

Solid Waste Element Data and Analysis Report

INTRODUCTION

Even though Gainesville and Alachua County have made great progress since the days of indiscriminate burning and dumping of garbage, there is still much to be done in order to efficiently and safely manage solid waste. While landfilling now includes the use of liners (to protect groundwater from contaminants in leachate), and other forms of air, litter, and water pollution control techniques, there are several additional strategies that should be used to properly manage waste.

Strategies are needed, for example, to address the rate of waste generation, which is leading to significant increases in the cost of acquiring land for landfill space. Increasingly sophisticated environmental safeguards needed to protect the environment from landfill wastes are also leading to large increases in landfill costs. Illegal dumping of wastes continues to be a major problem, particularly when such dumping occurs in creeks, lakes, and wetlands. In the past, the issue of hazardous waste management has received a great deal of attention as an important problem.

How can the City extend the life of county landfills or other landfills used for disposal of its solid waste? How can the composition of wastes delivered to the landfills be managed so as to more effectively protect the environment from hazardous wastes? What strategies are available to decrease the amount of solid waste that must be landfilled? This Report looks at the current status of solid and hazardous waste management in Gainesville and Alachua County, and proposes strategies designed to answer questions such as these.

HISTORY OF SOLID WASTE MANAGEMENT

In 1964, the City of Gainesville, Alachua County, and the State Board of Health were cooperating under an agreement which established a "Mosquito Control District".¹ The District operated a landfill near the runways of the Gainesville Municipal Airport. At that time, this landfill was accepting household and commercial refuse. Also at this time, the City operated a dump for combustible refuse near the South Main Street Wastewater Treatment Plant. A third landfill, also operated by the City and located on Archer Road (five miles from downtown Gainesville), accepted junk vehicles, large logs, and other items not considered suitable for the airport landfill.

¹ Florida State Board of Health. 1965. *A Report of an Environmental Health Survey of Gainesville Florida, April 19-30, 1965.*

In 1964, there were 13 on-site incinerators within city limits (six of which were on the University of Florida campus). The University used a combination of incineration and an on-campus dump to dispose of refuse in 1964. Also in 1964, Gainesville residents passed a \$100,000 bond issue for the purchase of future landfill sites.

There were at least 16 on-site incinerators identified within city limits in 1973, six of which were on the university campus.²

By 1973, the City was using 29 "packer" garbage trucks to collect residential and commercial solid waste. All solid waste collected by the City was disposed of at the Northeast Sanitary Landfill (opened January 1973) near Fairbanks.³ The Archer Road Dump was closed in August 1972, and the old Airport Landfill was closed in January 1973.

At that time, the University maintained a fleet of campus garbage trucks which transported campus solid waste to a transfer station at the south side of campus near Lake Alice. University trailers were used to transport this waste to the Northeast Landfill. There was also a sanitary landfill on campus for non-putrescible, non-domestic waste.

In 1978, the City was contracted with Browning-Ferris Industries (BFI) for the collection of residential and commercial solid waste.⁴ The Northeast Landfill was continuing to receive all of the solid waste from the City, although three newly opened landfills (the Northwest Landfill west of Alachua, the Southeast Landfill near Grove Park, and the Southwest [S.W.] Landfill west of Archer) were beginning to receive waste from Gainesville.

In 1983, the Northeast, Northwest, and Southeast landfills were no longer open. Only the S.W. Landfill, operated by Alachua County, was receiving residential and commercial solid waste.⁵ Gainesville's waste was being collected by BFI.

In 1989, the City began a citywide residential curbside recycling program for glass, newspapers, cans, yard waste, and certain types of plastic. This program was contracted to BFI. The City continued to dispose of all of its residential and commercial solid waste at the S.W. Landfill up until December 1998. At that time the Alachua County transfer station became fully operational, while the S.W. Landfill officially closed.

² Page V-9, Ibid.

³ Environmental Science and Engineering, Inc. 1973. *Solid Waste Management, 1973. Phase I.* For: North Central Florida Regional Planning Council.

⁴ Alachua County Pollution Control District. 1978. *Alachua County Pollution Control District Annual Report, 1977-1978.*

⁵ Alachua County Planning and Development Department. 1984. *Alachua County Comprehensive Plan: Solid Waste Element, 1984.*

Organization, Jurisdiction, Authority, and Regulation

Alachua County is authorized, through the County Charter, to regulate solid waste collection and disposal throughout the county. The County has delegated to the City the authority for collection within city limits. Alachua County remains exclusively responsible for the disposal of all solid waste within the county, in accordance with state law (Sec. 403.706 [1], FS).

Alachua County owns and operates a solid waste transfer station, located north of the airport at 5115 N.E. 63rd Avenue. The S.W. Landfill officially closed on December 19, 1998, although a drop-off center where residents can bring up to five bags of garbage per visit will remain in operation at that location on the same schedule as the four rural collection centers in the county. There is currently one privately owned and operated construction and demolition debris landfill within the county.⁶ This private landfill is also regulated by Alachua County.

The City has an interlocal agreement with the County for solid waste disposal. This agreement stipulates that the City is committed to deliver residentially and commercially collected solid waste collected by the City's franchised haulers to the County's designated facilities for solid waste management. (A copy of the agreement can be found on page A-14 in the Appendix.)

The City is responsible for the billing and collection of solid waste fees from residential customers within city limits.

Predominant Types of Land Uses Served by Solid Waste Facilities

There are three categories of existing land uses being served by county solid waste facilities: (1) land uses within the city; (2) land uses outside of city limits but within the county, including the small cities; and (3) land uses on the University of Florida Campus.

As shown in Table 1 of the Future Land Use Data and Analysis Report (1991 Comprehensive Plan), and excluding the University of Florida campus acreage (about 1,836 acres), approximately 40 percent of the acreage within city limits consists of residential land use, approximately 23 percent consists of public service land use, approximately 17 percent consists of unimproved land, and approximately 8 percent consists of business land use.

⁶ Conversation with Sally Palmi, Alachua County Solid Waste Coordinator, January 1999.

Predominant land uses on the University of Florida campus are educational (50 percent), recreational (30 percent), and conservation (19 percent).⁷

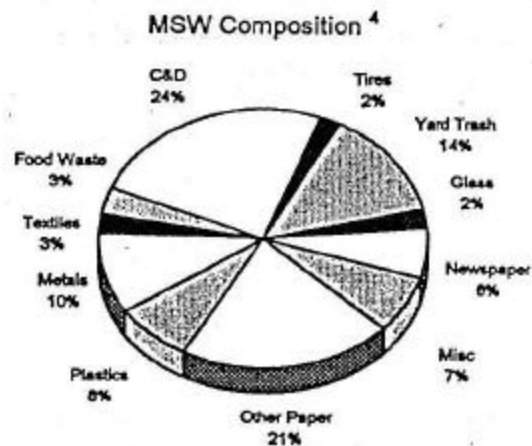
EXISTING SYSTEM

Composition of Solid Waste

Based on Alachua County averages, it is estimated that less than half of all solid waste delivered to the S.W. Landfill by the City in 1996 was composed of paper, yard waste, glass, and food (Figure 1). While plastics represent only 8 percent of the total, by weight, studies suggest that plastics represent up to 32 percent by volume.⁸ Since 1960, plastics, paper, rubber, leather, textiles (cloth), and yard waste have shown the most significant increases in proportionate share of the total solid waste composition.⁹

Note that of the materials comprising the solid waste stream, the proportion representing yard waste varies most significantly throughout any given year. Whereas the yearly average is 15 percent of the waste stream, the proportion representing yard waste rises to upwards of 40 percent at certain times of the year when yard landscaping is at its peak (mostly in the spring and summer).

Figure 1



⁷ University of Florida Master Plan Amendment: March 1, 1999. "Land Use Changes."

⁸ U.S. Environmental Protection Agency. "A Plastics Packaging Primer." RE:Sources. Environmental Action, July/August.

⁹ Concern, Inc. 1988. "Waste: Choices for Communities". Washington, D.C.

Source: FDEP, 4/14/98

Collection of Solid Waste

Currently, the City contracts with Boone/Waste Management¹⁰ to provide mandatory residential solid waste collection services within city limits. Residential service includes all single-family homes, multi-family units of four or fewer units under common ownership, and individual mobile homes. Residential collection is once per week.

Any franchised hauler may provide commercial solid waste collection service. Collection service is offered on an as-needed basis. Boone/Waste Management is not under contract with the City to collect commercial construction or demolition debris or clean debris. Boone/Waste Management collected approximately 40 percent of the waste hauled from the University of Florida campus in 1998. The University hauled the remainder.

Construction and demolition debris (C & D) is hauled to private C & D landfills by individuals, construction contractors, the University campus, and city and county public works departments. Often, such hauling is by contract with Boone/Waste Management. Due to recent amendments to Florida Department of Environmental Protection requirements for C&D landfills, specific permits with more stringent regulations are now required. Many operators did not want to comply with the new regulations and applied for permits only for the storage and disposal of 'clean debris,' which is inert waste such as uncontaminated concrete, brick, glass and ceramics. The transfer station does not accept C&D waste. Because there is only one current legal C&D landfill, the County will evaluate options for C&D disposal if it appears that there may be insufficient capacity at the private C&D facilities to meet the demand.¹¹

Boone/Waste Management provides all labor, insurance, supervision, machinery and equipment, plant building, trucks and other tools, equipment, and accessories necessary to fulfill the obligations of the residential and commercial solid waste collection contract with the City. As of 1999, the Boone/Waste Management fleet includes one 25-cubic-yard vehicle, four 34-cubic-yard vehicles, and four 40-cubic-yard vehicle for residential service within the city limits. These vehicles carry a one-person crew. The fleet includes seven 30-cubic-yard vehicles for curbside recycling within city limits. There is also one 40-cubic-yard vehicle for commercial

¹⁰ Alachua County Solid and Hazardous Waste Public Information Committee. Solid and Hazardous Waste News, Volume X, November 1998.

¹¹ Conversation with Sally Palmi, Alachua County Solid Waste Coordinator, and Evaluation and Appraisal Report on Solid Waste Element of Alachua County Comprehensive Plan: 1991-2011, September 28, 1998.

service for City pickup only, where the City pays the hauler per cubic yard. Ten other vehicles haul commercial solid waste in the City and the County, based on the location of the client business. Both the recycle and commercial vehicles carry a one-person crew.¹²

All residential and non-residential waste collected within the City by Boone/Waste Management is delivered to the transfer station. However, an unknown amount of construction and demolition debris collected from within the city is delivered to the Florence Construction and Demolition Debris Landfill. Refer to "Other Construction and Demolition Debris" section for further information about the Renfroe Landfill.

Boone/Waste Management is not under contract with the City to collect residential special waste (except white goods and household furniture), hazardous waste, infectious waste, biohazardous waste, biological waste, or sludge.

Businesses handling hazardous materials are responsible for commercial hazardous waste management in accordance with state and federal regulations. In addition, such handlers must comply with the county Hazardous Materials Management Code which, among other things, requires stringent monitoring, reporting, and site design procedures. Household hazardous waste is currently collected by the four rural collection centers and the temporary collection center at the S.W. Landfill. These staffed facilities accept relatively low-hazard wastes such as used oil and paints. Conditionally exempt small quantity generators (CESQGs) can dispose of hazardous waste at the new Household Hazardous Waste Collection Center (HHWCC), located at the Leveda Brown Environmental Park/Transfer Station. Households can also drop off their wastes at the HHWCC. Refer also to "Hazardous Waste" section for hazardous waste management.

Biohazardous waste in Gainesville is generated by hospitals, clinics, offices of doctors, and medical labs. The four Gainesville hospitals currently either incinerate biohazardous (infectious) waste or have it shipped out of the county for disposal. Hazardous (chemical) waste is shipped out of state. Radioactive waste is allowed to decay, with the remaining residue incinerated or shipped out of state. Refer to the "Biohazardous Waste" section for further information.

The University of Florida collects its own waste from the campus using four 34-cubic-yard collection vehicles. Waste is collected from residence halls, married student housing, fraternities, sororities, Tanglewood apartments, and P.K. Yonge Laboratory school. Boone/Waste Management collects campus construction waste and waste from the university hospital system.

Collection of Recyclables

¹² Conversation with Sean Pugh of Boone/Waste Management, February 1999.

The City began a pilot curbside recycling program (which included 6,500 homes) in October 1987. Based on the success of that program, the City began a citywide program (22,000 homes) in May 1989. Through this program, Boone/Waste Management is contracted to collect newspaper, glass, aluminum and metal cans, polyethylene terephthalate (PETE) and high-density polyethylene (HDPE) bottles from all single-family homes and multi-family dwelling units of less than five units within the same building as defined in Section 5.45 of the General and Technical Specifications For Solid Waste, Recycling and Yard Trash Collections Within the City of Gainesville and County of Alachua, March 10, 1999. The collection of polyvinyl chloride (plastic #3) became effective on October 1, 1999. The collection of such recyclables is at least once per week. The location of current recyclables collection programs is shown in Map 2 in the Appendix.

Boone/Waste Management is responsible for marketing the collected recyclables or otherwise ensuring the reuse of recyclables. Local centers that collect and market recyclables are shown in Map 2 in the Appendix.

Based on a contracted formula, Boone/Waste Management and the City share in the revenues generated from the sale of recyclables.

In addition to the residential program, the City had a six-month pilot program in 1990 for the collection of recyclables at 22 downtown commercial establishments. The pilot program, which also included 24 urban area apartment complexes, evaluated the feasibility of incorporating non-single-family residential recyclers into the citywide recycling program. This led to a mandatory commercial recycling provision that was added to the solid waste ordinance and implemented on January 1, 1997. Under the new law, all businesses are required to recycle office paper and corrugated cardboard, and apartments are required to recycle newspapers and metal cans.

The City of Gainesville and Alachua County have launched a joint two-bin pilot project. In October 1998, households in selected neighborhoods received an orange bin to accompany the regular blue recycling bin. The residents are asked to put all paper products in the orange bin while the traditional "Big Blue" will collect cans, plastic containers, glass, empty spray cans and household batteries. The main reasons for the second bin is to provide more capacity for recyclable items, reduce contamination of the product, and facilitate sorting, and keep paper products dry and in place by stacking "Big Blue" on top of the orange bin. The program will be evaluated in 1999 to determine whether it should expand throughout the mandatory collection areas of the City and the County.¹³

¹³Alachua County Solid and Hazardous Waste Public Information Committee. Solid and Hazardous Waste News, Volume X, November 1998.

