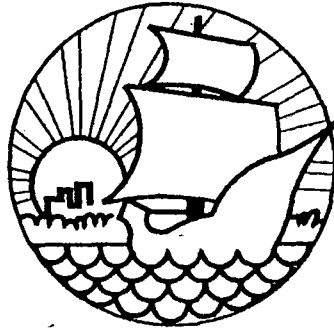


Task 7

**Evaluate Alternative Solid Waste
Recycling / Waste Reduction Proposals**

**- Update to Solid Waste Master Plan
Manatee County, Florida**



Submitted to

**Manatee County Government
Board of County Commissioners
and
Public Works Department**

by

**R.W. BECK
AND ASSOCIATES**

***February 26, 1992
Board Working Session***



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EF-5327-AA1-AB

February 25, 1992

Board of County Commissioners
Mr. Gus DiFonzo
Manatee County Government
4501 66th Street West
Bradenton, Florida 34210

Dear Commissioners and Mr. DiFonzo:

**Subject: Supplementary Information for Second Working Session
Regarding Solid Waste Reduction Proposals**

As requested by the Board at your January 29, 1992 working session, R. W. Beck and Associates has responded to several requests for additional information:

1. We have provided additional cost information and solid waste program details for counties that are generally perceived as comparable to Manatee County because of similar population and other characteristics.
2. We have checked references for each of the six shortlisted vendors to establish their track record and the experience with the technologies proposed in communities in which they are currently working.
3. We have provided a general summary of currently available solid waste management technologies and their status and popularity throughout the United States.

Comparison to Other Counties

Responding to the comments made at the last Board working session, R. W. Beck and TIA Solid Waste Management Consultants expanded the analysis comparing Manatee County's solid waste programs and rates to those of other counties. We included those additional counties the Board had suggested and gathered additional demographic and other information for the counties analyzed, also as requested. TIA performed the bulk of the analysis, which is presented in the attached tables. R. W. Beck prepared a brief summary table presenting the principal differences among the counties in their programs and rates.

The comparison shows that there are few counties precisely comparable to Manatee County. Counties that are similar in total population may not have a mandatory collection assessment or may have a significantly different population density or may have a different mix of urban and lower density development.

The tables show that additional waste reduction/recycling programs for Manatee County directed toward meeting the goals of the Solid Waste Management Act, will increase the monthly cost of solid waste services to the homeowner. Because the existing collection cost per the County's contract is low and the landfill tipping fees are comparable to or lower than the disposal cost for other counties, the new solid waste management system will probably cost less than for other counties that have a full program in place.

Vendor References

As requested, R. W. Beck and Associates contacted representative reference communities for the six shortlisted companies. We were unable to contact a reference community/facility for ARK Energy because the company is working toward developing a demonstration plant at this time. Mr. Gaylen Oderkirk stated that the technology has been proven by various plants in the U.S. and elsewhere that are no longer in operation.

The notes from our telephone contacts are included. The information provided by the persons to whom we spoke is summarized below. In some cases, the reference facilities/programs are considerably smaller than what has been proposed to Manatee County. A pertinent article from the magazine, Biocycle, has also been enclosed.

THE AMERICAN RECYCLING COMPANY, INC. ("Amerecycle") Mixed Waste Recycling with Windrow Composting

Amerecycle received good marks for how they operate the facility for Sumter County. This 35 ton per day facility (currently being expanded to 50-60 TPD) is their only reference facility. The facility proposed for Manatee County would be much larger and have additional features and improvements.

ARK ENERGY, INC. / CSW ENERGY, INC. Mixed Waste Recycling with Waste-to-Ethanol Plant

ARK Energy currently has no commercial facilities operating similar to what they have proposed. This was confirmed by Gaylen Oderkirk. A demonstration plant in California is proposed to start construction some time this year.

BEDMINSTER BIOCONVERSION CORPORATION ("BBC")
Co-Composting of Municipal Solid Waste and Sewage Sludge

Bedminster has a small-scale (15-TPD), one-digester, commercial facility using its technology for municipal solid waste and sewage sludge at Pinetop-Lakeside, Arizona. The facility manager is very pleased with the facility. They are not recovering materials for recycling. A larger (150-TPD of MSW) facility is under construction in Sevierville, Tennessee, which is scheduled to start operation in August 1992.

A 120-TPD facility in St. Cloud, Minnesota uses some aspects of the Bedminster technology, specifically the Eweson digester, but, according to Bedminster's CEO, it is not a true Bedminster facility and is not operated as Bedminster would. This facility, which is operated by RECOMP, is trying to correct some technical and financial problems.

The 800-TPD MSW/400-TPD sewage sludge facility proposed for Manatee County represents a substantial scale-up from any existing BBC facilities.

CEDAR HAMMOCK REFUSE DISPOSAL/WASTE MANAGEMENT, INC.
OF FLORIDA

Curbside Collection of Recyclables and Yard Waste/MRF

Waste Management, Inc. and its various companies throughout Florida operate many curbside collection programs. R. W. Beck obtained comments from two programs that include curbside recycling collection, separate yard waste collection and a materials recovery facility—Sarasota County and Orange County. Although some aspects of each of these programs are new, the County personnel contacted in each case indicated that Waste Management is doing a good job and has historically performed well.

INDUSTRIAL WASTE SERVICE, INC. (Attwoods)
Transfer and Processing of Source-Separated Recyclables

Based on one month of operation and previous experience with Attwoods' Waste Aid Systems as a hauler, Pasco County gave them a good reference. This type of program is fairly new but several large cities, including Pittsburgh, PA and Mobile, AL, have used a bag-based recycling system for a while. Some programs commingle garbage and recyclables in the same vehicle rather than having separate routes for recycling and solid waste collection as IWS proposes.

XL DISPOSAL CORPORATION
Mixed Waste Recycling Facility Producing Fuel Cubes(?) / Compost(?)

Without exception, the references contacted for XL gave them very favorable reviews. The communities range from fairly small up to the City of Chicago. At 400 TPD of mixed waste processing capacity, the Crestwood, Illinois reference facility is substantial and very comparable to what XL proposes to do in Manatee County. The facility has been operating for 2.5 years with consistent results.

Current Popular Programs and Trends

Generally, the solid waste management options available to Manatee County are:

- Recycling
- Incineration
- Landfilling
- Other.

The "Other" category includes municipal solid waste composting, co-composting of municipal solid waste and sludge, ethanol production, anaerobic digestion to produce methane, pyrolysis and even less common technologies such as producing lightweight aggregate from refuse-derived fuel and clay. Separate yard waste composting/mulching operations are fairly common as are special landfills and recycling facilities for tires, white goods and construction and demolition debris.

There are several options for **recycling** including primarily source separation and recovery of recyclables through mixed waste processing. By far, source separation with curbside collection and drop-off centers is the most common approach. (A nationwide survey conducted by R. W. Beck and Associates identified over 2,300 curbside programs and over 3,500 drop-off programs.) However, mixed waste processing facilities are making inroads in communities trying to reduce the cost of separate collection. "Blue bag" recycling programs are used in some communities. The recycling bags are either collected mixed with bags containing solid waste in the same truck or collected separately as an alternative to bins and specialized recycling vehicles. (Another survey showed 16 percent of 177 programs sampled used bags for curbside recycling.) There are many differences in recycling programs such as materials collected, frequency of collection, curb separated versus commingled collection and going to a materials recovery facility or directly to markets.

Landfills are by far the most common **disposal** or back-end technology option and, even when other technologies are used, there is always a landfill for non-processible, non-recyclable waste and residue from the process. Incineration is also common, with over 125 waste-to-energy plants in operation in North America including 11 in Florida. In comparison, there are less than 10 MSW composting facilities, including Pembroke Pines, Sumter County and potentially Escambia County in Florida. (See 1991 update on MSW composting facilities included in this package.) Various policies of the Florida Department of Environmental Regulation and some pending regulations favor composting facilities for parts of the waste stream.

Most innovative and thoughtful communities have an integrated solid waste management system having several different technologies, each of them appropriate for the part of the waste stream that it handles. Some communities have or are considering a volume-based or variable can rate structure in which customers "pay by the pound" for solid waste disposal and generally receive a lower rate for recycling. This is most advantageous if the community uses a private landfill and achieves an immediate avoided disposal cost for the tons recycled.

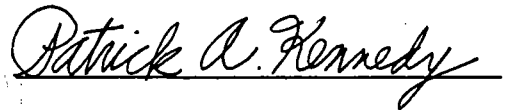
February 25, 1992

The proposals submitted by the vendors represent a good cross-section of the available options, with the exception of incineration. R. W. Beck and Associates would be happy to provide additional information regarding what other communities are doing with programs of interest to the Board.

We look forward to a productive working session.

Very truly yours,

R. W. BECK AND ASSOCIATES



Patrick A. Kennedy, Director
Solid Waste Management

PAK/sl

cc: Herb Kosstrin
Bob Tardy
Bob Myers
Teresa Ilan, TIA Solid Waste Management Consultants

COMPARISON TO OTHER COUNTIES

**SUMMARY COMPARISON OF MANATEE COUNTY'S AND OTHER COUNTIES'
SOLID WASTE PROGRAMS AND RATES**

COUNTY	MANATEE	ALACHUA	ESCAMBIA	LEON	MARION	PASCO	POLK	SARASOTA
1990 Population	211,707	181,596	262,798	192,493	194,833	281,131	405,382	277,776
No. of Households	91,060	74,121	100,305	77,932	77,933	124,947	158,352	127,420
Area (sq mi)	747	902	661	676	1,610	738	1,823	573
Density (HH/sq mi)	122	82	152	115	48	169	87	222
Mandatory Assessment	YES	YES	NO	NO	YES Disposal Only	YES Disposal Only	YES	YES
Cost (\$/HH/month) ⁽¹⁾	6.35	13.92	13.50–18.00	8.97 ⁽²⁾	13.17–13.67 ⁽³⁾	12.67	15.63	12.21 ⁽⁶⁾
Technology/Program								
Collection	Franchised	Franchised	Franchised	Franchised	Franchised	Not Franchised	Franchised	Franchised
Recycling	Pilot Curbside/ Drop-Offs	Curbside/ Drop-Offs	Mixed Waste Processing	Curbside ⁽⁴⁾ / Drop-Offs	Curbside/ Drop-Offs	Curbside with Blue Bags/MRF	Drop-Offs	Curbside/Drop- Offs/MRF
Disposal	Class I Landfill	Class I/III LF; Yard Waste Facility	Class I LF; Yard Waste Facility; Composting	Class I Landfill; Yard Waste Facility	Class I Landfill; Yard Waste Facility	Class I/III LF; Waste-to-Energy Facility	Class I/III LF; Yard Waste Facility ⁽⁵⁾	Class I Landfill; Yard Waste Facility
COMMENTS	Program not yet complete							Program collects 14 materials subject to ballot referendum

⁽¹⁾ - For typical single family service.

⁽²⁾ - Cost for collection and disposal (per Gary Gayle, Recycling Coordinator, 02/25/92)

⁽³⁾ - Add \$4.50/household/month for yard waste collection.

⁽⁴⁾ - For the City of Tallahassee only.

⁽⁵⁾ - The City of Lakeland operates a waste-to-energy facility.

⁽⁶⁾ - Collection – \$5.90; disposal – \$2.13; recycling including yard waste collection – \$2.18.

**COMPARISON OF MANATEE COUNTY'S AND OTHER COUNTIES'
SOLID WASTE PROGRAMS AND RATES ^[1]**

Page 1 of 3

COUNTY	MANATEE	ALACHUA	ESCAMBIA	LEON	MARION	PASCO	POLK	SARASOTA
I. DEMOGRAPHICS ^[2]								
Population	211,707	181,596	262,798	192,493	194,833	281,131	405,382	277,776
No. of Households	91,060	74,121	100,305	77,932	77,933	124,947	158,352	127,240
Single Family	53,214							
Multi-Family	22,150							
Mobile Home	15,696							
Area (sq mi)	747	902	661	676	1,610	738	1,823	573
Density (persons/sq mi)	283	201	398	285	121	381	222	485
Unincorporated ^[3]	211	100	^[4]	114	96	^[4]	^[4]	104
Density (HH/sq mi)	122	82	152	115	48	169	87	222
Incorp./Unincorp. (% of Pop.)	30/70	46/54	23/77	65/35	24/76	12/88	40/60	30/70
II. COLLECTION ^[5]								
Public/Franchised ^[6]	Franchised	Franchised	Franchised	Franchised	Franchised	Licensed, Not Franchised	Franchised	Franchised
Mandatory Assessment	YES	YES	NO	NO	NO	NO	YES	YES
Solid Waste (\$/HH/mo)	4.40–9.11 ^[7]	^[8]	13.50–14.40 ^[10]	8.97 ^[11]	8.50–9.00	8.50 ^[13]	9.34	3.91–5.90 ^[14]
Yard Waste (\$/HH/mo)	--	^[8]	--	^[11]	4.50	^[13]	--	^[14]
White Goods (\$/HH/mo)	--	^[9]	--	^[12]	--	--	--	^[14]
SUBTOTAL (\$/HH/mo)	4.40–9.11	^[8]	13.50–14.40	8.97 ^[11]	13.00–13.50	8.50	9.34	3.91–5.90
III. DISPOSAL								
Technology	Class I Landfill	Class I/III LF; Yard Waste Facility	Class I LF; Yard Waste Facility; MRF/Composting	Class I LF; Yard Waste Facility	Class I LF; Yard Waste Facility	Class I/III Landfill; Waste-to-Energy	Class I/III LF; Yard Waste Facility	Class I LF; Yard Waste Facility
Mandatory Assessment	YES	YES	NO	NO	YES	YES	YES	YES
\$/HH/month	1.95	^[8]	13.50-14.40 ^[10]	8.97 ^[11]	4.42 ^[16]	4.17 ^[17]	6.29	1.13–2.13 ^[14]
IV. RECYCLING								
Mandatory Assessment	NO	YES	NO	NO	YES	NO	NO	YES
\$/HH/month	0.00	^[8]	^[18]	^[4]	0.25 ^[16]	^[4]	^[4]	2.18 ^[24]
Curbside Households Served	13,977	26,000	^[18]	39,899 ^[19]	6-10,000 ^[21]	90,000 ^[22]	^[23]	34,131
Single Family	13,977	23,000	^[18]	36,000 ^[19]	6-10,000 ^[21]	90,000	--	30,590
Multi-Family	0	2,700	^[18]	3,899 ^[19]	0	0	--	3,541
Mobile Home	0	300	^[18]	^[4]	0	^[4]	--	^[4]

**COMPARISON OF MANATEE COUNTY'S AND OTHER COUNTIES'
SOLID WASTE PROGRAMS AND RATES ^[1]**

Page 2 of 3

COUNTY	MANATEE	ALACHUA	ESCAMBIA	LEON	MARION	PASCO	POLK	SARASOTA
Drop-Off Households Served	76,334	12,250	^[18]	15,591 ^[20]	9,839	^[4]	153,837	95,188
Single Family	28,694	^[4]	^[18]	0	9,480	^[4]	98,143	94,884
Multi- Family	47,640	^[4]	^[18]	15,591	359	^[4]	14,034	304
Mobile Home	Included in MF	^[4]	^[18]	^[4]	^[4]	^[4]	41,660	^[4]
No. of Drop-Offs	8	5	^[18]	14	4	5	26	13
V. ADMINISTRATION								
Assessment Fee	^[25]	^[25]	^[25]	NO	NO	^[25]	^[25]	^[25]
Tax Collector	NO	YES ^[26]	NO	NO	^[4]	NO	NO	NO
TOTAL ASSESSMENT (\$/HH/mo)	6.35-11.06	13.92	--	^[4]	4.67	--	15.63	8.83-12.21
TOTAL COST (\$/HH/mo)	6.35-11.06	13.92	13.50-18.00	8.97+	13.17-13.67 ^[44]	12.67	15.63	8.83-12.21
VI. OPERATION AND MANAGEMENT ^[34]								
Area/Capacity ^[35]	322/16.2 MCY	54/30	145/300	^[4]	100	^[4]	400	^[4]
Remaining Life (years)	26	6-7	1,750	10	9	^[4]	23	3
Permit Expires		Nov-92	1995	Apr-93	1997	1995	^[4]	1995
Permit Costs		^[4]	^[4]	22,500	4.8 M ^[37]	^[4]	^[4]	^[4]
Operating Budget (\$M)	3.06	3.2	7.5	3.0	13.4	22.0	6.25 ^[38]	3.5
Closure Costs (\$)		900,000	250,000	1.3 M ^[36]	385,000	^[4]	3.2 M ^[39]	4.0 M ^[36]
Siting Costs (\$)		880,000	^[4]	^[4]	^[4]	^[4]	^[4]	500,000
Planned Improvements		^[4]	^[4]	Expansion	Expansion	No WTE ^[4]	^[4]	None
VII. TIPPING FEES (\$/ton)								
Solid Waste	18.00	45.00	18.95	18.10	41.00	45.65	31.00	18.14
Tires	73.50	150.00	1.50-3.50/tire	58.00	50.00	45.65	62.00	58.89
White Goods	18.00	27.50	3.00+3.75/200 lb	^[41]	41.00	0.00	62.00	18.14
Yard Wastes/Wood	18.00	27.50/22.50 ^[40]	18.95	18.10	41.00	45.65	31.00	28.88
Processible (WTE)	--	--	--	--	--	45.65	--	--
C & D Debris	--	27.50	--	--	41.00	45.65	31.00	18.14
Hazardous Wastes	--	150.00	18.95	--	50.00	--	--	--
Special Wastes	--	--	150.00	100.00	50.00	45.65	62.00	--
Recyclables	--	--	--	--	--	--	--	1.23
VIII. USE OF REVENUES								
O&M	✓	✓	✓	✓	✓	✓	✓	✓
Recycling		✓	✓	✓ ^[42]	✓	✓	✓	✓
Contingency		✓				✓		
Other County Programs								✓ ^[43]

**COMPARISON OF MANATEE COUNTY'S AND OTHER COUNTIES'
SOLID WASTE PROGRAMS AND RATES ^[1]**

Page 3 of 3

FOOTNOTES

- [1] Costs in \$/HH/month unless otherwise noted.
- [2] Based on 1990 Census of Population. 1990 Census of Housing data were obtained for Manatee County only.
- [3] County planning departments were contacted; information obtained from Alachua, Leon, Marion, Sarasota and Manatee counties. Figures are in persons per square mile.
- [4] Contacts were either unwilling or unable to provide information.
- [5] Information based on services provided to unincorporated areas, unless otherwise noted.
- [6] Collection was public, franchised by county to private haulers, or provided by private haulers not franchised with county.
- [7] Weighted average of three areas' collection cost breakdown: front door - \$4.40; rear door - \$9.11; variance - \$6.02.
- [8] Solid waste collection cost based on yearly fee of \$167.00, which includes collection and disposal of solid waste and recyclables, and administration fees.
- [9] Information was not obtained.
- [10] Collection cost breakdown: franchise collection/disposal - \$13.50; county collection/disposal - \$14.50; and city collection/disposal - \$18.00
- [11] Solid waste collection fee includes monthly yard waste collection and solid waste disposal.
- [12] White goods picked up at an additional, unspecified cost.
- [13] Average of private hauler fees; solid waste and yard waste collected.
- [14] Low figure for Class II wastes (apartments with > 9 units, mobile homes, condos and time shares). High quote for Class I waste (single family, 2- to 3-unit structures, apartments with 2-9 units). Materials collected: solid waste, yard waste and white goods. Yard waste collection cost included in recycling.
- [15] Cost of county disposal is \$43.20 every 3 months for residents that haul their waste to the landfill.
- [16] Cost based on assessment of \$56.00/HH/year, of which disposal is \$4.42/HH/month, and recycling is \$3.00/HH/yr.
- [17] Further costs breakdown could not be provided.
- [18] Recycling in Escambia County is part of front-end operation of mixed waste processing facility that is funded as part of disposal costs.
- [19] City of Tallahassee only.
- [20] Drop-offs located at multi-family units in unincorporated areas only.
- [21] Curbside program to begin in February 1992; figures are estimates.
- [22] Program began in January 1992.
- [23] Curbside service provided by Meals-on-Wheels, a non-profit organization, in unincorporated areas of the county.
- [24] Includes yard waste collection and a recyclables revenue credit of \$1.14 to \$1.33/HH/month.
- [25] Administrative costs embedded in other assessment fees.
- [26] Cost per HH/month varies from year to year.
- [27] All O&M figures reflect both Class I and Class III landfills in Alachua County.
- [28] Class I landfill, composting operation, and MRF operated as a system; operating budget reflects all operations.
- [29] Yard waste mulching operation expected to come on-line by end of February.
- [30] Mulching operation accepts all compostable materials, including limbs of any size.
- [31] Class I landfill, Class III landfill, and WTE facility operated under one budget.
- [32] Polk County operates three landfills; O&M figures reflect all three. WTE facility in Polk County was not included because it is operated by the City of Lakeland.
- [33] Yard waste mulching operation included in landfill budget and includes two tub grinders.
- [34] Annual costs unless otherwise noted.
- [35] Landfill area in acres; yard waste facility/waste-to-energy/MRF capacity in tons per day.
- [36] Figures represent total cost of closure.
- [37] Cost includes permitting of new 17-acre cell.
- [38] Yard waste facility included in recycling operation budget.
- [39] Yard waste facility included in landfill costs.
- [40] Yard waste fee is \$27.50 per ton, while wood waste fee is \$22.50 per ton for the yard waste facility. \$150.00 per ton fee for the Class I Landfill.
- [41] Free to residents; commercial customers charged \$18.10/ton.
- [42] Landfill revenues used to pay salary of recycling coordinator position.
- [43] Includes solid waste collection, hazardous waste handling.
- [44] Cost without yard waste collection.

NOTES FROM VENDOR REFERENCE CHECKS

Vendor: The American Recycling Company, Inc. ("Amerecycle")

Reference: Mr. Garry Breeden
Director
Sumter County Public Works
222 East McCollum Avenue
Bushnell, Florida 34233
(904) 793-0240

Date Called: February 20, 1992
Caller: Pat Kennedy

I confirmed that Garry's letter of August 10, 1991, which was included in Amerecycle's proposal to Manatee County and is attached, reflects his current view of the company. He also confirmed that they have not had any odor problems.

Amerecycle's management contract with Sumter County expires in October. The proposal for extension is being worked on now with staff for presentation to the Board of County Commissioners in the middle of March. Garry feels that the County will probably negotiate with Amerecycle.

Currently there is no flow control in the County and no mandatory assessment. Current tipping fee is \$35/ton with annual permits at a discount for senior citizens and disabled persons. Residents that haul waste to the landfill can pay \$0.50 per bag or pay by the ton. Non-compostable, non-recyclable waste is taken to Lake County's waste-to-energy facility, which is nearby.

The County has completed two additional compost pads. They have capacity for 35 tons per day currently and with new pads can compost 50-60 TPD. There is a stockpile of compostable waste that has not been processed. The additional capacity will allow this backlog to be reduced.

I discussed with Garry the problems that some MSW composting facilities have had/are having. He had visited Agripost's facility in Dade County and saw some things they should have been doing immediately. He did not even like to stay in the facility because it was an unhealthy environment (the inoculant/starter they used seemed like mold or fungus to him). He felt that Amerecycle/Sumter County were successful because they manage the facility properly, controlling moisture and aeration. He also thought that it was important to be sited far away from residential areas. We talked about the effect of size on operation. He thought that the proper operation would still work but he had not seen facilities work at a larger scale.

Attachment

Sumter County Public Works

222 East McCollum Avenue
Bushnell, Florida 33513
Phone (904) 793-0240

Garry Breeden
Director

Tommy Hurst
Assistant Director

August 10, 1991

To whom it may concern:

Sumter County made a decision in 1986 to provide for its citizens an alternative method of solid waste disposal. It was our opinion that we were not being good stewards of our environment when we were simply landfilling our total solid waste stream. Since that decision, the disposal of solid waste in our County has changed dramatically. In 1988, we began operation of a processing facility designed for municipal solid waste recycling and composting. The plant became operational in May of 1988. It is owned by Sumter County and, for the first eighteen months, was also operated by the County Public Works Department. For a variety of reasons which were deemed advantageous to the County, in October of 1989, the decision was made to contract with a private sector firm for the ongoing operational management of the facility. Between October of 1989 and April of 1990 however, the County became increasingly concerned with the cost and quality of management being rendered at the facility. In April of 1990, after considerable deliberation, a unanimous decision was reached by the Sumter County Board of Commissioners to approve the transfer of the existing management contract to the American Recycling Company, Inc. (Amerecycle) which began to assume managerial activities in May of 1990 and formally commenced full scale operational management of the facility on June 1, 1990.

Our County has been extremely pleased with Amerecycle's performance. While FDER sanctioned testing of the compost produced at our facility has been underway for quite some time, it was approved during Amerecycle's tenure as our facility management firm, and given a GRADE "A" - UNRESTRICTED DISTRIBUTION rating by FDER. This is the first such rating ever achieved in Florida and, to our knowledge, the first such rating ever achieved in the nation for compost generated from municipal solid waste. Every "harvest" of compost produced at our facility has received this highest of ratings from the state.

Since Amerecycle assumed management of the facility, they have implemented several programs to provide increased efficiency in the utilization of labor and equipment. Their programs have resulted in lower operating costs and increased production at the facility. Public and employee safety procedures have been implemented which meet or exceed all Local, State, OSHA, and other Federal guidelines. Their attention to environmental protection combined with initiatives for maximum recovery of resources has returned the operation to a positive direction consistent with the County's original intent, and the future looks bright for Sumter County and its relationship with Amerecycle.

We are very satisfied with Amerecycle and are confident that their success in Sumter County can be repeated elsewhere. The facility improvements which they have recommended evidence to us that they seek the highest levels of innovation and professionalism in the waste management industry. Their staff and associated project team members represent the true spirit of cooperation and to that we attribute much of their success. Our relationship continues to evolve into what we feel is now and will continue to be an ideal example of the benefits that a quality partnership between the public and private sector can bring to the residents of any community, and we are proud to be setting that example with Amerecycle.

Our current contract with Amerecycle has a three year term, however, our satisfaction with Amerecycle's performance combined with our mutual assessment of current and future needs at the Sumter County facility have prompted negotiations between Amerecycle and our Administrative Staff which, when approved by our Board in the next few months, will increase Amerecycle's operational responsibilities at the facility and will extend the term of the agreement.

The efficient operation of this facility, resulting from our County Commissioner's decision to build the plant and from Amerecycle's management, have saved the residents of Sumter County, Florida literally millions of dollars in abated expenses such as landfill closure costs and new landfill construction. Additionally, hundreds of thousands of pounds of recyclable materials have been diverted from our landfill into a new source of revenues. The County has also benefited from the use of the compost derived from the operation. Use of the material on medians, erosion areas, parks, and horticultural improvements around the County has not only saved topsoil or fertilizer expense, it is such a rich "potting soil" type of material that it has also helped to beautify Sumter County. Amerecycle is successfully continuing to develop various markets for the compost in our area and we are pleased to be working with the University of Florida and the Solid Waste Composting Council as ongoing contributors to several different compost product testing programs and compost market development programs.

Amerecycle has become a good corporate citizen in Sumter County and we feel that members of their staff will be with us for many years to come. Additionally, we wish the best for them as they set out to develop business elsewhere and heartily recommend them. Please feel free to contact me at any time.

Sincerely:

A handwritten signature in black ink, appearing to read "Garry Breeden", written over a horizontal line.

Garry Breeden
Director of Public Works

GB/dj

Vendor: Bedminster Bioconversion Corporation ("BBC")

Reference: Mr. John Snyder
Pinetop-Lakeside, Arizona
MSW Sludge Co-composting Facility
(602) 368-5370

Date Called: February 18, 1992
Caller: Bonnie Taher

Very small "scale model" plant processing 10/5 tons MSW/sludge per day. No front end recyclables collection; no markets. About 2-5 percent noncompostable materials removed before processing; plant gets residential wastes only, no commercial or industrial, so MSW is fairly consistent in character. Retention time 4.5 days. Inorganic material—mostly cans and plastics—screened out after processing. Landfilled because there is no market within reasonable transportation distance and materials are covered with an "organic oil" that would require additional preparation for/by purchaser. Only material remaining in finished compost after final 1/4" screening is occasional bits of glass, not sharp; workers regularly run their hands through it and have never been cut. Product has about 1-2 percent nitrogen and will be sold to wholesalers, who will do final processing into potting soil, etc. for retail sale.

Compost costs about \$50-60/ton to produce, including capital, labor. The plan was built at about a 50 percent cost saving because Bedminster was able to locate a used digester unit. Facility's personnel further modified various components on site.

