

CHAPTER 3.0 SOLID WASTE MANAGEMENT SYSTEM

3.0 SOLID WASTE MANAGEMENT SYSTEM

3.1 Introduction

This chapter describes the programs and approaches currently in place to meet the solid waste management needs of the County. The system involves citizens, private entrepreneurs, and local government. The solid waste management system includes collection, processing, disposal, recycling, policy planning, environmental compliance and enforcement, and environmental monitoring.

3.2 Collection

For Calendar Year (CY) 2002 there were twenty-five solid waste collection and transportation firms permitted to operate in Loudoun County. A list of permitted waste collection companies in Loudoun County is provided in **Appendix G**. Of these, sixteen are considered “Minor” collectors operating 3 or fewer vehicles and transporting 2,000 tons or less of solid waste per year. Minor collectors serve the greater portion of rural the District. The remaining nine firms are considered “Major” collectors operating 4 or more collection vehicles and disposing of 2,000 tons or more of solid waste per year. These collectors primarily serve the urban and suburban areas of the District. All of the incorporated Towns and many of the larger residential communities contract with Major collectors for solid waste disposal services. In addition to those firms offering solid waste disposal services, there are an unknown number of companies collecting and disposing of construction and demolition waste (C&D) within the County. This group was not regulated under County ordinances prior to 2002.

3.2.1 Municipal Solid Waste Collection by the Private Sector

Loudoun County does not provide trash collection services to residences and businesses. Residents, businesses, property management companies, institutions, and homeowners' associations (HOAs) contract directly with private refuse collection companies.

Residents living in unincorporated portions of the District have several options for meeting their solid waste disposal needs. They can hire one of the many solid waste collection firms that operate in the County or a household may transport its trash to the local public sanitary landfill and pay the tipping fee. A household that is part of an HOA usually receives trash and recycling collection service as part of the HOAs community maintenance services, which are paid for by the resident in HOA fees or assessments.

Residents of multi-family housing units, including apartments and condominiums, typically receive refuse collection service utilizing dumpsters that are located in the complex by the property management company.

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Businesses in the LCSWPD typically hire a private refuse collection firm to remove waste. Trash dumpsters are utilized by businesses for on-site storage of solid waste. These containers, which range generally from two to six cubic yards in volume, are placed in parking lots or specially designed enclosures. A single dumpster may serve one or more businesses. Stationary or portable trash compaction units are used by businesses with a high volume of waste but limited outside space for trash storage. In addition, several businesses and small industries also use their own company trucks to haul solid waste to the LCSWMF.

3.2.2 Role of the County in Collection

Loudoun County does not provide solid waste collection services to residents or businesses. The Loudoun County Public Schools provide solid waste collection services to schools and other public buildings. The County's primary role is to regulate the storage, collection, and transportation of solid waste and recyclables within the County.

Chapter 1082 (**Appendix H**) of the Codified Ordinances of Loudoun County, the "Loudoun County Solid Waste Storage Ordinance," regulates the types of collection containers used for storage of MSW and the frequency at which MSW will be collected. This ordinance is currently enforced and administered by the Loudoun County Department of Public Health and has been in place since 1992. This ordinance also ensures that activities associated with MSW storage are conducted in a manner that does not create a public nuisance, pollute the air, cause a discharge of pollutants to the waters of the County and, in general, impair the quality of the environment or create a hazard to the public.

Chapter 1084 of the Codified Ordinances of Loudoun County, the "Loudoun County Solid Waste Collection and Transportation Ordinance", regulates solid waste collection and transportation activities conducted within the County. Major revisions to Chapter 1084 were adopted in 2002. These revisions establish performance standards for collectors, identify specific materials to be collected for recycling, establish a compliance schedule for recycling and require all collectors to submit a quarterly solid waste collection report. A provision requiring all Major collectors to provide curbside recycling services to all customers outside the incorporated areas of the County was also part of the revision.

3.2.3 Role of the Towns in Collection

Residents of the seven incorporated Towns receive curbside trash and recycling collection services from private contractors who operate under contract to the Towns. Some of the Towns require contractors to provide special waste collection services. Town tax revenues pay for refuse collection.

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Small businesses generating only one or two small containers of trash weekly may be included under Town contracts. Each Town has its own policy regarding whether to provide trash and recycling collection services for larger businesses.

Some of the Towns provide special waste pickup services through their solid waste services providers or their public works departments for large items that are too bulky for routine pickup (sofas, appliances, etc.). Most of the Towns collect solid waste from public works activities and transport this to the LCSWMF. These wastes include storm drainage waste, sludge, construction project wastes, and vegetative waste (VW).

3.2.4 Individuals

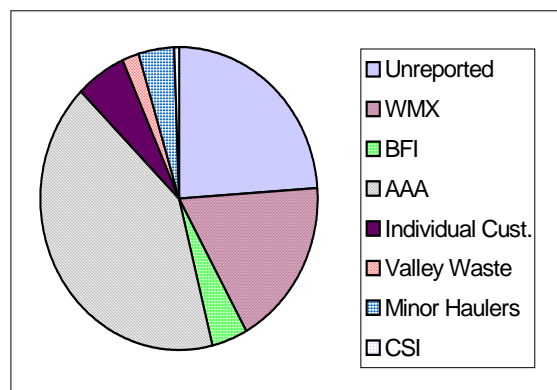
Many residents transport their solid waste directly to the County SWMF. Residents typically transport MSW, small amounts of C&D waste, VW, source-separated recyclables, appliances and tires for processing, recycling, and disposal.

