and grapple		24,500
Skid Loader		18,000
	Sub =	$ 43,000

Detailed calculations on the line items are provided below. The outline corresponds to the order in the above summary.

I. COSTS

A. Direct Operating Costs

1. Salaries & Wages

a. Labor Calculations
Driver -- .15 FTE to service drop-off sites.

Processing and landfill recycling center upkeep -- newspaper baling at .5 ton/hour; corrugated container baling at .75 ton/hour; glass crushing at 4 tons/hour; plus .15 FTE to operate recycling center at landfill

Salvage -- sorting and waste reloading at .5 ton/hour of recyclable material sorted from mixed commercial wastes

Manager -- marketing, promotion, site supervision, contract management, payroll, data collection, government liaison.

b. Summary

Position	Low Participation	High Participation
Driver	.15 FTE	.15 FTE
Processing Laborer	.50	1.60
Salvage Laborer	.50	1.60
Manager	.40	1.00
	1.55 FTE	4.35 FTE

Position	$/hour	+	33%(1)	Loaded Hourly Rate
Driver	8.58		2.83	11.41
Processing Laborer	8.47		2.80	11.27
Salvage Laborer	8.47		2.80	11.27
Manager	9.50		3.14	12.64

(1) Includes FICA, unemployment, workers compensation, health benefits.

Position	Loaded Hourly Rate		Annual Hours(1)		FTE	Annual Cost
Driver	$11.41	x	2,160	x	.15	$3,697
Processing	11.27	x	2,160	x	.50 to 1.60	$12,172 to 38,949
Salvage	11.27	x	2,160	x	.50 to 1.60	12,172 to 38,949
Manager	12.64	x	2,160	x	.40 to 1.00	10,921 to 27,302
					1.55 to 4.35	$38,962 to $108,897

(1) Includes 80 hours vacation replacement.

2. Fixed Overhead

	$/Year	$/Year
Telephone - local	190	
long distance	240	
Insurance - truck	700	
Liability	1,600	
TOTAL		$ 2,730

3. Variable & Fees

a. Licensing - Truck	190
b. Supplies Safety equipment, baling wire, tools, etc.	1,200
c. Utilities	2,400
d. Operations and Maintenance Forklift @ $100/month	1,200
Baler @ $100/month	1,200
Glass Crusher @ $100/month	1,200
Truck Low: 60 mi/wk @ $.40/mi High: 120 mi/wk @ $.40/mi	1,248 - 2,496
	4,848 - 6,096

APPENDIX F

RECYCLING PROGRAM COST FACTORS

This appendix provides a listing of costs for the St. Joseph County recycling program described in Chapter 4 and evaluated in Chapter 5. The projected costs noted on the following pages are estimates; actual cost data obtained during the final design phase may differ.

SUMMARY OF ANNUAL RECYCLING PROGRAM COSTS

I. COSTS	Low Participation(1)	High Participation(1)
A. Direct Operating Costs		
1. Salaries and Wages	$ 39,000	$108,900
2. Fixed Overhead	2,700	2,700
3. Variable and Fees	13,700	27,900
Sub-Total Direct Costs	$ 55,400	$139,500
B. Annualized Capital, Start-Up Costs & Interest	$ 18,000	$ 18,000
C. Costs of Promotion and Education	$ 3,700	$ 3,700
TOTAL COSTS	$ 77,100	$161,200
II. REVENUES		
Sales of Materials		
TOTAL REVENUE	$ 28,100	$107,500
III. NET COSTS		
A. Annual Net Cost		
Cost	$ 77,100	$161,200
Revenues	28,100	107,500
ANNUAL NET COST	$ 49,000	$ 53,700
B. Net Cost Per Household ($/Yr.)	$ 2.50	$ 2.70
C. Net Cost Per Ton of Recycled Material	$ 62.50	$ 18.40

(1) Low participation is 5 percent of targeted residents for the drop-off centers in Sturgis and Three Rivers and the targeted residents for the landfill drop-off center; and 10 percent recovery of targeted commercial wastes. High participation is 30 percent of those residents served by the centers in the two cities, 20 percent of the potential users of the landfill drop-off site, and 30 percent recovery of the targeted commercial wastes.