The City and the University, in cooperation with the former Southern Bell telephone company (now BellSouth), conducted a first-ever-citywide collection of old telephone books in 1989. This collection netted approximately 36 tons of phone books for recycling.

The University has its own recycling program to comply with state recycling requirements. The University has recycled paper, aluminum and bi-metal cans, yard waste, sludge, scrap metal, and concrete/masonry since 1990. Plastic and glass recycling was expected to begin in late 1990, but plastic was dropped from the program several months later. Additional items that are currently being recycled include fluorescent light fixtures, wooden pallets, construction lumber, cotton goods, oil filters, used motor oil and anti-freeze.

Collection of Yard Trash

As a part of the citywide recyclables program started in May 1989, Boone/Waste_Management is under contract with the City to collect all yard trash from single-family homes and multi-family units of fewer than five units per building. Collection is at least once per week. Pickup is curbside.

Boone/Waste Management is responsible for ensuring that the yard trash collected is reused in composting, mulch, fuel, or other reuse operation. Currently, yard trash is delivered to Watson's farm in Gilchrist County.

Trends in Solid Waste, Recyclables, and Yard Trash Collection

As shown in Figure 2, the total amount of solid waste delivered to the S.W. Landfill from all waste generators (including the City) has steadily increased over the past two years, and the amount of solid waste delivered to waste management facilities is projected to steadily increase throughout the 2000-2010 planning period. This stability despite recent population growth has been attributed largely to: (1) the diversion of waste away from the S.W. Landfill as a result of the rising tipping fee at the Landfill; (2) the availability of a Class III landfill (as defined under *Landfill* in Definitions section of the Appendix) and several private construction and demolition debris (C&D) disposal facilities; and (3) increased recycling rates.¹⁴ As shown in Figure 3, the tipping fee had risen substantially in recent years, until a recent reduction due to lower costs related to the closing of the S.W. Landfill. Current fees are expected to remain stable.¹⁵

The relatively stable rate of waste generation since 1997, indicates a steady increase in waste delivered to the transfer station, an increase primarily due to the increase in county population

¹⁴ CH2M-Hill. 1989 and June 1991. "Financial Evaluation of the Solid Waste Disposal System." Gainesville, Florida.

¹⁵ Norm Thomas, Alachua County Public Works Department, February 1999.

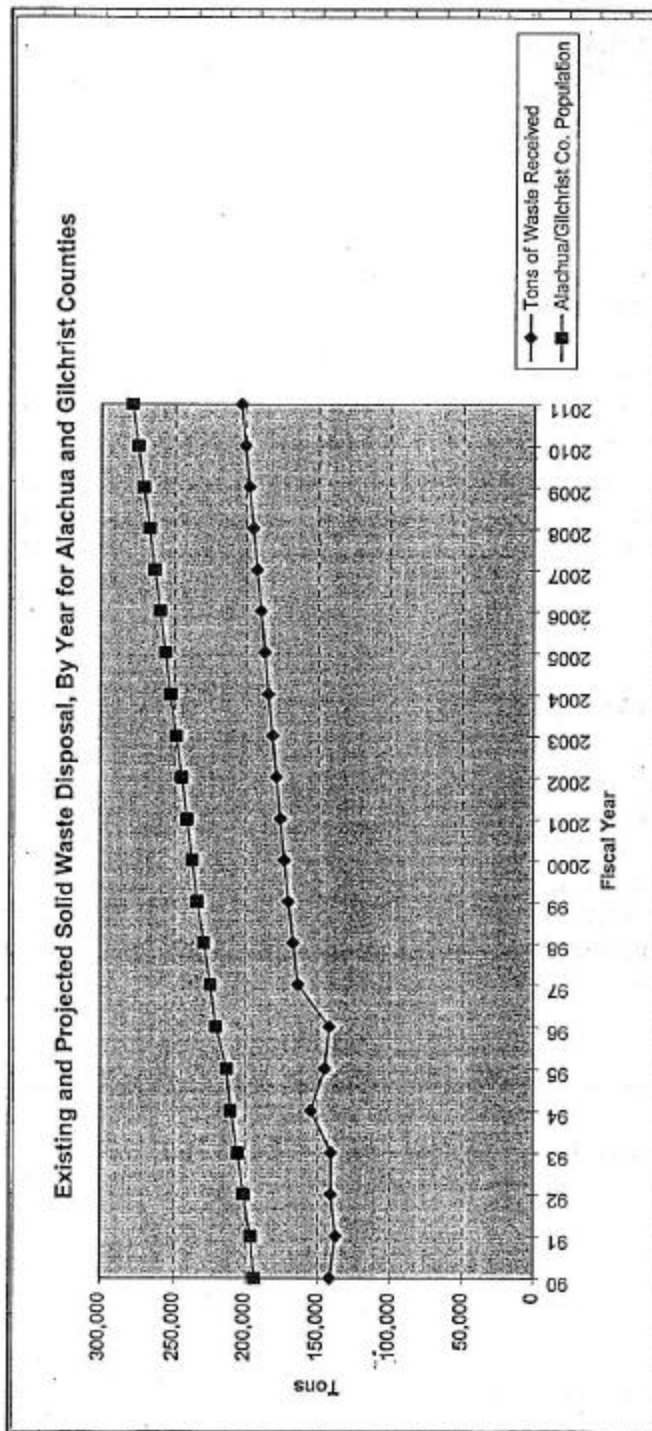
over the ten-year period (Figure 2). Note also that the amount of waste delivered to the transfer station does not represent all landfilled waste generated within Gainesville city limits. According to the county Department of Public Works, an unknown quantity of construction and demolition debris is currently delivered to public and private construction and demolition debris landfills.

In fiscal year 1997-1998, the UF campus delivered 10,428.57 tons of garbage, and construction and other debris, to the S.W. Landfill. Of this total, 8,139.75 tons was Class I waste and 2,288.82 tons was construction and demolition debris, not including outside contractors working on campus, who have their own contracts with private haulers for disposal of their construction and demolition debris. Approximately 78 percent of the refuse at UF is Class I waste while approximately 22 percent is Class III waste. The Class III waste is delivered to the Florence landfill. It is expected that campus waste tonnages delivered to county disposal facilities will continue to increase due to increases in the number of students enrolled at the university. The tonnage increases would be higher were it not for the growth in the amount of recyclables diverted and overall waste reduction. This tonnage increase will probably level off over the five-year planning time horizon as the rate of recycling approaches an expected peak rate of 40 percent and as UF enrollment stabilizes.

Based on experiences in other communities, recycling rates are expected to steadily increase over time (at least over the next few years) as more households learn about recycling and begin to more fully incorporate recycling practices into day-to-day household activity.

Solid Waste Element
 Data and Analysis

Figure 2



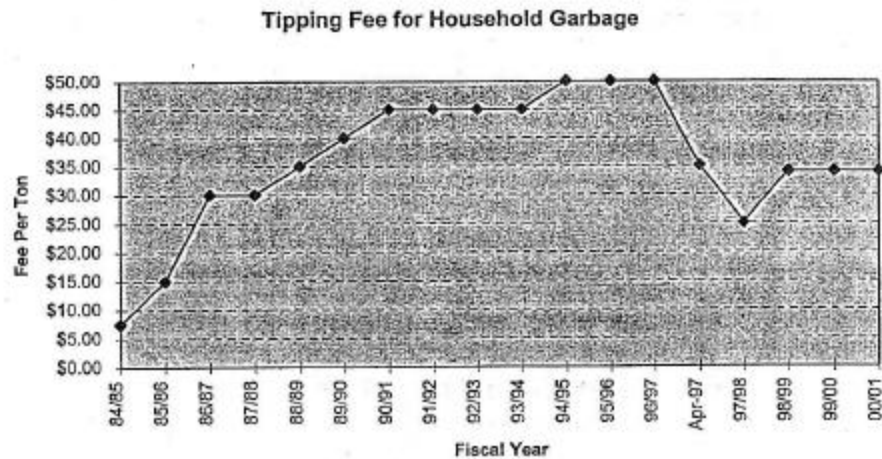
Alachua County Department of Public Works, September 1998.

Petition 102CPA-99 PB

Figure 3

Solid Waste Element
Data and Analysis

Figure 3



Fiscal Year	Fee Per Ton
1984-85	\$7.50
1985-86	\$15.00
1986-87	\$30.00
1987-88	\$30.00
1988-89	\$35.00
1989-90	\$40.00
1990-91	\$45.00
1991-92	\$45.00
1992-93	\$45.00
1993-94	\$45.00
1994-95	\$50.00
1995-96	\$50.00
1996-97	\$50.00
April 1997	\$35.00
1997-98	\$25.00
1998-99	\$34.00
1999-00	\$34.00*
2000-01	\$34.00*

*Estimated

SOURCE:

Norm Thomas, Alachua County Public Works Department, February 1999.

Fiscal Year	Fee Per Ton
1984-85	\$7.50
1985-86	\$15.00
1986-87	\$30.00
1987-88	\$30.00
1988-89	\$35.00
1989-90	\$40.00
1990-91	\$45.00
1991-92	\$45.00
1992-93	\$45.00
1993-94	\$45.00
1994-95	\$50.00
1995-96	\$50.00
1996-97	\$50.00
April 1997	\$35.00
1997-98	\$25.00
1998-99	\$34.00
1999-00	\$34.00*
2000-01	\$34.00*

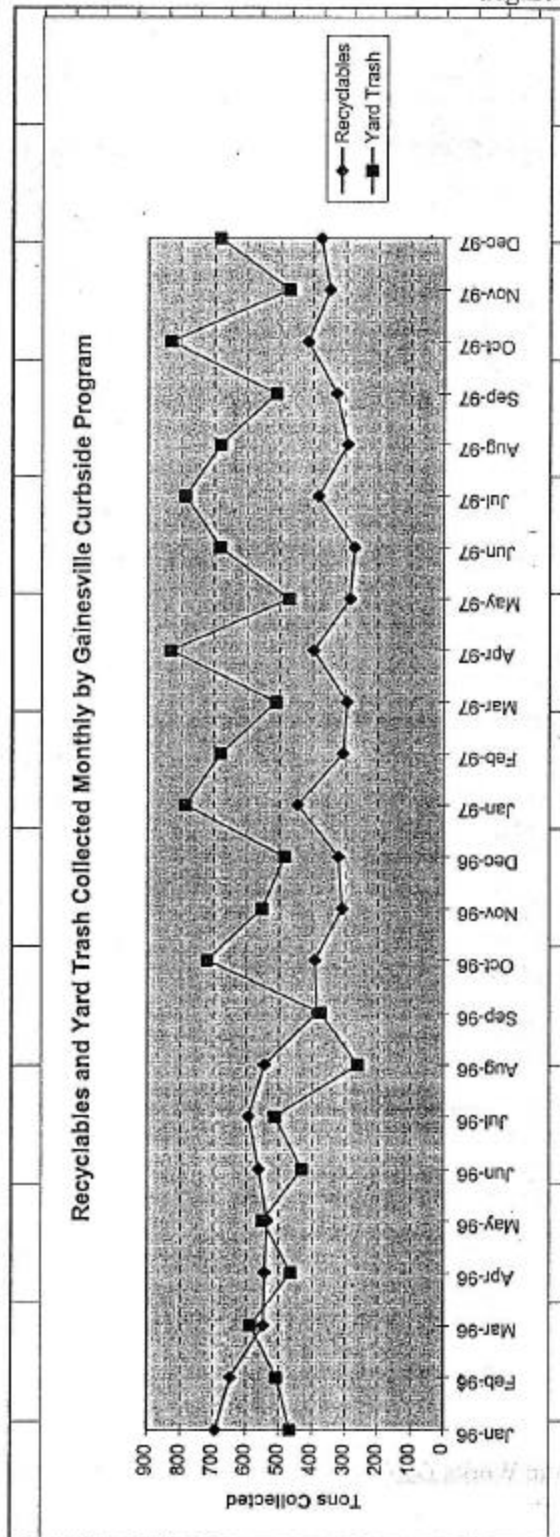
*Estimated

SOURCE:

Norm Thomas, Alachua County Public Works Department, February 1999.

Solid Waste Element
 Data and Analysis

Figure 4



Source: City of Gainesville Solid Waste Division, 1999

According to the City of Gainesville Solid Waste Division, in calendar year 1997, the approximately 23,000 city households participating in the curbside recycling program averaged 82.3 pounds of recyclables and yard trash per month per household, or 987.76 pounds per year. At this rate, the citywide curbside recycling program was annually diverting over 10,000 tons of waste from the Landfill. With a \$25 per ton tipping fee in fiscal year 1997-98, this diversion avoided approximately \$293,518 in landfill tipping fees annually. In addition, based on average weekly, monthly and annual garbage, recyclable, and yard trash figures, this was an overall recycling level of 39 percent for the residential portion of the total solid waste generation within city limits. Note also that yard waste currently represents approximately one-half, by weight, of all curbside recyclables being collected (see Figure 7 in the Appendix).

For solid waste, recyclables, and yard trash, city collection rates are expected to vary seasonally. For solid waste and recyclables, peak tonnages are expected during the fall and spring (when the University of Florida is in full session), and in January (just after the December holiday season). For yard trash, peak tonnages are typically in the spring and summer, when maximum yard maintenance activity occurs.

The UF campus recycling program currently collects approximately 6,000 tons of collected recyclables per year (or 35 percent of the waste stream). The campus solid waste coordinator has a target of 6,000 tons per year (a 38 percent recycling rate), which is expected to be near the maximum attainable recycling rate with the current recycling system. Yard waste currently represents approximately 40-45 percent, by weight, of all collected recyclables, and paper is approximately 38 percent of the total.¹⁶

Disposal of Solid Waste

The vast majority of solid waste generated within city limits and collected for disposal is delivered to the transfer station. A relatively small and unknown quantity of solid waste destined for disposal is not sent to the transfer station. Such waste is (1) delivered to public and private construction and demolition debris landfills; (2) taken to rural collection centers; (3) incinerated by the UF Health Center, UF Veterinary School, and the VA Medical Center, after which the ash is hauled to a location outside of Alachua County; or (4) illegally dumped. (See Map 1 in Appendix. For more information regarding ash disposal, refer to the "Biohazardous Waste" section.)