This facility has experienced no down time or odor problems. The staff is very attentive to "housekeeping," washing down the tipping area and other surfaces every day. If odor starts to develop in the reactor, they cut back on the sludge immediately. Monitoring systems are entirely manual; automated systems originally installed led to inattention on the part of the personnel. The facility is run by two people.

(John mentioned that the St. Cloud, Minnesota plant had to close down because of odor. He believes it's because of bad housekeeping, not the composting process; he said the transfer station part of that facility can be "smelled a mile away.")

John is very proud of his facility and their innovative approach to building and operating this compost project. They give two tours a day and welcome a visit from us or the client.

Vendor: Bedminster Bioconversion Corporation
(RECOMP is a Bedminster technology licensee at
their St. Cloud, Minnesota facility)

Reference: Mr. Ken Bell
RECOMP
Denver, Colorado
(303) 759-0945

Date Called: February 5, 1992
Caller: Bonnie Taher

The transfer station that serves the St. Cloud, MN facility receives about 250 TPD; the composting plant processes about 120 TPD. There is no recovery other than corrugated and hazardous materials and anything else that looks like it would cause a problem to process. Retention time is three days, material is screened at the end of the process. Ken says it is too soon to evaluate the Royer system, and the only problems so far have been one-time maintenance issues that won't recur. He said Royer has been very responsive and stands behind the unit. The main problem with the plant has been vapor, and they are working on a venting system. He didn't have much detailed information and suggested I call the plant managers of the St. Cloud and Bellingham, WA facilities directly:

Dave Marenberg, Plant Manager, St. Cloud (612) 253-3668
Bill Lundgren, Plant Manager, Bellingham (206) 384-1057

Vendor: Bedminster Bioconversion Corporation
(RECOMP is a Bedminster technology licensee at this site.
BBC does not own or operate this facility)

Reference: Mr. Dave Marenberg
Plant Manager
RECOMP
St. Cloud, Minnesota
(612) 253-3668

Date Called: February 5, 1992
Caller: Bonnie Taher

Specifically asked about Royer system: "Works pretty good; small difficulty with moisture control." It was "desiccating" the product, he said. They've been adding moisture for the last few weeks and controlling the carriage speed—sometimes doing a double pass, with turning on only one. Usually it takes about 2 hours for the carriage/turner to travel the 196 foot length. This is somewhat below full speed. The main problem has been with the electronic monitoring unit—it gives readouts in % rather than °C; it gives readouts for 8 bays (there are only 6). Royer is working on the manufacturer of the electronic unit to solve this problem. In the meantime, they are controlling the air vents manually and have the unit set to turn on one minute every hour. Another problem is the temperature differential between the wall of the trough, where the sensors are located, and the center of the pile—they are monitoring to see if they can find a consistent difference. Seems to be 10 to 15 degrees in winter.

I asked him about the odor problem, and he did acknowledge that there had been frequent complaints from the neighboring businesses (the plant is in a light industrial area), usually related to turning the pile. He believes they've solved the odor problem by installing a better venting system to evacuate air into the biofilter. The new fan, which was installed just last Saturday, has 54,000 CFM capacity. Until the fan was installed, they turned the piles only at night.

Vendor: Bedminster Bioconversion Corporation
(RECOMP is a Bedminster technology licensee at this site.
BBC does not own or operate this facility)

Reference: Mr. Robert Deem
RECOMP
St. Cloud, Minnesota
(612) 253-3668

Date Called: February 5, 1992
Caller: Bonnie Taher

Tipping fee at facility is \$84.65/ton. Mandatory curbside recyclables collection (both private and municipal) serves about 15,000 homes, removes most of inorganic materials, leaving a very high quality feedstock. Costs about \$68/ton to process. Hand picking of corrugated, newspapers, as noted by Ken Bell. Excellent markets for product, sells about \$12/ton to landscapers, construction companies, horticulture companies. Annual operating budget is about \$4 million.

Vendor: Waste Management, Inc. ("WMI")

Reference: Mr. Dale Rieth
Director of Solid Waste
Sarasota County Solid Waste Department
3982 Bee Ridge Road
Building H, Unit B
Sarasota, Florida 34233
(813) 364-4444

Date Called: February 18, 1992
Caller: Pat Kennedy

The County has five franchise districts. WMI services four of the five districts—residential and commercial. Eaglewood Disposal is the other hauler and serves the part of the county south of Venice. The franchise areas do not cover the sparsely populated parts of the County.

The recycling contract with the County requires Waste Management to build a MRF. The County Commissioners have asked WMI to put a hold on MRF construction pending a March ballot referendum on the charter mandate. The referendum, if approved, would give the Commissioners the ability to modify the recyclables to be collected. Currently, WMI is operating from the former Durbin Paperstock facility in Sarasota. This is satisfactory to the County as an interim arrangement.

The County collects and separates 14 materials now; most of the municipalities only 9. Per the charter amendment there is a ban on all 14 materials at the landfill. Of the four municipalities, three do as does the County; Sarasota has its own MRF run by BFI. An interlocal agreement within 90 days and the ban on materials at the landfill are part of the referendum.

MRF has program (residential) and non-program (commercial, municipal and out-of-county) recyclables. Non-program recyclables pay a surcharge. There is a surcharge at the landfill to pay for the MRF.

Operationally the County has no complaints at the staff level. WMI performs at a high level and they are easy to work with. Bob Dunning is the manager/primary contact.

The County is currently collecting yard waste separately, mulching it and using it for landfill cover. As received the yard waste is poor mulch—not enough wood. The County is shredding pallets and C&D waste to improve the mulch. He suggested I call Elayne Hayes for yard waste quantities collected.

Vendor: Waste Management, Inc.

Reference: Mr. Chris S. Kohl
Assistant Manager
Orange County Public Utilities Division
Orlando, Florida
(407) 836-7230

Date Called: February 19, 1992
Caller: Pat Kennedy

Chris returned my call for Stan Keely, the Public Utilities Deputy Director. I asked about a reference for Waste Management for curbside recycling, yard waste collection and the materials recovery facility. Recycling, MSW and yard waste collection are franchised in the unincorporated areas of the County. Central Service Corporation, a Waste Management company, provides curbside recyclables and yard waste collection. They are one of the better haulers, fairly responsive. WMI's Recycle America operates the County's materials recovery facility. The County is generally pleased with their performance.

The County operates a yard waste composting area at the County Landfill. They use windrows on a paved area.

Vendor: Industrial Waste Service, Inc. (Attwoods)

Reference: Mr. Robert Sigmond
Solid Waste Director
Pasco County, Florida
(813) 847-8041

Date Called: February 19, 1992
Caller: Pat Kennedy

Waste Aid Systems, an Attwoods company, has been a licensed hauler in Pasco County for years. The administration is very happy with them. There are no franchises for solid waste collection. Waste Aid started accepting recyclables in blue plastic bags January 20, 1992. They receive them at their existing transfer station/MRF on the west coast. They then sort, clean up, bale, etc. and transport to markets for \$50/ton. Revenue from recyclables is shared 70/30 (Waste Aid/County).

Haulers collect solid waste and recyclables in the garbage packer trucks on separate days. They use 8:1 compaction for MSW, 2:1 for recyclables in blue bags. Pasco County went from twice-a-week to once-a-week garbage collection to implement this program. Some complaints were received from residents regarding the reduction in service.

Although the program has only been operating for one month, he feels that it is going well and that Waste Aid is doing a good job. They had previously done a good job and were considered one of the top haulers.

Residents can buy blue bags in all supermarkets for no higher cost than trash bags. Pasco County had tried to convince supermarkets to provide recycling bags free instead of plastic shopping bags. Montgomery Ward, Joel and Jerry and possibly Phar-Mor will be providing free bags. Supermarkets balked partly because their bag holders were set up for existing bag sizes. First Brands (Glad) and Mobil (Hefty) provided a free initial supply of 30,000 bags with coupons to start the program.

The County has a population of approximately 281,000. There are 96,000 single family homes. Cities are in the program as well. Waste Aid currently collects 12.5 TPD of recyclables. Call Joanne Hurley for more details.

Bob Sigmond wanted to know if Manatee County was interested in a bag-based program because there are mutual advantages for higher volume of bags.

Vendor: XL Disposal Corporation

Reference: Mr. Mike Shivarelli
Deputy Commissioner
Department of Streets and Sanitation
City of Chicago
City Hall
Chicago, Illinois 60602
(312) 744-4580

Date Called: February 18, 1992
Caller: Pat Kennedy

The City has been using XL for approximately 10 years. Of 5,000–6,000 TPD, XL handles approximately 1,500 to 2,000. He would give them a "Triple A" rating for a first class operation. They have had no disruptions of service and cover emergencies for the City. He could not say enough good about them. They compete with Waste Management and BFI and he considers them the top vendor. The City does its own collection and brings the waste to XL. Previously they had up to five different trucks going down the alleys—garbage (rear loader), bulky waste, EMCO side loader, recycling and compost/yard waste.

As far as he knows they are the first vendor with the trommel screen. They use hand picking prior to trommel. Initially there was some controversy over whether commingled waste/recyclables collection would work. The City is now using this process as the basis of its solid waste management plan for the next 20 years. The City is implementing a blue bag collection system (blue bags containing recyclables co-collected with MSW) based on XL's system. The RFP for the materials recovery facility to handle the blue bags went to 16 companies. Waste Management, Ogden Martin, and XL were selected. XL is the only vendor that will operate a facility on its own property; the other two are on City property.

XL's tipping fee is approximately \$42.00/ton. The range for all vendors is \$39–45/ton.

He did not know whether XL does composting.

Vendor: XL Disposal Corporation

Reference: Ms. Nancy Benedetto
Village Clerk
Village of Crestwood
13840 S. Cicero Avenue
Crestwood, Illinois 60445
(708) 371-4800

Date Called: February 18, 1992
Caller: Pat Kennedy

I reached her trying to contact the Village Manager, Mr. Frank Gassmere, who will be away until Monday, February 24. She has been with the Village for 23 years. Her perspective is that XL is a total asset to the Village. She suggested that I call Mr. Gassmere for more details and that I call the mayor, Chester Stranczek, tomorrow at his business (708) 596-8310.

Vendor: XL Disposal Corporation

Reference: Mr. James Dempsey
Superintendent of Public Works
Village of Riverdale
325 West 142nd Street
Riverdale, Illinois 60627
(708) 841-2202

Date Called: February 18, 1992
Caller: Pat Kennedy

In trying to reach Mr. Frank J. Koehler, Community Director Economic Development, it was suggested that I contact Mr. Dempsey and a City councilman, Mr. Hovel at his home [(708) 849-4534]. Mr. Dempsey informed me that XL is in the second year of a 3-year contract. He has high praise for XL. They are picking up all garbage and recyclables for 4,000 single family homes and taking it to their facility in Crestwood. The cost is \$9.33/household/month. All profits from recyclables go to XL. They are looking at 35 percent recycling (including compost) vs. a state goal of 25 percent by 1994.

Vendor: XL Disposal Corporation

Reference: Mr. Chester ("Chet") Stranczek
Mayor
Village of Crestwood
Crestwood, Illinois 60602
(708) 596-8310

Date Called: February 19, 1992
Caller: Pat Kennedy

He considers XL tremendous and thinks that the owners, Ed and Bob Pruim, are fine people. The Chicago area was considering incineration but, due in part to public resistance, moved toward mixed waste processing with XL and others. He has visited other facilities around the U.S. and considers their facility among the best. Many other cities come to visit and are generally very impressed.

The Crestwood facility is in an area that borders residences but they have never had complaints about odor, noise or other problems.

Crestwood is a village of 2 square miles, 12,000 residents and 3,500 single family homes. It consists of mostly residential areas. Residents pay approximately \$7/household/month for solid waste collection/disposal/recycling service that includes everything with no separation by residents. Without this system residents would pay a lot more for separate pickups.

The facility provides a high degree of recycling. Sorted non-recyclable paper → pellets → U.S. Steel for coke ovens.

The following article from Biocycle reflects the status of MSW composting facilities as of October 1991. Since the article was written, the Portland (Oregon) Metro facility has stopped operating. The facility in St. Cloud, Minnesota is going through changes in the parent company of RECOMP.

1991 FACILITY UPDATE

SOLID WASTE COMPOSTING

WHEN THE annals of solid waste composting are written, 1991 will be noted as a landmark year—the year that the number of operating projects doubled. It is also interesting to note that the new facilities that come on line represent a full range of systems and operating capacities.

The 1991 report of mixed solid waste composting will be presented in two parts. This first article describes the operating plants. The January 1992 issue, will describe the complete list of projects in development—from serious consideration through construction. The projects discussed in this report are composting a mixed waste stream. The editors plan to do a survey of composting projects handling source separated organics (other than just yard waste) in 1992.

PROJECT GROWTH

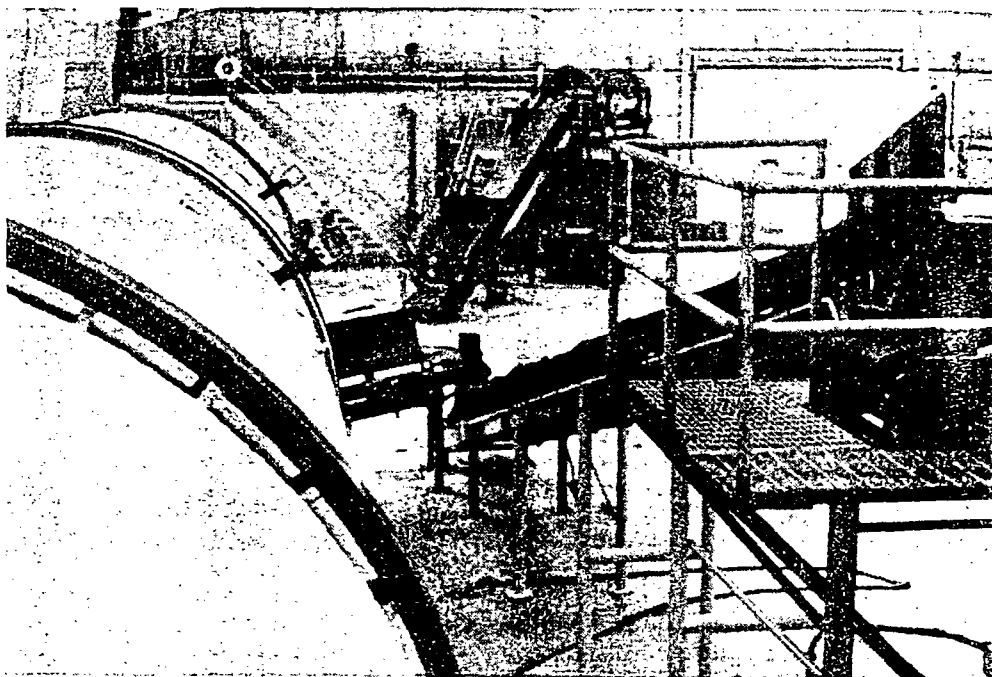
There has been a steady rise in the number of operating MSW composting plants in the U.S. throughout the 1980s and into the 1990s. The Delaware Reclamation Project (DRP), owned by the Delaware Solid Waste Authority and operated by Raytheon, Inc., opened its doors in New Castle in 1984. Although there were other MSW composting efforts undertaken in the U.S. prior to the opening of the Delaware facility, the DRP represents the first full-scale plant in this generation of composting operations.

There has been steady growth in the number of operating plants since 1984. Essentially, the numbers increased to two in 1986, three in 1987, five in 1988, seven in 1989, and nine in 1990 (representing one plant that stopped operating from the year before). This year, *BioCycle* identified 18 operating plants. One plant identified as operational in 1990, the Agripost facility in Dade County, Florida, ceased operations this past spring. Thus there has been a net gain of 10 operating projects since 1990.

Table 1 lists the operating mixed waste composting facilities, along with the current amount of waste being composted and the proprietary system being used, if any. Of the 10 new facilities on the list, six just went into the start-up phase within the last several months. These are located in Pinetop, Arizona; Escambia County, Florida; Pembroke Pines, Florida; Mora, Minnesota; Truman, Minnesota; and Ferndale, Washington. The four others—Portland, Oregon; Coffeyville, Kansas; Des Moines, Iowa; and Hidalgo County, Texas—began operating earlier in 1991. Two plants began composting in 1991 but have ceased operations at this time, one in Ashland, Kentucky and the other in Berrien County, Georgia.

Three of the operating plants—Fillmore County and Swift County, Minnesota and Sumter County, Florida—were described in detail in "Recycling At MSW Composting Facilities" (*BioCycle*, October 1991). Therefore, no update is provided on those facilities in this article. In addition, an accompanying

Photo courtesy of Bedminster Bioconversion Corp.



Eighteen full-scale plants are in operation this year and several others are due to start up in the near future. The 1990 survey showed nine.

*Jim Glenn
and Robert Spencer*

Operators try to maintain temperatures of 140° to 150° for 4.5 days at the Pinetop-Lakeside, Arizona facility.

article in this special report, "Upfront Processing At MSW Composting Facilities," provides further details on the following operating plants: Des Moines, Iowa; Mora and Truman, Minnesota; Portland, Oregon; and Ferndale, Washington.

LAKESIDE, ARIZONA

While most of the news this year in composting has been made by the start-up of larger facilities such as Portland, Oregon and Mora, Minnesota, another plant, albeit a much smaller one, also recently initiated operations. Pinetop-Lakeside, Arizona lies in a recreational area 170 miles northeast of Phoenix. The permanent population is about 1,500, but the peak for solid waste generation is during the July/August vacation season and then during the winter when the area fills with skiers.

The cocomposting system, supplied by Bedminster Bioconversion, started operating this summer. It uses the Eweson digester, and is designed to accommodate approximately five tons of sludge and up to 12 tons of MSW. The composting operation is housed in an existing building on the grounds of the Pinetop-Lakeside Sanitary District wastewater treatment plant. It was developed in response to the impending closure of the county landfill where the sludge

WASTE OPERATIONS ON THE RISE

was being disposed. The facility does not charge a tip fee for the MSW, which is delivered and used as the compost bulking agent.

Incoming waste is dumped on the tipping floor where the obvious noncompostables are removed. "The hauler, Waste Management, Inc., altered its routes so we're getting mainly residential materials," notes John Snyder, District Manager of the Pinetop-Lakeside Sanitary District. MSW is put into an elevated hopper, which then feeds a conveyor and the digester. Currently, sludge is loaded via a front-end loader; eventually, it will be pumped in directly from the sludge processing area. Operators try to maintain temperatures of 140° to 150° in the digester. Retention time in the vessel is about 4.5 days.

After working its way to the rear of the digester, the material drops into a hopper and is conveyed to an Amadas trommel with 1½ inch holes that is used to screen out non-compostables at this point. The reject material — approximately 30 percent of the incoming MSW stream — goes to the county landfill.

The remaining material is taken to a composting area where six- to seven-foot high windrows are constructed over a forced aeration system, with automatic timers providing intermittent aeration. The piles are turned from right to left every two days; moisture is added by an overhead sprinkler system. At the end of 30 days, the material is screened through a trommel with 1/4 inch openings to produce the final product.

Snyder says that because there are several soil amendment manufacturers in the area, "we have people standing in line to buy the compost." Therefore, the district plans to put the material out for bid.

DELAWARE RECLAMATION PROJECT

The nation's longest running cocomposting facility in New Castle, Delaware continues to operate as it has for the past several years. The 1,000 tpd (tpd) of MSW coming into the plant passes through a mechanical sorting process which splits the material into a light and heavy fraction. Between 200 and 225 tons/day of the heavy fraction is then combined with a like amount of sludge. That material is placed in one of four Fairfield digesters for seven days.

Each year, about 60,000 tons of material comes out of the digesters. The bulk of it (approximately 75 percent) is shipped directly to the Delaware Solid Waste Authority's nearby landfill and used as landfill cover.

Table 1. Summary of Operating Plants Data

<i>Plant Name</i>	<i>Year Started</i>	<i>Current Amount of MSW Composted (tons/day)</i>	<i>Proprietary Technology or System⁽¹⁾</i>	<i>Ownership/Operation</i>
Lakeside, AZ	1991	10-12	Bedminster Bioconversion	Joint Venture
New Castle, DE	1984	200-225	Fairfield digesters	Public/Private
Escambia County, FL	1991	130 (400 design)	—	Public/Public
Pembroke Pines, FL	1991	100 (660 by 1/1/92)	Buhler	Private/Private
Sumter County, FL	1988	50	—	Public/Private
Des Moines, IA	1991 (at full scale)	192	TRS Industries	Private/Private
Coffeyville, KS	1991	80	—	Private/Private
Fillmore County, MN	1987	18	—	Public/Public
Mora, MN (East Central SWC)	1991	210	Daneco	Public/Private
Lake of the Woods County, MN	1989	5-10	—	Public/Public
Pennington County, MN	1985	10	Lundell (for processing)	Public/Private
St. Cloud, MN	1988	100 (when operations recommence)	Eweson digesters. Royer agitated bed	Private/Private
Swift County, MN	1990	18	—	Public/Public
Truman, MN (PrairieLand SWB)	1991	100	OTVD	Public/Public
Portland, OR	1991	600	Dano/Riedel	Private/Private
Hidalgo County, TX	1991	150	—	Private/Private ⁽²⁾
Ferndale, WA	1991	100	Royer agitated bed	Private/Private
Portage, WI	1986	16	—	Public/Public

(1) This category is limited to compost system vendors and not other proprietary technologies/equipment in use at these facilities.

(2) Operators of the Hidalgo County plant were negotiating with the county to purchase the composting facility.

The other digested material is piled and cured for 30 days and then passed through a 1/4 inch screen. Sixty percent of the screened compost is marketed, while the remainder goes to the landfill for cover. The use of the compost had been restricted to sales to professionals (e.g. landscapers, nurseries) in the state until this past spring when the Department of Natural Resources approved it for use by the general public in the state. It cannot be used for any human food production. The compost, which is marketed as FairGrow, is typically sold for \$4.50/cu.yd. for lawn maintenance and turf

establishment.

Last spring, the Authority attempted to market bagged material, but had to discontinue that program because some of the compost had not been cured properly, causing it to mold. That effort may be renewed in the spring of 1992. Despite problems with the bagged material, sales of compost will be between 8,000 and 9,000 tons in 1991. According to Rebecca Roe, Marketing Coordinator for FairGrow, the Authority is investigating the purchase of a new, higher capacity screen, which would increase the amount of compost that could be sold. "Right now we've got a waiting list of people that want the compost," says Roe.

ESCAMBIA COUNTY, FLORIDA

Since July 1990, Escambia County has been hand sorting recyclables from about 1,000 tpd of MSW. After waste is deposited in the tipping building, the bags are opened by hand. Workers have been removing the following average amounts of recyclables each month: 30 tons of ferrous; 80 tons of glass sorted into three colors; 25 tons of plastic sorted into PET, HDPE, and mixed plastic; and seven tons of aluminum beverage containers. Until recently, material remaining after sorting was shredded and landfilled.

The county always planned to compost the shredded material instead of putting it directly into the landfill. Permitting issues, combined with an unusually high rainfall earlier this year, delayed completion of the 15 acre composting pad. Finally, in mid-September, about one-third of the pad was completed, and composting got underway. "Ultimately, we plan to compost 400 tpd of the processed MSW," says Drew Vanlandingham, environmental control coordinator for the county. "Right now, we are composting about one-third of that, or roughly 130 tpd."

The compost pad available was constructed on a clay base, using crushed recycled concrete for the surface. A Scarab windrow turning machine is used to manage the windrows. Septage and landfill leachate are sprayed onto the windrows as a moisture source for composting. This also is expected to treat the wastewater through a combination of volatilization, evaporation and biological degradation in the composting process. Leachate from the compost pad will be collected as well.

Escambia County constructed wetlands at the landfill complex to biologically treat 25,000 gallons per day of septage and 1,000 gallons per day of leachate. "The wetlands are doing a great job of reducing biological oxygen demand of the septage," says Vanlandingham. "We see a tenfold reduction in nutrients just after the first four ponds. Ultimately, there will be 14 in total."

From the outset, the county planned to use the compost product for daily and final landfill cover, and therefore no back end processing of the composted material is done. "With our climate and the amount of water

we are putting on the windrows, we are getting a good rate of decomposition," says Vanlandingham. "After four weeks of composting, the material is good enough to put on the landfill as cover."

The tipping fee at the landfill is \$18.95 per ton. Pensacola provides waste from the city areas and the county obtains waste from 80 percent of the unincorporated towns in the county.

PEMBROKE PINES, FLORIDA

Another project that started in mid-September is the Reuter composting facility in Pembroke Pines. This facility, owned and operated by Reuter Recycling of Florida, has a design capacity of 660 tpd. (Recomp, Inc. recently purchased 55 percent of Reuter's equity interest in the plant.) Acceptance testing began October 1, 1991 and the plant should be fully operational by January 1, 1992. As of mid-October, roughly 100 tpd were being processed. The project accepts waste from four cities — Pompano Beach, Dania, Hallendale and Pembroke Pines — under 20 year contracts. The total cost of the facility, including financing charges and start up capital, was \$48.5 million. The tipping fee for the four cities is around \$54/ton.

The facility uses a Buhler processing and composting system. Nonprocessibles are pulled off on the tipping floor. The material then is screened after this initial preparation. Fine material is removed and the remaining fraction is separated into larger items (e.g., corrugated cardboard and film plastics) and products such as bottles, cans and smaller organics. After recyclables are

Photo by IFS Industries, Inc.



Sewage sludge and municipal solid waste are windrowed in Des Moines, Iowa.

BERRIEN COUNTY, GEORGIA CEASES COMPOSTING

LAST SPRING, *BioCycle* wrote about a small composting operation in Nashville, Georgia. It was operated by the Berrien County Resource Recovery Development Authority (BCRRDA). A Lundell system was processing about 20 tpd of MSW, of which about seven tpd was actually composted.

During the summer of 1991, the BCRRDA received a state order to cease composting at its Nashville facility. To continue, composting would have to take place under roof, says David Gaskins, the plant manager. According to Brian Wright of Georgia's Environmental Protection Division, the Authority has submitted plans for an upgrade to the composting operation. Gaskins says that the estimated cost of the improvements was probably more than \$150,000, and he did not believe that

BCRRDA currently had sufficient funds to make the modifications. In the meantime, residual material that was being composted prior to the stop order is being hauled to a landfill over 100 miles away.

The Authority did receive permission recently from the state to distribute about 100 tons of compost, which had been screened and tested for pollutants. "We're planning to give it to some farmers since a number of them are asking for the compost," says Gaskins.

Another challenge for the Authority had been to find markets for the refuse derived fuel (RDF) pellets produced at the plant. Gaskins says that it only had one user, and more were being sought. There have been problems drying out the stockpiled fuel pellets that had become too wet.



removed, the remainder is directed to a mixing drum and then through a screening operation with two- and six-inch holes. The under two inch fraction goes into the composting line. Material between two and six inches in size is shredded and then screened again (using 2.5-inch holes). The fraction under 2.5 inches is combined with the two-inch minus material and is taken to the 288,000 sq.ft. composting building. The forced aeration windrow process is used; material composts for six weeks.

Prior to distribution, the compost is run through a hammermill, screened and then put through a destoner. Approximately 200 tpd of compost will be produced from the 660 tpd of incoming material. Reuter has negotiated a contract with Bird Compost Management to market the compost produced by the facility.

DES MOINES, IOWA

Sludge from the City of Des Moines' wastewater treatment plant was the motivating force behind a cocomposting facility which started full scale operation in March 1991 after a one year pilot project. "Wood chips as a bulking agent are not readily available in the area, but MSW was," says David Bair, Sanitation Administrator for the Des Moines Sanitation Department.

The facility is designed to process 192 tpd of MSW and 115 wet tpd of sewage sludge. The plant is owned and operated by TRS Industries of Overland Park, Kansas. The city has a 10 year "put or pay" contract with TRS to supply the MSW and sludge. It collects waste from the city's 200,000 residents and delivers the MSW to the processing facility. The tipping fee is \$21.63/ton for the MSW

and sludge. The 30 to 35 percent rejects and residuals from the composting plant are disposed in a landfill owned by the Des Moines Metro Agency.

Bair reports that the facility is accomplishing a 65 percent reduction in the amount of material going to the area landfill. He adds that Iowa allows composting to count toward the state's 50 percent recycling goal (by the year 2000) and Bair believes the plant is exceeding that level.

In the past, much of the city's wastewater sludge has been land applied, but Bair says another option was needed because weather conditions occasionally make it impossible to get trucks onto farm fields. He estimates that the cocomposting plant will handle about 50 percent of the total sludge production, and therefore direct land application of sludge will continue to play a major role in the city's residuals management program.