APPENDIX F

RECYCLING PROGRAM COST FACTORS

APPENDIX E

ST. JOSEPH COUNTY RECYCLING PROGRAM
POTENTIAL SECONDARY MATERIALS MARKETS

A list of potential secondary materials markets is provided to assist in the marketing of materials recovered in the St. Joseph County Recycling program. A more detailed listing and analysis of secondary material markets can be found in the Background Report to Recycling Feasibility Studies, Volume I - Markets. A description of market specifications, evaluation of markets, market trends and other valuable information is also provided in Volume I.

Material	Location	Company
Newspaper	Kalamazoo	James River Corp. (1)
	Aslip, IL	FSC Paper Corp.
	Battle Creek	Cereal City Recycling
	Hudsonville	Nu-Wool
	Kalamazoo	Allied Paper, Inc.
	Kalamazoo	Atlas Barrels
	Kalamazoo	Friedland Scrap & Supply Co.
	Kalamazoo	Joseph Thall Corp.
	Kalamazoo	Miller Road Transfer & Recycling
	Kalamazoo	Second Phase Recycling
	Kalamazoo	Van's Paper Sales
	Kalamazoo	Weisman Brothers
	Niles	Niles Waste Paper
	St. Joseph	United Container Corp.
	South Bend, IN	South Bend Waste Paper
	Watervliet	Watervliet Paper Co.
	White Pigeon	White Pigeon Paper
Glass Bottles	Marion, IN	Foster-Forbes Glass Co. (1)
	Charlotte	Owens-Illinois, Inc.
	Streator, IL	Owens-Illinois, Inc.
Tin Cans	Gary, IN	Vulcan Materials (1)
	South Bend, IN	Metal Resources

Scrap Metals	Sturgis	Sturgis Iron and Metal (1)
	Berrien Springs	Tetracon
	Benton Harbor	Alfred Metals
	Benton Harbor	Alreco Metals Co.
	Benton Harbor	Cohen Steel, Inc.
	Benton Harbor	Martin Brothers
	Buchanan	Buchanan Iron & Metal Co.
	Dowagiac	Franklin & Son
	Gary, IN	Vulcan Metals
	Kalamazoo	Ace Iron & Metal Co.
	Kalamazoo	Central Iron & Metal Co.
	Kalamazoo	Fisher Diversified Metals
	Kalamazoo	Friedland Scrap & Supply Co.
	Kalamazoo	Graff Steel Processing Co.
	Kalamazoo	Kozel Iron & Metal Co.
	Kalamazoo	Magnimet Corp. Kalamazoo
	Kalamazoo	Schupan & Sons, Inc.
	Kalamazoo	Summit Steel Processing Corp.
	Niles	Niles Waste Paper Co.
	Niles	Jack Renner Metals
	South Haven	Bohn Al & Brass
	South Haven	L. Warshawsky & Co.
Plastics	Three Rivers	Crocker, Ltd. (1)
Corrugated Containers	Otsego	Mead Corp. (1)
	Otsego	Menasha Corp. (1)
	Evanston, IL	Packaging Corp. of America
	Filer City	Packaging Corp. of America
	Kalamazoo	Allied Paper, Inc.
	Kalamazoo	Atlas Barrels
	Kalamazoo	Friedland Scrap & Supply Co.
	Kalamazoo	James River
	Kalamazoo	Joseph Thall Corp.
	Kalamazoo	Miller Road Transfer & Recycling
	Kalamazoo	Second Phase Recycling
	Kalamazoo	Van's Paper Sale
	Kalamazoo	Weisman Brothers
	Niles	Niles Waste Paper Co.
	St. Joseph	United Container Corp.
	Watervliet	Watervliet Paper Co.
	White Pigeon	White Pigeon Paper

(1) Principal market used for this study's calculations.

APPENDIX E

ST. JOSEPH COUNTY RECYCLING PROGRAM
POTENTIAL SECONDARY MATERIALS MARKETS