CAPACITY ANALYSIS

Major Generators

¹⁶ Al Krause, *Ibid.*

The major generators of solid waste using the transfer station for disposal include residents, institutions and businesses of:

- * City of Gainesville
- * Unincorporated Alachua County
- * University of Florida campus
- * City of Alachua
- * City of Hawthorne
- * City of LaCrosse
- * City of Micanopy
- * City of Archer
- * City of Newberry
- * City of High Springs
- * City of Waldo
- * Gilchrist County

Solid waste generation by land use type for Alachua County is estimated as follows:¹⁷

Residential = 50 percent of the total waste stream
Commercial/Industrial = 25 percent
Institutional = 12 percent
Special = 13 percent

It was estimated in 1997 that the City of Gainesville accounted for approximately 45 percent of the waste stream being disposed of at the Southwest Landfill.¹⁸

Projected Waste Generated by the City, Level-of-Service Standards, and Remaining Disposal Capacity

It is estimated that 195,758 tons of solid waste was generated countywide in fiscal year 1996-97.¹⁹ By using the estimate of the waste proportion from the city (45 percent of the waste stream being disposed of at the S.W. Landfill), it is estimated that 88,091 tons of solid waste was generated within the city in 1996-97 (see Table 1). This represents 4.8 pounds per person per day. By factoring in a 38.85 percent recycling rate, the net city waste delivered to the S.W. Landfill in 1996-97 was 53,868 tons (Table 1).

¹⁷ Camp, Dresser and McKee. 1987. North Central Florida Comprehensive Regional Solid Waste Management Master Plan, Ibid.

¹⁸ Text File Report on Legislative file number 970356, Interlocal Agreement with Alachua County for Solid Waste Disposal, September 8, 1997.

¹⁹ Alachua County Public Works Department, September 1998.

Table 1 projects that 114,481 tons of Class I solid waste and recyclables will be generated within the city by 2005. The City therefore maintains the following level-of-service for solid waste collection:

SOLID WASTE COLLECTION RATE

Solid Waste and Recyclables From Within City in 2005 = 114,481 tons

Projected City Population in 2005 = 106,856

= 1.07 tons/capita/year

= 5.9 lbs./capita/day

The frequency and provision of solid waste collection for both residential and non-residential generators shall be sufficient to ensure public health and safety, protection of environmental features, and energy conservation, and shall be provided in such a manner as to discourage urban sprawl.

SOLID WASTE DISPOSAL RATE

Waste From Within City in 2005 After Recycling = 70,005 tons

Projected City Population in 2005 = 106,856

= 0.655 tons/capita/year

= 3.6 lbs./capita/day

Table 1. Gainesville Solid Waste Generation Projections

Fiscal Year	Population	Total Waste (Tons)	Tons/Capita	Recycled (Tons)	Net Waste (Tons)
1997	99,870	88,091	0.882	34,223	53,868
1998	100,315	101,622	1.01	39,480	62,142
1999	101,405	103,723	1.02	40,296	63,427
2000	101,498	105,869	1.04	41,130	64,739
2001	102,548	107,536	1.05	41,778	65,758
2002	103,608	109,230	1.05	42,436	66,794
2003	104,680	110,953	1.06	43,105	67,848
2004	105,762	112,703	1.06	43,785	68,918
2005	106,856	114,482	1.07	44,476	70,006
2006	108,145	116,083	1.07	45,098	70,985
2007	109,451	117,708	1.07	45,730	71,978

2008	110,772	119,355	1.08	46,369	72,986
2009	112,109	121,027	1.08	47,019	74,008
2010	113,458	122,723	1.08	47,678	75,045

NOTES:

- Population estimates from the Gainesville Dept. of Community Development. Estimates for the years 2000 and 2005 are based on the projections of the Shimberg Center for Affordable Housing. After 2005, the projections are based on the City's percentage share of the total Alachua County population at the year 2005.
- Per capita waste generation for FY 1997 based on estimated total solid waste generated in FY 1997 (45% of 195,758 tons = 88,091 tons). Rate assumed to remain constant over planning horizon.
- Projected recycling rate is 38.85 percent for the entire projection period.
- Total waste for 1997 is the waste originating from within Gainesville city limits and is estimated at 45 percent of the waste stream being disposed of at the County solid waste management facility.
- All waste figures are in tons.

SOLID WASTE DISPOSAL: LEVEL-OF-SERVICE STANDARD

For the City to establish a level-of-service standard for solid waste disposal, an interlocal agreement between the City and Alachua County has been negotiated to ensure disposal capacity for existing and future development within the City over the 10-year planning horizon. The agreement requires the County to allocate and maintain sufficient Class I and Class III solid waste capacity to accommodate the following Class I and Class III solid waste disposal level of service standard:

0.656 tons/capita/year (3.59 lbs./capita/day)

Note that this per capita disposal rate is less than the rate estimated by the County²⁰ to apply countywide. Although there is a higher per capita amount of commercial, industrial, and institutional square footage within Gainesville city limits than outside of city limits, the City in recent years experienced a steady decline in its share of the total county population. Also, the amount of recycling in the City is approaching 40 percent, further reducing the amount of waste that requires disposal. The City will continue to maintain a solid waste concurrency mechanism to ensure that new development within city limits is concurrent with the adopted level of service standard for Class I solid waste disposal. The Solid Waste LOS will have to be changed both

²⁰ Solid Waste Element of the Alachua County Comprehensive Plan (adopted October 1991).

in applicable Goals, Objectives and Policies of the Comprehensive Plan and in applicable provisions of the Land Development Code. Refer to page A-12 in the Appendix for the text of the current interlocal agreement between Gainesville and Alachua County.

Southwest Landfill Facility Performance

As described in the “Facility Performance” section of the Alachua County Comprehensive Plan,²¹ the S.W. Landfill provided solid waste management services since 1982, and provided sufficient capacity to accommodate all Class I and Class III wastes generated within the county prior to its closing. The Landfill officially closed on December 19, 1998, and the transfer station became fully operational on December 21, 1998.

Problems and Opportunities Associated with Solid Waste Facilities Replacement, Expansion, and New Facility Siting

As described in the “Analysis of Problems and Opportunities Associated with Landfill Facility Needs” section of the Alachua County Comprehensive Plan,²² the County contracts with CH2M-Hill to monitor both operating and closed county sanitary landfills. The monitoring program has detected evidence of contamination in certain monitoring wells at the S.W. Landfill and the closed Northeast and Northwest Landfills. The closed Southeast landfill, on the other hand, has shown no violations of state or federal standards. As a result of the contamination at the S.W. Landfill, the County entered into a consent agreement with The Florida Department of Environmental Protection (FDEP) as described in the “Impact of Southwest Landfill on Environmental Features” section below. A contamination report was prepared by CH2M-Hill for the Northeast Landfill. Assessment of the site contamination is continuing. In 1993, a pesticide was found in groundwater at the NW landfill. The site was remediated and in 1994 the source of the contamination was removed.²³

Future Needs

In anticipation of the need to close the S.W. Landfill in 1998, in 1989 Alachua County established a landfill site selection committee. This committee was charged with identifying an environmentally and economically suitable site containing 1,440 acres able to accommodate 50-

²¹ Ibid.

²² Ibid.

²³ Evaluation and Appraisal Report on Solid Waste Element of Alachua County Comprehensive Plan: 1991-2011, September 28, 1998.

to-100 years of landfill needs.²⁴ As described in the “New Landfill Siting” section of the Alachua County Comprehensive Plan²⁵, this committee (and a second committee formed later) has used landfill siting criteria to identify areas most suited to a new facility. The criteria include consideration of transportation efficiencies, environmental protection, protection of public health, avoidance of major population centers, and sufficient parcel size. The process resulted in the identification of two favorable sites located in the northeast section of the county.

The Alachua County Future Land Use Map was amended in 1995 to designate an area for a solid waste management facility. The Florida Department of Community Affairs Notice of Intent to Find This Amendment in Compliance was challenged, and pursuant to a settlement of the challenge, a committee chosen by the Board of County Commissioners initiated a Request for Proposal process for alternatives to a landfill. In response to the RFP, a proposal was submitted by Waste Management, Inc. to construct a transfer station and dispose of the solid waste in another county. In December 1996, the County Commissioners directed staff to proceed with the option as outlined in the proposal. The County has a ten-year contract for disposal with the New River Association with options for renewal every five years. Renewal is contingent upon New River acquiring additional acreage for landfilling operations. The County did purchase one of the two identified sites deemed favorable by the landfill selection process. Site Echo will remain in reserve as a possible future landfill site.²⁶ The transfer station became fully operational on December 21, 1998.

The following alternatives are available to the County and City if at some point in the future the County and City would like to consider different waste management alternatives:

*** Transfer to Other Counties**

This was the option chosen by Alachua County. It required an interlocal agreement between Alachua County and an outside governmental association with available Class I landfill capacity sufficient to accommodate county solid waste until Alachua County is able to re-establish landfill space within the county. Unless a landfill site is chosen within the County in the future, the transfer alternative must be adopted. This is because none of the other alternatives described below are currently able to divert 100 percent of the generated solid waste from landfills.

Advantages

²⁴ Conversation with Jim Abbott, Alachua County Dept. of Public Works, March 9, 1990.

²⁵ Solid Waste Element of the Alachua County Comprehensive Plan (adopted October 1991).

²⁶ E.A.R. on Solid Waste Element of Alachua County Comprehensive Plan: 1991-2011, September 28, 1998.

- * Relatively high public acceptance by the sending community.
- * Can be implemented relatively rapidly and at relatively low cost.
- * Such remote landfilling would reduce the potential for environmental harm within Alachua County.

Disadvantages

- * Relatively low public acceptance by the receiving community and therefore may not be politically feasible.
 - * Would reduce local control over waste management and planning.
 - * Would create disincentives for minimizing hazardous waste and waste quantities.
- * **Increased Re-use, Composting, Recycling**

This would require the County and City to institute programs and regulations, which would increase the level of re-use, composting, and recycling beyond the rate attained at the time of landfill capacity. Since it is not currently feasible to divert 100 percent of generated solid waste from landfills with these techniques, some form of landfilling would still be required. Note that this alternative should be implemented in conjunction with any of the other alternatives chosen.

Advantages

- * Relatively high public acceptance.
- * Can be implemented relatively rapidly and at relatively low cost.
- * Environmentally benign or beneficial.

Disadvantages

- * Amount of waste potentially recyclable may be small.
- * May require the City to use significantly higher levels of financial or legal coercion (or both) to compel citizens to increase the rate of recycling.

* **Resource Recovery and Refuse-Derived Fuel**

This alternative would require the County to establish a facility to collect and salvage valuable materials from the Gainesville waste stream, and convert a portion of the stream to usable fuel to be sold for energy generation.

Advantages

- * Higher public acceptance than mass-burn because of potential for salvage and less toxic air emissions. (Salvaging can remove materials which are toxic when burned.)
- * Can be used by utility companies, which mix the fuel with coal to produce energy.
- * Can produce income from salvaged materials and energy.

Disadvantages

- * Fuel cost or quality (or both) may not be acceptable to the receiving utility.
- * High initial capital cost and on-going operation and maintenance cost.
- * Re-use, source reduction, composting, and recycling may be discouraged to increase the feasibility of resource recovery.

* **Mass-Burn Incineration**

This would require the County to establish a facility to incinerate a portion of Gainesville's waste stream.

Advantages

- * Disease vectors such as rats and insects are destroyed.

Disadvantages

- * Ash and air emissions may cause significant environmental and public health degradation.
- * High initial capital cost and on-going operation and maintenance cost.

- * Re-use, source reduction, composting, and recycling may be discouraged to increase the feasibility of mass-burn.

Because the disadvantages are so significant, mass-burn incineration is not a viable alternative.

Environmental Impact of Southwest Landfill

The primary impact of the recently closed S.W. Landfill on environmental features is the leachate from the decomposition of materials in the Landfill. Leaching is the extraction or flushing out of dissolved or suspended materials within the landfill by water or other liquids as they percolate downward through the landfill. Landfill leachate typically contains a variety of materials hazardous to water quality, including heavy metals and volatile organic compounds, which must be prevented from reaching the groundwater.

To minimize leachate contamination, the cell at the S.W. Landfill had a composite liner system, a dual collection system for both stormwater and leachate, and an on-site treatment plant for heavy metal precipitation. After treatment, the leachate was hauled by truck to a transfer facility where it was metered into the wastewater system for final treatment at the Kanapaha Wastewater Treatment Plant. The County Office of Waste Management and the University of Florida Environmental Engineering Department cooperated to conduct studies of the chemistry of the leachate from the Landfill, and the effects of the leachate on the environment.²⁷

Studies of the S.W. Landfill conducted by CH2M-Hill since 1985 have shown evidence of contamination exceeding safe drinking water standards in certain monitoring wells. The County signed a consent order issued by the Florida Department of Environmental Regulation (FDEP) in 1986 for the S.W. Landfill. The order requires the County to take remedial actions such as installation of a liner and leachate treatment facility for new Class I disposal cells, covers for closed disposal areas, and the purchase of off-site property.²⁸

See the "Hazardous Waste" section for more information about the S.W. Landfill and hazardous waste management strategies.

Environmental concerns related to the new transfer station are limited to nuisance factors such as noise, odors, and heavy truck traffic. The adjacent land is currently vacant, with the Gainesville Regional Airport the nearest use.

²⁷ Solid Waste Element of the Alachua County Comprehensive Plan (adopted October 1991).

²⁸ Ibid.

Impact on Residential Curbside Garbage Fee

The residential curbside garbage fee will probably be increased in future years to cover potential incremental increases in the disposal tipping fee and increases in transportation costs. Any increased tipping fee would likely be a consequence of:

- * An increase in the cost to operate and maintain the existing county solid waste system;
- * The diversion of County commercial waste from the transfer station.

In part, an increased tipping fee might be needed to offset the effect of waste tonnages being diverted from the transfer station. This diversion (by recycling and the use of other transfer and/or landfill facilities) decreases the amount of revenue collected by the transfer station, which necessitates a tipping fee increase to maintain the existing revenue stream.

As shown previously in Figure 3, the tipping fee for residential waste at the transfer station is currently \$34 per ton. Tipping fees in Florida counties ranged from \$23 per ton in Manatee and Palm Beach Counties, to \$92 per ton in Monroe County.²⁹

The residential curbside garbage fee for the city is largely determined by the tipping fee. Collection fees are volume based and vary according to whether a household chooses a 35-, 64- or a 96-gallon cart. Some single individuals and smaller households have expressed a desire to have the option of choosing a smaller size cart, since many have difficulty filling up the 35-gallon cart in time for regular pickup service. This may reduce the incentive to recycle since some people may decide to fill up the cart with recyclable material. A plan is being developed to introduce a 20-gallon cart later this year, with correspondingly lower fees.

City Public Works Waste Management Practices

The following wastes are collected as a part of City operations:³⁰

Concrete

Under current city operations, all of the waste concrete is recycled.