The 3/8-inch screened compost has been licensed by the state's agriculture department as a soil conditioner for use on agricultural land. The city, which has marketing responsibility for the compost, intends to provide compost to some of the same farmers who are in the land application program. Bair says that some of the compost produced during the pilot cocomposting project was used on agricultural land. So far, however, the compost from the full scale facility has gone to cover a closed landfill. The city also is planning to use the compost in municipal landscaping projects, just as it currently uses compost produced from its yard waste composting operation.

COFFEYVILLE, KANSAS

Of all the operating MSW composting plants in the U.S., Resource Recovery, Inc. in Coffeyville has the most low technology approach. The company takes advantage of thick layers of clay soil as the composting pad, upon which 80 tpd of MSW are dumped and formed into windrows which are then mixed and fluffed with a custom built machine attached to a loader. Since there is no sorting of the waste prior to composting, a trommel with a two inch screen is the only means of removing inorganic material prior to stockpiling the compost. The reject material from the screen goes to the adjacent landfill owned by the company.

Carol Knisely, II of Resource Recovery, Inc. says that no compost has been marketed as of September 1991, pending further study of the product and potential markets. He adds that Pittsburg State University in Pittsburg, Kansas is providing graduate students who are evaluating methods for refining the compost, as well as identifying potential markets.

Although agriculture is one potential market, Knisely is most interested in having the compost used in reclamation of over 800 acres of barren land near Joplin, Missouri, about 60 miles east of Coffeyville. Former zinc mining operations left large piles of mine tailings, which are now part of an EPA

Continued on page 80

Equipment, processing methods and materials handling vary at MSW composting facilities, reflecting the specifics of regional conditions.

In Minnesota, Lake of the Woods County is now composting under the roof of an expanded open sided building. Mixing is done in the totally enclosed portion of the facility, previously used for composting.

SOLID WASTE COMPOSTING

Continued from page 37

Superfund site that the U.S. EPA and the Bureau of Mines are seeking to have cleaned up. In discussions with both agencies, Knisely has learned that the tailings may be used to fill the mine shafts, but the land where the tailings have been piled for many years will require soil for revegetation. Preliminary discussions with the two agencies have indicated an interest in using compost from the Resource Recovery, Inc. facility.

MORA, MINNESOTA

The East Central Solid Waste Commission's 250 tpd facility in Mora started operating on July 30, 1991 and recently completed the first two phases of acceptance testing. During the five days of testing, throughput levels exceeded the design capacity and residue levels were below the 40 percent envisioned. Final acceptance should occur sometime in November. Currently, the facility is processing an average of 210 tpd of MSW.

The \$11 million facility is owned by the commission, but will be operated by Daneco, Inc., which also designed and built the plant. Capital costs, plus other system costs including several transfer stations and a new landfill, were paid from a \$17 million revenue bond issue, which is backed by the commission's five counties. The annual operating costs are estimated at \$1.3 million and the first year's tipping fee is \$67/ton. Each of the counties in the commission has developed curbside recycling programs in all cities with a population of over 1,000.

Composting is done in two stages. Material is composted for two weeks, screened for residue, and then composted for an additional four weeks. Next, there is 90 days of curing, after which the material is screened a final time. Approximately 95 tpd of compost is produced from 250 tpd of incoming material.

Two grades of compost will be produced from the final screening process. Approximately 24 percent is designated for use by the commission as landfill cover. It is expected that the remaining 76 percent will be a Class I compost to be marketed by the commission. According to Steve Knight, director of the commission, the marketing program will begin in the spring of 1992, and "most will be going to landscaping and restoration projects."

LAKE OF THE WOODS COUNTY, MINNESOTA

With an infusion of about \$180,000 of county funds in 1991 to buy a windrow turning machine and expand the covered composting pad, the Lake of the Woods County composting facility — a 10 tpd plant — in Graceton "hopefully" has seen its last major capital investment, says Gary Lockner, the county Zoning Administrator and principal official overseeing the solid waste programs. He wishes the county had incorporated these features into the original design of the

plant so that the difficulties experienced in achieving sufficient degradation of the waste during the first year of operation could have been avoided (see "Minnesota Facilities Meet MSW Composting Challenges," *BioCycle*, December 1990).

After that first year, state regulators decided the compost produced during that time was insufficiently stabilized to be used for landfill cover, the intended use. The state ordered the county to hire a consultant to make recommendations, some of which already have been implemented.

"The turning machine operator told me the other day that five week old compost looks almost completely degraded," says Lockner. The turner is used about every four days on each windrow, based on the operator's observations that it takes one to two days to get the piles composting, but after four days the piles start to cool down and need mixing again.

Lockner expects to have even greater control over the composting process once the covered curing area extension is completed this fall, giving a total area of 50' x 300'. As part of the state-ordered improvements, consultants have been monitoring the operation and making recommendations. One portion of the \$100,000 state grant for such assistance is an evaluation of worker health and safety in the compost facility. The consultant's final report is expected in February 1992.

Now that the composting operation will be conducted entirely under the roof of the expanded open sided building, the totally enclosed portion of the facility — previously used for composting — is being used to accumulate and mix a week's worth of material before forming it into windrows on the covered pad. Lockner says they also are experimenting with venting heat from the outside windrows into this building to start drying the fresh compost and partially heat the building. The screening operation has been moved into this room to minimize problems with freezing during screening.

Source separated recyclables (the county has a mandatory ordinance) still go to the county MRF in Baudette, about 12 miles from the Graceton facility. Capital improvements also have been made at the MRF.

The county recently opened a landfill for demolition debris adjacent to the compost facility. An older, adjoining landfill had been used during the past year for disposal of plant residues, and is expected to be permanently closed this year. The residue, about 10 percent of the incoming waste stream, is being shipped to a neighboring county where the tip fee is \$30 per ton. Lockner expects that arrangement to continue for at least two years, after which either a new multicounty landfill will be available or the county will have developed its own.

Lockner observes that the county has made the capital improvements to the composting and recycling facilities without increasing the per household service fee of only \$40 per year. The latest capital costs

St. Cloud reports that they have made some "pre-sales" of compost for next spring. Efforts are also underway to do an agricultural test plot as part of a marketing outreach program for farmers.

were covered by the county's annual capital budget and state recycling grant funds, and were therefore not amortized.

PENNINGTON COUNTY, MINNESOTA

Future Fuels, Inc. operates a combined recycling/RDF/composting facility in Thief River Falls that utilizes the Lundell technology. The plant, owned by Pennington County, shifted its emphasis to composting over the last few years due to state regulations that had been restricting use of RDF produced in Minnesota. (Roughly 10 of the 80 tons coming into the plant are composted.) Recently enacted legislation in Minnesota, however, will allow up to 30 percent of the fuel source in heating system boilers to be RDF, explained Richard Nordhagen of Future Fuels, Inc..

The county has applied to the state for a \$683,600 grant to install a composting pad with leachate collection to replace the ground surface compost area; purchase a windrow turning machine instead of leasing one; and purchase screening equipment for final processing of compost. Nordhagen explains that without these improvements, the facility will not be able to become a permitted composting facility. The lack of screening equipment limits markets for the compost. Therefore composted material is being stored on site for future processing, probably until next spring or summer given that the grant has not yet been awarded.

ST. CLOUD, MINNESOTA

The 100 tpd Recomp facility in St. Cloud has seen considerable activity over the last year. The plant processes mixed MSW which feeds into both a composting system and a regional RDF plant. Recomp is in the final stages of constructing a six bay, agitated bed composting system supplied by Royer Industries, Inc., says Dave Marenberg, the plant manager. This unit, which will be entirely enclosed, is intended to aid in controlling odors at the site. (A wet scrubber, combined with a compost biofilter, are being installed for odor control.) The Royer system, expected to be operational in November 1991, will replace the existing open windrow system.

Because of construction, the only compost produced at the plant for about the last year has been for internal use. The fraction of the waste stream normally designated for composting has been processed through the digesters to achieve volume reduction, and then taken to a landfill for a reduced tip fee.

No sorting of recyclables is done at the plant. In normal daily operation, about 100 tons of MSW are put through a trommel, which drops out about 60 tpd of material that goes to the Eweson digesters. The 40 tpd of "overs" are taken to an incinerator. Another 20 tpd of material put into the digesters comes from other sources, primarily a trailer load of the wet fraction from the RDF plant which is backhauled to St. Cloud.

Once the composting portion of the plant is operating at full scale again, material will

be screened after it leaves the digesters and prior to being taken to the Royer system. After it leaves the composting area, it will be screened and run through a destoner. It is expected that material designated for higher end uses will undergo additional curing. Ultimately, about 45 tons of compost will be made from over 100 tons of material that enters the digesters.

Marenberg also reports that this year has been a busy one on the marketing front. "For the first time since we started operating we already have 'pre-sales' for next spring." To keep compost markets open, Recomp has been selling material from other generators, mostly yard waste composting projects in the Twin Cities. The company has been placed as a compost supplier on the Minnesota Department of Transportation's "preferred" vendor list. As part of its market development efforts, Recomp also has been actively courting the agricultural market. The company attended a number of county fairs in Minnesota this year. Efforts are underway to do an agricultural test plot next year as part of an outreach program for farmers.

TRUMAN, MINNESOTA

Full scale start-up of the Prairieland Solid Waste Board's (PSWB) 100 tpd MSW composting facility in Truman got underway on August 15, 1991. A one week throughput acceptance test was planned for the end of September, with the final product tests scheduled before January 1992.

Dennis Hanselman, plant director, reports that during the early phase of start-up the facility has been "working better than expected." The only major problem experienced was a legal one. A local hauler filed suit against Prairieland, disputing the designation of the composting facility as the disposal site for the garbage he collected. That suit was resolved in favor of the PSWB this past summer.

The PSWB is made up of Martin and Faribault Counties, which are located along the Iowa border in south central Minnesota. Watonwan County also ships its waste to the plant. The total population in the three counties is approximately 56,000.

The facility, which cost just under \$7 million to build, is both publicly owned and operated by the PSWB. The project was financed by a revenue bond and a state grant of \$2 million. The tipping fee is currently \$50/ton. An additional service fee, assessed on residents in the PSWB's two counties, is used to make up the difference between the tipping fee and the estimated \$72 to \$75/ton costs.

Seres Systems of Minneapolis built the plant using a system manufactured in France for OTVD of Paris/New York. (OTVD has the patented Siloda composting technology.) Other than the magnetic separation of ferrous metals, there is no recycling at the facility. However, the PSWB has initiated a curbside collection program in its two counties that reportedly is achieving an 80 per-

cent participation rate. Materials collected include newspaper, office paper, aluminum and tin cans, and glass and plastic bottles.

The compostable fraction produced is conveyed to a building which houses 10, horizontal 5' x 13' x 136' bunkers. Material in the bunkers is turned by a large paddle wheel; air is pumped into the composting mass. Retention time in this Siloda process is 24 to 28 days, followed by an additional two months in a static pile finishing area.

In the final stage of the process, the compost goes through a grinder and then another trommel screen. In total, approximately 32 to 35 tons of compost will be produced daily. About 35 tpd of residue is expected. That material will go to a landfill in Watonwan County. Hanselman expects the compost to be sold to local agricultural and horticultural markets. "There has been a lot of interest so far," he notes.

PORTLAND, OREGON

The first week of April marked the start up of the West coast's first and largest MSW composting facility. That plant, owned and operated by Riedel Environmental Technologies, reached its design capacity of 600 tpd of incoming waste about six weeks later. Riedel operates the plant under contract to Portland Metro. The facility is still in the start up phase and has not completed acceptance testing.

As has been reported, the plant has been the subject of odor complaints almost from the outset of operations. According to Charles Bird of Riedel, the company has identified the sources of odors and has had some success in reducing them. At this point, the major problem areas appear to be in the aeration and maturation sections of the facility. The odor problems prompted Riedel to mount an outreach campaign with its neighbors to inform them of the steps being taken to correct them.

The facility was constructed at a cost of approximately \$30 million. The major source of those funds was a tax exempt revenue bond issued by Metro for the project. Currently, the tipping fee charged by Metro at the facility is \$68/ton. However, the base cost of operating the plant — which includes such things as the debt service, operational and maintenance charges, landfill fees and trucking — are pegged by Bird at about \$49/ton.

Active composting takes place in one of two open sided aeration buildings. Air is forced through the composting bed that measures 175' x 350' and is anywhere from six to eight feet high. After 21 days of composting, the material is taken to a curing area for another 21 days. The finished compost will be screened prior to marketing.

Currently, compost from the facility is going through analysis to prove it can meet the state Department of Environmental Quality standards. With the exception of providing Metro with compost that will be used to close one of its landfills, "until we pass the DEQ tests we're not going to release any of the

compost," says Bird. After the standards have been met, Riedel says it has agreements with users for the first three years of production.

HIDALGO COUNTY, TEXAS

During the second week of February 1991, MSW processing and composting started at a 150 ton per day composting facility located in Edinburg, Texas. Hidalgo County had a contract with the firm of Pena-Ayala, owners of the facility, to deliver a portion of the county's 1,000 tpd of waste to the plant. Leonard Camarillo, a county commissioner,

explains that the county was the applicant for the compost facility permit, although it was constructed and operated initially by Pena-Ayala. After observing the facility operate for more than six months, the county voted at a meeting in mid-September to purchase the compost facility's building, shredder, associated landfill and 213 acres of land for a cost of \$2 million, subject to successful contract negotiations.

Camarillo explains that Texas counties have been mandated by the state to provide waste disposal facilities by 1992. Hidalgo County also is applying for permits to expand the landfill. The current tip fee at the compost facility is \$9 per ton, an amount that may have to be increased, according to Camarillo.

The compost facility consists of one large

ject to state approval, is to fill caliche pits — holes left from the extraction of a white, gravel-like material used on unpaved county roads.

According to Camarillo, very little recycling takes place in the communities due to poor markets. Currently, only aluminum and cardboard have any market outlets in this most southern region of Texas.

FERNDALE, WASHINGTON

In June, Recomp, Inc. started operating an MSW composting facility in Ferndale, a suburb of Bellingham in Whatcom County. This facility, built in conjunction with the development of an incinerator at the site, is capable of accepting approximately 300 tpd of solid waste. The plant is privately owned and operated by Recomp. The upfront processing and composting portions of the project cost approximately \$8 million.

Recomp has a contract with the City of Bellingham to process solid waste coming from that city. Additionally, the flow control ordinance developed by Whatcom County has designated the facility as a priority disposal site. Currently, the plant is receiving approximately 220 tpd of solid waste from the city and county. The tipping fee at the site is \$90/ton for waste haulers and \$100/ton for individuals.

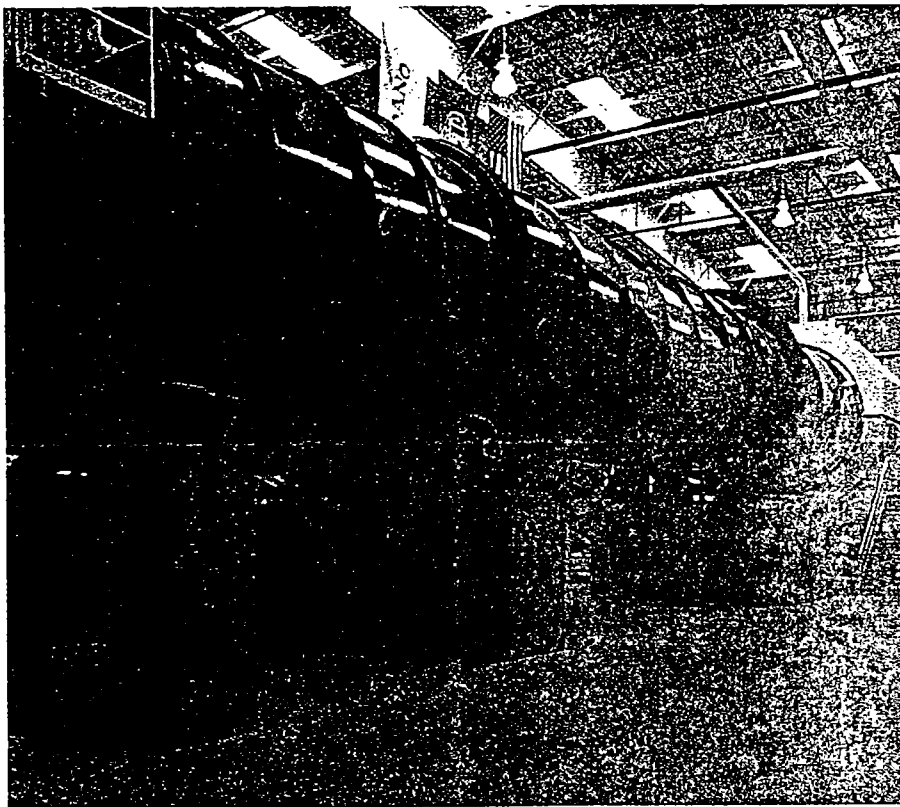
After upfront processing, material designated for composting is loaded into one of two 50 tpd capacity rotating, cylindrical digesters where it remains for approximately three days. It then is screened and composted in a Royer agitated bed system that consists of eight bays with a capacity of 1,300 tons. The finished compost is then screened and goes through an air classification unit. From the 100 tpd of solid waste that enter the digesters, approximately 35 tpd of compost is produced. According to Lisa Meucci, Director of Resource Management at the plant, the system will spend the next year going through shakedown.

Currently, Recomp has a two year contract with a local nursery that intends to use the compost for land reclamation. The nursery also may use the compost in a potting mixture. The Whatcom County Health Department is requiring that the firm go through a one year testing program prior to its giving approval for compost use.

PORTAGE, WISCONSIN

The City of Portage has been operating an MSW composting plant since 1986. It takes in about 16 tpd of MSW, which is mixed with sewage sludge and loaded into a rotary drum. The city relies on residential source separation for removal of recyclables prior to composting. There is no front end processing system to recover stray recyclables prior to composting.

Structural problems with the drum led to a facility shut down. Construction at the plant was completed in early October, and composting has resumed.



A blend of MSW and water is pulped in Portland's 80 ft. long mixing drums before composting.

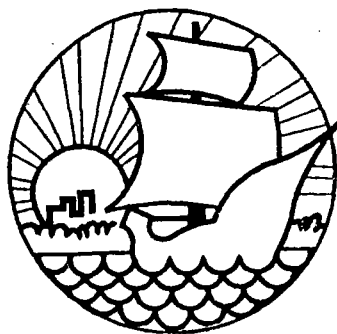
building with a tipping floor/picking area where large items, particularly metal objects which could damage the shredder, are removed. A conveyor then takes the waste into a vertical gyroscopic mill, which discharges into a pressurized staging room/bag house equipped with a dust collection system. From there, a conveyor loads the waste into a truck which takes it to the outdoor composting pad. A Scarab windrow turning machine is used to manage the composting process.

Plastic pieces in the compost are creating end use problems, adds Camarillo. He says that the county intends to install screening equipment to remove the plastic. Once in place, stockpiled compost could be screened and possibly used as a soil amendment in county projects. Another potential use, sub-

Task 7

**Evaluate Alternative Solid Waste
Recycling / Waste Reduction Proposals**

**Update to Solid Waste Master Plan
Manatee County, Florida**



Submitted to

**Manatee County Government
Board of County Commissioners
and
Public Works Department**

by

**R.W. BECK
AND ASSOCIATES**

***January 29, 1992
Board Working Session***



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This report was originally submitted for a Board of County Commissioners working session that was to have been held January 14, 1992. The working session was rescheduled to January 29, 1992.

R.W. BECK
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EF-5327-AA1-AB

January 3, 1992

Board of County Commissioners
Mr. Gus DiFonzo
Manatee County Government
4501 66th Street West
Bradenton, Florida 34210

Dear Commissioners and Mr. DiFonzo:

**Subject: R. W. Beck Information for Working Session
to Compare Solid Waste Reduction Proposals**

Enclosed are two tables: Table 7-1 summarizing six vendor proposals for Manatee County's waste reduction system and Table 7-2 comparing the six proposals according to common criteria. These six vendors, of ten that had submitted, were identified by the County's selection committee for this project, headed by Tom Cook. All of the vendors had been scrutinized by R. W. Beck and Associates before being shortlisted. All have made a formal presentation to the County and some of the vendors have submitted follow-up materials including clarifications to questions and supplements to the basic proposals.

At the January 14, 1992 working session of the Board of County Commissioners, R. W. Beck and Associates will be making a presentation comparing the proposals with our comments and recommendations. We have made a previous presentation of these proposed options to the Solid Waste Advisory Board. R. W. Beck intends to fully explain our comparison of the proposals, including the tables at the working session. We are available to answer questions at any time.

The tables condense a great deal of information gleaned from review of a substantial amount of material. It was a challenging assignment to compare proposals that had widely disparate approaches to solid waste management and typically made different assumptions for common items such as the waste stream quantity and composition, prices for recyclables, capacity of the facility and the County's existing programs. We attempted to make the proposals directly comparable by using the same criteria and methodology in each case. We were sometimes unable to achieve this objective because the information was not available or the option was not proposed clearly.

As an aid to understanding the highlights of each option, we summarize the proposals with the following comments/recommendations:

THE AMERICAN RECYCLING COMPANY, INC. ("Amerecycle")
Mixed Waste Recycling with Windrow Composting

The process is proven through limited experience in Florida at much smaller capacity. Apparently odor problems at the Sumter County facility have been minimal. However, based on review of operating and closed U.S. facilities, R. W. Beck and Associates' opinion is that at some times in the operation of the facility there will be odor problems that cannot be contained under the current proposal. The problem can be somewhat resolved **after odor incidents** have occurred through the proposal modifications in Amerecycle's December 17, 1991 letter to Tom Cook. In the letter, Amerecycle offers enclosure and air quality treatment for the first 10 days of composting in the windrow as a contingency at a slightly higher tipping fee.

We recommend that enclosure/odor control for a longer period (15 days minimum) be required and that any contract include control of odors as part of the basic system rather than a contingency.

The facility proposed uses a large area at the landfill site, 80 acres, much of it for composting pads.

The proposal offers a specific financial penalty for excess residue disposal in the Lena Road Landfill, which is highly desirable to the County. Specific details of how this would be administered should be confirmed during contract negotiations.

ARK ENERGY, INC. / CSW ENERGY, INC.
Mixed Waste Recycling with Waste-to-Ethanol Plant

Although this proposal has the lowest proposed tipping fee by far, the ethanol production facility involves unproven technology that is currently going through the pilot plant stage--there are no commercially operating facilities. This involves a high degree of risk to the County, even with well written contracts.

The economic proforma of the facility would need to be examined in greater detail before we could recommend that the County consider this proposal. We feel that the ethanol yields are unrealistically high and that there are significant technological issues yet to be resolved. We have not seen the costs or economic projections for this facility.

The ability to obtain financing for the facility would be questionable without resolving these issues. The adequacy of the proposed \$2 million letter of credit should also be evaluated relative to the County's risks before you move forward with this vendor.

BEDMINSTER BIOCONVERSION CORPORATION ("BBC")
Co-Composting of Municipal Solid Waste and Sewage Sludge

The proposal offers a fully enclosed aerated composting system with odor control (negative air pressure and biofilters) which maintains better control of the composting process but provides no recycling outside the materials incorporated in the compost. Bags are not opened and inspected prior to entering the digester and unacceptable waste would have to be discovered indirectly through monitoring of temperature/biological

activity in the digester. Unsatisfactory material would have to be disposed of separately, blended/diluted with acceptable compost, or recycled through the process.

We would recommend inspecting at least a sample of waste delivered in bags. Alternatively, BBC should assume responsibility for hazardous waste accepted at the facility and placed in the digester.

The plastic that has been through the digester would be virtually non-recyclable and the value of steel and aluminum cans would be reduced by compost and contaminants inside the cans. To be equivalent to other proposals relative to recycling the majority of these materials as required, a program such as the "colored bag" system referred to in BBC's letter of December 16, 1991 would have to be added "up front" at some additional cost. The cost of this add-on would have to be determined.

CEDAR HAMMOCK REFUSE DISPOSAL/WASTE MANAGEMENT, INC. OF FLORIDA

Curbside Collection of Recyclables and Yard Waste

This proposal is very familiar to Manatee County as it would be an expansion of existing programs with an existing franchised hauler. The proposal has the advantages of being able to be implemented quickly providing immediate results, little technical risk and a short-term contract that gives the County time to develop a long-term system. It has the disadvantages of falling short of the goals of the Solid Waste Management Act (without complementary commercial recycling programs), doing little to extend landfill life and high cost.

The yard waste quantities projected by WMI (22.5 lb/household/month) seem low in relation to the amount of yard waste in the waste stream. This would leave a question as to whether yard waste is primarily generated by commercial accounts.

INDUSTRIAL WASTE SERVICE, INC. ("IWS")

Transfer and Processing of Source-Separated Recyclables

This proposal is also by an existing established licensed hauler.

The proposal only directly addresses part of the waste reduction system. The County could elect to reject the proposal as incomplete and non-responsive. Our evaluation as presented in the tables relies on inferring much of the information.

The materials recovery facility ("MRF") in Tampa proposed to be used for this project is not yet constructed and its status is uncertain. The facility would serve programs in Pasco and Hillsborough counties as well.

The proposal does not meet the 30 percent recycling goal without collection of recyclables by others.

XL DISPOSAL CORPORATION

Mixed Waste Recycling Facility Producing Fuel Cubes

The proposed facility uses established technology. The program will fall short of the 30 percent recycling goal (23 percent projected on average) because fuel cubes produced from waste are not counted toward the goal because they will be burned. The composting/yard waste aspects of the facility are not developed to where they could be counted in our evaluation. With high levels of private recycling, such as construction and demolition debris or improved yard waste recovery, the goals are within reach.

The tipping fee is competitive because XL proposes to pay the County \$16 per ton for landfill disposal of residue.

Markets for fuel cubes need to be identified.

Realizing that costs are an important issue in comparing the proposals, we have included an analysis of the economics in Table 7-2. This is a comparative analysis for purposes of evaluating the proposals only and should not be taken as a projection of actual costs to homeowners. This rate analysis can only be properly done after contracts are in place and more information is considered.

The economic analysis assumes that the cost of the landfill will be roughly the same at a reduced tonnage rather than that the tipping fee will remain the same. We included an estimate of the capital cost for future landfill airspace because the proposals differ in their effect on landfill life and it is helpful to put this in economic terms.

R. W. Beck and Associates recommendations are based on the information available at this time and our independent analysis.

Subject to discussion at the working session and further direction from the County we would recommend that:

1. The ARK Energy proposal not be considered further without requesting a detailed economic proforma and commitments for financing. *(ARK has been very cooperative in discussing their proposal and providing information to us but this request should be through the County.)*
2. The IWS proposal be considered non-responsive as offered.
3. The Cedar Hammock/Waste Management proposal be considered primarily as an interim measure, if a long-term program cannot resolved from this RFP.
4. XL Disposal Corporation be asked for clarification regarding its proposal for composting and yard waste facilities.
5. Amerecycle and Bedminster Bioconversion Corporation be considered the primary contenders.

The Board may wish to have further presentations from these and other vendors before reaching its decision.

R. W. Beck and Associates recommends that, in addition to the original submissions, both Amerecycle's and Bedminster Bioconversion Corporation's proposals be evaluated based on clarifications/modifications which provide for:

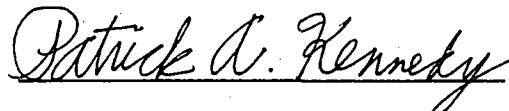
- Enclosure and air quality control for part (15 days) of Amerecycle's compost area;
- Front-end separation of plastic, aluminum and ferrous containers via a colored bag collected with the normal MSW pickup. (This program is proposed by Amerecycle to also include glass containers.)

With these changes, both proposals would be acceptable, although they would each offer certain advantages and disadvantages.

We look forward to a productive work session.

Very truly yours,

R. W. BECK AND ASSOCIATES



Patrick A. Kennedy, Director
Solid Waste Management

PAK/sl

cc: Herb Kosstrin
Bob Tardy
Bob Myers



TABLES 7.1 AND 7.2

SUMMARY AND COMPARISON OF SHORTLISTED PROPOSALS

**TABLE 7-1
SUMMARY OF SHORTLISTED PROPOSALS**

	The American Recycling Company, Inc. ⁽¹⁾	ARK Energy, Inc. / CSW Energy, Inc.	Bedminster Bioconversion Corporation	Cedar Hammock Refuse Disposal /WMI of Florida	Industrial Waste Service, Inc. ("IWS")	XL Disposal Corporation
Technology	Mixed MSW Recycling / Size Reduction / Windrow Composting (Open)	Mixed MSW Recycling Separation / Ethanol Production Co-Energy Plant	MSW Co-Composting with Sewage Sludge (Closed)	Curbside Collection / Sorting of Recyclables; MRF ⁽¹⁾ ; Curbside Yard Waste Collection	Transfer of Recyclables Collected by Others in "Blue Bags" (Newspaper / Other); MRF ⁽²⁾	"Automated" Mixed Waste Processing / NRT Rotary Material Separator ("RMS")
Options	Option 1: Receive <i>source-separated</i> C & D debris Option 2: Receive <i>source-separated</i> yard waste Option "A": Dual-chambered truck for YW/MSW ⁽¹⁾ Option "B": 800 TPD, ⁽¹⁾ capacity		Colored bag collection of plastics and aluminum. ⁽¹⁾	Market Risk Option (see Revenue Sharing below) Multi Family Option 1: No brown and green glass Multi-Family Option 2: County purchases wheeled carts		Fuel Pelletizing (Fuel Cubes) Composting is discussed but proposal is not well developed.
Capacity	Mixed MSW: 525 TPD, Option 1: 75 TPD, C&D Option 2: 175 TPD, YW Option "B": 800 TPD, mixed MSW	1,400 TPD, (Recycling) ⁽⁴⁾ 883 TPD, (Ethanol)	800 TPD, (MSW) 400 TPD, (Sludge)	42,600 SF households 22,000 MF households (current customers)	Not given. All County plus additional residential and commercial recyclables.	1,000 TPD, (minimum) 1,500 TPD, (2 shifts) 2,000 TPD, (maximum)
Terms of Payment	\$49/ton Mixed MSW Minimum 13,650 T/month Option 1: \$25/ton C&D Option 2: \$25/ton YW Option "A": \$48.25/ton Option "B": \$42.35/ton (CPI adjustment)	\$18/ton tipping fee (<i>estimated</i>) assuming free disposal of rejects and County disposes of hazardous waste	\$42.50/ton assuming residue landfilled by the County at no cost other than transportation (CPI-type adjustment)	Residential Curbside: \$1.92/unit/month MF: \$1.20/unit/month MF Option 1: \$1.10 MF Option 2: \$0.86 Residential YW: \$2.35 ⁽¹⁾ MF YW: No change	\$55.39/ton for transport, processing and marketing. Collection costs not proposed but estimated at \$1.65/unit/month during presentation	\$32.50/ton (includes \$16/ton to Manatee County for residue disposal) Annual cost-of-living and disposal fee adjustments
Revenue Sharing	50/50 on gross non-compost recyclables revenues > \$1 million and net compost revenues after 5 years	\$5/ton tipping fee rebate; \$0.05/gallon of ethanol; 5% of pre-tax profit from sale of recyclables	50/50 on net compost revenue and income from outside sewage sludge processing	Willing to negotiate additional processing fee for share of revenue from recyclables	Not offered for residential; roll-off. Not offered for single-family. Willing to share for roll-offs and totes.	50/50 on recycling revenues from Al, metal, glass, plastic, ONP, OCC and fuel cubes (XL estimates \$782,000/ year)
Guarantees	70% diversion of <i>processed</i> waste (surcharge = 110% of current tipping fee at Facility for landfill > 30% by weight); \$500,000 performance bond	\$2 million letter of credit until commercial operation of MSW-to-ethanol facility. Willing to agree to maximum residue % based on waste composition.	A-C Equipment Services mechanical guarantee on digesters; Hartford Steam Boiler System Performance Insurance	None specific. Reputation of the company.	None specific. Reputation of the company.	30% by weight reduction with no specified penalty
Contract Life	20 years, put-or-pay; County may purchase after 10 years	25 years with extensions in 5-year increments	20 years, put-or-pay	3 years with 2-year option	15 years	20 years, then Facility to County or renegotiate
Manatee County's Responsibilities	Flow control contract; scale operator; Minimum Monthly Tonnage; Non-Acceptable Waste / IHHW / residuals; landfill and leachate	Assist with Florida PSC in qualifying cogeneration plant; hazardous waste and residue from ethanol	Landfill for residue; lease land for facility at nominal cost; 250,000 TPY minimum commitment	Purchase bins	Provide for collection and delivery of recyclables; disposal of rejects (garbage); site and utilities for transfer facility	Provide site; landfill for residue

TABLE 7-1
SUMMARY OF SHORTLISTED PROPOSALS
(Continued)

	The American Recycling Company, Inc. ⁽³⁾	ARK Energy, Inc. / CSW Energy, Inc.	Bedminster Bioconversion Corporation	Cedar Hammock Refuse Disposal /WMI of Florida	Industrial Waste Service, Inc. ("IWS")	XL Disposal Corporation
Financing	Amerecycle through Banc One; low interest Industrial Revenue Bond if available and the County agrees	Tax-exempt financing with 15 to 20% ARK/CSW equity investment; non-recourse; no obligation for debt by County	Bedminster and corporate partner will either finance through Chase Manhattan or operate a County-owned/financed facility	Not applicable	Not stated, but IWS would probably finance itself.	XL's own financial resources subject to review/audit during negotiations
Area at Lena Road Site	80 acres - mixed MSW 12 acres - C&D 10 acres - yard waste	5 acres - Recycling Separation Facility; 40 to 65-acre+ for Ethanol Production Co-Energy at another site	20 acres; 9-acre plant footprint	0 acres	Not specified	70,000-square foot building plus 5-acre compost site
Facility Cost	Not given	\$45 million	Not given	Not applicable	Not given	\$8.99 M (includes \$1.04 M for pelletizing)
Proposed Equipment	<u>MRF/VRS:</u> OCC balers, trommel bag opener/flow separator, conveyors, magnetic belt separator, hand picking stations with collection bins feeding balers, magnetic conveyor head pulleys, eddy current separator, twin hammermills, out-feed conveyor, rotary blending drum <u>Composting:</u> composting and harvesting tractors, front end loaders, shredder, trommel screen, de-stoner, blending/bagging equipment, compost testing laboratory	<u>Recycling Separation Facility:</u> conveyors, two hand picking lines, collection bins, balers, magnetic conveyor, tire shredder, plastic shredder, chopper (cellulose), hydraulic compactor, HHW area, battery area <u>Ethanol/Co-Energy:</u> hydraulic ram, feed hopper, overhead crane, hydropulper, hydrolysis vats, draining and pressing, acid recovery system, fermentation vats, CO ₂ absorption, ethanol distillation, lignin refiner laboratory	10 Eweson digesters (16-ft diameter, 180 feet long), conveyors, 1 1/4-inch rotary trommel screen, aerated channels, blowers, aerated static composting/curing pile, fine trommel screen, stoner, soil (compost/gravel) biofilter	Not specified. Conventional multi-compartment recycling and packer trucks assumed. Recyclables will bypass sorting lines in Sarasota County MRF to balers, etc.	Not specified. Conventional non-compaction transfer station is likely.	Wood grinder, hammermill shredder, magnets, balers, 2 NRT RMS drums, can sorter, can crusher, plastic granulator, ELPAC/Pulsort for aluminum cans, self-tipping hopper, compost turner, tire loader, fork truck, scissors lift <u>Pelletizing:</u> air classifier, shear shredders, cuber, grinders, dryers
Storage	1,500 tons (72 hours) on tipping floor	15,000 SF for recovered materials at Recycling Facility; 4 days (90,000 SF) at Ethanol Facility	1,400 tons on tipping floor	Not applicable	Not specified	700 tons on tipping floor
Staffing	100 full-time (5 professional, 95 skilled/semi-skilled)	74 (32 Recycling, 42 Co-Energy)	Not given	Approximately 80 employees in Manatee County including administration and solid waste collection	Not given	39 (7 Administrative, 28 Operations, 4 Maintenance)

TABLE 7-1
SUMMARY OF SHORTLISTED PROPOSALS
(Continued)

	The American Recycling Company, Inc. ⁽¹⁾	ARK Energy, Inc. / CSW Energy, Inc.	Bedminster Bioconversion Corporation	Cedar Hammock Refuse Disposal /WMI of Florida	Industrial Waste Service, Inc. ("IWS")	XL Disposal Corporation
Operations	6 days/week, 10-hour shift	Recycling: 5 days/week, two shifts; Co-Energy: 7 days/week around the clock	6 days/week, 52 weeks/year Accept waste during landfill hours	Collection: 6 days/week, 6 a.m. to 6 p.m. MRF: Monday through Saturday, 7 a.m. to 7 p.m.	Not given	Receiving: Mon-Fri 7 a.m. to 4 p.m. Sat 7 a.m. to 12 p.m. Processing: Mon-Fri 6 a.m. to 11 p.m. Sat 6 a.m. to 2 p.m.
Materials To Be Recovered						
ONP	• In compost	• To ethanol	• In compost	•	•	•
Aluminum cans	•	•	?	•	•	•
Glass containers	•	•	• In compost	•	•	•
Plastic bottles	HDPE/PET+	HDPE/PET/Other	?	HDPE/PET	Mixed plastic	HDPE/PET
Ferrous metals	•	•	?	Steel/tin cans only	Steel/tin cans only	•
OCC	•	• To ethanol	• In compost	•	• ⁽⁶⁾	•
Yard waste	Option 2: Type "Y" compost	• To ethanol/lignin	• In compost	•	? ⁽⁷⁾	?
Compost	• (Type "A")		• (Type "A")			?
Other	Option 1: C&D Landfill cover (?) With acceptable market value: other metals, other plastic, batteries, tires, used oil, pallets and white goods	ethanol, CO ₂ , lignin, other metals (?), other aluminum, tires	other (non-container) glass in compost			Aluminum foil, C&D debris, LDPE, other metals, other paper, tires, wood products white goods, HHW, compostibles
COMMENTS	Most thoughtful and thorough proposal; odor from 32 acres of open air windrows cannot be controlled if problem; 6-acre leachate overflow pond within slurry wall for the Landfill.	No existing comparable commercial facilities. 115-MW natural gas-fired co-energy facility would use the ethanol facility as a thermal host (PURPA). ARK claims the projects each stand alone.	Recycling other than ONP, OCC, glass, etc. in compost, particularly plastic, is not proposed. Possible County WWTP sludge management cost savings.	Extensive public education program is included in rates. Sarasota County MRF may have surcharge for non-program (out of county) recyclables.	Proposal does not provide the costs of a comprehensive curbside collection program. Public education/promotion services are available but apparently are part of per month collection costs.	Proposal is effective at materials recovery. Fuel cubes do not count toward recycling goal. Composting not considered in evaluation.

⁽¹⁾ Proposed Recycle America of Sarasota materials recovery facility ("MRF"); Waste Management Paper Stock facility in the interim.

⁽²⁾ Proposed IWS Tampa MRF. Status uncertain.

⁽³⁾ Supplementary proposals offered after the original submission.

⁽⁴⁾ Manatee County's waste stream is 1,000 TPD₆ to 1,000 TPD₆, so that Recycling Separation facility would have to operate at 1,200 to 1,400 TPD₆.

⁽⁵⁾ Includes yard waste processing at current disposal rate (\$18/ton).

⁽⁶⁾ Cardboard is not shown in single family and multi-family rate schedules, but is accepted at transfer facility.

⁽⁷⁾ Willingness to work with Resource Recovery Industries indicated but no concrete proposal is offered.

**TABLE 7-2
COMPARISON OF SHORTLISTED PROPOSALS**

	The American Recycling Company, Inc. ⁽¹⁾	ARK Energy Inc. / CSW Energy, Inc.	Bedminster Bioconversion Corporation	Cedar Hammock Refuse Disposal / WMI of Florida	Industrial Waste Service, Inc. ("IWS")	XL Disposal Corporation
Technology	Mixed MSW Recycling / Size Reduction / Open Windrow Composting	Mixed MSW Recycling Separation / Ethanol Production Co-Energy Plant	MSW Co-Composting with Sewage Sludge (Closed); Eweson Digesters → Aerated Channels → Aerated Curing Pile	Curbside Collection / Sorting of Recyclables; MRF; Curbside Yard Waste Collection	Transfer of Recyclables Collected by Others in 'Blue Bags' (Newspaper / Other); MRF	'Automated' Mixed Waste Processing / NRT Rotary Material Separator
Feasibility of the Technology ⁽¹⁾	Feasible with limited U.S. track record. One much smaller facility is operating in Sumter County, FL.	Developmental on pilot scale only. Integrated pilot plant intended to be built in 1992.	Relatively proven technology. Three smaller U.S. reference facilities. The technology is waiting first large-scale success.	Well established collection system. WMI has 67 similar programs in Florida alone. Limited experience with yard waste.	Transfer of commingled recyclables and sorting in a MRF is a common technology.	Reference facility in Crestwood, IL and other similar facilities have proven successful.
Risks/Guarantees to the County	Scale up is a concern. Amerecycle offers a surcharge on residue to be landfilled > 30 % plus performance bond and insurance.	First-of-a-kind facility will require additional equity capital for financing. \$2 million dollar letter of credit should be evaluated for adequacy.	Modules proven at 50-TPD scale. Scale up is seen as minimal risk due to the modular nature of the technology.	Minimal risk to the County. Yard waste processing is not included.	Minimal technical risk to the County but program is incomplete.	Materials recovery/recycling is expected to perform but fuel cubes and composting have more questions to be answered.
Time To Implement	Mixed MSW: 18 to 24 months from Contract; C&D or Yard Waste: within 6 months of Notice to Proceed	12 months construction, 2+ years total. ARK suggests 2-year interim contract for yard waste.	1 year to design/permit and 2 years to build; fast-track can get plant into operation within 1 year of Contract.	April or May 1992 for Sarasota County MRF; 3 months or less to Waste Management Paper Stock on interim basis; Yard waste depends on facility	6 months from Contract	9 to 12 months from Contract
Solid Waste Management Act Goals						
30% Recycling ⁽²⁾	Meets the goal for all options (DER considers diversion via composting as reduction/recycling)	Falls short of goal, even at 1,400 TPD. Ethanol does not count toward reduction goal per DER.	Meets goal because ONP and glass in compost count as recycling.	Does not meet goal without other complementary programs.	No. Proposal relies on others to collect recyclables.	No. Does not meet goal without credit for fuel cubes or better developed composting approach.
Majority of "Big 4"	ONP in compost counts. Meets goal for glass and aluminum. Short on plastic bottles except for Option 'B'.	No ONP credit for ethanol similar to compost. Meets goal for other three materials	No. Not for plastic bottles and aluminum cans. Not well addressed in proposal. Willing to consider additions	Meets goal for ONP with existing programs and commercial recycling. Short on plastic bottles	Would meet goal with existing programs and commercial recycling except for plastic bottles	Mixed waste material recovery from most of waste stream meets this goal with existing recycling
Yard Waste	No for primary proposal. Option 2 and Option 'B' meet goal.	Yes. Will go to ethanol not landfill.	In compost, which is permitted	Separate collection in proposal	No specific proposal	Proposed composting/mulching incomplete
C&D Debris	Option 1 in proposal	Will accept at basic tipping fee	Unacceptable waste to be handled by County	Not included	Not included	Included in proposal
Tires	Will handle at facility	Will accept at basic tipping fee	Unacceptable waste to be handled by County	Not included	Not included	Included in proposal

**TABLE 7-2
COMPARISON OF SHORTLISTED PROPOSALS**

	The American Recycling Company, Inc. ⁽¹⁾		ARK Energy Inc. / CSW Energy, Inc.		Bedminster Bioconversion Corporation		Cedar Hammock Refuse Disposal / WMI of Florida		Industrial Waste Service, Inc. ("IWS")		XL Disposal Corporation	
Diversion Potential (TPY / % of Total Waste)	70% of waste <i>processed</i> 94,000 / 21.9		70% of waste <i>processed</i> 137,000 / 32.0		70% of waste <i>processed</i> 131,000 / 30.6		7 to 10% expected 29,200 / 6.8		< 10% 19,900 / 4.6		40%+ 140,700 / 32.9	
Landfill Life (Years from July 1, 1991)	30.6 to 36; Facility uses 80 acres at Landfill		48.0		34.7		25.8		25.3		36.5	
Economics	\$/ton	\$/HH/mo ⁽⁴⁾	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo
Processing Fees	18.76	2.03	11.09	1.20	24.79	2.68	⁽⁵⁾	⁽⁵⁾	2.56	0.28	23.70	2.56
Collection Costs	36.72	3.97	36.72	3.97	36.72	3.97	76.94 ⁽⁶⁾	8.32 ⁽⁶⁾	51.98	5.62	36.72	3.97
Landfill Costs	14.87	1.61	14.87	1.61	14.87	1.61	14.87	1.61	14.87	1.61	11.37	1.23
Revenues	(0.38)	(0.04)	(1.46)	(0.16)	(4.06)	(0.44)	0.00	0.00	0.00	0.00	(3.00)	(0.32)
Sludge Savings	NA	NA	NA	NA	NA	⁽⁸⁾	NA	NA	NA	NA	NA	NA
Net Cost	69.97	7.57	61.22	6.62	72.33	7.82	91.81	9.93	69.41	7.51	68.79	7.44
LF Capital Cost ⁽⁷⁾	4.41	0.48	10.72	1.16	6.22	0.67	1.44	0.16	1.04	0.11	6.97	0.75
Environmental Acceptability	Composting is currently viewed favorably but odor problems plague the technology. Landfill site is appropriate.		Other sites, industrial plant and cogeneration (115-MW power plant) raise more questions than other proposals		Composting is currently viewed favorably but odor problems plague the technology. Landfill site is appropriate.		Recycling is popular		Recycling is popular		Materials recovery is highly acceptable particularly at landfill.	
Permittability	Enhanced version of a similar facility recently permitted in Florida.		Many permit issues to be addressed.		BBC has other projects pending in Florida.		No permit issues		No permit issues		Issues for facility related to composting and fuel cubes.	
COMMENTS	Most complete proposal. Local management proposed. Primary concern is ability to control odors from 32 acres of composting windrows. The minimum capacity should be considered further.		Attractive tipping fee if adequate contract and guarantees and financing for an unproven technology can be obtained. Cogeneration may improve financing. Economics should be considered further.		Thorough proposal with compost marketing well covered. Front-end separation/recycling and inspection of bags would be desirable. Enclosed operation with odor controls should be able to avoid problem.		High per-ton cost for separate collection but immediate results would be achieved. Short-term contract commitment.		High per-ton costs for only a part of the program.		Shortest time proposed of the processing facilities. The proposal covers materials recovery well but composting and fuel pellets options are incomplete.	

⁽¹⁾ Including track record of the technology and the vendor.

⁽²⁾ Only half of the goal can be credited from yard waste, C&D debris, white goods and tires

⁽³⁾ Information shown for the primary proposal. Supplementary information for options is included in Tables 7-2a and 7-2b.

⁽⁴⁾ Cost to the typical single-family homeowner (\$/household/month).

⁽⁵⁾ Included in collection costs.

⁽⁶⁾ Collection costs adjusted for difference between \$18 and \$25/ton for yard waste processing.

⁽⁷⁾ Avoided landfill development costs for capacity remaining after 2015.

⁽⁸⁾ No significant savings were identified.

TABLE 7-2a
SUPPLEMENTARY ECONOMICS INFORMATION

	The American Recycling Company, Inc.					
	Option "A"		Primary Proposal with Options 1 and 2		Option "B"	
Economics	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo
Processing Fees	18.47	2.00	21.02	2.27	24.71	2.67
Collection Costs	36.72	3.97	58.45	6.32	36.72	3.97
Landfill Costs	14.87	1.61	14.87	1.61	14.87	1.61
Revenues	(0.38)	(0.04)	(0.54)	(0.06)	(1.03)	(0.11)
Sludge Savings	NA	NA	NA	NA	NA	NA
Net Cost	69.68	7.53	93.81	10.14	75.27	8.14
Capital Cost	4.42	0.48	6.89	0.74	6.40	0.69

TABLE 7-2b
SUPPLEMENTARY DIVERSION POTENTIAL AND LANDFILL LIFE INFORMATION

	The American Recycling Company, Inc.		
	Option "A"	Primary Proposal with Options 1 and 2	Option "B"
Diversion Potential (TPY / % of Total Waste)	94,000 / 21.9	164,000 / 38.3	136,300 / 31.8
Landfill Life (Years from July 1, 1991)	30.6	36.0	35.2

COMPARISON TO OTHER COUNTIES

**COMPARISON OF MANATEE COUNTY'S AND OTHER COUNTIES'
SOLID WASTE RATES**

Page 1 of 2

COUNTY	MANATEE	CHARLOTTE	ESCAMBIA	HILLSBOROUGH	LEE
	Landfill (LF)	Landfill (LF)	Mixed Waste Processing (WTE/LF)	Waste-to-Energy (WTE/LF)	Landfill (LF)
I. TECHNOLOGY					
II. COLLECTION					
Assessment Fee	YES	YES	NO	NO	YES
Solid Waste \$/HH/month (avg)	4.01 - 8.51 ^[1]	6.70	13.50 - 18.00 ^[5]	6.84 - 12.35 ^[6]	8.56 ^[8]
Yard Waste \$/HH/month (avg)	--	1.71			
White Goods \$/HH/month (avg)	--	0.09			
Other Costs \$/HH/month (avg)	--	0.31 ^[3]			
SUBTOTAL	4.01 - 8.51	8.81	13.50 - 18.00	6.84 - 12.35	8.56
III. DISPOSAL					
Assessment Fee	YES	YES	NO	YES	YES
\$/HH/month (avg)	1.95	2.29		7.70 ^[7]	6.84 ^[9]
IV. RECYCLING					
Assessment Fee	NO	YES	NO	YES	YES
\$/HH/month (avg)	0.00	2.18 ^[4]		1.02	1.06
V. ADMINISTRATION					
Assessment Fee (\$/HH/month)	^[2]	^[2]	^[2]	0.52	
Tax Collector (\$/HH/month)	--				0.46
TOTAL ASSESSMENT (\$/HH/month) ^[1]	5.96 - 10.46	13.28	--	9.25	16.92
TOTAL COST (\$/HH/month)	5.96 - 10.46	13.28	13.50 - 18.00	16.09 - 21.60	16.92
VI. TIPPING FEES (\$ per ton)					
Solid Waste	18.00	27.50	18.95		28.32
Tires	73.50	100.00	1.50 - 3.00/tire		107.36
White Goods	18.00	27.50	3.00 + 3.75/200 lbs		28.32
Yard Wastes/Wood	18.00	27.50	18.95		28.32
Processible (WTE)				57.20	
Non-Processible (LF)				26.80	
C & D Debris		27.50	18.95		28.32
Hazardous Wastes			150.00		
Special Wastes					
Recyclables					

**COMPARISON OF MANATEE COUNTY'S AND OTHER COUNTIES'
SOLID WASTE RATES**

Page 2 of 2

COUNTY	PASCO	POLK	PUTNAM	SARASOTA	SUMTER
	Waste-to-Energy (WTE/LF)	Landfill (LF)	Landfill (LF)	Landfill (LF)	Separation/Solid Waste Composting
I. TECHNOLOGY					
II. COLLECTION					
Assessment Fee	NO	YES	YES	YES	NO
Solid Waste \$/HH/month (avg)	8.50 ⁽¹⁰⁾	9.34 ⁽⁸⁾	4.92 ⁽⁸⁾	3.91 - 5.90 ⁽¹⁴⁾	8.00 - 10.00 ⁽¹⁵⁾
Yard Waste \$/HH/month (avg)					
White Goods \$/HH/month (avg)					
Other Costs \$/HH/month (avg)					
SUBTOTAL	8.50	9.34	4.92	3.91 - 5.90	8.00 - 10.00
III. DISPOSAL					
Assessment Fee	YES	YES	YES	YES	NO
\$/HH/month (avg)	4.17 ⁽¹¹⁾	6.29 ⁽¹²⁾	3.91 ⁽¹³⁾	1.13 - 2.13 ⁽¹⁴⁾	0.50/bag
IV. RECYCLING					
Assessment Fee	NO	NO	YES	YES	NO
\$/HH/month (avg)			2.25	2.18 ⁽¹⁵⁾	
V. ADMINISTRATION					
Assessment Fee (\$/HH/month)	⁽²⁾	⁽²⁾	⁽²⁾	⁽²⁾	⁽²⁾
Tax Collector (\$/HH/month)					
TOTAL ASSESSMENT (\$/HH/month) ⁽¹⁾	4.17	15.63	11.08	8.83 - 12.21 ⁽¹⁶⁾	0.00
TOTAL COST (\$/HH/month)	12.67	15.63	11.08	8.83 - 12.21	8.00 - 10.00+
VI. TIPPING FEES (\$ per ton)					
Solid Waste	45.65	31.00	36.00	18.14	35.00
Tires	45.65	62.00	50.00	50.00	150.00
White Goods	0.00	62.00	50.00	18.14	35.00
Yard Wastes/Wood	45.65	31.00	36.00	18.14	35.00
Processible (WTE)					
Non-Processible (LF)					
C & D Debris	45.65	31.00	36.00	18.14	35.00
Hazardous Wastes			55.00		
Special Wastes		62.00	50.00		
Recyclables				1.23	

- [11] Weighted average of three areas collection cost breakdown: front door – \$4.01; rear door – \$8.51; variance – \$5.51.
- [12] Administration costs are embedded within other assessment fees.
- [13] Collection assessment – \$0.33; contingency – -\$0.02.
- [14] Includes \$0.28 recycling credit for each household.
- [15] Collection cost breakdown: franchise collection/disposal – \$13.50; county collection/disposal – \$14.50; and city collection disposal – \$18.00.
- [16] Collection cost breakdown: curbside – \$6.84; curbside/inground storage – \$9.60; back door – \$9.60; and back door/inground – \$12.35. Materials collected include solid waste and white goods.
- [17] Disposal cost breakdown: tire shredding – \$0.01; landfill operation – \$0.86; resource recovery – \$5.87; household hazardous waste – \$0.62; and field service – \$0.34.
- [18] Materials collected include solid waste, yard waste and white goods.
- [19] Disposal cost breakdown: landfill operations – \$3.77; solid waste operating – \$0.38; hazardous waste – \$0.22; solid waste management – \$0.79; illegal dump cleanup – \$0.15; rate stabilization – \$1.53.
- [110] Average of private hauler fees. Materials collected include solid waste and yard waste.
- [111] Further cost breakdown could not be provided.
- [112] Disposal cost breakdown: operating – \$2.92; closure fund – \$1.42; recycling/hazardous waste programs – \$0.51; reserve fund – \$1.44.
- [113] Disposal cost breakdown: landfill operations – \$0.83; debt service – \$2.83; required escrow – \$0.25.
- [114] Low figure for Class II wastes (apartments with > 9 units, mobile homes, condos and time shares). High quote for Class I waste (single family, 2- to 3-unit structures, apartments with 2-9 units). Materials collected: solid waste, yard waste and white goods.
- [115] Includes a revenue credit of \$1.14 to \$1.33/HH/month.
- [116] Includes hazardous waste and community clean up.
- [117] Range of private hauler fees. Materials collected include solid waste, yard waste and white goods.

The following tables were presented as display boards at the working session on January 29.