²⁹ Department of Environmental Protection, Solid Waste Management in Florida, June 1998.

³⁰ Conversation with Tom Frisbie, City of Gainesville Public Works Department, January 22, 1999.

Sand and Leaves

These items are picked up by City street sweepers. They are classified as a hazardous material due to lead content. A contract with Alachua County commits the City to landfill this material at the transfer station. The City currently spends approximately \$100,000 per year to landfill this material.

Trees and Vegetation

Smaller branches of trees and vegetation collected from City operations are chipped and used as mulch for the tree-planting program. Medium branches and trunk pieces to 12" in diameter are cut into fireplace size pieces and left by the tree for citizens to pick up. Twelve to 36" branch and trunk pieces are carried to the public works compound for splitting for the Fire Wood Distribution Program. Pieces larger than 36" are placed in dumpsters and hauled to Wood Resources Recovery with other branch clippings, where they are made into mulch.

House Demolition Debris

Debris from City house demolitions is recycled as much as possible, and the remainder is delivered to the transfer station.

City Landfill Analysis

The City C & D landfill was located on the eastern portion of the Gainesville Regional Airport property. Part of the site included the Old Airport Landfill discussed under the "Hazardous Waste and Contamination Sites" section later in this Data Collection and Analysis Report. In cooperation with the Florida Department of Environmental Protection (FDEP), a remedial study was conducted for the old landfill. To date, there has been no detection of contamination of tributaries to Little Hatchet Creek as a result of the materials placed at the old landfill. Monitoring of the groundwater is required quarterly to detect possible contamination.

The landfill was part of a borrow pit operation for City sand needs. The excavated space was filled with waste concrete pieces too large for rip-rap recycling. The landfilled concrete was derived exclusively from City Government operations within city limits. The concrete is considered inert and therefore is not expected to be a threat to the environment.

The City landfill was closed in 1995 as a C&D landfill. From 1995 to 1997, the facility was used for clean fill only. It was not worth the liability insurance cost to maintain the site as a C&D landfill.³¹

Other Construction and Demolition Debris

As noted above in the "Disposal of Solid Waste" section, a relatively small and unknown quantity of solid waste destined for landfilling is not sent to the transfer station. Much of this waste consists of construction and demolition debris destined for public and private construction and demolition debris landfills, rural collection centers, or is illegally dumped (see Maps 1 and 3).

Sludge Disposal

Significant amounts of sludge are collected from three wastewater treatment facilities within the city limits: (1) the Gainesville Regional Utilities (GRU) facility at Kanapaha; (2) the GRU facility at South Main Street; and (3) the University of Florida facility on the university campus.

The Kanapaha Water Reclamation facility (KWRF) serves the GRU service area roughly west of 13th Street. The South Main Street Wastewater Treatment Plant (MSWWTP) facility collects wastewater from GRU customers east of 13th Street.³² Existing biosolids digestion capacity allows GRU to comply with Chap. 62-640, FAC requirements for treating and land applying treated wastewater residuals. These requirements are based on and adopt by reference the EPA regulations (CFR Part 503, Subpart D) for the treatment and subsequent land application of biosolids. Since biosolids are aerobically digested, they are considered "Class B" biosolids in accordance with rules of both the FDEP and EPA. All biosolids removed from GRU's facilities are land applied either by surface application or soil incorporation.

Because the service area has relatively low levels of industrial activity, the sludge from both the KWRF and the MSWWTP are classified using EPA criteria "Exceptional Quality." The wastewater biosolids are digested, thickened, and then hauled by truck for land application at one of the land application sites in Alachua County and surrounding areas. GRU maintains a current Agricultural Use Plan that includes each application site and tracks the nutrient loading throughout the year. In some cases, pH adjustment is necessary prior to land application of biosolids. Adjustment of pH is accomplished by either spreading a calcium carbonate by-product from the Murphee Water Treatment Plant or applying agricultural lime.

³¹ Conversation with Emory Swearingen, City of Gainesville Public Works Department, 1998, April 1999.

³² Gainesville Department of Community Development, 1991. Ibid.

Currently, the two GRU facilities produce 35,000 gallons per day of biosolids at approximately 5 percent solids.³³

The university facility serves university campus wastewater generators.³⁴ Sludge from the facility is a wet sludge or slurry, used in land application.³⁵ The university currently ships all collected sludge to a tree farm for land application. Like the GRU sludge, university sludge is classified as "Grade 1." As a result, there is no expected adverse environmental impact from current university sludge land application practices.

DIVERTING WASTE FROM THE LANDFILL

In 1988, the Florida Legislature passed the Solid Waste Management Act, which, among other things, requires each county to reduce by 30 percent the amount of municipal solid waste that would be disposed of in the absence of recycling efforts, and that this reduction be attained by 1994. This objective was established in recognition of the fact that landfilling is an extremely costly method of solid waste management. The Act also requires the following:

- * Only shredded tires accepted at landfills (by 7/1/89).
- * Used oil banned from landfills (by 10/1/89).
- * Major appliances (white goods), and plastic grocery bags not biodegradable in 120 days banned from landfills (by 1/1/90).
- * Yard trash, and plastic foam and plastic-coated paper take-out containers (unless biodegradable in 12 months) banned from landfills (by 1/1/92).
- * Plastic bottles and packages must have a molded label showing type of resin (by 7/1/92).
- * One-cent charge on all glass, aluminum, and plastic containers not recycled at rate of at least 50 percent (by 10/1/92).
- * A majority of the newspaper, aluminum cans, glass, and plastic bottles must be diverted from the landfill and recycled (by 12/31/94).

³³ David Richardson, Gainesville Regional Utilities, February 1999.

³⁴ Gainesville Department of Community Development, 1991. Ibid.

³⁵ CH2M-Hill. 1987. Ibid.

- * Two-cent charge on all containers not recycled at rate of at least 50 percent (by 10/1/95).

These state requirements are designed to divert from the disposal system those wastes which should be managed by one of the five diversion techniques described below. Typically, diverting waste material from landfills does not make money for the City (or even pay the full cost of the diversion programs). Instead, the primary value associated with diversion is the avoided costs (especially tipping fees and environmental costs). While the City is successfully diverting large amounts of recyclable materials through the curbside recycling program, Table 5 in the Appendix lists additional significant materials delivered to landfills from within city limits in recent years that should be diverted from landfills because of their recycling potential, their tendency to consume large amounts of landfill space, or their potential for harming the environment.

In general, there are four techniques available for diverting solid waste from landfills: (1) source reduction; (2) re-use; (3) recycling; and (4) composting. Each will be discussed below.

Source Reduction

Source reduction involves the reduction in quantity of material or toxicity of a manufactured product (or elimination of the item from the production stream). Typically, items targeted for source reduction are those deemed extremely difficult to manage in an environmentally acceptable manner. Examples include DDT, chlorofluorocarbons, and asbestos. Information is available from the City's Solid Waste Division to the general public and businesses concerning source reduction and how it is effective at reducing the amount of waste and the cost of disposing of it.³⁶

Advantages of Source Reduction

- * Represents the most effective means of reducing pollution, saving energy, and conserving other natural resources.

Disadvantages of Source Reduction

- * Difficult for local governments to encourage source reduction.

Source Reduction Strategies

- * Provide information to the local legislative delegation to support state and federal initiatives which encourage the reduced production or elimination of difficult-to-dispose products.

³⁶ Solid Waste Division, City of Gainesville, 1999.

Re-Use

Re-use involves the collection of discarded materials and the re-use of those materials by another user. (For example, the collection and re-use of polystyrene peanuts and books.) Re-use differs from recycling in the sense that re-use involves little or no reprocessing of the material before it is put back into use, whereas recycling involves reprocessing techniques such as melting or shredding to convert the material to a usable form.

Currently, there are several individuals and businesses in the city which accept items such as white goods, old autos, furniture, and books for re-sale. Among the programs available that are designed to encourage re-use are:

1. Volume-based rates,
2. Distribution of the booklet, "Breaking the Waste Habit,"
3. The "smart shopper" promotion,
4. Backyard recycling, mulching, etc.,
5. The furniture collection and lottery event, and
6. The City auction of surplus items.³⁷

Advantages of Re-Use

- * Extremely efficient as a means of conserving energy and other natural resources.
- * Maintains a market of relatively low-cost products.
- * Results in less generation of pollution than the manufacture of products from raw materials.

Disadvantages of Re-Use

- * Difficult to establish sufficient incentives to encourage a high rate of re-use.
- * Planned obsolescence of products by the manufacturer.

Re-Use Strategies

- * Encourage the use of re-usable tote bags for groceries and other retail shopping.

³⁷ Gina Hawkins, Gainesville Recycling Coordinator, April 1999.

- * Ensure that City purchasing policies encourage the purchase of re-usable products.
- * Provide information to the local legislative delegation to support state and federal initiatives, which encourage re-use of materials and products.

Recycling

Recycling involves the separation of materials such as glass, aluminum, paper, and scrap metal from solid waste, and delivery such materials to a facility which reprocesses the material for re-use. As described previously, the City has established an aggressive recycling program that included all single-family residences as of May 1989. In addition, a mandatory commercial recycling program was established in 1997. The University of Florida, which generates 5 to 10 percent of all waste delivered to the transfer station, has also started a strong recycling program. As an added recycling incentive, the City has revised its land development regulations to allow recycling centers within the MU-2 (mixed use medium intensity) zoning district. These actions are in addition to previously existing recycling efforts, such as auto scrapping, auto battery and oil collection, and programs in certain government office buildings.

Advantages of Recycling

- * High level of public acceptance.
- * Saves relatively large amounts of energy and other natural resources.
- * Results in less generation of pollution than the manufacture of products from raw materials.

Disadvantages of Recycling

- * Often difficult to identify lucrative markets for recyclables.
- * Recyclables such as certain types of plastic and paper either cannot be recycled using current technology, or may yield a recycled product that is inferior to the original product.

Recycling Strategies

- * Establish government quotas for the purchasing of recycled materials.
- * Establish monetary incentives, such as a variable-rate user fee curbside collection program, for increased household recycling.

- * Maximize the number of non-single-family land uses (such as multi-family, commercial, governmental, and institutional) involved in the recycling program.
- * Discourage the use of difficult-to-recycle materials such as glossy paper and certain types of plastic.
- * Promote recycling through public education programs.
- * Establish or expand government and private office paper recycling programs.
- * Provide information to the local legislative delegation to support state and federal initiatives which encourage recycling of materials and products.

The State Comprehensive Plan (Chapter 187, Florida Statutes) has a new provision concerning the initiation of programs to develop or expand recyclable material markets, particularly those involving plastics, metals, paper and glass. In 1998, the City Commission approved a source reduction and recycling procurement policy that is intended to increase the recycled content of products purchased and used by the City, reduce waste in the manufacture and use of products purchased and used by the City, and encourage businesses that promote recycling to locate within the Gainesville area. This will increase demand for products with recycled content, which will improve the price for materials collected for recycling, as well as encourage source reduction.

Composting

Composting involves collecting organic wastes such as yard trash (mostly grass, leaves, and tree branches) and kitchen waste (food scraps, etc.). These wastes are then converted to a soil conditioner for use in soil improvement efforts. As noted previously, both the City and the University have established yard trash composting programs. In addition, the University has conducted pilot studies to examine the efficiency of various types of composting methods.

Advantages of Composting

- * Represents a large percentage of the total quantity of waste historically delivered to landfills.
- * Home composting of yard and kitchen waste reduces the amount of waste to be picked up at curbside, and provides a soil amendment for home gardens and landscaping. By reducing the amount picked up at curbside, the City lowers costs for collection, transport, and processing of residential waste.

Disadvantages of Composting

- * Home composting of kitchen waste when done improperly can result in nuisances such as odor and attraction of scavenging animals.

Composting Strategies

- * Encourage home composting of yard trash and kitchen wastes.
- * Provide information to the local legislative delegation to support state and federal initiatives which encourage composting.

Diverting from Landfills at Various Rates

As noted previously, state law requires all Florida counties to reduce the waste that is disposed of by 30 percent by 1994. (No more than 50 percent of this reduction may be due to yard waste, construction/demolition debris, white goods, and tires. This results in the adjusted recycling rate versus the unadjusted recycling rate which is the weight of recycled waste divided by the total weight of all the solid waste collected in the jurisdiction.) This objective is part of a nation wide effort to extend the life of landfills and therefore reduce the economic and environmental costs of waste disposal.

As noted previously in the "Trends in Solid Waste, Recyclables, and Yard Trash Collection" section, it is currently estimated that the City is diverting approximately 38 percent of the residential portion of solid waste generated within city limits through its curbside recycling program. The current diversion rate for all land uses within city limits (which includes commercial, industrial, and institutional generators) is unknown. As of, however, it has been estimated that the total countywide diversion rate for all land uses is approximately 34 percent adjusted and 47 percent unadjusted.³⁸

The maximum theoretical amount of municipal waste diversion that can be attained through recycling ranges from 50 to 80 percent.³⁹ The City of Seattle established a goal of recycling 40 percent by 1991, 50 percent by 1993, and 60 percent by 1998. Existing recycling rates include 50 percent in Japan, 52 percent in Woodbury, New Jersey, and 59 percent in Perkasie, Pennsylvania.⁴⁰

³⁸ Gina Hawkins, Gainesville Recycling Coordinator, April 1999.

³⁹ Concern, Inc. 1988. Ibid. Also: Blumberg, Louis, and Robert Gottlieb. 1989. "The Facts." Planning. November 1989. Also: Miller (ed.) 1979. Living in the Environment. Wadsworth Co., Belmont, CA.

⁴⁰ Environmental Protection Agency. 1989. Recycling Works! Washington, D.C. Also: Concern, Inc. 1988. Ibid. Also: Dumas, Kitty. 1990. "N.J. City Divides Its Garbage

The City surpassed the 30 percent diversion rate by 1994 in accordance with the State goal established by the 1988 Solid Waste Management Act. The City intends to go beyond the State goal and achieve a 50 percent diversion rate by 2000.

Note that economic and environmental benefits due to diversion would be attained by the City even if additional landfill capacity becomes available in the future. This is true for two reasons: (1) even with infinite landfill capacity, there are economic and environmental costs associated with failure to divert waste from landfills; and (2) assuming landfill capacity is finite, diverting waste saves costs by extending the life of existing and future landfills.