MANATEE COUNTY RECYCLING/WASTE REDUCTION PROGRAM

SUMMARY OF SHORTLISTED PROPOSALS

1 of 3

	The American Recycling Company, Inc.	ARK Energy, Inc. / CSW Energy, Inc.	Bedminster Bioconversion Corporation	Cedar Hammock Refuse Disposal /WMI of Florida	Industrial Waste Service, Inc. ("IWS")	XL Disposal Corporation
Technology	Mixed MSW Recycling / Size Reduction / Windrow Composting (Open)	Mixed MSW Recycling Separation / Ethanol Production Co-Energy Plant	MSW Co-Composting with Sewage Sludge (Closed)	Curbside Collection / Sorting of Recyclables; MRF Curbside Yard Waste Collection	Transfer of Recyclables Collected by Others in "Blue Bags" (Newspaper / Other); MRF ⁽²⁾	"Automated" Mixed Waste Processing / NRT Rotary Material Separator ("RMS")
Options	Option 1: Receive <u>source-separated</u> C & D debris Option 2: Receive <u>source-separated</u> yard waste Option "A": Dual-chambered truck for YW/MSW ⁽³⁾ Option "B": 800 TPD ₆ ⁽³⁾ capacity		Colored bag collection of plastics and aluminum. ⁽³⁾	Market Risk Option (see Revenue Sharing below) Multi Family Option 1: No brown and green glass Multi-Family Option 2: County purchases wheeled carts		Fuel Pelletizing (Fuel Cubes) Composting is discussed but proposal is not well developed.
Capacity	Mixed MSW: 525 TPD ₆ Option 1: 75 TPD ₆ C&D Option 2: 175 TPD ₆ YW Option "B": 800 TPD ₆ mixed MSW	1,400 TPD ₅ (Recycling) 883 TPD ₇ (Ethanol)	800 TPD ₆ (MSW) 400 TPD ₆ (Sludge)	42,600 SF households 22,000 MF households (current customers)	Not given. All County plus additional residential and commercial recyclables.	1,000 TPD ₆ (minimum) 1,500 TPD ₆ (2 shifts) 2,000 TPD ₆ (maximum)
Terms of Payment	\$49/ton Mixed MSW Minimum 13,650 T/month Option 1: \$25/ton C&D Option 2: \$25/ton YW Option "A": \$48.25/ton Option "B": \$42.35/ton (CPI adjustment)	\$18/ton tipping fee (<u>estimated</u>) assuming free disposal of rejects and County disposes of hazardous waste	\$42.50/ton assuming residue landfilled by the County at no cost other than transportation (CPI-type adjustment)	<u>Residential Curbside</u> : \$1.92/unit/month MF: \$1.20/unit/month MF Option 1: \$1.10 MF Option 2: \$0.86 Residential YW: \$2.35 ⁽⁵⁾ MF YW: No change	\$55.39/ton for transport, processing and marketing. Collection costs not proposed but estimated at \$1.65/unit/month during presentation	\$32.50/ton (includes \$16/ton to Manatee County for residue disposal) Annual cost-of-living and disposal fee adjustments
Revenue Sharing	50/50 on gross non-compost recyclables revenues > \$1 million and net compost revenues after 5 years	\$5/ton tipping fee rebate; \$0.05/gallon of ethanol; 5% of pre-tax profit from sale of recyclables	50/50 on net compost revenue and income from outside sewage sludge processing	Willing to negotiate additional processing fee for share of revenue from recyclables	Not offered for residential; roll-off. Not offered for single-family. Willing to share for roll-offs and totes.	50/50 on recycling revenues from Al, metal, glass, plastic, ONP, OCC and fuel cubes (XL estimates \$782,000/ yr)
Guarantees	70% diversion of <u>processed</u> waste (surcharge = 110% of current tipping fee at Facility for landfill > 30% by weight); \$500,000 performance bond	\$2 million letter of credit until commercial operation of MSW-to-ethanol facility. Willing to agree to maximum residue % based on waste composition.	A-C Equipment Services mechanical guarantee on digesters; Hartford Steam Boiler System Performance Insurance	None specific. Reputation of the company.	None specific. Reputation of the company.	30% by weight reduction with no specified penalty
Contract Life	20 years, put-or-pay; County may purchase after 10 years	25 years with extensions in 5-year increments	20 years, put-or-pay	3 years with 2-year option	15 years	20 years, then Facility to County or renegotiate
Manatee County's Responsibilities	Flow control contract; scale operator; Minimum Monthly Tonnage; Non-Acceptable Waste / HHW / residuals; landfill and leachate	Assist with Florida PSC in qualifying cogeneration plant; hazardous waste and residue from ethanol	Landfill for residue; lease land for facility at nominal cost; 250,000 TPY minimum commitment	Purchase bins	Provide for collection and delivery of recyclables; disposal of rejects (garbage); site and utilities for transfer facility	Provide site; landfill for residue

MANATEE COUNTY RECYCLING/WASTE REDUCTION PROGRAM

SUMMARY OF SHORTLISTED PROPOSALS

2 of 3

	The American Recycling Company, Inc.	ARK Energy, Inc. / CSW Energy, Inc.	Bedminster Bioconversion Corporation	Cedar Hammock Refuse Disposal /WMI of Florida	Industrial Waste Service, Inc. ("IWS")	XL Disposal Corporation
Financing	Amerecycle through Banc One; low interest Industrial Revenue Bond if available and the County agrees	Tax-exempt financing with 15 to 20% ARK/CSW equity investment; non-recourse; no obligation for debt by County	Bedminster and corporate partner will either finance through Chase Manhattan <u>or</u> operate a County-owned/financed facility	Not applicable	Not stated, but IWS would probably finance itself.	XL's own financial resources subject to review/audit during negotiations
Area at Lena Road Site	80 acres - mixed MSW 12 acres - C&D 10 acres - yard waste	5 acres - Recycling Separation Facility; 40 to 65-acre+ for Ethanol Production Co-Energy at another site	20 acres; 9-acre plant footprint	0 acres	Not specified	70,000-square foot building plus 5-acre compost site
Facility Cost	Not given	\$45 million	Not given	Not applicable	Not given	\$8.99 M (includes \$1.04 M for pelletizing)
Proposed Equipment	MRF/VRS: OCC balers, trommel bag opener/flow separator, conveyors, magnetic belt separator, hand picking stations with collection bins feeding balers, magnetic conveyor head pulleys, eddy current separator, twin hammermills, out-feed conveyor, rotary blending drum Composting: composting and harvesting tractors, front end loaders, shredder, trommel screen, de-stoner, blending/bagging equipment, compost testing laboratory	Recycling Separation Facility: conveyors, two hand picking lines, collection bins, balers, magnetic conveyor, tire shredder, plastic shredder, chopper (cellulose), hydraulic compactor, HHW area, battery area Ethanol/Co-Energy: hydraulic ram, feed hopper, overhead crane, hydropulper, hydrolysis vats, draining and pressing, acid recovery system, fermentation vats, CO ₂ absorption, ethanol distillation, lignin refiner	10 Eweson digesters (16-ft diameter, 180 feet long), conveyors, 1 1/4-inch rotary trommel screen, aerated channels, blowers, aerated static composting/curing pile, fine trommel screen, stoner, soil (compost/gravel) biofilter	Not specified. Conventional multi-compartment recycling and packer trucks assumed. Recyclables will bypass sorting lines in Sarasota County MRF to balers, etc.	Not specified. Conventional non-compaction transfer station is likely.	Wood grinder, hammermill shredder, magnets, balers, 2 NRT RMS drums, can sorter, can crusher, plastic granulator, ELPAC/Pulsort for aluminum cans, self-tipping hopper, compost turner, tire loader, fork truck, scissors lift Pelletizing: air classifier, shear shredders, cuber, grinders, dryers
Storage	1,500 tons (72 hours) on tipping floor	15,000 SF for recovered materials at Recycling Facility; 4 days (90,000 SF) at Ethanol Facility	1,400 tons on tipping floor	Not applicable	Not specified	700 tons on tipping floor
Staffing	100 full-time (5 professional, 95 skilled/semi-skilled)	74 (32 Recycling, 42 Co-Energy)	Not given	Approximately 80 employees in Manatee County including administration and solid waste collection	Not given	39 (7 Administrative, 28 Operations, 4 Maintenance)
Operations	6 days/week, 10-hour shift	Recycling: 5 days/week, two shifts; Co-Energy: 7 days/week around the clock	6 days/week, 52 weeks/year Accept waste during landfill hours	Collection: 6 days/week, 6 a.m. to 6 p.m. MRF: Monday through Saturday, 7 a.m. to 7 p.m.	Not given	Receiving: Mon-Fri 7 a.m. to 4 p.m. Sat 7 a.m. to 12 p.m. Processing: Mon-Fri 6 a.m. to 11 p.m. Sat 6 a.m. to 2 p.m.

MANATEE COUNTY RECYCLING/WASTE REDUCTION PROGRAM

SUMMARY OF SHORTLISTED PROPOSALS

3 of 3

	The American Recycling Company, Inc.	ARK Energy, Inc. / CSW Energy, Inc.	Bedminster Bioconversion Corporation	Cedar Hammock Refuse Disposal /WMI of Florida	Industrial Waste Service, Inc. ("IWS")	XL Disposal Corporation
Materials To Be Recovered						
ONP	• In compost	• To ethanol	• In compost	•	•	•
Aluminum cans	•	•	?	•	•	•
Glass containers	•	•	• In compost	•	•	•
Plastic bottles	HDPE/PET+	HDPE/PET/Other	?	HDPE/PET	Mixed plastic	HDPE/PET
Ferrous metals	•	•	?	Steel/tin cans only	Steel/tin cans only	•
OCC	•	• To ethanol	• In compost	•	•	•
Yard waste	Option 2: Type "Y" compost	• To ethanol/lignin	• In compost	•	?	?
Compost	• (Type "A")		• (Type "A")			?
Other	Option 1: C&D Landfill cover (?) With acceptable market value: other metals, other plastic, batteries, tires, used oil, pallets and white goods	ethanol, CO ₂ , lignin, other metals (?), other aluminum, tires	other (non-container) glass in compost			Aluminum foil, C&D debris, LDPE, other metals, other paper, tires, wood products white goods, HHW, compostibles
COMMENTS	Most thoughtful and thorough proposal; odor from 32 acres of open air windrows cannot be controlled if problem; 6-acre leachate overflow pond within slurry wall for the Landfill.	No existing comparable commercial facilities. 115-MW natural gas-fired co-energy facility would use the ethanol facility as a thermal host (PURPA). ARK claims the projects each stand alone.	Recycling other than ONP, OCC, glass, etc. in compost, particularly plastic, is not proposed. Possible County WWTP sludge management cost savings.	Extensive public education program is included in rates. Sarasota County MRF may have surcharge for non-program (out of county) recyclables.	Proposal does not provide the costs of a comprehensive curbside collection program. Public education/promotion services are available but apparently are part of per month collection costs.	Proposal is effective at materials recovery. Fuel cubes do not count toward recycling goal. Composting not considered in evaluation.

⁽¹⁾ Proposed Recycle America of Sarasota materials recovery facility ("MRF"); Waste Management Paper Stock facility in the interim.

⁽²⁾ Proposed IWS Tampa MRF. Status uncertain.

⁽³⁾ Supplementary proposals offered after the original submission.

⁽⁴⁾ Manatee County's waste stream is 1,000 TPD₆ to 1,000 TPD₇, so that Recycling Separation Facility would have to operate at 1,200 to 1,400 TPD₅.

⁽⁵⁾ Includes yard waste processing at current disposal rate (\$18/ton).

⁽⁶⁾ Cardboard is not shown in single family and multi-family rate schedules, but is accepted at transfer facility.

⁽⁷⁾ Willingness to work with Resource Recovery Industries indicated but no concrete proposal is offered.

MANATEE COUNTY RECYCLING/WASTE REDUCTION PROGRAM

COMPARISON OF SHORTLISTED PROPOSALS

1 of 2

	The American Recycling Company, Inc. ⁽³⁾	ARK Energy Inc. / CSW Energy, Inc.	Bedminster Bioconversion Corporation	Cedar Hammock Refuse Disposal / WMI of Florida	Industrial Waste Service, Inc. ("IWS")	XL Disposal Corporation
Technology	Mixed MSW Recycling / Size Reduction / Open Windrow Composting	Mixed MSW Recycling Separation / Ethanol Production Co-Energy Plant	MSW Co-Composting with Sewage Sludge (Closed); Eweson Digesters → Aerated Channels → Aerated Curing Pile	Curbside Collection / Sorting of Recyclables; MRF; Curbside Yard Waste Collection	Transfer of Recyclables Collected by Others in "Blue Bags" (Newspaper / Other); MRF	"Automated" Mixed Waste Processing / NRT Rotary Material Separator
Feasibility of the Technology ⁽¹⁾	Feasible with limited U.S. track record. One much smaller facility is operating in Sumter County, FL.	Developmental on pilot scale only. Integrated pilot plant intended to be built in 1992.	Relatively proven technology. Three smaller U.S. reference facilities. The technology is waiting first large-scale success.	Well established collection system. WMI has 67 similar programs in Florida alone. Limited experience with yard waste.	Transfer of commingled recyclables and sorting in a MRF is a common technology.	Reference facility in Crestwood, IL and other similar facilities have proven successful.
Risks/Guarantees to the County	Scale up is a concern. Amerecycle offers a surcharge on residue to be landfilled > 30 % plus performance bond and insurance.	First-of-a-kind facility will require additional equity capital for financing. \$2 million dollar letter of credit should be evaluated for adequacy.	Modules proven at 50-TPD scale. Scale up is seen as minimal risk due to the modular nature of the technology.	Minimal risk to the County. Yard waste processing is not included.	Minimal technical risk to the County but program is incomplete.	Materials recovery/ recycling is expected to perform but fuel cubes and composting have more questions to be answered.
Time To Implement	<u>Mixed MSW</u> : 18 to 24 months from Contract; <u>C&D or Yard Waste</u> : within 6 months of Notice to Proceed	12 months construction, 2+ years total. ARK suggests 2-year interim contract for yard waste.	1 year to design/permit and 2 years to build; fast-track can get plant into operation within 1 year of Contract.	April or May 1992 for Sarasota County MRF; 3 months or less to Waste Management Paper Stock on interim basis; Yard waste depends on facility	6 months from Contract	9 to 12 months from Contract
Solid Waste Management Act Goals						
30% Recycling ⁽²⁾	Meets the goal for all options (DER considers diversion via composting as reduction/recycling)	Falls short of goal, even at 1,400 TPD _s . Ethanol does not count toward reduction goal per DER.	Meets goal because ONP and glass in compost count as recycling.	Does not meet goal without other complementary programs.	No. Proposal relies on others to collect recyclables.	No. Does not meet goal without credit for fuel cubes or better developed composting approach.
Majority of "Big 4"	ONP in compost counts. Meets goal for glass and aluminum. Short on plastic bottles except for Option "B".	No ONP credit for ethanol similar to compost. Meets goal for other three materials	No. Not for plastic bottles and aluminum cans. Not well addressed in proposal. Willing to consider additions	Meets goal for ONP with existing programs and commercial recycling. Short on plastic bottles	Would meet goal with existing programs and commercial recycling except for plastic bottles	Mixed waste material recovery from most of waste stream meets this goal with existing recycling
Yard Waste	No for primary proposal. Option 2 and Option "B" meet goal.	Yes. Will go to ethanol not landfill.	In compost, which is permitted	Separate collection in proposal	No specific proposal	Proposed composting/ mulching incomplete
C&D Debris	Option 1 in proposal	Will accept at basic tipping fee	Unacceptable waste to be handled by County	Not included	Not included	Included in proposal
Tires	Will handle at facility	Will accept at basic tipping fee	Unacceptable waste to be handled by County	Not included	Not included	Included in proposal

MANATEE COUNTY RECYCLING/WASTE REDUCTION PROGRAM

COMPARISON OF SHORTLISTED PROPOSALS

2 of 2

	The American Recycling Company, Inc. ⁽¹⁾		ARK Energy Inc. / CSW Energy, Inc.		Bedminster Bioconversion Corporation		Cedar Hammock Refuse Disposal / WMI of Florida		Industrial Waste Service, Inc. ("IWS")		XL Disposal Corporation	
Diversion Potential (TPY / % of Total Waste)	70% of waste <i>processed</i> 94,000 / 21.9		63-66% of waste <i>processed</i> 112,600 / 26.0		70% of waste <i>processed</i> 131,000 / 30.6		7 to 10% expected 29,200 / 6.8		< 10% 19,900 / 4.6		40%+ 140,700 / 32.9	
Landfill Life (Years from July 1, 1991)	30.6 to 36; Facility uses 80 acres at Landfill		35.4		34.7		25.8		25.3		36.5	
Economics	\$/ton	\$/HH/mo ⁽⁴⁾	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo
Processing Fees	18.76	2.03	11.09	1.20	24.79	2.68	⁽⁵⁾	⁽⁵⁾	2.56	0.28	23.70	2.56
Collection Costs	36.72	3.97	36.72	3.97	36.72	3.97	76.94 ⁽⁶⁾	8.32 ⁽⁶⁾	51.98	5.62	36.72	3.97
Landfill Costs	14.87	1.61	14.87	1.61	14.87	1.61	14.87	1.61	14.87	1.61	11.37	1.23
Revenues	(0.38)	(0.04)	(1.46)	(0.16)	(4.06)	(0.44)	0.00	0.00	0.00	0.00	(3.00)	(0.32)
Sludge Savings	NA	NA	NA	NA	⁽⁸⁾	⁽⁸⁾	NA	NA	NA	NA	NA	NA
Net Cost	69.97	7.57	61.22	6.62	72.33	7.82	91.81	9.93	69.41	7.51	68.79	7.44
LF Capital Cost ⁽⁷⁾	4.41	0.48	6.60	0.71	6.22	0.67	1.44	0.16	1.04	0.11	6.97	0.75
Environmental Acceptability	Composting is currently viewed favorably but odor problems plague the technology. Landfill site is appropriate.		Other sites, industrial plant and cogeneration (115-MW power plant) raise more questions than other proposals		Composting is currently viewed favorably but odor problems plague the technology. Landfill site is appropriate.		Recycling is popular		Recycling is popular		Materials recovery is highly acceptable particularly at landfill.	
Permittability	Enhanced version of a similar facility recently permitted in Florida.		Many permit issues to be addressed.		BBC has other projects pending in Florida.		No permit issues		No permit issues		Issues for facility related to composting and fuel cubes.	
COMMENTS	Most complete proposal. Local management proposed. Primary concern is ability to control odors from 32 acres of composting windrows. The minimum capacity should be considered further.		Attractive tipping fee if adequate contract and guarantees and financing for an unproven technology can be obtained. Cogeneration may improve financing. Economics should be considered further.		Thorough proposal with compost marketing well covered. Front-end separation/recycling and inspection of bags would be desirable. Enclosed operation with odor controls should be able to avoid problem.		High per-ton cost for separate collection but immediate results would be achieved. Short-term contract commitment.		High per-ton costs for only a part of the program.		Shortest time proposed of the processing facilities. The proposal covers materials recovery well but composting and fuel pellets options are incomplete.	

⁽¹⁾ Including track record of the technology and the vendor.

⁽²⁾ Only half of the goal can be credited from yard waste, C&D debris, white goods and tires.

⁽³⁾ Information shown for the primary proposal. Information for options is included in supplementary tables.

⁽⁴⁾ Cost to the typical single-family homeowner (\$/household/month).

⁽⁵⁾ Included in collection costs.

⁽⁶⁾ Collection costs adjusted for difference between \$18 and \$25/ton for yard waste processing based on 22.5 lb/HH/month.

⁽⁷⁾ Avoided landfill development costs for capacity remaining after 2015.

⁽⁸⁾ No significant savings were identified.

MANATEE COUNTY RECYCLING/WASTE REDUCTION PROGRAM

SUPPLEMENTARY ECONOMICS INFORMATION

	The American Recycling Company, Inc.					
	Option "A"		Primary Proposal with Options 1 and 2		Option "B"	
Economics	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo	\$/ton	\$/HH/mo
Processing Fees	18.47	2.00	21.02	2.27	24.71	2.67
Collection Costs	36.72	3.97	58.45	6.32	36.72	3.97
Landfill Costs	14.87	1.61	14.87	1.61	14.87	1.61
Revenues	(0.38)	(0.04)	(0.54)	(0.06)	(1.03)	(0.11)
Sludge Savings	NA	NA	NA	NA	NA	NA
Net Cost	69.68	7.53	93.81	10.14	75.27	8.14
LF Capital Cost	4.42	0.48	6.89	0.74	6.40	0.69

SUPPLEMENTARY DIVERSION POTENTIAL AND LANDFILL LIFE INFORMATION

	The American Recycling Company, Inc.		
	Option "A"	Primary Proposal with Options 1 and 2	Option "B"
Diversion Potential (TPY / % of Total Waste)	94,000 / 21.9	164,000 / 38.3	136,300 / 31.8
Landfill Life (Years from July 1, 1991)	30.6	36.0	35.2

COMPARISON OF MANATEE COUNTY'S AND OTHER COUNTIES' SOLID WASTE RATES

1 of 2

COUNTY	MANATEE	CHARLOTTE	ESCAMBIA	HILLSBOROUGH	LEE
I. TECHNOLOGY	Landfill (LF)	Landfill (LF)	Mixed Waste Processing (WTE/LF)	Waste-to-Energy (WTE/LF)	Landfill (LF)
II. COLLECTION					
Assessment Fee	YES	YES	NO	NO	YES
Solid Waste \$/HH/month (avg)	4.01 - 8.51	6.70	13.50 - 18.00	6.84 - 12.35	8.56
Yard Waste \$/HH/month (avg)	--	1.71			
White Goods \$/HH/month (avg)	--	0.09			
Other Costs \$/HH/month (avg)	--	0.31			
SUBTOTAL	4.01 - 8.51	8.81	13.50 - 18.00	6.84 - 12.35	8.56
III. DISPOSAL					
Assessment Fee	YES	YES	NO	YES	YES
\$/HH/month (avg)	1.95	2.29		7.70	6.84
IV. RECYCLING					
Assessment Fee	NO	YES	NO	YES	YES
\$/HH/month (avg)	0.00	2.18		1.02	1.06
V. ADMINISTRATION					
Assessment Fee (\$/HH/month)				0.52	
Tax Collector (\$/HH/month)	--				0.46
TOTAL ASSESSMENT (\$/HH/month)	5.96 - 10.46	13.28	--	9.25	16.92
TOTAL COST (\$/HH/month)	5.96 - 10.46	13.28	13.50 - 18.00	16.09 - 21.60	16.92
VI. TIPPING FEES (\$ per ton)					
Solid Waste	18.00	27.50	18.95		28.32
Tires	73.50	100.00	1.50 - 3.00/tire		107.36
White Goods	18.00	27.50	3.00 + 3.75/200 lbs		28.32
Yard Wastes/Wood	18.00	27.50	18.95		28.32
Processible (WTE)				57.20	
Non-Processible (LF)				26.80	
C & D Debris		27.50	18.95		28.32
Hazardous Wastes			150.00		
Special Wastes					
Recyclables					

COMPARISON OF MANATEE COUNTY'S AND OTHER COUNTIES' SOLID WASTE RATES

2 of 2

COUNTY	PASCO	POLK	PUTNAM	SARASOTA	SUMTER
I. TECHNOLOGY	Waste-to-Energy (WTE/LF)	Landfill (LF)	Landfill (LF)	Landfill (LF)	Separation/Solid Waste Composting
II. COLLECTION					
Assessment Fee	NO	YES	YES	YES	NO
Solid Waste \$/HH/month (avg)	8.50	9.34	4.92	3.91 - 5.90	8.00 - 10.00
Yard Waste \$/HH/month (avg)					
White Goods \$/HH/month (avg)					
Other Costs \$/HH/month (avg)					
SUBTOTAL	8.50	9.34	4.92	3.91 - 5.90	8.00 - 10.00
III. DISPOSAL					
Assessment Fee	YES	YES	YES	YES	NO
\$/HH/month (avg)	4.17	6.29	3.91	1.13 - 2.13	0.50/bag
IV. RECYCLING					
Assessment Fee	NO	NO	YES	YES	NO
\$/HH/month (avg)			2.25	2.18	
V. ADMINISTRATION					
Assessment Fee (\$/HH/month)					
Tax Collector (\$/HH/month)					
TOTAL ASSESSMENT (\$/HH/month)	4.17	15.63	11.08	8.83 - 12.21	0.00
TOTAL COST (\$/HH/month)	12.67	15.63	11.08	8.83 - 12.21	8.00 - 10.00+
VI. TIPPING FEES (\$ per ton)					
Solid Waste	45.65	31.00	36.00	18.14	35.00
Tires	45.65	62.00	50.00	50.00	150.00
White Goods	0.00	62.00	50.00	18.14	35.00
Yard Wastes/Wood	45.65	31.00	36.00	18.14	35.00
Processible (WTE)					
Non-Processible (LF)					
C & D Debris	45.65	31.00	36.00	18.14	35.00
Hazardous Wastes			55.00		
Special Wastes		62.00	50.00		
Recyclables				1.23	

MANATEE COUNTY

RFP #919022

RECYCLING/WASTE REDUCTION PROGRAM



MANATEE COUNTY GOVERNMENT

REQUEST FOR PROPOSAL #919022

RECYCLING/WASTE REDUCTION PROGRAM

TERMS AND CONDITIONS

A. SUBMITTAL

A.01 TIME & DATE DUE

Manatee County, a political subdivision of the State of Florida (hereinafter "Manatee County" or the "County") will receive sealed proposals from individuals, corporations, partnerships, and other legal entities organized under the laws of the State of Florida or authorized to conduct business in the State of Florida, until

3:00 P.M., Tuesday, August 13, 1991

A.02 OPENING LOCATION

extended to September 3, 1991

These proposals will be publicly opened in the Manatee County Purchasing, 2908 12th Street Court East, Bradenton, Florida in the presence of County officials at the above stated time and date. All proposers or their representatives are invited to be present, however NO DECISION will be made at that time on the selection.

A.03 DELIVERY REQUIREMENTS

Any proposals received after above stated time and date will not be considered. It shall be the sole responsibility of the proposer to have their proposal delivered to the Manatee County Purchasing Office for receipt on or before the above stated time and date. If a proposal is sent by U.S. Mail, the proposer shall be responsible for its timely delivery to the Purchasing Office. Proposals delayed by mail shall not be considered, shall not be opened at the public opening, and arrangements shall be made for their return at the proposers request and expense.

A.04 CLARIFICATION & ADDENDA

Each proposer shall examine all requests for proposal documents and shall judge all matters relating to the adequacy and accuracy of such documents. Any inquiries, suggestions or requests concerning interpretation, clarification or additional information pertaining to the request for proposal shall be made through the Manatee County Purchasing Office. The County shall not be responsible for oral interpretations given by any County employee, representative, or others. The issuance of a written addendum is the only official method whereby interpretation, clarification or additional information can be given. If any addenda are issued to this request for proposal, the County will attempt to notify all prospective proposers who have secured same, however, it shall be the responsibility of each proposer, prior to submitting the proposal, to contact the Manatee County Purchasing Office at (813) 748-4501 ext. 3352 to determine if addenda were issued and to make such addenda a part of the proposal.

A.05 SEALED & MARKED

Six signed copies of your proposal shall be submitted in one sealed package, clearly marked on the outside "Sealed Proposal for RFP #919022 Recycling/Waste Reduction Program" and addressed to:

Manatee County Purchasing
2908 12th Street Court East
Bradenton, Florida 34208-3998

A.06 LEGAL NAME

Proposals shall clearly indicate the legal name, address and telephone number of the proposer (company, firm, partnership, individual). Proposals shall be signed above the typed or printed name and title of the signer. The signer shall have the authority to bind the proposer to the submitted proposal.

A.07 PROPOSAL EXPENSES

All expenses for making proposals to the County are to be borne by the proposer.

A.08 IRREVOCABLE OFFER

Any proposal may be withdrawn up until the date and time set above for opening of the proposals. Any proposals not so withdrawn shall, upon opening, constitute an irrevocable offer for a period of 90 days to sell to Manatee County the goods or services set forth in the attached specifications until one or more of the proposals have been duly accepted by the Board of County Commissioners. Board action on proposals normally will be taken within 45 days of opening, however, no guarantee or representation is made herein as to the time between the proposal opening and subsequent Board action.

A.09 RESERVED RIGHTS

The County reserves the right to accept or reject any and/or all proposals, to waive irregularities and technicalities, and to request resubmission. Any sole response received the first submission date may or may not be rejected by the County depending on available competition and timely needs of the County. There is no obligation on the part of the County to award the contract to the lowest proposer and the County reserves the right to award the contract to a responsible proposer submitting a responsive proposal with a resulting negotiated agreement which is most advantageous and in the best interests of the County. The County shall be the sole judge of the proposal and the resulting negotiated agreement that is in its best interest and its decision shall be final. Also, the County reserves the right to make such investigation as it deems necessary to determine the ability of any proposer to perform the work or service requested. Information the County deems necessary to make this determination shall be provided by the proposer. Such information may include, but shall not be limited to; current financial statements by an independent CPA; verification of availability of equipment and personnel; and past performance records.

A.10 APPLICABLE LAWS

All applicable laws and regulations of the State of Florida and ordinances and regulations of Manatee County will apply to any resulting agreement. Any involvement with any Manatee County Procurement shall be in accordance

A.10 APPLICABLE LAWS (continued)

with Manatee County Procurement Code Ordinance 84-02. Appeals and Remedies are provided for in Section 9-101(1) of the Procurement Code. Protestors shall seek resolution of their complaints initially with the Purchasing Director, and secondly with the County Administrator prior to protesting to the Board of County Commissioners. A protest with respect to this request for proposal shall be submitted in writing prior to the scheduled opening date of this proposal, unless the aggrieved person did not know and could not have been reasonably expected to have knowledge of the facts giving rise to such protest prior to the scheduled opening date of this proposal. The protest shall be submitted within six calendar days after such aggrieved person knows or could have reasonably been expected to know of the facts giving rise thereto. All claims by a proposer against the County relating to a contract, except protests, shall be submitted in writing to the Purchasing Director for a decision as required by Section 9-103 of the Manatee County Procurement Code.

A.11 CODE OF ETHICS

With respect to this proposal, if any proposer violates or is a party to a violation of the Code of Ethics of Manatee County per Manatee Procurement Code Ordinance 84-02, Article 12, Ethics in Public Contracting, and/or the State of Florida per Florida Statutes, Chapter 112, Part III, Code of Ethics for Public Officers and Employees, such proposer may be disqualified from performing the work described in this proposal or from furnishing the goods or services for which the proposal is submitted and shall be further disqualified from submitting any future proposals for work or for goods or services for Manatee County.