HAZARDOUS WASTE

Background

As required by the state Water Quality Assurance Act of 1983, the Alachua County Department of Environmental Protection (A.C.E.P.D.) prepared a hazardous waste assessment for Alachua County.⁴¹ The assessment commenced in May 1984 and was completed in May 1987. The following is a summary of its findings:

Approximately 16.5 million pounds of hazardous wastes were generated annually in the county by large quantity generators (LQGs) and small quantity generators (SQGs). (Households also contribute significantly to the hazardous waste problem, but were not included in this assessment.) Based on a 1987 Alachua County population of 179,715, this generation rate is equal to 92 pounds per person per year. Most generators and waste volumes are located in the Gainesville urban area.

Hazardous Waste Generators and Quantities

Major hazardous waste problems in the County originate from SQGs, conditionally exempt small quantity generators (CESQGs) and households.

Based on 1997 data provided by the Alachua County Department of Environmental Protection, the top five hazardous wastes-generated by SQGs, by weight, are as follows:

<u>Hazardous Waste</u>	<u>Pounds/Year</u>	<u>Percent of Total</u>
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and Reaps Savings." Governing. January 1990. Also: Miami Herald. 1989. "Market snags could lay law's merits to waste." June 25.

⁴¹ Alachua County Department of Environmental Services. 1987. "Hazardous Waste Management Assessment for Alachua County." Gainesville, Florida.

Oil Filters	8,504,762	51
Used Oil and Other Lubricants	2,946,844	18
Lead Acid Batteries	2,447,905	15
Absorbents with listed non halogenated solvent	749,560	4.5
Spent anti-freeze w/low lead	614,282	3.7

The largest LQGs in Alachua County as reported in 1997 were Perma-Fix with 3,479 tons generated, Eveready Battery Company with 591 tons generated, Archimica (formerly known as PCR) with 448 tons generated and Koppers Industries with 194 tons of waste generated.

Hazardous Waste Management

A permanent commercial hazardous waste management facility was built at the Leveda Brown Environmental Park/Transfer Station just outside of city limits at 5115 N.E. 63rd Avenue, to treat, store, or transfer hazardous waste produced by CESQGs and households. Paint, paint thinners, used oil, dry-cell batteries, and lead-acid batteries are collected at the five rural collection centers. Also, as noted in the Alachua County Comprehensive Plan,⁴² several commercial establishments in the county currently collect used oil and auto batteries.

A.C.E.P.D. staff operates the permanent Household Hazardous Waste Collection Center at the Leveda Brown Environmental Park/Transfer Station. The center began operation in the fall of 1999 and is open five days a week, year round, to accept household hazardous waste and CESQG business waste.⁴³

Hazardous Waste and Contamination Sites

There are ten hazardous waste and contamination sites within city limits. There are also several abandoned dump sites (e.g., Citizens Field, Arredondo, A. Quinn Jones, Old City Dump northeast of the Main Street WWTP, the Original City Dump at Gainesville Shopping Center, Williams Elementary/Lincoln Middle School) which are not included because they were used primarily for household waste. The potential for significant hazardous waste contamination from households is thought to be minimal. Information about the sites was obtained from FDEP and the Alachua County Department of Environmental Protection as of June 1999. The sites are briefly described below and shown in Map 3, in Appendix A.

⁴² Solid Waste Element of the Alachua County Comprehensive Plan (adopted October 1991).

⁴³ Kurt Seaburg, Alachua County Environmental Protection Department (A.C.E.P.D.), July 1999.

Cabot Carbon/Koppers

The Cabot Carbon/Koppers site was designated as a "Superfund" site in 1983. Activity at the site has contaminated the surficial aquifer and soil. Compounds found in groundwater and soils include phenols, terpenes, pentachlorophenol, creosote, copper, chromium, arsenic. Clays in the Hawthorn Formation which underlie the site apparently protect the Floridan aquifer, as well as the municipal wellfield 2.3 miles to the northeast. In June 1990, the Environmental Protection Agency gave tentative approval to a plan by Cabot Corp. and Beazer Materials and Service (formerly Koppers Co.) to clean up this site. Site investigation was completed by EPA in 1990. Remedial action methods selected included in-situ bioremediation, soil excavation, soil washing and groundwater treatment. Remedial actions and groundwater monitoring are on-going.

Crom Corp. (Zirtech)

Groundwater monitoring identified contamination of the unconfined Floridan aquifer by this company, which manufactures drilling fluid additives. Contaminants include iron and chromium. Additional investigations found no surface water contamination. No further testing is being done. In cooperation with FDEP, the company carries out on-going compliance inspections.

Fabco Air

The surficial aquifer and soil at this site were contaminated with solvents through an industrial septic tank drainfield. Fabco has completed a soils cleanup at the site. A contamination assessment plan was approved by FDEP in January 1988, and a consent order for corrective actions was executed in March 1988. Groundwater assessments at the site have been completed. Source treatment of the groundwater is the likely form of remedial action to be taken in the near future.⁴⁴

Flying Colors

An inspection in July 1988 revealed hazardous waste from this facility was being discharged into Little Hatchet Creek. The facility strips and paints aircraft at a Gainesville Regional Airport site. In May 1990, a final order was issued by FDEP. The facility obtained a closure permit from FDEP on June 1993. The permit included provisions for closing two land treatment units and a storage area. Closure activities were completed in 1994.

Former Gainesville Airport Landfill and Burn Site

A landfill and unlined solvent pits have contaminated the surficial aquifer. Compounds include organics (benzene, trichloroethylene) and heavy metals (chromium and lead). In February 1990, Environmental Science and Engineering (ESE) consultants submitted a contamination assessment plan to FDEP. Additional sampling of the aquifer was conducted. A risk assessment plan prepared by ESE was approved by FDEP in September 1990. A remedial study was conducted for the old landfill and to date, there has been no detection of

⁴⁴Waste Cleanup Section, Department of Environmental Protection, Jacksonville, FL, May 1999.

contamination of tributaries to Little Hatchet Creek as a result of the materials placed at the old landfill. Monitoring of the groundwater is required quarterly to detect possible contamination.

Gainesville Gas

Asphalt sludges and residues were reportedly disposed of at this site by gas manufacturing companies which previously operated at the site. In May 1989, a preliminary contamination assessment was completed with recommendations for further study. Gainesville Regional Utilities, which currently owns the site, has submitted a contamination assessment plan to FDEP. The site is eligible for the Early Detection Incentive (EDI) program, which provides for state-funded remediation of petroleum contamination sites. This site is now the subject property of the Brownfield Project, located south of Depot Avenue, with an estimated cost \$2,000,000. This project would involve using the brownfield site for a master stormwater basin for the downtown area. A grant funded a recent environmental assessment of the site to determine the environmental issues and how remediation would be done.⁴⁵

Gainesville Scrap

Soil samples from the site indicated the presence of PCBs. The source of the PCBs was apparently 2000 gallons of transformer oil that was dumped on the ground during transformer recycling. Gainesville Scrap and Iron Co. formerly recycled metal (including transformers) at the site, which was acquired by Florida Mining and Materials (FMM) in 1987. FDEP is negotiating a consent order with FMM for an assessment and remediation plan. The site received a "No Further Action" determination from FDEP in 1993.

PCR, Inc. (formerly SCM)

Water quality in the surficial aquifer was degraded by past plant practices including waste burial, possible spills, and possible piping leaks. On-site contamination from organic compounds was identified through groundwater monitoring. A contamination assessment plan prepared by PCR in cooperation with FDEP was conditionally approved by FDEP in May 1990. A monitoring program began in January 1991, and remedial action has proceeded.⁴⁶ PCR is now known as Archimica.

University of Florida Landfill

Contamination by several organic compounds (benzene, chlorobenzene, vinyl chloride, clomethane, and dichlorobenzene) has been detected at an upgradient off-site well. FDEP plans to conduct an investigation to determine the source of the contamination, and will then begin enforcement action against the responsible parties for site remediation. Assessment work and groundwater sampling was conducted by the Florida Department of Environmental Protection Site Investigation Section in 1997. A final report has not been produced and the site is still under investigation.

⁴⁵ Ibid.

⁴⁶ Ibid.

Hazardous Waste and Contamination Sites Outside of City Limits

Seven additional hazardous waste and contamination sites are located within the urban area but outside of city limits as described below and shown in Map 3, in Appendix A.

Fairbanks Sandpit

Florida Department of Transportation (FDOT) disposal of 55-gallon containers of organic solvents led to leakage of solvents into groundwater (including the intermediate aquifer). The site was discovered in 1983. Subsequently, over 1,000 drums were removed and a groundwater treatment system was installed. FDOT funded the provision of city water service to residents in the area because drinking water wells had become contaminated. In March 1990, FDOT discovered 43 additional containers, 18 of which were either filled or partially filled with material. In all, 300 additional drums were excavated in 1990. A long-term monitoring program has been established, and will include quarterly assessments. Contaminated soil removal was completed in 1996 and a groundwater remediation system was installed and permitted in 1997. Groundwater remediation is in progress.

Feagles Fill Dirt

Elevated levels of total organic carbon and violations of primary drinking water quality standards for lead and mercury were detected at this site. In 1983 and 1984, FDEP inspected the site and issued warnings about improper landfilling materials and activities. FDEP approved a closure plan in 1984 and requested further hydrogeologic monitoring. The County revoked special use permits for the site in June 1984. The site was acquired by William Renfroe in 1985 and is now used as a construction and demolition debris landfill. Renfroe entered into a consent order with FDEP in 1986 requiring a closure plan and allowing construction and demolition debris landfilling in previously excavated areas. The plan was submitted in 1987. Among other things, the consent order requires annual sampling of four monitoring wells for volatile organics. This facility is now known as the Florence Landfill, operating as a construction and demolition debris landfill. The site has an ongoing groundwater monitoring program.

Alachua County Southwest Landfill

In 1985, volatile organics were observed in landfill monitoring wells and nearby private water supply wells. The Landfill has contaminated the upper portion of the Floridan aquifer in the area. Remediation has involved the installation of a liner, leachate collection and treatment system, and new and replacement monitoring wells. A contamination assessment report was completed in 1996. The site has an ongoing groundwater monitoring program.

Stengle Air Field

This is a former U.S. Department of Army defense site. Groundwater contamination by chlorinated solvents has been detected at this site. Contamination is in the vicinity of one of the old airfield hangers beneath Butler Plaza Shopping Center. An Interim Remedial Action Plan

was submitted to FDEP in 1994. A revised plan was submitted to FDEP in 1998. FDEP has requested further assessment work in order to determine the horizontal and vertical extent of the soil and groundwater contamination.

Vital Industries

Over the years, 18 drums of hazardous waste had accumulated at this site. However, soil samples taken in the location of the leaking drums revealed no contamination. A groundwater recovery system was installed in 1992. A 1996 "No Further Action Request" was denied by FDEP. Additional assessment work and remedial actions are ongoing.

Voyles Quadraplex

In April 1987, methalene chlorine groundwater contamination in the Voyles Quadraplex area was detected. Contamination is attributed to improper dry cleaning solvent disposal and, to a lesser extent, improper laboratory solvent disposal. An FDEP Final Order was issued in 1992 requiring corrective action from Rip's One-Hour Cleaners, ABC Research and Blue Grass Trust to address the onsite contamination. ABC, Inc. is currently performing a Contamination Assessment Report to address their part of the contamination. Rip's One-Hour Cleaners is currently under the Drycleaning Solvent Cleanup Program. The entire site was referred to the FDEP Site Screening Superfund Subsection in 1999 for additional site assessment.

Biohazardous Waste

Biohazardous waste is generated by hospitals, clinics, doctors' offices (including dental and veterinary), funeral homes, nursing homes, research labs, and medical labs. There are four hospitals in the Gainesville urban area (Shands, Shands at AGH, Veterans Administration (VA), and North Florida Regional). These four institutions produce a significant percentage of the total amount of biohazardous waste generated in the county.

Most of the hospitals follow the same procedure for biohazardous waste disposal. Infectious waste is generally shipped out of county for disposal or, in the case of the Veterans Administration hospital, is incinerated on-site. Chemical waste is collected by a licensed hazardous waste hauler for disposal out of state. Radioactive waste is allowed to decay, after which remaining residues are shipped out of state or incinerated on-site.

The advantages of hospital waste incineration include:

- * Significant volume reduction
- * Little processing needed
- * Pathogens destroyed
- * Significantly lower disposal cost for hospital
- * Generally burn a smaller volume of waste than municipal incinerators

The disadvantages include:

- * Potential air pollution problems. (Hospital incineration tends to produce more dioxins and furans per gram incinerated than municipal incineration.)
- * Hospitals tend to be located in densely populated areas, which increases public exposure to emissions.

Currently, none of the hospitals except for the VA conduct medical waste incineration. Browning, Ferris Industries has contracts with the facilities generating medical wastes and handles collection and disposal. The VA hospital is required to conduct chemical monitoring and submit quarterly reports to FDEP.⁴⁷

The environmental risks associated with biohazardous waste include illegal dumping, accidents during the handling of the waste, and emissions and ash from incinerators.

Hazardous Waste Legislation

Federal

The Resource Conservation and Recovery Act of 1976 (RCRA) authorized the EPA to establish requirements for generators and transporters of hazardous waste facilities under Chap. 40 CFR Parts 260-268. In particular, the Act established criteria for the design and operation of treatment, storage, and disposal by hazardous waste facilities.

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 established the "Superfund" program. This program, administered by the EPA, provides clean-up money for abandoned hazardous waste sites.

State

In 1974, the State enacted the "Resource Recovery and Management Act", Chap. 403, Part IV, FS, which requires counties to prepare a solid waste plan. Chap. 17-730, FAC, essentially adopts the federal regulations (Chap. 40 CFR Parts 260-268) implemented pursuant to the RCRA, which specifically addresses hazardous waste management.

⁴⁷ Conversation with Chris Childers, Alachua County Health Department, Environmental Health, January, 1999.

Biohazardous waste generators must comply with Chap. 10D-104, FAC, which prescribes minimum standards for the safe handling and disposal of biohazardous waste. The Department of Health and Rehabilitative Services oversees on-site handling, while FDEP regulates off-site handling and disposal.

Local

Alachua County's Hazardous Waste Disclosure Ordinance (83-6) requires SQGs to file a disclosure form annually with the County. The form was developed from FDEP guidelines.

The County adopted a hazardous materials management code in 1991. The Code is designed to uniformly regulate facilities handling hazardous materials in order to prevent discharges to the environment. The Code includes provisions for early detection of leaks, cost recovery to pay for emergency response actions performed by the County, containment requirements, discharge recovery requirements, and standards for construction, operation, maintenance, monitoring, replacement, and closure of hazardous materials storage facilities. The Code was amended in 2000 to add licensing requirements and air quality regulation.