A.12 COLLUSION

By offering a submission to this request for proposal the proposer certifies the proposer has not divulged to, discussed or compared his proposal with other proposers and has not colluded with any other proposer or parties to this proposal whatever. Also, proposer certifies, and in the case of a joint proposal each party thereto certifies as to his own organization, that in connection with this proposal:

- a. any prices and or cost data submitted have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices and or cost data, with any other proposer or with any competitor;
- b. any prices and or cost data quoted for this proposal have not been knowingly disclosed by the proposer and will not knowingly be disclosed by the proposer prior to the scheduled opening directly or indirectly to any other proposer or to any competitor;
- c. no attempt has been made or will be made by the proposer to induce any other person or firm to submit or not to submit a proposal for the purpose of restricting competition;
- d. the only person or persons interested in this proposal as principal or principals is/are named therein and that no person other than therein mentioned has any interest in this proposal or in the contract to be entered into; and
- e. no person or agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee excepting bona fide employees or established commercial agencies maintained by the Purchaser for the purpose of doing business.

A.13 CONTRACT FORMS

Any agreement or contract resulting from the acceptance of a proposal shall be on forms either supplied by or approved by the County and shall contain, as a minimum, applicable provisions of the request for proposal, and the proposers submission to the proposal. Any variance whatsoever from the proposal as submitted, that the proposer may request be included in the contract, shall be at the sole discretion of the County. The County reserves the right to reject any agreement which does not confirm to the request for proposal and any County requirements for agreements and contracts.

A.14 INDEMNIFICATION

The successful proposer covenants and agrees to indemnify and save harmless the County, its agents and employees, from and against all claims, suits, actions, damages or causes of actions, or judgments arising out of the terms of the resulting agreement for any personal injury, loss of life or damage to property sustained as a result of the performance or non-performance of services or work; from and against any orders, judgments, or decrees, which may be entered against the County, its agents or employees; and from and against all costs, attorney's fees, expenses and other liabilities incurred in the defense of any such claim, suit or action, and the investigation thereof. Nothing in the award, resulting agreement, contract or Purchase Order shall be deemed to affect the rights, privileges and immunities of the County as set forth in Florida Statute Section 768.28.

A.15 PROPOSAL FORMS

All Proposals must include therewith the required forms, however, the Proposal itself does not have to be in any prescribed form. Proposers must indicate any variances from the County requested specifications, terms and conditions, otherwise proposers must fully comply with the County requested specifications, terms and conditions. Alternate proposals may or may not be considered at the sole discretion of the County.

A.16 SELECTION

Membership of the Selection Committee may be determined and or announced just prior to the scheduled opening or selection time.

The duly appointed Selection Committee shall rank proposers. If there are more than three proposers the Selection Committee shall select at least the top three proposers to be ranked. Within a few days after proposals have been opened, any selected proposers notified by the Selection Committee should be prepared to meet with the Selection Committee at the time and date determined by the Selection Committee. Selection Committee determinations shall be based upon the Selection Committee's ability to differentiate qualifications applicable to the scope and nature of the services to be performed per this request for proposal. Determinations shall be based on but not limited to the following considerations:

- a. competence, including technical education and training, experience in previous undertakings of this kind of proposal, capability, availability of adequate personnel, equipment and facilities, the extent of repeat business, and, where applicable, the relationship of cost estimates to actual costs on previous undertakings;
- b. current work load;
- c. financial responsibility;

A.16 SELECTION (continued)

- d. ability to observe and advise whether specifications are being complied with, where applicable;
- e. past record of professional accomplishments;
- f. proximity of the project involved;
- g. past record of performance for the County and/or for other governmental entities.
- h. ability to design an approach and management plan to meet the requirements and needs of the County;
- i. whether the proposer (firm) is a certified minority business enterprise as defined by the Florida Small and Minority Business Assistance Act; and
- j. other specific selection criteria that may be mentioned in the scope of this proposal.

A.17 PUBLIC ENTITY CRIMES

Florida Statutes Section 287.133(3)(a) requires that prior to award of a contract for goods or services, including building construction contracts in excess of Threshold Category II (\$10,000), a sworn statement (Form PUR 7068 (Rev.04/91) shall be submitted.

A.18 INSURANCE

The proposer will not commence work under a contract until all insurance under this section and such insurance coverage as might be required by the County has been obtained.

Minimum amounts of insurance (inclusive of any amounts provided by an umbrella or excess policy) shall be as follows:

a. Workers' Compensation/Employers' Liability

Part One - There shall be no maximum limit (other than as limited by the applicable statute) for liability imposed by Florida Worker's Compensation Act, the Longshoremen's and Harbor Workers' Compensations Act or any other coverages required by the contract documents which are customarily insured under Part One of the standard Worker's Compensation Policy.

Part Two - The minimum amount of coverage for those coverages required by the contract documents which are customarily insured under Part Two of the standard Workers' Compensation Policy shall be:

\$100,000	(Each Accident)
\$500,000	(Disease-Policy Limit)
\$100,000	(Disease-Each Employee)

b. Commercial General Liability

The limits are to be applicable only to work performed under this contract and shall be those that would be provided with the attachment of the Amendment of Limits of Insurance (Designated Project or Premises) endorsement (ISO Form CG 25 01) to a Commercial General Liability Policy with the following minimum limits.

General Aggregate	
Products/Completed Operations Aggregate	\$ 300,000
Personal and Advertising Injury	\$ 300,000
Each Occurrence	\$ 300,000
Fire Damage (Any One Fire)	\$ Nil
Medical Expense (Any One Person)	\$ Nil

A.18 INSURANCE (continued)c. Business Auto Policy

Each Occurrence Bodily Injury and Property

Damage Liability Combined

\$ 300,000

Annual Aggregate (If Applicable)

\$Three Times The Each
Occurrence Limitd. Owners Protective Liability Coverage

The minimum OCP Policy limits per occurrence and, if subject to an aggregate, annual aggregate to be provided by the Proposer shall be the same as the amounts shown above as the minimum per occurrence and general policy aggregate limits respectively required for the Commercial General Liability Coverage. The limits afforded by the OCP Policy and any excess policies shall apply only to the Owner and the Owner's officials, officers, agents and employees and only to claims arising out of or in connection with the work under this contract.

e. Certificates of Insurance and Copies of Policies - Certificates of Insurance in triplicate evidencing the insurance coverage specified in the four above paragraphs a., b., c. and d., shall be filed with the Purchasing Director before operations are begun. The required certificates of insurance shall not only name the types of policy, policy number, date of expiration, amount of coverage, companies affording coverages, but also shall refer specifically to the bid number, project title and location of project. Insurance shall remain in force at least one (1) year after completion and acceptance of the project by the County in the amounts and types as stated herein, including coverage for all products and services completed under this contract.

ADDITIONAL INSURED: - The County of Manatee shall be specifically named as an additional insured.

If the initial insurance expires prior to the completion of operations and or services by the proposer, renewal certificates of insurance and required copies of policies shall be furnished by the proposer and delivered to the Purchasing Director thirty (30) days prior to the date of their expiration.

f. Professional Liability The Proposer, at its own cost and expense, shall effect and maintain at all times during the life of this Agreement a good and sufficient professional liability insurance policy of not less than Five Hundred Thousand Dollars \$500,000, protecting the Proposer against claims of the County for negligence, errors, mistakes, or omissions in the performance of the services to be performed and furnished by the Proposer.

Nothing herein contained shall in any manner create any liability against the County on behalf of any claim for labor, services, or materials, or of subcontractors, and nothing herein contained shall affect the liability of the Proposer or his sureties to the County or to any workmen or materialmen upon bond given in connection with this Agreement.

THIS FORM MUST BE RETURNED WITH YOUR PROPOSAL

PROPOSAL SIGNATURE FORM

RFP 919022

RECYCLING/WASTE REDUCTION PROGRAM

Firm Name

Mailing Address

City, State

Telephone Number

Address: Branch office servicing Manatee County other than above

Name, Title & Telephone No. of contact Representative for County

The undersigned attests to his (her, their) authority to submit this proposal and to bind the firm herein named to perform as per contract, if the firm is awarded the Contract by the County.

Signature

Witness Signature

Date

Typed Name and Title
of above signer

Typed Name and Title
of above signer

**SWORN STATEMENT UNDER SECTION 287.133(3)(a),
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES**

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC
OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted to _____
(print name of the public entity)
by _____
(print individual's name and title)
for _____
(print name of entity submitting sworn statement)
whose business address is _____

(if applicable) its Federal Employer Identification Number (FEIN) is _____.
(If the entity has no FEIN, include the Social Security Number of the individual
signing this sworn statement: _____.)
2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.
4. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means:
 1. A predecessor or successor of a person convicted of a public entity crime: or
 2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.
5. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public

entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Please indicate which statement applies.)

Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, nor any affiliate of the entity have been charged with and convicted of a public entity crime subsequent to July 1, 1989.

The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (Please attach a copy of the final order.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

(Signature)

Date: _____

STATE OF _____

COUNTY OF _____

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

_____ who, after first being sworn by me, affixed
(name of individual signing)

his/her signature in the space provided above this _____ day of _____, 19____.

NOTARY PUBLIC

My commission expires:

General Conditions

I. GENERAL INSTRUCTIONS

A. PURPOSE

The County of Manatee is soliciting written proposals, open and unlimited in content, from qualified proposers to enter into contract for a County wide recycling/waste reduction program to include, but not limited to, proposals in conjunction with various Recycling Curb Side Collection Programs*, Recycling Drop Off Collection Centers* (*limited to the Franchise Waste Haulers per the Solid Waste Management Act), as well as Material/Waste Reduction Facilities with front-end recycling separation capability along with tail-end technology for solid waste reuse. Each program may be responded to separately at the exclusion of other programs.

This course of action is primarily in response to the "Solid Waste Management Act" that mandates to all counties in Florida a 30% reduction in solid waste landfill by 1994 (see Abstract of law). In summary, the County seeks to select a program that will coincide and enhance the County's current waste reduction efforts at its landfill facility and will insure the County meets its 30% mandated reduction goal as well as other related Solid Waste Management Act requirements in a manner that is environmentally and economically feasible to Manatee County and its citizens. All proposals shall be geared to this goal and will be reviewed accordingly.

The County will not be willing to enter into a joint venture arrangement, to provide up-front capital for equipment or facility costs, to provide guarantees for financing, or to raise money through bond issues or tax revenues. However, the County is interested, and would request, a sharing of revenues derived from the sale of recyclables as well as any revenues derived from the sale of the end product of solid waste refuse.

If a reduction facility is proposed and is to be located at the Lena Road Landfill facility, then the proposer needs to include the necessary requirements for acreage, water and sewer utilities, electric needs, permits and any other construction and/or operational necessities.

B. FORM OF PROPOSALS

The proposal shall contain two separate sections; a "technical proposal" and a "cost/price proposal". Each of these sections shall be complete in itself so evaluation of one may be accomplished independently of the other.

C. REFERENCES

Proposer shall provide a capability profile indicating similar tasks related to proposer's experience in other counties/municipalities in the subject area of the proposal.

D. WORK EXPERIENCE

The proposal shall include past work experience of a similar nature. The information to be included in this section are the name, telephone number, contact person, and length of period work was or is being performed. Also, indicate personnel involved and whether or not they are still with your firm.

General Conditions

E. PERIOD OF CONTRACT

The proposal shall include the length of contract necessary for proposer to execute selected Recycling/Waste Reduction Program. In addition to contract time frame, proposer shall be prepared, in some initial fashion, to meet the 1992 special handling of "yard waste" and the 1994 30% reduction goal deadlines. The period of this contract shall remain in force from the date of execution for the time period set forth in the contract. If a waste reduction facility is proposed, proposer shall provide detailed information as to ownership and management of facility at the time of expiration of the contract.

II. REQUIREMENTS AND SPECIFICATIONS

A. SCOPE OF WORK

Proposers shall be responsible for the collection, transportation and marketing of the following recyclable materials to include, but not limited to: aluminum cans, glass containers, newspaper, clear and color mixed plastic containers and bottles, steel/tin cans, corrugated boxes and yard debris.

Proposer shall also include source of materials collected, eg: single-family residential, multi-family dwellings, commercial or industrial. In addition, state any necessary public information, educational services, and materials to be provided by the County.

Pending chosen program/technology, successful proposers are granted rights to recyclables collected only by said program/technology that it will be serving within unincorporated Manatee County.

B. HOURS OF OPERATION

Each proposal shall indicate the hours and days of operation in order that purpose of proposal can be accommodated.

C. PROPOSER RESPONSIBILITIES

The proposer shall:

- a. Provide the name and telephone number of a permanent contact to deal with issues in regard to the program.
- b. Be responsible for all expenses associated with the collection, transportation, and marketing of recyclable materials.
- c. Be responsible for the reporting of all goods recycled by weight and type on a monthly basis to the County. Accurate weight receipts from state certified scales indicating weight by type of recyclables shall be submitted to the Solid Waste Division of Public Works on or before the tenth (10th) day of each month.

D. TERMS OF PAYMENT

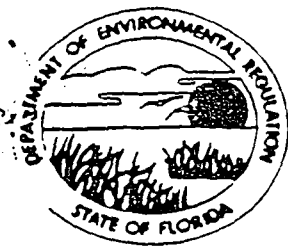
Proposer shall include their conditions of payment with specifics as to whether rates will be calculated on a "per ton", "per household" or equally acceptable financial indicator basis. Also to be included is the proposed formula for sharing of any revenues derived from the sale of recyclables as well as any revenues derived from the sale of the end product of solid waste refuse.

General Conditions

Proposer shall submit to the County financial guarantees or provide assurances that the proposer shall not default on the contract or leave Manatee County with unfinished facilities or programs. A financial profile of the proposer's business should be included with the proposal.

E. **ADDITIONS AND DELETIONS**

The County reserves the right to add to or delete similar items to those included in the Contract should requirements change. Items added or deleted may depend on current market trends and will be mutually agreed upon by the County and the Contractor. Additions or Deletions shall require formal Contract amendment.



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor

Dale Twachtman, Secretary

John Shearer, Assistant Secretary

IMPLEMENTING THE 1988 FLORIDA SOLID WASTE MANAGEMENT ACT: A PROGRESS REPORT

William Hinkley
Environmental Administrator, Solid Waste Section
Florida Department of Environmental Regulation
Tallahassee, FL 32399-2400

ABSTRACT

Florida generated an estimated 15.8 million tons of municipal solid waste (MSW) in 1988. The state population continues to grow rapidly, and per capita solid waste generation is also projected to continue to grow. These two trends could result in the generation of nearly 30 million tons of MSW by 2010. Of the 15.8 million tons of MSW generated in 1988, 4% of the total was recycled, 21% was burned in waste-to-energy plants, and the remaining 75% was disposed of in landfills.

The 1988 Florida Solid Waste Management Act is an extraordinarily broad statute, which revised nearly all aspects of Florida's solid waste management program. Counties must achieve an overall 30% recycling goal by 1994. Grants and awards are provided to assist in meeting this goal. In addition, the act established a number of new programs for the management of special wastes. The act also provided for new initiatives in training of operators of solid waste management facilities, research and demonstration, education, packaging requirements and litter control.

Much has been accomplished over the past year towards implementing the new law. All of Florida's 67 counties met the requirement to initiate a recycling program by July 1, 1989, although no counties are yet close to reaching the 30% recycling goal. Newsprint is currently the most commonly collected item for recycling, while plastics are the least commonly collected. Over \$20 million in grants was distributed to counties to help initiate recycling. Rules were adopted for the management of waste tires, used oil, biohazardous waste, compost and other special wastes, and standards were set for degradable plastics. Training programs are in operation for landfill operators and recycling coordinators. Several solid waste research programs and demonstration projects are underway, and new initiatives were started to deal with the state's litter problems.

IMPLEMENTING THE 1988 FLORIDA SOLID WASTE MANAGEMENT ACT: A PROGRESS REPORT

INTRODUCTION

Florida's 1988 Solid Waste Management Act, which the Wall Street Journal called "the most ambitious assault on solid waste yet attempted in any state," outlines a broad framework for state and local actions to deal with solid waste. This paper provides background information on solid waste management in Florida; highlights the key provisions of the Solid Waste Management Act; and summarizes progress made in the first year in implementing the law.

BACKGROUND ON FLORIDA SOLID WASTE MANAGEMENT

Definition

Municipal solid waste" (MSW) is defined in the 1988 Solid Waste Management Act to be "any solid waste, except for sludge, resulting from the operation of residential, commercial, governmental, or institutional establishments that would normally be collected, processed, and disposed of through a public or private solid waste management service. The term includes yard trash, but does not include solid waste from industrial, mining, or agricultural operations".

Generation

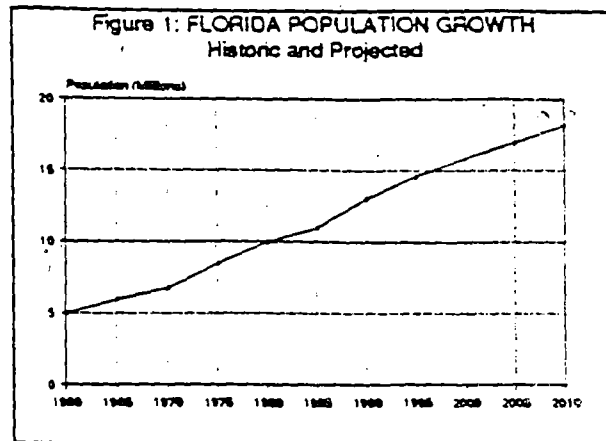
The average statewide per capita MSW generation rate in Florida in 1988 is estimated to have been about 7 pounds/person/day, or about one and one quarter tons/person/year. For the state as a whole, this equals 43,400 tons/day or 15.8 million tons/year.

A rate of 7 lbs./person/day, is considerably higher than the 1988 national average of 3.6 lbs./person/day estimated by Franklin and Associates for the U.S. Environmental Protection Agency. The reasons for this discrepancy are not known, but it is due in part to how the two numbers were calculated and the large number of visitors Florida receives each year.

Growth in solid waste generation is a function of population growth and the growth in per capita generation. Florida, with a population of nearly 13 million, is now the fourth most populous state in the nation. The state's population continues to grow rapidly, increasing at over 900

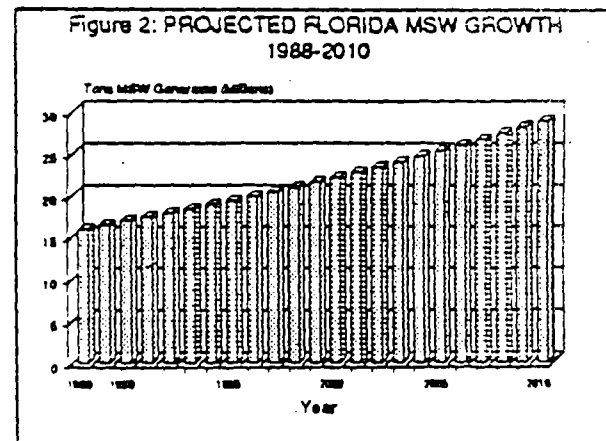
people/day, or the equivalent of a new Tampa per year. The state's population is projected to continue to grow at about 1.7%/year over the next twenty years. Figure 1 depicts historic and projected population growth.

Per capita solid waste generation in Florida is projected to grow at a rate of 1%/year. Figure 2 shows the resulting growth in solid waste for the period 1988-2010, assuming the population growth shown in Figure 1, and 1%/year growth in per capita generation.



A significant fraction of the waste stream is made up of so-called "special wastes", defined to be "solid wastes that can require special handling and management, including, but not limited to, white goods, whole tires, used oil, mattresses, furniture, lead-acid batteries and biological wastes". The following quantities of special wastes are estimated to have been generated in Florida in 1988:

- * 15 million tires.
- * 24 million gallons of used oil.
- * 3 million refrigerators, stoves and other appliances.
- * 10-14 million pieces of furniture and furnishing items.
- * 600,000 tons of ash from waste-to-energy plants.
- * 3-4 million spent lead acid batteries are removed from cars and trucks.
- * 80-160,000 tons of household and small quantity generator



hazardous wastes.

* 200-400,000 tons of biohazardous waste produced by over 50,000 biohazardous waste generators.

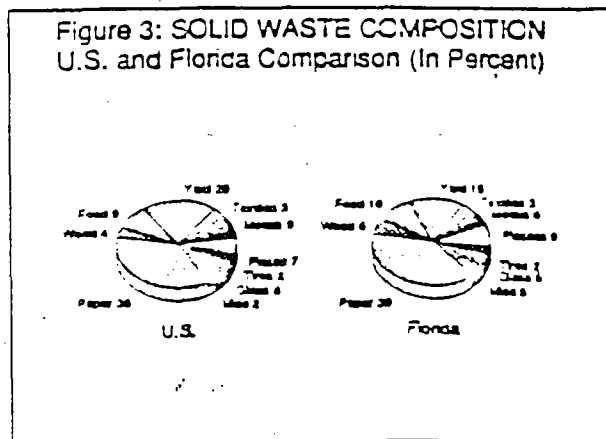
* Unknown millions of tons of construction and demolition debris generated by 57,000 licensed building contractors in Florida.

Some of these special wastes are being recycled. An estimated 16 million of the 24 millions of used oil is being recycled or burned as boiler fuel; most of the lead acid batteries are currently being recycled; and many of the appliances and other white goods are being recycled. Recycling of tires is also beginning to occur.

Composition

The composition of Florida solid waste in 1988 is not known with any certainty. However, an estimate can be made by averaging the results of four county waste composition studies conducted in 1987 and 1988. This data is displayed in Figure 3, where it is compared to the U.S. composition determined by the 1988 EPA/Franklin study. These comparisons do not show substantially different waste compositions, although there are some differences.

The composition of MSW changes over time, reflecting changes in technology, life styles, the economy and other factors. Figure 4 compares the composition of Florida solid waste as it occurred in 1976 with the 1988 average Florida composition previously shown in Figure 2. As can be seen, there have been changes in several categories. Yard waste has decreased from 25% to 15%, food waste has declined from 15% to 10%, wood waste has increased from 2% to 6% and plastics has increased from 2% to 9%.



The EPA/Franklin study summarizes the composition of the U.S. municipal solid waste stream for the period 1960 to the present, and projects the composition to

the year 2000. The share of waste stream attributable to paper and paperboard has risen from 30% in 1960 to 37% currently, and this trend is expected to continue. There has also been a slow but steady rise in the percent of the waste stream made up by plastics, from less than 1% in 1960 to a projected 9% by 2000. Aluminum cans have shown a gradual rise over time, but the percentage of other metals is gradually falling. In contrast, the percentages of the waste stream made up of tires, textiles and wood have remained fairly constant.

Management

Of the estimated 15.8 million tons of MSW generated in 1988, .6 million tons, or approximately 4% of the total, was recycled. 3.3 million tons, or 21%, was burned in nine waste-to-energy plants. Figure 5 summarizes the growth in WTE plant capacity since 1980. The remaining 11.9 million tons, or 75%, was disposed of in landfills. Figure 6 summarizes current solid waste management in Florida.

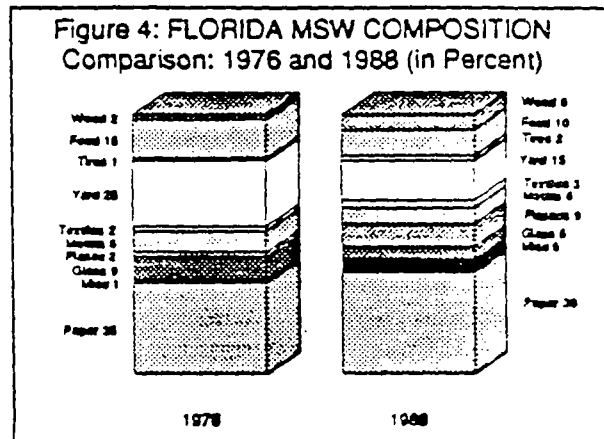


Figure 7 depicts Florida's solid waste strategy for the period 1988 to 1994, the year the 30% recycling goal established by the 1988 Solid Waste Management Act is to be achieved.

HIGHLIGHTS OF THE 1988 SOLID WASTE MANAGEMENT ACT

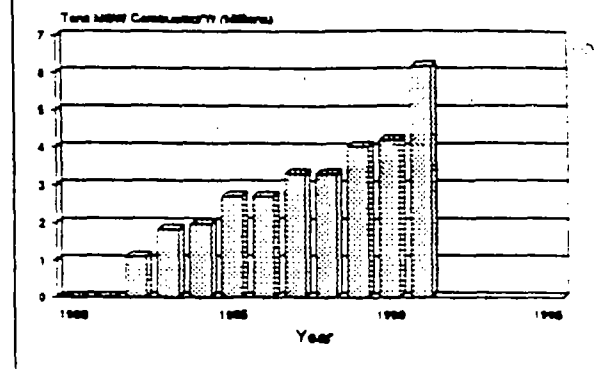
The 1988 Florida Solid Waste Management Act (SWMA) is an extraordinarily broad statute, which revised nearly all aspects of Florida's solid waste management program. The SWMA was the result of nearly two years of work by the state legislature, state agencies, local governments and dozens of private sector interests. The following are the key elements of the nearly 100 page law.

Local Government Responsibilities

The SWMA clarifies that counties have primary responsibility for solid waste management in Florida. Cities may not operate disposal facilities except under special circumstances. Interlocal agreements between cities and counties are essential to good management, especially recycling. All

local governments which provide for solid waste services must account for the full costs of solid waste services--the so-called "truth in garbage" provision. The SWMA encourages establishment of solid waste enterprise accounts. Counties (as well as privately owned landfills) must establish landfill closure escrow accounts or provide other proof of financial responsibility to close landfills. Counties may establish special annual assessments for solid waste, which are collected along with property taxes.

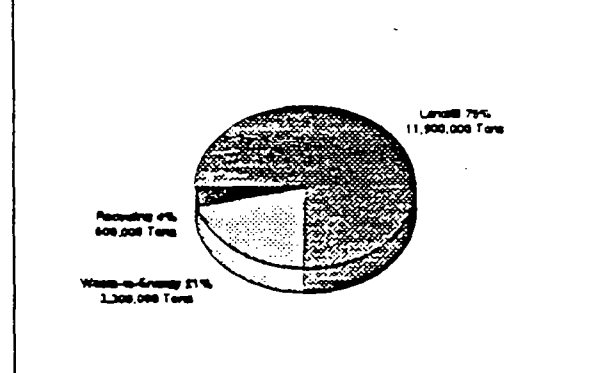
Figure 5: FLORIDA WTE PLANT TREND
Total State Capacity



State Agency Responsibilities

Over a dozen state agencies are given responsibilities under the SWMA. The Department of Environmental Regulation (DER) has the lead responsibility for developing the state program, adopting all regulations and standards, permitting facilities and managing a series of grant programs. Other agencies with key roles include the Department of Health and Rehabilitative Services, which shares responsibilities with DER in managing biohazardous waste, the Department of Commerce, which is seeking to bring more recycling businesses to Florida, the Department of Education, which is developing recycling curriculum materials for Florida K-12 schools and the Department of General Services which is charged with developing procurement standards for products with recycled content.

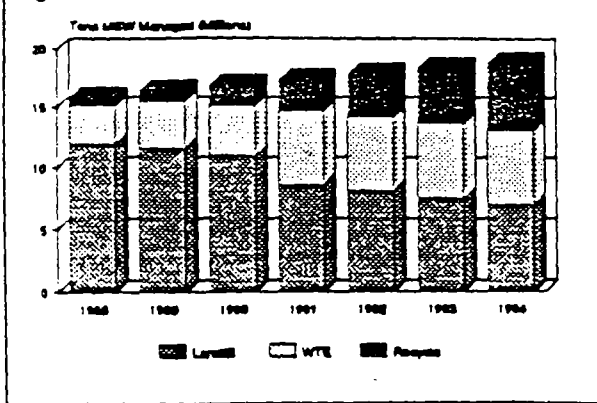
Figure 6: 1988 FLORIDA MSW MANAGEMENT
15.8 Million Tons Total



Recycling Requirements and Goals

The SWMA requires all counties to initiate a recycling program by July 1, 1989, which separates and offers for recycling a majority of aluminum cans, glass, newspaper and plastic bottles. They must achieve this 50% plus rate by the end of 1994. In addition, counties must

Figure 7: FLORIDA'S SOLID WASTE STRATEGY



achieve an overall MSW 30% recycling goal by 1994. No more than half of the goal can be attained through recycling construction and demolition debris, yard trash, tires and white goods.

Recycling Incentives

An exemption from the state sales tax is provided in the SWMA for equipment "integral to recycling". In addition, state government is directed to remove

all biases against recycled materials in bidding specifications and to establish up to a 10% price preference for products containing recycled materials. State agencies are required to set a good example by setting up statewide agency recycling programs. The DER and Department of Commerce are directed to prepare an annual survey and directory of the recycling industry. The Department of Commerce is also directed to conduct market research and work with firms to locate plants in Florida which recycle or use recovered materials.

Grants and Awards

Six grant and two award programs were established by the SWMA, with \$30 million appropriated for Fiscal Year 1989. Grants and awards are for recycling, recycling education, innovative recycling projects, used oil management, waste tire management, and litter control.

Special Wastes

New management programs are established by the SWMA for biohazardous waste, waste tires and used oil. These include registration of haulers, storage, transportation and disposal standards, and other measures. In addition, the SWMA directs DER to adopt new regulations or prohibitions for ash from the combustion of solid waste, compost, lead acid batteries, yard trash, white goods and construction and demolition debris.

Training

The SWMA requires that all operators of solid waste facilities must be trained. DER is not allowed to issue a permit for a new facility which

does not have a trained operator. DER is charged with establishing qualifications and training programs, in conjunction with the university system, community colleges and private professional associations.

Research, Development and Demonstration

The SWMA establishes a Center for Solid and Hazardous Waste Management within the state university system to coordinate applied research. In addition, specific demonstration projects were funded for seafood waste management, yard trash composting, and anaerobic digestion of solid waste. The Department of Transportation is directed to evaluate the use of crumb rubber from tires, ash from the combustion of solid waste in roads and other uses, such as fence posts made from recycled plastic. The DER is also authorized to issue research permits to allow testing of innovative management, recycling and disposal concepts.

Packaging Requirements

Certain packaging types are banned in the SWMA, including detachable pop-tops and packaging made from fully halogenated chloroflorocarbons. Other packaging materials must be degradable by specified dates. Beverage container holding devices and retail carry-out plastic bags must degrade within 120 days, styrofoam or plastic-coated paper products used in conjunction with food for human consumption must degrade within 12 months, one year after they are certified as safe by the U.S. Food and Drug Administration and are available in commercial quantities.

Litter

The Clean Florida Commission was created by the SWMA. In addition, the non-profit organization "Keep Florida Beautiful Inc." was created to report to and coordinate with the Clean Florida Commission in reducing litter throughout the state. The two groups are to work together on litter control and awareness projects. The SWMA also provides for a major strengthening of Florida litter law, including provisions for penalty points on driver licenses and confiscation of vehicles for illegal dumping.

Advanced Disposal Fee

The advanced disposal fee (ADF) applies to all containers made from glass, plastic, aluminum, plastic coated paper or other metals. If a 50% recycling rate is not achieved for each container type by 1992, a one cent/container fee per container type is imposed. The recycling rate is to

be determined by DER. If the 50% rate is not achieved by 1995, the fee increases to two cents/container. The ADF is to be redeemable at designated redemption centers, with the state then reimbursing the redemption centers.

Fees and Funding

The major source of first year funding was from Stripper Well Settlement Funds, part of the Overcharge Settlement Agreement. The balance of funds for the first and following years are generated from several new fees. \$32 million was appropriated for Fiscal Year 1988-89.

ONE YEAR IMPLEMENTATION PROGRESS REPORT

Recycling

Local Governments Recycling Programs. Local recycling programs can be viewed from two basic perspectives: the materials the programs collect, and the systems the programs use to collect and process those materials. The SWMA sets reduction or recycling goals for specific materials, but leaves it up to the counties and the cities to decide what systems or methods they will use to meet the goals.

Newsprint was the most commonly collected recyclable material as of May, 1989. It was collected in 46 cities, or approximately 10% of all Florida cities. There are 26 counties in which newspaper is being collected at either the municipal, county unincorporated, or county-wide level, although many of these programs are just in the pilot stage. Aluminum is collected in 28 cities, and glass is collected in 24 cities.

The least commonly collected of the mandated materials is plastic, and many counties seem to be uncertain about how and when they are going to collect and recycle this material. There are 11 counties in which plastic is being collected at either the municipal, county unincorporated, or county-wide level, although many of these programs are also just in the pilot stage. Six of those counties collect plastic in either the unincorporated areas or on a county-wide basis. Palm Beach County, with 831,146 people, is the largest county in that group. Six cities in another five counties collect plastic, with Jacksonville (population 639,146) being the largest city in that group.

As of May, 1989, very few cities or counties were doing any collection or recycling of special wastes--white goods, yard trash, construction and

demolition debris, and waste tires. The most commonly collected material was yard trash, collected in five cities and five county-wide areas.

There is great diversity among the types of existing and planned materials collection and processing systems in Florida. Also, the type of processing system determines the type of collection system. Curbside and drop-off collection systems require citizens to do some of the processing by separating recyclable materials at home. An Intermediate Processing Center (IPC) processes recyclable materials only, not the total raw solid waste. A Materials Recovery Facility (MRF) requires no separation of materials by citizens because it processes the total raw solid waste stream, separating the recyclables from the non-recyclable materials, and further separating them by specific materials.

Residential curbside collection programs are more common in cities and less common in rural and unincorporated areas. The less densely the population is distributed, the more prohibitive is the cost of a curbside collection program. Residential curbside collection programs exist in 21 counties covering 37 cities, 2 unincorporated areas, and 4 county-wide areas, while 22 counties plan to implement such programs in an additional 62 cities, 5 unincorporated areas, and 9 county-wide areas. Residential drop-off programs exist in 17 counties covering 21 cities, 4 unincorporated areas, and 4 county-wide areas. Another 36 counties plan such programs in another 48 cities, 16 unincorporated areas, and 18 county-wide areas. Several other counties and cities are considering curbside and drop-off programs, but have yet to make any final decisions as of May, 1989.

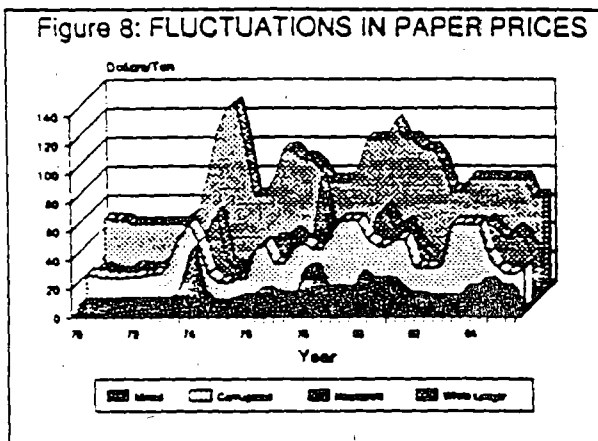
Although there are many people living in apartments and condominiums throughout Florida, only five counties (covering three cities and three county-wide programs) currently have a recyclable materials collection program for multi-family buildings. Seven more cities have indicated that they plan on including multi-family buildings in their recycling programs. The problem is complicated by the fact that solid waste from multi-family buildings is often collected on commercial routes, rather than residential.

Very few counties or cities have a recyclable materials collection program for the commercial sector, and not many more are planned at this time. However, more local interest in this approach is anticipated during the next few years because of its relatively high cost effectiveness for certain materials, especially cardboard and glass. In many cities and counties, a comprehensive recycling program, covering both residential

and commercial sectors, will be the only way to achieve the 30% recycling goal. In addition, when the ADF begins in 1992 many commercial facilities will be included in a recycling program.

Most of the interest in centralized processing is at the county level, and mainly for MRFs. With the exception of Palm Beach County and Jacksonville, the interest in MRFs comes mainly from the more rural and less-populated counties, where the economics of curbside collection are less attractive.

There are eight counties with no existing or planned curbside or drop-off collection programs, and each of them has, or is planning to have, a MRF. The only exception is Bay County, which has a waste-to-energy plant. However, there are an additional 11 counties and two cities that do either curbside and/or drop-off collection of recyclable materials and either have, plan to have, or are considering, a MRF.



Recycling Industry, surveyed 242 potential dealer/processors in Florida in a two-part survey. Of these firms, 170 responded to the initial survey and 136 completed a detailed survey. Florida dealer/processors purchased 1,619,186 tons of recyclable materials in 1986. Industrial and commercial sources accounted for 58% of total tonnage, with private individual and non-profit groups supplying 29% and municipal programs 3%. Florida dealer/processors sold 1,603,960 tons of recyclable materials in 1986. Ferrous metals accounted for over half of the tonnage with nonferrous metals and paper together claiming an additional 45% of total tonnage shipped. The greatest future gain is expected in container glass. Florida industrial users consumed 29% of the total tonnage shipped. Out-of-state and export markets consumed over half of the total volume. Sales of recyclable materials by Florida dealer/processors in 1986 totalled \$129 million.

Markets are both the greatest obstacle and the greatest opportunity in the recycling of materials recovered or diverted from the solid waste stream. Without adequate markets for recovered materials, recycling

cannot take place. There are both economic and non-economic barriers to recycling. One key issue is that materials entering markets for recycling will behave much like other commodities in price fluctuation. An example of the historic cycles of price swings in secondary materials is illustrated in Figure 8 for several kinds of paper.

Recycling Incentives. The Florida Department of Commerce is mandated by the SWMA to assist and encourage the recycling industry in the state. The Department has been helping Florida businesses expand and encouraging business start-ups to meet the recycling industry opportunities. In addition, out-of-state businesses are encouraged to use Florida recovered materials and to locate facilities in Florida.

The Department of Revenue has amended its rules to provide a sales tax exemption for recycling machinery and equipment. The machinery and equipment must be certified by as recycling machinery by DER. The amendment provides that machinery and equipment must be used to increase the consumption of Florida-source recyclable materials by not less than 10 percent at a single location.

The Department of General Services is directed to review and revise existing procurement procedures and specifications for the purchase of products and materials, to eliminate discrimination against products and materials with recycled content. By January, 1990, purchasing personnel of state agencies will review and revise their procedures and specifications and report their findings. A list of commodities having recycled content is completed. It will be used by state agencies to determine the products which may be recycled or reused. Manufacturers and suppliers have been contacted to determine the percentage of recycled material contained in the products, their durability, safety, and competitiveness. A Certification of Recycled Content will be included in bid invitations, and standards and guidelines will allow for a bid preference. The Department has also initiated a Capitol Complex recycling program, and is assisting a number of other state agencies in starting their recycling programs. Approximately 23 buildings will be included in the DGS program. All state agencies in state owned buildings are expected to participate in the program. The DER has had an in-house recycling program for office paper, newspaper and aluminum cans for nearly two years, and the program has been highly successful.

Special Waste Management

Biohazardous Waste. Biohazardous waste regulation is a joint responsibility of the Department of Health and Rehabilitative Services

(HRS) and DER. The HRS rule addresses packaging, handling and on-site storage, while DER's rule covers transportation, on and off-site incineration and off-site disposal. Initial rules were adopted in March, with further amendments adopted in May and July. Air permits for biohazardous waste incinerators will now address pathogen destruction, temperature and dwell time, and other biohazardous issues, in addition to conventional air quality issues. Off-site storage sites for biohazardous waste now need a general permit. In addition, biohazardous waste haulers are now required to be registered with DER.

Combustor Ash. The SWMA directs DER to establish standards for the management and disposal of ash from the combustion of solid waste. Two workshops were held and several key technical issues were unresolved. An engineering consulting firm under contract with DER was requested to conduct a thorough technical review of ash management. In August, DER convened a Technical Advisory Committee on ash management and disposal to evaluate the proposed rule and make recommendations. The DER will hold one and possibly two more workshops on the revised language. Adoption is scheduled for April, 1990.

Compost. DER is directed by the SWMA to set standards for the production and allowable uses of solid waste compost. Workshops were held in March and May with many good issues raised, including accounting for the widely varying technologies which are grouped as "MSW composting", terminology, establishing maturity levels for compost, and testing requirements and methods. The rule was revised to resolve these issues and was adopted in September.

Construction and Demolition Debris. Effective July 1, 1989, construction and demolition (C&D) debris had to be separated from the solid waste stream and segregated in separate locations at a landfill. Off-site disposal of C&D requires a general permit. The conditions of the permit include: controlling access to site; notifying DER of site location; provisions for disposing of non-C&D; and plans and methods for closure.

Lead Acid Batteries. No disposal of lead acid batteries in landfills or WTEs was allowed after January 1, 1989. In addition, any person selling batteries at retail must accept used batteries as trade-ins.

Used Oil. No landfilling was allowed after October 1, 1988, with some exceptions. Also, effective October 1, 1988, used oil was prohibited for road oiling, dust control, weed abatement or other similar uses. A rule on used oil management was adopted in November, 1989, and addresses registration and annual reporting, liability insurance and evidence of

familiarity with appropriate state laws and regulations. General permits will be required for used oil recycling facilities.

Waste Tires. No landfilling of whole tires was allowed after July 1, 1989. The SWMA directs DER to develop rules addressing the storage and disposal of waste tires and processed tires, requires permits for waste tire sites, collection facilities, and processing facilities. Waste tire haulers are required to register with the DER. Provisions are also made in the rule for abatement of tire stockpiles and for tire research and development projects. The rule was drafted and presented to a Technical Advisory Committee in October, 1988, brought to a workshop in November, adopted in December, 1988, and took effect in February, 1989.

White Goods. No landfilling of white goods is allowed after January 1, 1990.

Yard Trash. No landfilling in lined landfills is allowed after January 1, 1992.

Packaging Requirements

Separable Pop-tops. Separable pop-tops from beverage containers were prohibited after January 1, 1989.

Degradable Plastic. After July 1, 1989 beverage container devices must be degradable within 120 days. After January 1, 1990, plastic bags provided by retail stores must be degradable within 120 days. After October 1, 1990, no plastics can be sold which are made from fully halogenated chloroflorocarbons. One year after certified as safe by the Food and Drug Administration and available in commercial quantities, polystyrene and plastic coated paper containers used in conjunction with food for human consumption must be degradable within 12 months. A rule setting specific standards for these requirements was adopted in December, 1989.

Litter

The Clean Florida Commission, comprised of the heads of the DER, and the Departments of Transportation, Natural Resources, Education and Commerce, was established over the past year and has been meeting regularly. In addition, the private sector, non-profit corporation Keep Florida Beautiful, Inc. has been organized. An advertising firm has been selected to begin to implement a statewide litter prevention campaign. Adopt-A-Highway and Adopt-A-Beach programs are in the process of

being developed. One of the most powerful tools available to combat illegal dumping is that provision of the SWMA which provides for criminal penalties for commercial littering. Illegal dumpers are increasingly being arrested and their vehicles confiscated, and this trend will most likely continue.

Education

The Department of Education has developed curriculum guidelines for recycling education for use in the state's K-12 public school system. The Department has also developed guidelines for the collection of recyclable materials and for the reduction of solid waste in the state education system.

Training

Solid waste management facility operator training activities have been underway over the past year in two major areas: landfill operators and recycling coordinators.

Landfill Operators. The DER cooperated with the Governmental Refuse Collection and Disposal Association (GRCDA) and the Training and Research in Environmental Occupations (TREEO) Center of the University of Florida to develop a landfill operators training course. The course lasts for three days and is taught twice a year by DER staff, GRCDA members, consulting engineers and university faculty. It is recognized as the approved course for landfill operators, and nearly 100 operators have been trained to date.

Recycling Coordinators. The DER held a series of meetings during the fall and winter with the GRCDA Recycling Committee, community colleges, bottling industry representatives and EPA to develop an approach and funding sources for a recycling coordinator training program. A program was finally developed and sponsored by Santa Fe Community College, with joint funding by the DER and the Florida Soft Drink Association. The first training session was held the last week of July, 1989 and 32 coordinators were trained. Future sessions will be held during the winter and spring of 1990.

Research and Demonstration

Center for Solid and Hazardous Waste Management. The Florida Center for Solid and Hazardous Waste Management, a center for technology development, technology transfer and information

dissemination, was created by the SWMA. The Center has been established and has oriented its research program to accomplish work in four main areas in 1988 and 1989: waste reduction, recycling and reuse; land disposal of non-recycled solid waste; beneficial uses of recycled materials, including combustion ash, in construction materials and related applications; and biohazardous waste management.

High Technology and Industry Council. The SWMA mandated the Council to address research problems associated with designing and implementing recycling materials such as plastics, rubber, metal, glass, paper, and other components of the waste stream. The Council published a report in February of 1989, titled "Research Requirements For The Recycle And Reuse of Solid Waste Materials" to meet the above mandate.

Department of Transportation Studies. The SWMA mandates the DOT to expand, where feasible, its use of recyclable materials in highway construction programs. As a result of the legislation, a research project between the Department's Bureau of Materials and the Department of Civil Engineering at the University of Florida entitled "The Utilization of Certain Waste By-Products For Highway Applications" was produced. The report examined the feasibility of using reclaimed oil for burner fuel, ground rubber tires and recycled glass in asphalt, recycled steel for rebar and I-beams, recycled mixed plastic for guard rails and fence posts, fly ash in portland cement concrete and in soil stabilization.

Demonstration Projects. Seafood waste disposal: in some small coastal counties, seafood waste can be as much as a third of the waste disposed of at the landfill. The material is difficult to handle, odor problems are notorious, and alternatives are needed for the recycling or improved disposal. DER has contracted with the Sea Grant Program of the state university system to establish composting, recycling and other projects in four coastal counties. Yard trash composting: The Department of Agriculture and Consumer Services, the Institute of food and Agricultural Sciences and Alachua County are cooperating in a yard trash composting demonstration project, which will start operation in December, 1989. Anaerobic digestion of MSW: The SWMA provides funding to the Institute of Food and Agricultural Sciences to conduct technology transfer seminars and workshops on anaerobic bioconversion of MSW and sewage sludge, with biogas recovery. Workshops and seminars were held this summer.

Grants and Awards

Recycling Awards. The SWMA directed DER to reserve \$750,000 from first year funds to award local governments which had a recycling program in place when the law took effect on October 1, 1988, and which met certain criteria. Application forms were distributed October 1, 1988 with a January 1, 1989 deadline. 40 programs were found eligible and each received an equal share of \$750,000, or \$18,750 per local government. Funds were distributed in April. This program provided ample evidence that there was already a great deal of recycling underway at the local level when the SWMA took effect.

Small County Grants. All counties with populations less than 30,000 receive an annual base grant of \$25,000. The SWMA requires that funds must be used in the first year to purchase scales for landfills. Landfill scales are essential for establishing equitable charges for solid waste disposal, a means to pay for solid waste management and closure over the long term, as well as to see if progress is being made towards the recycling. In the second and successive years, small county grants may be used for general solid waste management purposes, such as improving landfill operations, purchasing equipment and other needs. Application forms were sent to 27 eligible counties in July, 1988 and returned in October. Grant Agreements were sent to eligible counties in March, and funds were sent to counties in June.

Recycling Grants. The major grant program established by the SWMA is for recycling. \$15 million was made available in 1988 for recycling grants to local governments, for capital costs and temporary operating subsidies. 25% of the grant funds are awarded as equal base grants to all applicants. The remaining 75% is called the "incentive" portion of the grant, and is awarded on the basis of the total population within the jurisdiction which is participating in the recycling program. The SWMA requires that, in order to avoid having to match the grant, counties must sign interlocal agreements establishing cooperative recycling programs with cities within their boundaries whose populations equal at least 75% of the total population of all the cities in the county. Cities with populations greater than 50,000 are eligible to apply for the grants independent of their respective county, but they must match the grant amount if they choose to do so. Applications were mailed to all eligible applicants on March 15. All 67 counties and one city applied for the grants and applications were returned to DER by May 19. In order to provide additional time to bring more cities under interlocal agreement with their counties, the application deadline was extended into August. Grant agreements were signed with all participants by June 30, and

distribution of funds began in September.

Education Grants. \$4 million was made available in 1989 for grants to local governments for recycling education. These grants are a companion to the local government recycling grants and were distributed according to the same funding formula and timetable. The grants are for recycling education, the promotion of recycling and market development for recovered materials.

Waste Tire Grants. The SWMA establishes a grant program for counties for the recycling and proper disposal of waste tires. Grants are distributed to counties on the basis of population. Approximately \$1 million was available for Fiscal Year 1989 grants. Applications were mailed March 15 and returned May 19. Grant Agreements were signed in June and initial funds were available in September.

Used Oil Management Grants. The SWMA provides \$1 million in grants to local governments for establishing public used oil collection centers. As of June 30, 54 counties, 6 cities and one Indian tribe had been awarded between \$4,000 and \$25,000 depending on the size and type of program to establish collection centers.

Litter Grants. Over 35 communities and non-profit organizations were awarded a total of \$249,000 in litter prevention grants.

Private Sector Innovative Recycling Awards. DER was directed to use \$750,000 to provide awards directly to the private sector for innovative recycling programs. Up to \$75,000 may be awarded per project. A Request For Proposals was issued in November, 1989 and 39 proposals were received by the deadline in December. Awards will be made in January, 1990.

Fees and Funding

First year funding for implementing the SWMA came from two major sources: the Oil Overcharge Settlement Fund and several new fees established by the SWMA. The Oil Overcharge Settlement Fund provided start-up funds for the first year only, while money raised from the newly established fees. Funding for the second and subsequent years will be based on revenues received from the fees established by the SWMA.

Oil Overcharge Settlement Fund. The SWMA provided \$18.5 million for first year funding from the Oil Overcharge Settlement Fund.

contingent upon U.S. Department of Energy (DOE) approval. Oil Overcharge funds are the result of the settlement of a large civil suit brought against several large oil companies by DOE for overcharging for oil during the 1970s, when the price of oil was regulated. Initial application for funds was made in July, 1988, in conjunction with the Governor's Energy Office. Negotiations were held with the Governor's Energy Office and DOE during August-December. Final approval to use Oil Overcharge funds was obtained in late December. Funds were used as the source of revenue for local government grants in Fiscal Year 1988-89.

Waste Tire Disposal Fee. The SWMA established a \$.50/tire disposal fee for new tires sold at retail, beginning in January, 1989. The fee increases to \$1.00/tire in January, 1990. First year tire fees raised approximately \$900,000. Future revenue is estimated at \$8.5 million for Fiscal Year 1990 and \$12.4 million for Fiscal Year 1991.

Newspaper Fee. The SWMA established a \$.10/ton fee on newsprint consumed in the state, with provisions for \$.10 credit for each ton of recycled newsprint used. The fee raised approximately \$20,000 in Fiscal Year 1988-89.

Sales Tax Registration Fee. The SWMA established a fee of \$25/year for all businesses with taxable sales of at least \$30,000 but not more than \$200,000/year and \$50/year for businesses with taxable sales of greater than \$200,000/year. These fees raised \$4.4 million in Fiscal Year 1988-89.

Reduction in Dealer Sales Tax Collection Allowance. The SWMA reduced the allowance given to retailers who collect sales tax for the state, and diverted the reduction into the SWMTF. This provision raised \$6.6 million in Fiscal Year 1988-89.

INFORMATIONAL DATA

MANATEE COUNTY SOLID WASTE RECYCLING PROGRAMS

Manatee County, a coastline community, has a current recorded population of 201,707 with an anticipated growth factor of 3% per year over the next several years.

In addition to Tourism, the major commercial industries located within Manatee County are as follows:

Tropicana, Inc.	Wellcraft, Inc.
Chris Craft, Inc.	Eaton Corporation
Bausch & Lomb, Inc.	Loral American Beryllium Corp.

Manatee County currently operates its solid waste collection program, both commercial and residential, under Mandatory Collection Ordinance 85-11 and amendments. Solid waste is collected by our two franchise waste haulers, Industrial Waste Services, Inc. and Waste Management of Manatee County, and disposed of at the County Lena Road Landfill, a Class I facility, located off State Road 64 in the east central section of the County. Residential collection is unlimited in its amounts and collected twice weekly. The commercial segment, depending on size and disposal needs, may be served by a curbside can service, dumpster bin collection, compactor bins or construction roll-offs with the requirement of a once per week minimum collection schedule. The average municipal solid waste entering the Lena Road facility on a daily basis is in the 1,000 ton range. The tonnage includes disposal of wastes from our six municipalities as well as the unincorporated areas of the County.

A curbside recycling program for 3,000 households was implemented in Manatee County in October, 1989, for the collection of clear glass, aluminum and newsprint. In November of 1990, this program was expanded to 7,650 households and eight drop-off sites were added for the collection of newsprint, aluminum, plastic milk, water and soda bottles and clear, green and brown glass.

Waste reduction programs at the Landfill facility include shredding of all waste tires for use as landfill cover, segregation and sale of white goods and scrap metal to a processing facility and shredding and mulching of yard debris for use in various county departments and as soil erosion control at the landfill. A program for the collection of household hazardous waste is currently being defined and will be implemented prior to November, 1991.

Attached is a copy of our most recent waste composition study, landfill tonnage report and recycling tonnage and participation reports.

Manatee County MSW Composition

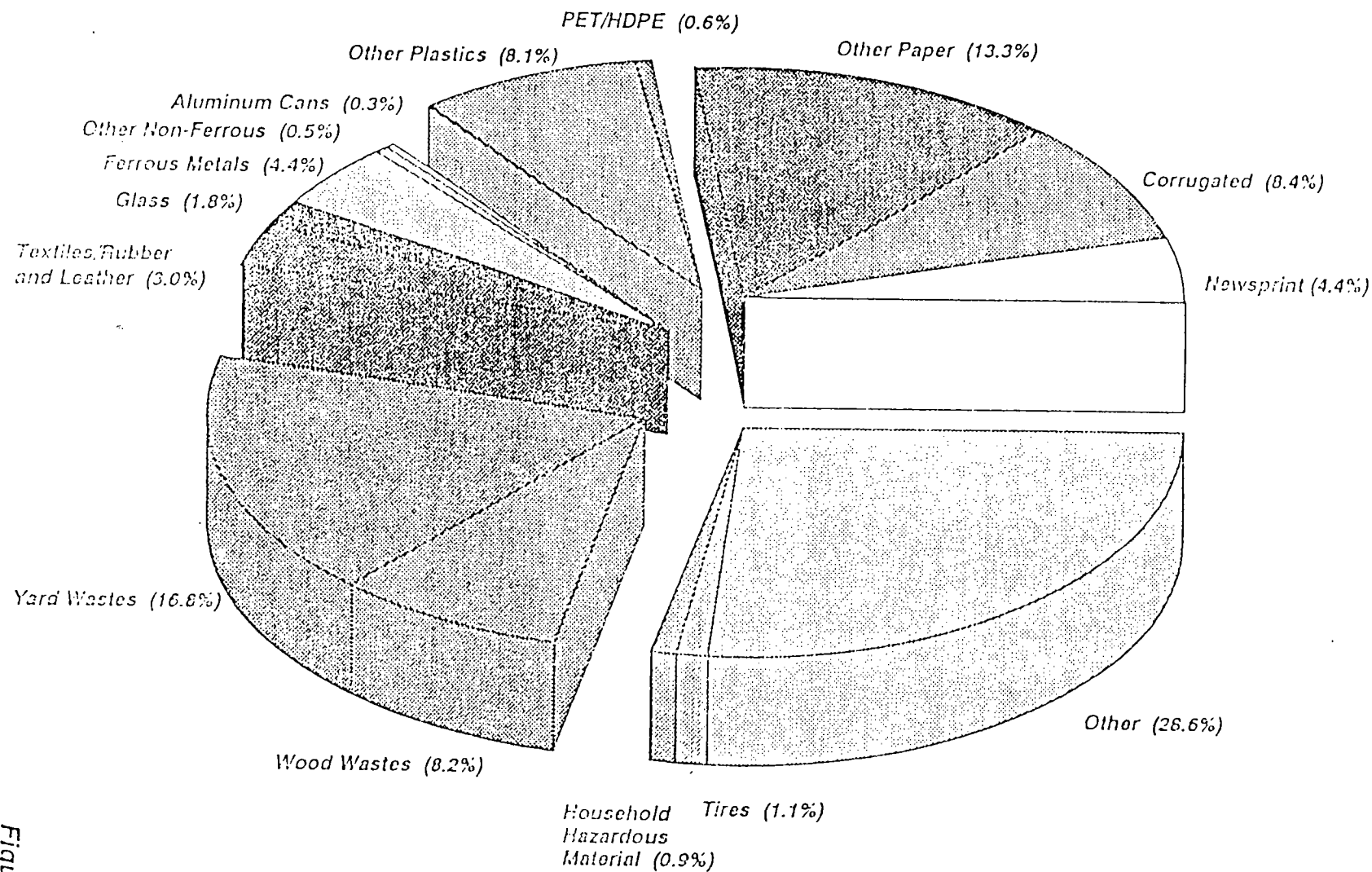


Figure 1-1

Results of October/November 1989 sampling/survey program.