County Hazardous Waste Programs

Household Hazardous Waste Collection Network

This FDEP-funded grant program provides money to establish waste collection facilities for recyclable hazardous wastes generated by households. Currently, there are five such collection facilities serving rural areas of the county.

Used Motor Oil Collection Network

This program allows individuals to dispose of their motor oil at the rural waste collection centers. Major oil marketers and vendors also participate by allowing individuals to dispose of their oil at retail facilities. Some also accept used oil filters.⁴⁸

Latex Paint Recycling Program

Since April 1994, latex paint has been separated and re-blended by SunTec Paints of Gainesville. The paint is reconditioned and then redistributed throughout the community. There is a free paint giveaway program for low-income people.⁴⁹

Fluorescent Lamps

⁴⁸ Ibid, Kurt Seaburg, A.C.E.P.D., July 1999.

⁴⁹ Alachua County Solid and Hazardous Waste Public Information Committee. Solid and Hazardous Waste News, Volume 4, April 1997.

Also in 1994, Alachua County began collecting fluorescent lamps as part of a mercury awareness campaign. As of June 1999, over 20,000 fluorescent lamps had been collected for recycling.⁵⁰

Household Hazardous Waste Center

In early 1999, Alachua County began construction of a Household Hazardous Waste (HHW) collection and processing center adjacent to the transfer station located at 5115 N.E. 63rd Avenue. The facility opened on October 26, 1999. An evaluation by County staff determined that the center would provide a higher level of service at a lower cost, compared to using a private firm like Perma-Fix to serve as the contractor for collection of hazardous waste. Some of the other benefits include:

- * Reduction of overall HHW program costs;
- * Enhanced opportunity to promote reuse and recycling of products within the local community;
- * Better service and lower waste disposal costs for small businesses;
- * Greater public access due to year round operations;
- * Greater capacity to receive and process HHW from remote rural collection events; and
- * Increased opportunity to promote pollution prevention and waste reduction to small businesses.

The HHW Collection Center will accept wastes considered hazardous including corrosive, toxic, ignitable and reactive materials. The intent is to minimize and divert HHW from landfills and improper disposal by means of reuse, recycling or hazardous waste disposal. The Collection Center will feature a reuse area where particular products that are accepted will be made available for use by the public.⁵¹

Hazardous Waste Management Strategies

Siting Hazardous Waste Collection Facilities

The County (and to a limited extent, certain commercial establishments) maintains facilities for treating, storing, or transferring hazardous wastes from conditionally exempt small quantity

⁵⁰ Ibid, Kurt Seaburg, A.C.E.P.D., July 1999.

⁵¹ Alachua County Solid and Hazardous Waste Public Information Committee. Solid and Hazardous Waste News, Volume X, November 1998.

generators (CESQGs). However, these facilities are extremely limited and inconvenient for the purpose of CESQG hazardous waste disposal. Instead, a centralized collection facility is being established to increase the visibility, convenience, and the safe collection involved in proper hazardous waste management for CESQGs. This facility is sited in the Gainesville urban area where most of the CESQGs are located. Waste delivered to this facility can be consolidated into truckloads that are economically efficient to transfer to treatment facilities. The treatment facility would treat, recycle, or reduce the waste before shipping it for ultimate disposal or re-use.

The following criteria were used to site the HHW Collection Center and shall be used to site any future hazardous waste collection facilities for CESQGs:

- * Outside of the Murphree Wellfield Protection Zone
- * Outside of areas of high aquifer recharge, stream-to-sink basins, 100-year floodplain
- * Primary and secondary public access to a major road such as an arterial or collector
- * Low permeability soils and underlain by the Hawthorn Formation
- * Fire/emergency medical service within 10 minutes
- * Outside of environmental conservation areas
- * Adequate buffering from residential and sensitive institutional land uses

Alternatives to Permanent Collection Sites and Collection Events

There will be certain circumstances for which it will not be possible to collect certain hazardous wastes at permanent collection sites or collection events. Many of these circumstances have been mitigated with the opening of the transfer station and the HHW Center. These circumstances include:⁵²

- * Temporary storage of abandoned or illegally dumped hazardous waste for which no responsible party is identifiable;
- * Temporary storage of household hazardous wastes for which a citizen cannot attend a regularly scheduled collection event;

⁵² Solid Waste Element of the Alachua County Comprehensive Plan (adopted October 1991), Kurt Seaburg, A.C.E.P.D., July 1999.

- * Temporary storage of potentially hazardous waste removed from the solid waste stream by landfill spotters and collection center attendants; or
- * Temporary storage of residuals from hazardous materials spills resulting from transportation accidents when the responsible party does not have other storage options available.

Such temporary storage will take place at the transfer station and at the HHW Center. The storage buildings are designed to provide primary, secondary, and tertiary containment of stored wastes. The HHW Center serves as a site for temporary storage of hazardous materials. This enables the citizen to drop off household hazardous wastes during regular business hours. A chemical storage building is available at the transfer station, where the hazardous waste removed from the waste stream by collection center attendants can be transferred over to the adjacent HHW Center. Hazardous materials from transportation accidents can be transported to the HHW Center.⁵³

Other Hazardous Waste Management Strategies

One or more of the following strategies can be adopted:

- * Because waste oil and batteries represent 80 percent of SQG and household hazardous waste, there is a need to continue to establish collection facilities at sites that are convenient for regular disposal by SQGs and households. Provision of these decentralized sites must be supplemented with a greatly expanded, on-going public education program. The Hazardous Materials Management Code inspection documents verify proper disposal for used oil and batteries.
- * Maintain an emergency response plan as required by Chap. 84-223, Laws of Florida. Currently, city and county developing an interlocal agreement to establish the administrative framework for an enlarged regional emergency response team for hazardous materials in the eleven county North Central Florida Region.
- * Encourage on-going education and training for employees of companies and agencies which handle hazardous materials.
- * Reduce the quantity of hazardous waste by: (1) encouraging large quantity generators (LQGs), SQGs, and CESQGs to use alternative, non-hazardous materials; (2) encouraging these handlers to recycle a larger percentage of their wastes; and (3) providing such handlers with information about proper management practices.

⁵³ Kurt Seaburg, Alachua County Environmental Protection Department, April & July 1999.

- * The County should continue to require reporting of hazardous materials used by SQGs.
- * Encourage the County to maintain a solid waste fee assessment at the transfer station which transfers a portion of the fee revenue to programs for hazardous waste disposal, education, enforcement, and clean-up.

APPENDIX A

Definitions
Map 1-5
Tables A-1—A-4
Figure A-1

DEFINITIONS

BIOHAZARDOUS WASTE: any solid or liquid waste which may present a threat of infection to humans. Includes, but is not limited to, nonliquid human tissue and body parts; laboratory and veterinary waste which contain human-disease-causing agents; used disposable sharps; human blood, and human blood products and body fluids; and other materials which in the opinion of the Florida Department of Health and Rehabilitative Services represent a significant risk of infection to persons outside the generating facility.

CLEAN DEBRIS: solid waste which is virtually inert and which is not a pollution threat to groundwater or surface waters and is not a fire hazard, and which is likely to retain its physical and chemical structure under expected conditions of disposal or use. Includes, but is not limited to, uncontaminated concrete, brick, glass, and ceramics.

CLOSURE: cessation of operation of a landfill, and the act of securing the landfill so that the landfill will pose no significant threat to human health or the environment.

COMPOST(ING): breakdown of organic matter in solid waste in the presence of oxygen by aerobic bacteria to produce a humus-like end product, which can be used as a soil conditioner.

CONSTRUCTION AND DEMOLITION DEBRIS: materials generally considered to be not water soluble and nonhazardous in nature, including, but not limited to, steel, glass, brick, concrete, or asphalt roofing material, pipe, gypsum wallboard, and lumber from construction or destruction of a structure as part of a construction or demolition project, and including rocks, soils, and vegetative matter which normally results from land clearing or land development operations for a construction project. If such material is mixed with non-construction or demolition debris, such material shall be classified as other than construction and demolition debris.

CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL: a landfill that accepts only construction and demolition debris.

DISPOSAL: discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or upon any land or water so that such solid waste or hazardous waste or any constituent thereof may enter other lands or be emitted into the air or discharged into any waters, or otherwise enter the environment.

GARBAGE: kitchen and table food waste and/or animal or vegetative waste that is attendant with or results from the storage, preparation, cooking, or handling of food materials; and any bottles, cans or other containers, excluding recyclable containers, utilized in normal household use, which, due to their ability to retain water, may serve as breeding places for mosquitoes and other insects.

HAZARDOUS MATERIAL: any substance or material which has been determined by the secretary of the United States Department of Transportation to be capable of imposing an unreasonable risk to health, safety, and property. This term includes hazardous waste. This term also includes any additional materials defined as hazardous by Gainesville or Alachua County.

HAZARDOUS WASTE: solid waste which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or may pose a substantial present or potential hazard to human health or the environment when improperly transported, disposed of, stored, treated or otherwise managed.

HOUSEHOLD TRASH: accumulated paper, magazines, packaging, containers, sweepings, and other accumulations of a nature other than garbage or yard trash, which are usual to housekeeping and to the operation of stores, offices, and other businesses.

INCINERATION: the controlled process by which combustible wastes are burned and changed into gases.

INDUSTRIAL WASTES: debris and waste products generated by manufacturing, food processing (except restaurants), land clearing, any commercial shrubbery or tree cuttings, building construction or alteration (except do-it-yourself projects) and public works type construction projects whether performed by a government unit or by contract.

LANDFILL: any solid waste disposal area for which a permit, other than a general permit, is required by Sec. 403.707, FS, that receives solid waste for disposal in or upon land other than a land-spreading site, injection well, or a surface impoundment.

CLASS I LANDFILL: receives an average of 20 tons or more of solid waste per day, or 50 cubic yards or more per day, and which is covered daily.

CLASS II LANDFILL: receives an average of less than 20 tons of solid waste per day, or less than 50 cubic yards of solid waste per day, and which is covered at least once every four days.

CLASS III LANDFILL: receives only trash or yard trash, and which is covered at least once every seven days.

LITTER: garbage, rubbish, trash, refuse, can, bottle, container, paper, or tobacco product which is thrown, discarded, placed, or deposited along public highways, on public or private lands, or in public waters.

PUTRESCIBLE: organic matter that can be decomposed by microorganisms, in part, to foul-smelling by-products.

RECYCLABLES (or RECYCLABLE MATERIAL): any material or group of materials which can be collected and sold for recycling at a net cost equal to or less than the cost of collection and disposal of the same materials.

RECYCLING: any process by which solid waste, or materials which would otherwise become solid waste, are collected and processed into raw materials suitable for creation of new products. (see also RE-USE)

REFUSE: rubbish and garbage or a combination or mixture of rubbish and garbage, including paper, glass, metal and other discarded matter, excluding recyclable materials.

RE-USE: any process by which solid waste, or materials which would otherwise become solid waste, are collected and returned to use with little or no processing. In contrast, recycling involves relatively intensive processing such as shredding or melting before the material can be reused. (see also RECYCLING)

RUBBISH: solid waste other than garbage which is usually attendant to domestic households or housekeeping, and to the operation of stores, offices and other businesses. Includes, but is not limited to, paper, magazines, packaging, containers, rags, excelsior and other packing material, bottles and cans, excluding recyclable materials.

SOLID WASTE: sludge from a waste treatment facility, water supply treatment plant, air pollution control facility, or garbage, clean debris, white goods, special wastes, rubbish, refuse, or other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from domestic, commercial, industrial, mining, agricultural, or governmental operations.

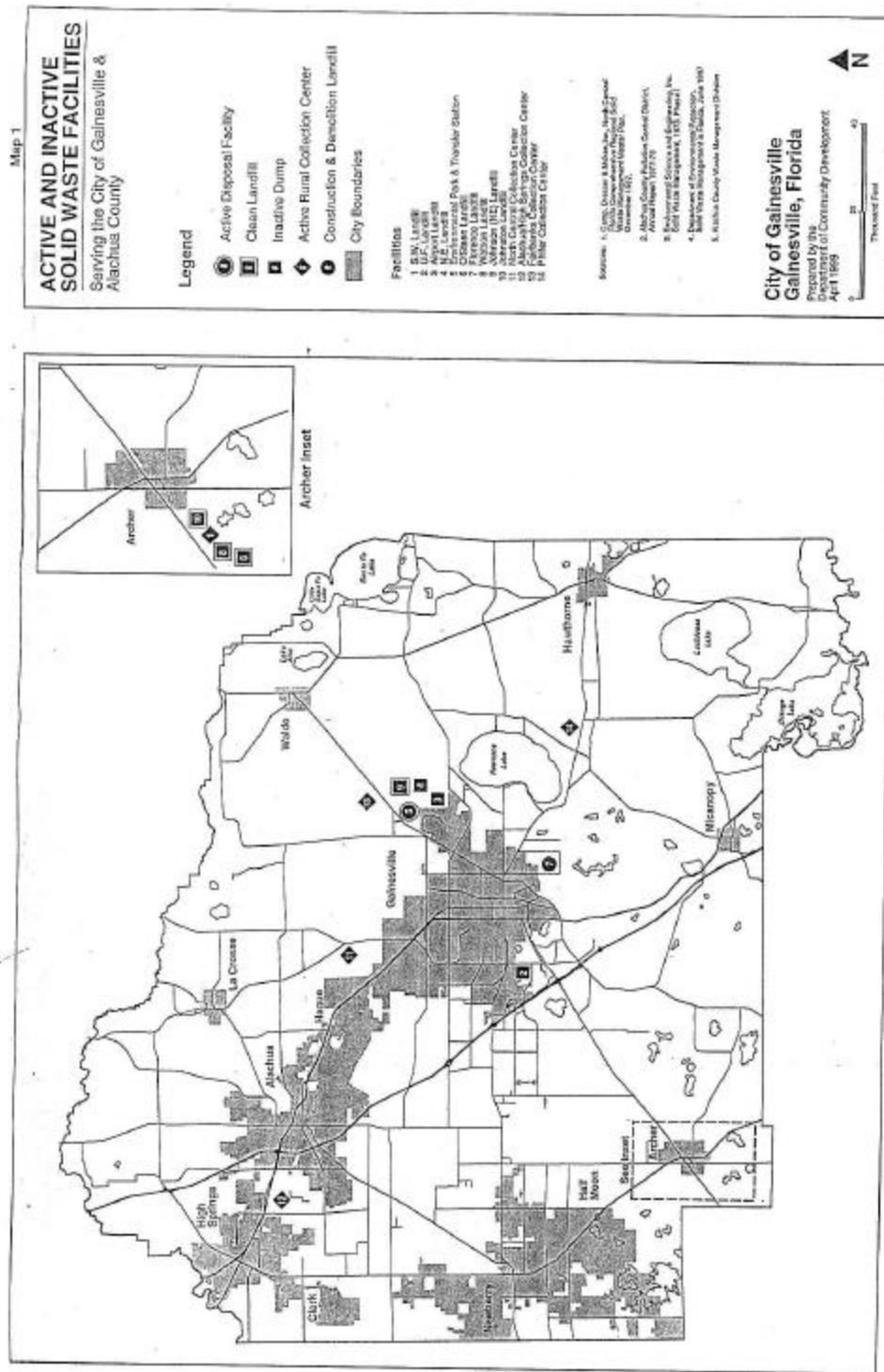
SPECIAL WASTES: solid wastes that can require special handling and management, including, but not limited to, asbestos, white goods, whole tires, used oil, mattresses, furniture, lead-acid batteries, and biological wastes.