MANATEE COUNTY PUBLIC WORKS
LENA ROAD LANDFILL FACILITY
TONNAGE COMPARISON: 1985-1991

	1985		1986		1987		1988		1989		1990		1991		1992	
	T/M	T/D	T/M	T/D	T/M	T/D	T/M	T/D	T/M	T/D	T/M	T/D	T/M	T/D	T/M	T/D
JAN	18720	780	20399	848	20559	857	22367	932	23857	954	26931	1036	28134	1082		
FEB	16748	698	19408	809	19967	832	23512	980	23058	960	23303	971	31828	1326		
MAR	18496	771	20527	855	24149	1006	26639	1110	27138	1005	25909	960	28204	1084		
APR	18728	780	20636	860	23451	977	23829	993	24370	975	23935	957	27437	1055		
MAY	18048	752	20316	847	21400	892	21847	910	25646	986	23929	920	27594	1061		
JUN	16868	703	20143	839	22703	946	25756	1073	28088	1080	26334	1013				
JUL	13862	578	21339	889	24321	1013	23838	993	25606	1024	24633	985				
AUG	18425	768	20673	861	21717	905	27844	1160	27140	1005	26266	973				
SEP	19063	794	20003	833	22285	929	25234	971	24360	974	23298	971				
OCT	20104	838	21452	893	23449	977	24070	926	24325	936	32426	1201				
NOV	19080	795	19278	803	22176	924	24276	971	22903	916	24770	991				
DEC	19241	802	21408	892	24852	1035	24385	938	21539	862	25590	1024				
TOTAL/AVG	217383	755	245582	852	271029	941	293597	996	298030	973	307323	1000	143197	1122		

LENA ROAD LANDFILL

MATERIAL CLASS REPORT-LANDFILLED, DIVERTED, RECYCLED in TONS

MATERIAL CLASS	MAY 1991			FISCAL 90-91 YEAR TO DATE		
	LANDFILLED	DIVERTED	RECYCLED	LANDFILLED	DIVERTED	RECYCLED
ASH						802
CLEAN-UP	18			1796.7		
CONCRETE		5			1220	
FLUFF	1648			12231		
ILLEGAL	51			268.6		
MIXED	25031.0			203867.5		
MULCH			257			319.4
SH-TIRES			103			438.6
RAW-TIRES		38			298.3	
WH-GOODS			12			153.3
WOOD		803			7700.	
TOTALS	26748	846	372	218163.8	9219.	1713.

CURBSIDE COLLECTION STATISTICS

April 1, 1991 through April 30, 1991

INDUSTRIAL WASTE SERVICE - AREA 1*Coach House--Shadowbrook--Palmetto Point/Bay Colony
Woodlawn Lakes--Thousand Oaks--Hidden Meadows--Piney Point
Snead Island

PARTICIPATION RATE PER HOUSEHOLD:

Total Number of Homes Served Per Week	2,225
Participation Rate Percentage	50.96 %

TONNAGE BY CATEGORY

Paper	21.97 tons
Glass	4.08 tons
Aluminum	.68 tons

TOTAL TONNAGE FOR AREA 1	26.73 tons
--------------------------	------------

WASTE MANAGEMENT OF MANATEE - AREA 2*Selected Areas of Bayshore Gardens, Holiday Heights,
Palma Sola Shores, San Remo, Tidy Island, Riverview Landings,
Palma Sola Harbour, Woods of Palma Sola, Flamingo Cay, Country
Oaks, Westwinds, Braden Woods, Pescara lakes, Palm Aire, El
Conquistador, Riverview Bluffs.

PARTICIPATION RATE PER HOUSEHOLD:

Total Number of Homes Served Per Week	3,646
Participation Rate Percentage	67.7 %

TONNAGE BY CATEGORY

Paper	56.13 tons
Glass	10.69 tons
Aluminum	1.80 tons

TOTAL TONNAGE FOR AREA 2	68.62 tons
--------------------------	------------

TOTALS BY
CATEGORY:

Participation Rate Percentage	59.33 %
Paper	78.10 tons
Glass	14.77 tons
Aluminum	2.48 tons

Total Volume by Weight	95.35 tons
------------------------	------------

TOTAL WEIGHT/TONS - PREVIOUS MONTH	107.04 tons
TOTAL WEIGHT/TONS - CURRENT MONTH	95.35 tons
TOTAL PAPER COLLECTED - YEAR TO DATE	595.72 tons
TOTAL GLASS COLLECTED - YEAR TO DATE	108.20 tons
TOTAL ALUMINUM COLLECTED - YEAR TO DATE	18.17 tons
TOTAL WEIGHT COLLECTED - YEAR TO DATE	722.19 tons

gbp

COLLECTION DROP-OFF SITE TONNAGES

INDUSTRIAL WASTE SERVICE AREAS

DATE	PAPER	PLASTIC	ALUMINUM	CLEAR GLASS	GREEN GLASS	BROWN GLASS	TOTAL/ DATE
1991							
MAR.-'91	.00	.07	.00	.18	.09	.00	.34
	<u>MARCH TOTAL:</u>	<u>.34</u>					
APR.-'91	1.15	.10	.03	.27	.06	.09	2.04
	<u>APRIL TOTAL:</u>	<u>1.70</u>					

COLLECTION DROP-OFF SITES

WASTE MANAGEMENT AREA

DATE	PAPER	PLASTIC	ALUMINUM	CLEAR GLASS	GREEN GLASS	BROWN GLASS	TOTAL/ DATE
<u>1990</u>							
OCT.	1.75	.07	.01	.31	.06	.14	2.33
	<u>OCTOBER TOTAL: 2.34 TONS (partial month)</u>						
NOV.	30.10	.95	.56	4.69	1.05	.73	40.41
	<u>NOVEMBER TOTAL: 38.08 TONS</u>						
DEC.	63.40	2.15	1.07	6.30	1.69	1.42	116.45
	<u>DECEMBER TOTAL: 76.03 TONS</u>						
<u>1991</u>							
JAN.	65.45	3.29	1.51	13.96	2.38	2.35	205.39
	<u>JANUARY TOTAL: 88.94 TONS</u>						
FEB.	70.87	3.57	1.14	10.82	2.71	1.71	296.91
	<u>FEBRUARY TOTAL: 90.82 TONS</u>						
MAR.	101.36	4.63	1.82	14.52	4.73	2.90	426.87
	<u>MARCH TOTAL: 129.96 TONS</u>						
APR.	111.15	5.99	2.08	16.95	4.05	4.71	571.80
	<u>APRIL TOTAL: 144.93 TONS</u>						

RECYCLING & EDUCATION

GRANT APPLICATION

TABLES AND WORKSHEET

TABLE 1-A
MUNICIPAL SOLID WASTE TO BE COLLECTED AND RECYCLED BY MATERIAL TYPE
(JULY 1, 1991 - JUNE 30, 1992)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Material Type	To Be Collected ^[1]				To Be Recycled				
	Tons/Year	% of Total Tons/Year ^[2]	Pounds/Capita/Year ^[3]	Pounds/Capita/Day ^[4]	Tons/Year	% of Total Tons/Year ^[5]	Pounds/Capita/Year ^[6]	Pounds/Capita/Day ^[7]	
1. Newspapers	21,500	5.0%	195	0.534	4,300	3.9%	39	0.107	
2. Glass	22,000	5.1%	200	0.547	11,000	9.9%	100	0.273	
3. Aluminum cans	1,700	0.4%	16	0.043	700	0.6%	6	0.017	
4. Plastic bottles	1,900	0.4%	18	0.048	100	0.1%	1	0.002	
5. Construction & demolition debris	96,900	22.5%	879	2.408	67,800	61.2%	615	1.685	
6. Yard waste	53,900	12.5%	489	1.339	10,800	9.7%	98	0.268	
7. White goods	4,500	1.0%	41	0.112	2,300	2.1%	21	0.057	
8. Tires	3,800	0.9%	34	0.094	1,900	1.7%	17	0.047	
9. Other plastics	26,300	6.1%	239	0.653	0	0.0%	0	0.000	
10. Ferrous metals	16,400	3.8%	148	0.407	3,300	3.0%	30	0.082	
11. Other non-ferrous metals	2,300	0.5%	20	0.056	600	0.5%	5	0.015	
12. Paper: corrugated	29,300	6.8%	265	0.727	5,900	5.3%	54	0.147	
13. Paper: office	10,200	2.4%	93	0.254	1,000	0.9%	9	0.025	
14. Paper: other	32,900	7.6%	299	0.819	0	0.0%	0	0.000	
15. Food wastes	15,200	3.5%	138	0.379	0	0.0%	0	0.000	
16. Textiles	10,800	2.5%	98	0.270	1,100	1.0%	10	0.027	
17. Miscellaneous	81,800	19.0%	742	2.032	0	0.0%	0	0.000	
18. Total	431,400	100.0%	3,913	10.722	110,800	100.0%	1,005	2.753	

^[1] Collected = Recycled + Landfilled + Combusted

^[2] % of Total Tons/Year = (Column 2, Material Type) x 100 ÷ (Column 2, Line 18)

^[3] Pounds/Capita/Year = (Column 2, Material Type) x (2,000 pounds/ton) ÷ (County Population)

^[4] Pounds/Capita/Day = (Column 4, Material Type) ÷ (365 days/year)

^[5] % of Total Tons/Year = (Column 6, Material Type) x 100 ÷ (Column 6, Line 18)

^[6] Pounds/Capita/Year = (Column 6, Material Type) x (2,000 pounds/ton) ÷ (County Population)

^[7] Pounds/Capita/Day = (Column 8, Material Type) ÷ (365 days/year)

NOTE: Line 18 of this table should be the same as Line 5 of Table 2-A.

COUNTY: Manatee

January 1, 1992 Population: 220,500

91TBL1-A.WK1/27-Sep-91/EF-5327-AA1-AB

TABLE 1-B
MUNICIPAL SOLID WASTE TO BE COLLECTED AND RECYCLED BY MATERIAL TYPE
(JULY 1, 1993 - JUNE 30, 1994)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Material Type	To Be Collected ^[1]				To Be Recycled			
	Tons/Year	% of Total Tons/Year ^[2]	Pounds/Capita/Year ^[3]	Pounds/Capita/Day ^[4]	Tons/Year	% of Total Tons/Year ^[5]	Pounds/Capita/Year ^[6]	Pounds/Capita/Day ^[7]
1. Newspapers	22,500	5.0%	195	0.534	11,300	6.3%	98	0.268
2. Glass	23,000	5.1%	200	0.547	11,500	6.4%	100	0.273
3. Aluminum cans	1,800	0.4%	16	0.043	900	0.5%	8	0.021
4. Plastic bottles	2,000	0.4%	18	0.048	1,000	0.6%	9	0.024
5. Construction & demolition debris	101,400	22.5%	879	2.408	71,000	39.6%	616	1.686
6. Yard waste	55,200	12.3%	479	1.312	44,200	24.6%	383	1.050
7. White goods	4,700	1.0%	41	0.112	3,500	1.9%	30	0.083
8. Tires	4,000	0.9%	34	0.094	3,000	1.7%	26	0.071
9. Other plastics	27,500	6.1%	239	0.653	0	0.0%	0	0.000
10. Ferrous metals	17,100	3.8%	148	0.407	12,800	7.1%	111	0.304
11. Other non-ferrous metals	2,400	0.5%	20	0.056	600	0.3%	5	0.014
12. Paper: corrugated	30,600	6.8%	265	0.727	15,300	8.5%	133	0.363
13. Paper: office	10,700	2.4%	93	0.254	2,100	1.2%	18	0.050
14. Paper: other	34,500	7.7%	299	0.819	0	0.0%	0	0.000
15. Food wastes	16,000	3.6%	138	0.379	0	0.0%	0	0.000
16. Textiles	11,300	2.5%	98	0.270	2,300	1.3%	20	0.055
17. Miscellaneous	85,500	19.0%	742	2.032	0	0.0%	0	0.000
18. Total	450,200	100.0%	3,904	10.695	179,500	100.0%	1,556	4.263

^[1] Collected = Recycled + Landfilled + Combusted

^[2] % of Total Tons/Year = (Column 2, Material Type) x 100 ÷ (Column 2, Line 18)

^[3] Pounds/Capita/Year = (Column 2, Material Type) x (2,000 pounds/ton) ÷ (County Population)

^[4] Pounds/Capita/Day = (Column 4, Material Type) ÷ (365 days/year)

^[5] % of Total Tons/Year = (Column 6, Material Type) x 100 ÷ (Column 6, Line 18)

^[6] Pounds/Capita/Year = (Column 6, Material Type) x (2,000 pounds/ton) ÷ (County Population)

^[7] Pounds/Capita/Day = (Column 8, Material Type) ÷ (365 days/year)

NOTE: Line 18 of this table should be the same as Line 5 of Table 2-B.

COUNTY: Manatee

January 1, 1994 Population: 230,700

91TBL1-B.WK1/27-Sep-91/EF-5327-AA1-AB

TABLE 2-A
MUNICIPAL SOLID WASTE TO BE COLLECTED AND RECYCLED BY GENERATOR TYPE
(JULY 1, 1991 - JUNE 30, 1992)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Generator Type	To Be Collected ^[1]				To Be Recycled			
	Tons/Year	% of Total Tons/Year ^[2]	Pounds/Capita/Year ^[3]	Pounds/Capita/Day ^[4]	Tons/Year	% of Total Tons/Year ^[5]	Pounds/Capita/Year ^[6]	Pounds/Capita/Day ^[7]
1. Residential: multi-family ^[8]	63,200	14.6%	573	1.571	1,900	1.7%	17	0.047
2. Residential: single-family	126,400	29.3%	1,146	3.141	23,100	20.8%	210	0.574
3. Commercial	237,500	55.1%	2,154	5.902	85,300	77.0%	774	2.120
4. Governmental and Institutional	4,300	1.0%	39	0.107	500	0.5%	5	0.012
5. Total	431,400	100.0%	3,913	10.720	110,800	100.0%	1,005	2.753

^[1] Collected = Recycled + Landfilled + Combusted

^[2] % of Total Tons/Year = (Column 2, Generator Type) x 100 ÷ (Column 2, Line 5)

^[3] Pounds/Capita/Year = (Column 2, Generator Type) x (2,000 pounds/ton) ÷ (County Population)

^[4] Pounds/Capita/Day = (Column 4, Generator Type) ÷ (365 days/year)

^[5] % of Total Tons/Year = (Column 6, Generator Type) x 100 ÷ (Column 6, Line 5)

^[6] Pounds/Capita/Year = (Column 6, Generator Type) x (2,000 pounds/ton) ÷ (County Population)

^[7] Pounds/Capita/Day = (Column 8, Generator Type) ÷ (365 days/year)

^[8] Check items included in this category: ☒ Apartments ☒ Condominiums ☒ Other (explain): Mobile Homes

NOTE: Line 5 of this table should be the same as Line 18 of Table 1-A.

COUNTY: Manatee

January 1, 1992 Population: 220,500

91TBL2-A.WK1/27-Sep-91/EF-5327-AA1-AB

TABLE 2-B
MUNICIPAL SOLID WASTE TO BE COLLECTED AND RECYCLED BY GENERATOR TYPE
(JULY 1, 1993 - JUNE 30, 1994)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Generator Type	To Be Collected ^[1]				To Be Recycled			
	Tons/Year	% of Total Tons/Year ^[2]	Pounds/Capita/Year ^[3]	Pounds/Capita/Day ^[4]	Tons/Year	% of Total Tons/Year ^[5]	Pounds/Capita/Year ^[6]	Pounds/Capita/Day ^[7]
1. Residential: multi-family ^[8]	65,900	14.6%	571	1.565	6,900	3.8%	60	0.164
2. Residential: single-family	131,800	29.3%	1,143	3.130	55,100	30.7%	478	1.309
3. Commercial	248,000	55.1%	2,150	5.890	116,450	64.9%	1,010	2.766
4. Governmental and Institutional	4,500	1.0%	39	0.107	1,050	0.6%	9	0.025
5. Total	450,200	100.0%	3,903	10.693	179,500	100.0%	1,556	4.263

^[1] Collected = Recycled + Landfilled + Combusted

^[2] % of Total Tons/Year = (Column 2, Generator Type) x 100 ÷ (Column 2, Line 5)

^[3] Pounds/Capita/Year = (Column 2, Generator Type) x (2,000 pounds/ton) ÷ (County Population)

^[4] Pounds/Capita/Day = (Column 4, Generator Type) ÷ (365 days/year)

^[5] % of Total Tons/Year = (Column 6, Generator Type) x 100 ÷ (Column 6, Line 5)

^[6] Pounds/Capita/Year = (Column 6, Generator Type) x (2,000 pounds/ton) ÷ (County Population)

^[7] Pounds/Capita/Day = (Column 8, Generator Type) ÷ (365 days/year)

^[8] Check items included in this category: ☒ Apartments ☒ Condominiums ☒ Other (explain): Mobile Homes

NOTE: Line 5 of this table should be the same as Line 18 of Table 1-B.

COUNTY: Manatee

January 1, 1994 Population: 230,700

91TBL2-B.WK1/27-Sep-91/EF-5327-AA1-AB

TABLE 3
PERCENTAGE OF POPULATION PARTICIPATING IN RECYCLING
(FOR MONTH OF JUNE, 1991)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Recycling Service	Residential Multi-family (Total Units in County = 47,640) ^[3]				Residential Single-family (Total Units in County = 71,460) ^[3]			
	Units with Service Available		Units Participating in Service		Units with Service Available		Units Participating in Service	
	Number	% ^[1]	Number	% ^[2]	Number	% ^[1]	Number	% ^[2]
1. Curbside collection	0	0.0%	0	0.0%	13,977	19.6%	8,386	11.7%
2. Buyback centers	0	0.0%	0	0.0%	0	0.0%	0	0.0%
3. Drop-off stations	47,640	100.0%		< 1.0%	28,694	40.2%	2,869	4.0%
4. Mobile drop-off	0	0.0%	0	0.0%	0	0.0%	0	0.0%
5. Total	47,640	*		*	42,671	*	11,256	*

Recycling Service	Commercial (Total Units in County = 2,723)				Governmental and Institutional (Total Units in County = 25)			
	Units with Service Available		Units Participating in Service		Units with Service Available		Units Participating in Service	
	Number	% ^[1]	Number	% ^[2]	Number	% ^[1]	Number	% ^[2]
1. Scheduled commercial collection	40	1.5%	15	0.6%	3	12.0%	3	12.0%
2. On-call commercial collection	899	33.0%	14	0.5%	0	0.0%	0	0.0%
3. Total	939	*	29	*	3	*	3	*

^[1] % = Units with Service Available x 100 ÷ Total Units in County

^[3] Residential Total Units include approximately 21% vacant units. Single-family 60%; Multi-family 40%.

^[2] % = Units Participating in Service x 100 ÷ Total Units in County

* Because waste generators could be participating in more than one recycling program, total percentages could amount to more than 100%, so this box should be left blank.

TABLE 4
MUNICIPAL SOLID WASTE COLLECTED AND TO BE COLLECTED BY MATERIAL TYPE
(JULY 1, 1990 - JUNE 30, 1991 AND JULY 1, 2010 - JUNE 30, 2011)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Material Type	(July 1, 1990 - June 30, 1991) ^[1]				(July 1, 2010 - June 30, 2011) ^[1]			
	Tons/Year	% of Total Tons/Year ^[2]	Pounds/Capita/Year ^[3]	Pounds/Capita/Day ^[4]	Tons/Year	% of Total Tons/Year ^[5]	Pounds/Capita/Year ^[6]	Pounds/Capita/Day ^[7]
1. Newspapers	21,000	5.0%	195	0.534	28,400	5.4%	195	0.533
2. Glass	21,500	5.1%	200	0.547	29,100	5.6%	199	0.546
3. Aluminum cans	1,700	0.4%	16	0.043	2,300	0.4%	16	0.043
4. Plastic bottles	1,900	0.5%	18	0.048	2,600	0.5%	18	0.049
5. Construction & demolition debris	94,700	22.4%	879	2.408	94,700	18.1%	649	1.778
6. Yard waste	53,200	12.6%	494	1.353	57,600	11.0%	395	1.081
7. White goods	4,400	1.0%	41	0.112	6,000	1.1%	41	0.113
8. Tires	3,700	0.9%	34	0.094	5,000	1.0%	34	0.094
9. Other plastics	25,700	6.1%	239	0.653	34,800	6.6%	238	0.653
10. Ferrous metals	16,000	3.8%	148	0.407	21,700	4.1%	149	0.407
11. Other non-ferrous metals	2,200	0.5%	20	0.056	3,000	0.6%	21	0.056
12. Paper: corrugated	28,600	6.8%	265	0.727	38,700	7.4%	265	0.726
13. Paper: office	10,000	2.4%	93	0.254	13,500	2.6%	92	0.253
14. Paper: other	32,200	7.6%	299	0.819	43,600	8.3%	299	0.818
15. Food wastes	14,900	3.5%	138	0.379	20,200	3.9%	138	0.379
16. Textiles	10,600	2.5%	98	0.270	14,400	2.7%	99	0.270
17. Miscellaneous	79,900	18.9%	742	2.032	108,200	20.7%	741	2.031
18. Total	422,200	100.0%	3,918	10.735	523,800	100.0%	3,589	9.833

^[1] Collected = Recycled + Landfilled + Combusted

^[2] % of Total Tons/Year = (Column 2, Material Type) x 100 ÷ (Column 2, Line 18)

^[3] Pounds/Capita/Year = (Column 2, Material Type) x (2,000 pounds/ton) ÷ (County Population)

^[4] Pounds/Capita/Day = (Column 4, Material Type) ÷ (365 days/year)

^[5] % of Total Tons/Year = (Column 6, Material Type) x 100 ÷ (Column 6, Line 18)

^[6] Pounds/Capita/Year = (Column 6, Material Type) x (2,000 pounds/ton) ÷ (County Population)

^[7] Pounds/Capita/Day = (Column 8, Material Type) ÷ (365 days/year)

NOTE: Line 18 of this table should be the same as Line 5 of Table 5.

COUNTY: Manatee January 1, 1991 Population: 215,500 / January 1, 2011 Population: 291,900

91TBL4.WK1/27-Sep-91/EF-5327-AA1-AB

TABLE 5
MUNICIPAL SOLID WASTE COLLECTED AND TO BE COLLECTED BY GENERATOR TYPE
(JULY 1, 1990 - JUNE 30, 1991 AND JULY 1, 2010 - JUNE 30, 2011)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Generator Type	(July 1, 1990 - June 30, 1991) ^[1]				(July 1, 2010 - June 30, 2011) ^[1]			
	Tons/Year	% of Total Tons/Year ^[2]	Pounds/Capita/Year ^[3]	Pounds/Capita/Day ^[4]	Tons/Year	% of Total Tons/Year ^[5]	Pounds/Capita/Year ^[6]	Pounds/Capita/Day ^[7]
1. Residential: multi-family ^[8]	61,900	14.7%	574	1.574	79,700	15.2%	546	1.496
2. Residential: single-family	123,700	29.3%	1,148	3.145	159,300	30.4%	1,091	2.990
3. Commercial	232,400	55.0%	2,157	5.909	279,600	53.4%	1,916	5.249
4. Governmental and Institutional	4,200	1.0%	39	0.107	5,200	1.0%	36	0.098
5. Total	422,200	100.0%	3,918	10.735	523,800	100.0%	3,589	9.833

^[1] Collected = Recycled + Landfilled + Combusted

^[2] % of Total Tons/Year = (Column 2, Generator Type) x 100 ÷ (Column 2, Line 5)

^[3] Pounds/Capita/Year = (Column 2, Generator Type) x (2,000 pounds/ton) ÷ (County Population)

^[4] Pounds/Capita/Day = (Column 4, Generator Type) ÷ (365 days/year)

^[5] % of Total Tons/Year = (Column 6, Generator Type) x 100 ÷ (Column 6, Line 5)

^[6] Pounds/Capita/Year = (Column 6, Generator Type) x (2,000 pounds/ton) ÷ (County Population)

^[7] Pounds/Capita/Day = (Column 8, Generator Type) ÷ (365 days/year)

^[8] Check items included in this category: ☒ Apartments ☒ Condominiums ☒ Other (explain): Mobile Homes

NOTE: Line 5 of this table should be the same as Line 18 of Table 4.

COUNTY: Manatee

January 1, 1991 Population: 215,500 / January 1, 2011 Population: 291,900

91TBL5.WK1/27-Sep-91/EF-5327-AA1-AB

TABLE 6
MUNICIPAL SOLID WASTE DISPOSAL FACILITIES
(AS OF JULY 1, 1991)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Facility	Remaining Permitted Capacity			Planned Increases			Ownership (Place "X" in column)	
	Landfill (MCY)	Waste-to- Energy (TPD)	Estimated Life (years)	Landfill (MCY)	Waste-to- Energy (TPD)	Year On-line	Public	Private
*								
1. Lena Road Landfill	18.72 ⁽¹⁾	--	26 ⁽²⁾				X	
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10. Total	18.72	--	26					

* Please list landfills first, followed by waste-to-energy plants.

NOTES:

⁽¹⁾ Capacity for Stages I, II and III (322 acres). The County holds an operating permit for Stage I (150 acres) and a construction permit for Stage II (101 acres). County plans are to seek a single operating permit for all three stages (including 71 acres in Stage III) in 1992.

⁽²⁾ Estimated remaining landfill life is projected to increase 7.5 years with 30% recycling by the end of 1994.

COUNTY: Manatee

91TBL6.WK1/27-Sep-91/EF-5327-AA1-AB

TABLE 7
MUNICIPAL SOLID WASTE RECYCLED
(JULY 1, 1990 - JUNE 30, 1991)

	(1)	(2)	(3)	(4)
	Material	Public (Tons)	Private (Tons)	Total (Tons)
1.	Newspapers	1,671	676	2,347
2.	Glass	227	14,533 ⁽¹⁾	14,760
3.	Aluminum cans	31	641 ⁽¹⁾	672
4.	Plastic bottles	40	1	41
5.	Construction & demolition debris	5,200	68,750	73,950
6.	Yard waste	1,093	0	1,093
7.	White goods	334		334
8.	Tires	844		844
9.	Other plastics	--	168	168
10.	Ferrous metals	28	1,892 ⁽¹⁾	1,920
11.	Other non-ferrous metals	2	550 ⁽¹⁾	552
12.	Paper: corrugated	204	2,904	3,108
13.	Paper: office	63	652	714
14.	Paper: other	34	102	136
15.	Food wastes	--	--	0
16.	Textiles	--	500	500
17.	Miscellaneous ⁽²⁾	996	120	1,116
18.	Total	10,769	91,487	102,255

* Exclude wastes generated from other counties but recycled by the private sector in your county (or city).

⁽¹⁾ Private sector tonnage was adjusted based on 1989 HDR recycling survey to account for incomplete response by recyclers. Manatee County will forward revised tables when these responses are received.

⁽²⁾ Ash 996 tons; rubber 120 tons.

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RECYCLING GOALS WORKSHEET

(JULY 1, 1990 - JUNE 30, 1991)

1. R = MSW (Municipal Solid Waste) recycled
(From Table 7, Column 4, Line 18) 102,255 tons
2. L = Uncombusted MSW landfilled 319,945 tons
3. C = MSW combusted 0 tons
4. R + L + C = Lines 1 + 2 + 3 = Total MSW
(Should equal Table 4, Column 2, Line 18) 422,200 tons
5. $\frac{100 \times R}{R + L + C} = \frac{100 \times \text{Line 1}}{\text{Line 4}} = \text{MSW recycling percentage}$ 24.2%
6. State law requires that no more than half of the 30% recycling goal can be met with the following special wastes:
 - a. Construction & demolition debris recycled 73,950 tons
 - b. Yard trash recycled 1,093 tons
 - c. White goods recycled 334 tons
 - d. Tires recycled 844 tons
7. Total Lines 6 (a through d) = Special wastes recycled 76,221 tons
8. $\frac{100 \times \text{Line 7}}{\text{Line 4}} = \text{Special wastes recycling percentage}$ 18.1%
9. Line 5 minus Line 8 6.2%
10. If Line 5 is equal to or greater than 30%, and Line 9 is equal to or greater than 15%, then the county has met the 30% recycling goal.
11. State law also requires that a "majority" of each of the materials listed below be recycled by the end of 1994. If Column 4 (below) is greater than 50% for each material, the county has met this requirement.

	(1)	(2)	(3)	(4)
Material	Total (Tons) ^[1]	Recycled (Tons) ^[2]	Recycled (%) [(Col. 3/Col. 2) x 100]	
a. Newspapers	21,000	2,347	11.2%	
b. Glass	21,500	14,760	68.7%	
c. Aluminum cans	1,700	672	39.5%	
d. Plastic bottles	1,900	41	2.2%	
e. Total	46,100	17,820	38.7%	

^[1] From Table 4, Column 2, Lines 1-4.

^[2] From Table 7, Column 4, Lines 1-4.

COUNTY: Manatee

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