TRANSFER STATION: A large warehouse-like facility where solid waste is sorted and stored prior to shipment to a landfill. The solid waste is transferred from small-capacity collection trucks to large-capacity transfer trailers and containers.

TRASH: a combination of yard trash and construction and demolition debris along with other debris such as paper, cardboard, cloth, glass, street sweepings, vehicle tires, and other like matter.

WHITE GOODS: inoperative and disposed of refrigerators, ranges, water heaters, freezers, small air conditioning units, and other similar domestic and commercial large appliances.

YARD TRASH: vegetative matter resulting from landscaping maintenance and land-clearing operations.



Map 2

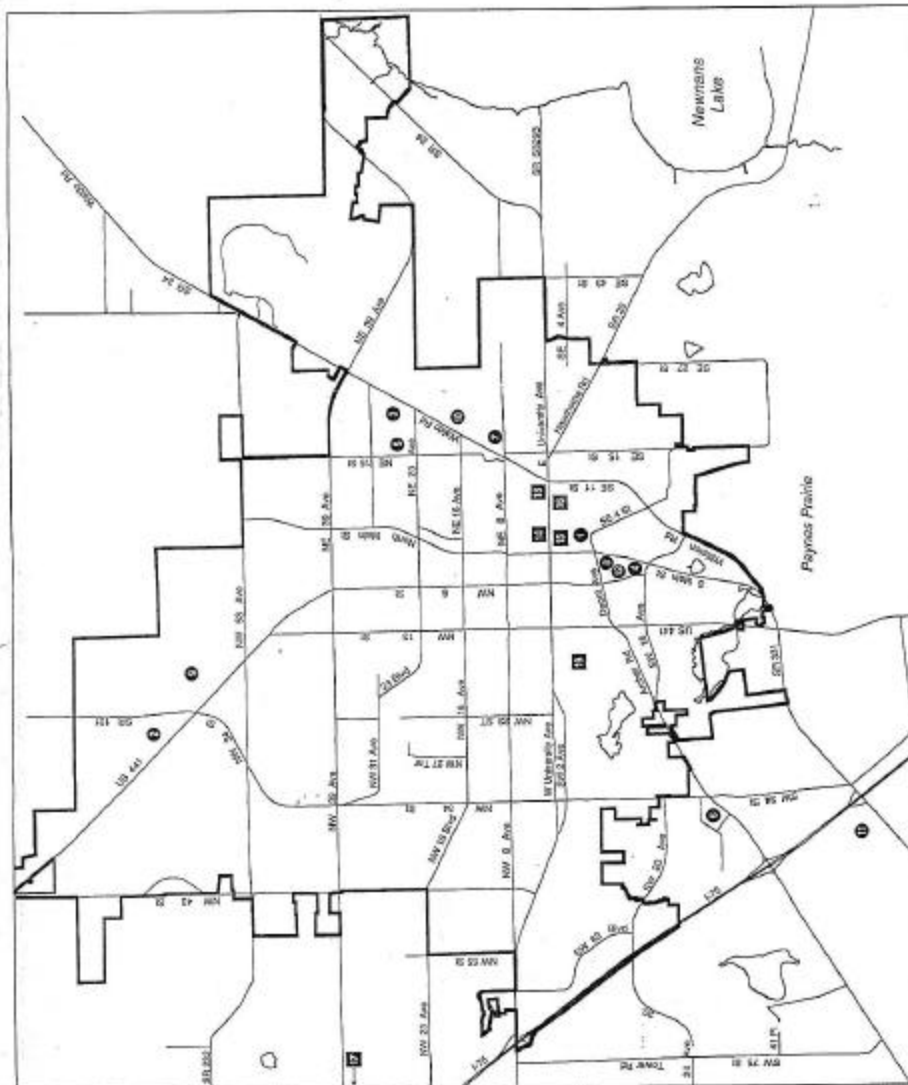
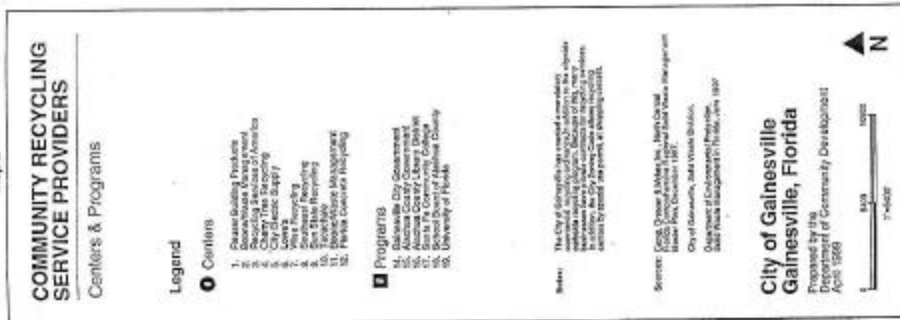


Table A-1. Solid Waste Disposed or Landfilled By Year

<u>Fiscal</u> <u>Year</u>	<u>Tons</u>	<u>County Population</u>
1990/91	141,683	183,773
1991/92	137,657	186,201
1992/93	140,969	190,655
1993/94	140,830	193,879
1994/95	154,802	198,261
1995/96	145,187	202,140
1996/97	142,091	208,125
1997/98	163,916	211,403
1998/99	167,305	215,585
1999/00	170,766	219,850
2000/01	173,456	223,154
2001/02	176,189	226,508
2002/03	178,967	229,912
2003/04	181,790	233,368
2004/05	184,659	236,875
2005/06	187,242	240,050
2006/07	189,862	243,267
2007/08	192,520	246,527
2008/09	195,216	249,831
2009/10	197,951	253,179
2010/11	200,725	256,572
2011/12	203,540	260,011
2012/13	206,394	263,495
2013/14	209,290	267,027
2014/15	212,228	270,605

NOTES:

* Populations and waste totals subsequent to 1996 are projections. Population estimates do not include Gilchrist County. Waste estimates, however, include waste expected from Gilchrist County.

SOURCES:

1. Alachua County Department of Public Works, September 1998.

Table A-2. Recyclables Collected by Gainesville Curbside Program, by Month
(in tons)

Date	ONP	OCC	OMG	Glass	Steel	Aluminum	Plastic	Appliances	Yard Trash	Total Recycled
January 96	289.01	82.25	105.83	137.15	46.96	6.06	23.73	2.04	466	1159.03
February	317.4	87.84	62.1	126.47	17.13	7.93	26.7	1.566	507	1154.136
March	298.91	30.76	31.41	115.02	19.77	6.45	40.06	4.662	586	1133.042
April	298.98	84.92	58.11	49.16	17.14	4.82	26.08	3.996	464	1007.206
May	265.54	33.13	27.7	152.69	19.42	7.53	23.81	5.856	550	1085.676
June	258.01	70.69	61.91	86.28	36.09	4.88	41.1	2.754	431	992.714
July	158.12	190.27	77.69	97.15	30.55	7.95	26.62	4.038	513	1105.388
August	259.23	26.54	49.22	147.49	19.28	7.59	29.08	5.736	260	804.166
September	155.44	59.22	32.08	92.08	12.01	10.01	20.02	4.11	375	759.97
October	175.96	37.71	37.71	82.55	15.62	4.46	33.47	4.578	720	1112.058
November	164.6	29.82	13.92	59.65	15.7	4.71	15.7	4.92	553	862.02
December	177.51	29.21	17.98	53.34	16.3	4.44	13.33	7.992	484	804.102
TOTAL	2818.71	762.36	575.66	1199.03	265.97	76.83	319.7	52.248	5909	11979.508
January 97	181.01	51.72	20.11	96.47	20.97	6.29	25.17	7.992	787	1231.212
February	159.25	32.66	12.25	68.63	10.67	4.58	16.78	1.452	680	986.272
March	146.61	28.12	26.11	56.77	11.35	4.26	17.03	4.176	512	806.426
April	176.66	46.76	36.38	81.07	18.42	3.69	25.8	8.316	832	1229.096
May	154.48	26.37	7.54	56.12	11.22	5.61	15.43	8.868	472	757.638
June	157.81	37.87	14.73	20.18	11.73	5.05	20.18	4.746	682	954.296
July	181.21	34.85	16.26	97.12	11.64	8.27	22.73	10.26	787	1169.34
August	126.99	43.54	18.14	50.8	14.51	7.26	25.4	6.828	680	973.468
September	158.95	59.14	22.18	44.36	14.77	3.7	18.48	5.574	512	839.154
October	218.17	27.85	18.57	106.77	13.93	4.64	18.57	6.222	832	1246.722
November	175.09	39.79	23.87	71.63	11.93	3.98	19.9	2.508	472	820.698
December	186.33	42.35	25.41	76.22	12.7	4.23	21.17	7.134	682	1057.544
TOTAL	2022.56	471.02	241.55	826.14	163.84	61.56	246.64	74.076	7930	12071.86

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ONP - Old Newspaper; **OCC** - Corrugated Cardboard; **OMG** - Old Magazines
Source: City of Gainesville Solid Waste Division, 1999.

Table A-3. Inventory of County Landfills

<u>Site</u> ¹	<u>Map No.</u>	<u>Acres</u>	<u>Class</u>	<u>Opened</u>	<u>Status</u>	<u>Service</u> *
S.W. Landfill	1	140	1 & III	1973	Active	A,B
U.F. Landfill	2	12	?	?	Closed	B
Airport Landfill	3	40	?	?	Closed('73)	A,B,C,D
N.E. Landfill	4	57	1	1973	Closed('82)	A,B,C,D
S.E. Constr. Landfill	5	40	C & D**	1988	Closed	E
O'Steen Landfill	6	565	C & D**	1986	Active	I
Florence Landfill	7	38	C & D**	1989	Active	E
Watson Landfill	8	41	C & D**	1985	Active	I
Johnson (NE) Landfill	9	35	C & D**	1987	Active	I
Johnson (SW) Landfill	10	80	C & D**	1988	Active	I
City C & D Landfill		60	C & D**	?	Closed(95)	F
N.W. Landfill		---	50	?	Closed('82)	?
S.E. Landfill		---	80	?	Closed('81)	?
Archer Rd Landfill		?	?	?	Closed('72)	G
S. Main St. Landfill		20	?	?	Closed	H
Wood Resources Recovery***		15	N.A.	1987	Active	A

NOTES:

¹ See Map 1 for locations of active landfills.

For Map No. location, refer to Map 1.

* "Service" refers to community provided service by the facility:

A = Alachua County (including City of Gainesville) residential and commercial.

B = University of Florida Campus.

C = Tacachale.

D = Gainesville Housing Authority.

E = Developers disposing of construction & demolition debris. Only the S.E. Construction and Florence landfills accept waste from the general public. The remaining private C & D landfills only accept waste from the owners or those persons designated by permit.

F = City government operations debris. (Primarily waste concrete.)

G = Bulky wastes.

H = Combustible refuse.

I = Clean fill refuse only.

** "C & D" = construction and demolition debris landfill.

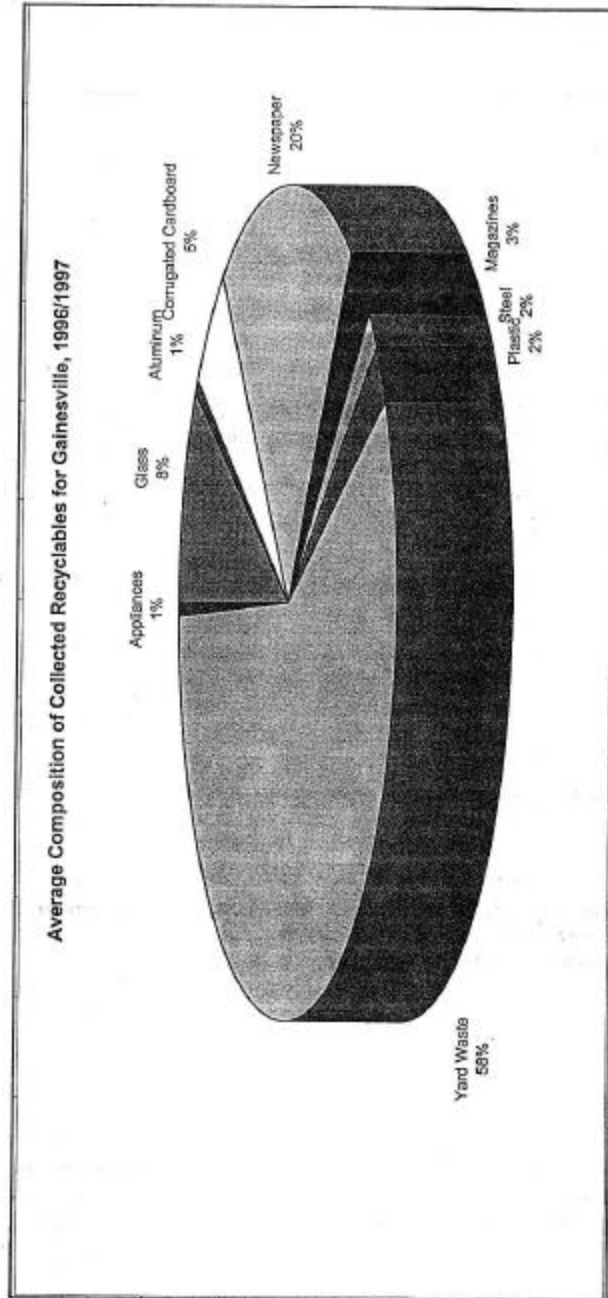
*** Composting facility, not a landfill.

Solid Waste Element Data & Analysis Report
Ord. No. 990216—Petition 102CPA-99PB
Appendix A—Eff. 7/24/00

SOURCE: City of Gainesville, Department of Community Development, March ~~1990~~ 1999, Sally Palmi, Alachua County
Solid
Waste Coordinator, March 1999.

Solid Waste Element
Data and Analysis
Appendix A

Figure A-1



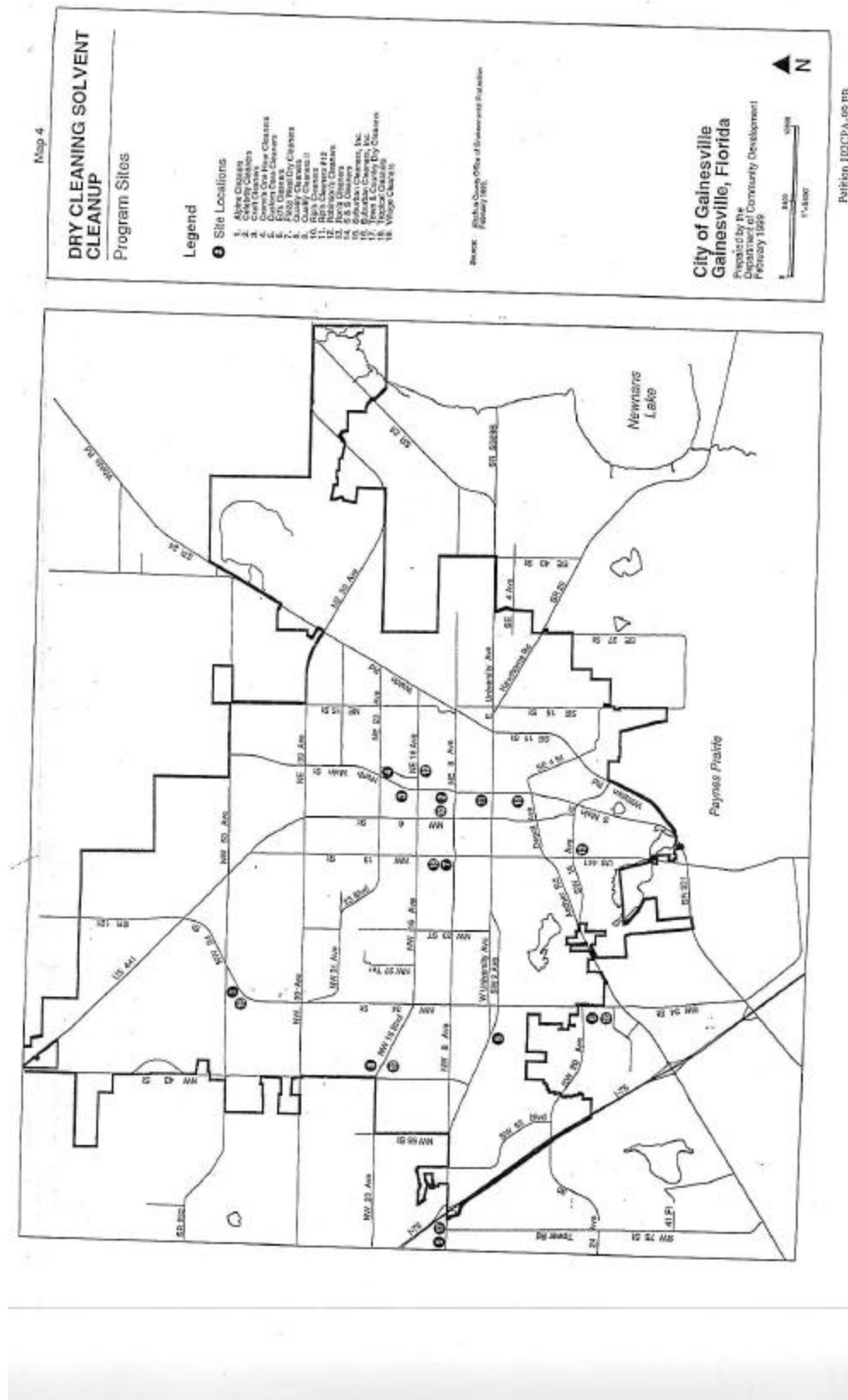
Source: City of Gainesville Solid Waste Division, 1999.

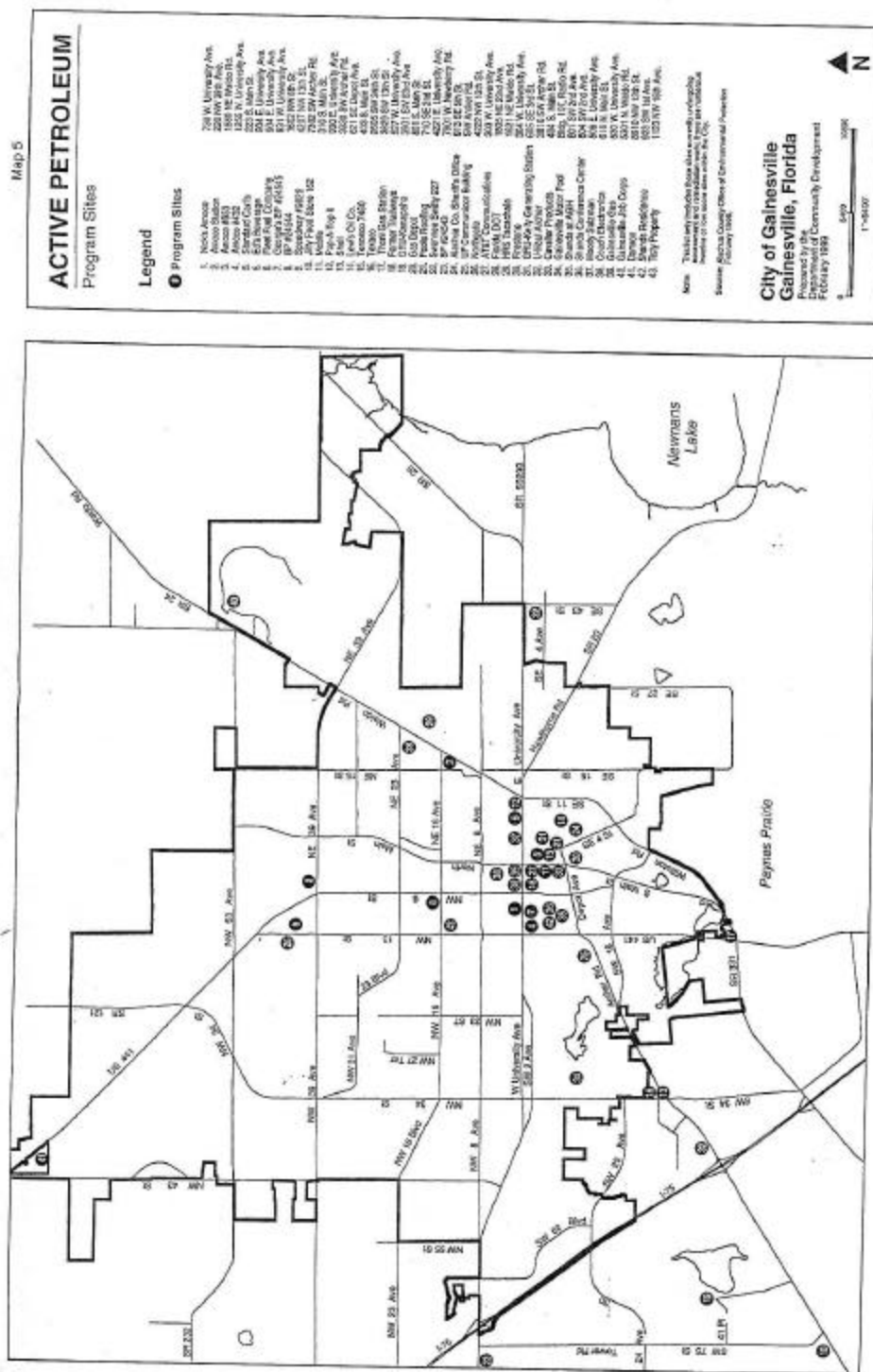
Petition 102CPA-99 PB

A-10

Appendix A—Eff. 7/24/00







**Table A-4. Significant Waste Materials Accepted By Landfills
In Past Years That Should Be Diverted From Landfills**

- * Foam Rubber
- * Disposable Diapers
- * Waste Oil
- * Food
- * Plastic Bags, Containers, and Packaging
- * Recyclable or Re-usable Beverage Containers
- * Cardboard
- * Recyclables from Multi-Family and Non-Residential Waste Generators
- * "Junk Mail" and Other Slick Paper
- * Auto
- * Scrap Metal
- * Construction and Demolition Debris
- * Furnishings, Clothing, Toys, and Other Household Items
- * Books, including Phone Books
- * Containers for Pesticides, Herbicides, Petroleum Products, Aerosols, Cleaning Fluids, Paint, Solvents, Oil, and Anti-Freeze.

NOTES:

- * The above list of materials are potentially harmful to public health and the environment, are potentially recyclable, or have a tendency to consume large amounts of landfill space.
- * Before mechanisms are adopted to ban or otherwise discourage the landfilling of these items, a convenient and safe alternative (such as curbside collection or recycling/collection centers) must be set up to minimize the illegal dumping of such materials.

SOURCES:

- * City of Gainesville, Department of Community Development, 1991.
- * James Abbott, Alachua County Department of Public Works.
- * Gina Hawkins, Gainesville Recycling Coordinator, May 1999.

Table 2. Solid Waste Disposed or Landfilled at S.W. Landfill, By Year (in tons)

<u>Fiscal</u> <u>Year</u>	<u>Waste Disposed or Landfilled</u>	<u>County Population</u>
1990/91	141,683	183,773
1991/92	137,657	186,201
1992/93	140,969	190,655
1993/94	140,830	193,879
1994/95	154,802	198,261
1995/96	145,187	202,140
1996/97	142,091	208,125
1997/98	163,916	211,403
1998/99	167,305	215,585
1999/00	170,766	219,850
2000/01	173,456	223,154
2001/02	176,189	226,508
2002/03	178,967	229,912
2003/04	181,790	233,368
2004/05	184,659	236,875
2005/06	187,242	240,050
2006/07	189,862	243,267
2007/08	192,520	246,527
2008/09	195,216	249,831
2009/10	197,951	253,179
2010/11	200,725	256,572
2011/12	203,540	260,011
2012/13	206,394	263,495
2013/14	209,290	267,027
2014/15	212,228	270,605

NOTES:

- * Populations and waste totals subsequent to 1996 are projections. Population estimates do not include Gilchrist County. Waste estimates, however, include waste expected from Gilchrist County.
- * Percent recycled is 30% for 1996 and expected for all subsequent years.
- * Waste tonnage and projections are Class I and Class III totals.

SOURCES:

1. Alachua County Department of Public Works, September 1998.

**Table 3. Recyclables Collected by Gainesville Curbside Program, by
Month (in tons)**

Date	ONP	OCC	OMG	Glass	Steel	Aluminum	Plastic	Appliances	Yard Trash	Total Recycled
FY 94-95										
October	199.68	26.24	10.88	55.68	17.92	5.12	13.44	0.00	434.95	763.91
November	190.08	44.80	23.04	65.92	26.88	6.40	17.92	0.00	452.50	827.54
December	261.76	48.64	41.60	88.32	22.40	8.32	8.96	0.00	378.80	858.80
January	229.76	88.96	58.24	78.08	21.12	3.52	40.96	0.00	472.00	992.64
February	164.42	48.36	46.72	71.77	39.83	6.84	15.68	0.00	479.00	872.61
March	193.66	27.21	43.06	48.08	19.01	7.19	16.80	0.00	719.00	1074.01
April	146.76	20.68	29.15	74.10	3.53	5.44	6.72	0.00	536.00	822.39
May	218.42	40.88	22.81	50.82	9.18	4.48	9.79	0.00	647.00	1003.38
June	171.90	51.12	34.03	84.81	18.58	4.90	25.07	0.00	735.70	1126.10
July	254.31	24.77	29.06	45.54	9.54	15.12	8.24	0.00	538.00	924.59
August	241.36	45.57	32.86	86.46	17.63	7.89	25.72	0.00	680.00	1137.48
September	173.29	43.07	48.76	54.47	13.57	4.18	18.05	0.00	582.00	937.39
TOTAL	2445.40	510.30	420.20	804.04	219.19	79.40	207.35	0.00	6654.95	11340.84
January 96	289.01	82.25	105.83	137.15	46.96	6.06	23.73	2.04	466	1159.03
February	317.4	87.84	62.1	126.47	17.13	7.93	26.7	1.566	507	1154.136
March	298.91	30.76	31.41	115.02	19.77	6.45	40.06	4.662	586	1133.042
April	298.98	84.92	58.11	49.16	17.14	4.82	26.08	3.996	464	1007.206
May	265.54	33.13	27.7	152.69	19.42	7.53	23.81	5.856	550	1085.676
June	258.01	70.69	61.91	86.28	36.09	4.88	41.1	2.754	431	992.714
July	158.12	190.27	77.69	97.15	30.55	7.95	26.62	4.038	513	1105.388
August	259.23	26.54	49.22	147.49	19.28	7.59	29.08	5.736	260	804.166
September	155.44	59.22	32.08	92.08	12.01	10.01	20.02	4.11	375	759.97
October	175.96	37.71	37.71	82.55	15.62	4.46	33.47	4.578	720	1112.058
November	164.6	29.82	13.92	59.65	15.7	4.71	15.7	4.92	553	862.02
December	177.51	29.21	17.98	53.34	16.3	4.44	13.33	7.992	484	804.102
TOTAL	2818.71	762.36	575.66	1199.0 3	265.97	76.83	319.7	52.248	5909	11979.50 8

ONP - Old Newspaper; **OCC** - Corrugated Cardboard; **OMG** - Old Magazines

Source: City of Gainesville Solid Waste Division, 1999.

Alachua County Department of Public Works, September 1998.

FACILITY	Tons Generated
Perma-Fix	3,479
Eveready Battery Company	591
Archimica (formerly known as PCR)	448
Koppers Industries	194

Source: Alachua County Environmental Protection Dept, 1999.

Appendix C

Consistency with Regional Policy Plan on Regionally Significant Resources or Facilities

Appendix B

Interlocal Agreement for Solid Waste Management

Draft 7/15/99

Solid Waste Element

of the

City of Gainesville 2000-2010 Comprehensive Plan