3.2.5 Distribution of Municipal Solid Waste Collection

Collection of MSW is distributed among major and minor collectors and individuals that transport their solid waste directly to the LCSWMF. **Figure 3-1** depicts the distribution of customers as households among collectors of residential MSW in the County. Based on reports submitted by collectors, approximately 11% of the households have no reported waste collection method or provider (based on an estimated 4,000 regular household users as individuals at the LCSWMF).

Figure 3-1: Distribution of MSW Collection

Collectors	# Households
Unreported (residual)	11,444
WMX*	17,657
BFI*	3,000
AAA*	28,687
Individual Customers**	4,068
Valley Waste*	1,300
Minor Collectors**	2,954
CSI*	348
Total:***	69,458



Sources:

*Reports submitted by Collectors for CY 2002 as required by the Codified Ordinances of Loudoun County, Chapter 1084.

**Loudoun County OSWM Solid Waste Activity Tracking (SWAT) reports.

***Total Households from Loudoun County Department of Economic Development. (April 2002).

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3.2.6 Construction and Demolition Waste Collection

C&D collection services are provided by numerous private companies that supply roll-off containers. Containers are serviced when full or on a pre-arranged schedule. The contracted company picks up the roll-off and hauls it to a waste transfer station (WTS) located in the County or to one of several landfills located in nearby jurisdictions. C&D is also hauled by private companies in trucks or trailers directly to disposal facilities.

3.2.7 Vegetative Waste Collection

Residents of the District typically have their yard waste picked up by private refuse companies as part of the contracted solid waste or recycling collection services. This yard waste is taken by these private companies either to a WTS or to a yard waste composting facility in the District (**Appendix I**). A yard waste composting facility is a Vegetative Waste Management Facility (VWMF), which composts yard waste. Residents without trash collection services can take yard waste to the LCSWMF for recycling.

Businesses and institutions usually contract directly with a landscaping company for grounds maintenance services and any resulting yard waste is typically taken off site by that company. These landscaping companies typically dispose of VW in a roll-off located at the their place of business, which is later serviced by a private refuse company, or haul the VW directly to a solid waste management facility, such as the LCSWMF.

Companies generating VW as part of land-clearing operations usually directly haul or contract to haul the waste to a VWMF located in LCSWMPD (**Appendix I**) or Prince William County. Other options include hauling saw logs, chips, or mulch generated at the site of the land clearing directly to markets, many of which are located in southern Virginia and West Virginia.

3.2.8 Special Waste, Household Hazardous Waste, and Clean Waste Programs

Special wastes—such as waste motor oil and antifreeze, household hazardous waste (HHW), scrap tires, and automotive batteries—must receive special handling and are collected only by specialized contractors. These contractors are hired by individual businesses or entities.

Special waste collectors offer services transporting regulated medical waste, HHW, and waste oil, waste antifreeze, and wet cell batteries. These special waste collectors may be permitted by the Virginia Department of Environmental Quality (DEQ) and/or the Environmental Protection Agency (EPA). Members of the District do not require additional solid waste collection permits for these collectors. A list of known authorized collectors operating in Loudoun County is located in **Appendix G**.

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Citizens of Loudoun County may bring special wastes to the LCSWMF and at other authorized locations. Various contractors are hired by Loudoun County to pick up special wastes from the LCSWMF and ensure that the materials are recycled or disposed of properly. The County contracts with specialized firms to conduct HHW collection events. Residents transport their HHW to collection sites where it is inventoried and prepared for shipment to an authorized disposal facility.

The drums or containers are loaded into a tractor-trailer for transport to an out-of-state Treatment/Storage/Disposal (TSD) facility. The Hazardous Waste Transporter must be registered with the Commonwealth and the EPA and meet the applicable requirements. The transporter must comply with DOT regulations for transportation of hazardous materials under 49 CFR part 172, subpart F and placard the vehicle. The collected HHW must be delivered to a TSD facility for off-loading within 3 days of the event. All operations at the TSD must be in accordance with Federal and State laws.

3.2.9 Industrial Waste Collection

The majority of waste generated in industrial offices and warehouses is similar to household refuse in composition and is handled as MSW. A small amount of industrial waste is created that may require special handling and disposal. Such wastes receive proper treatment and disposal by specialized contractors who collect and dispose of the waste outside of the District.

3.3 Waste Disposal, Transfer and Processing

3.3.1 Private Sector Disposal, Transfer, and Processing

A system of both public and private facilities has developed to manage the solid waste generated in the County. Currently, there are 5 privately owned solid waste management facilities permitted to operate in Loudoun County. These facilities accept a variety of materials for disposal and can be grouped into one of four types: 1) Waste Transfer Stations (WTS); 2) Materials Recovery Facilities (MRF); 3) Vegetative Waste Facilities (VWMF); and Yard Waste Composting Facilities. None of these facilities are technically disposal facilities. However, they collect and transport materials or wastes for disposal and/or recycling in other jurisdictions.

Appendix I lists the privately owned solid waste management facilities in Loudoun County.

3.3.1.1 MSW and C&D Processing

There are three privately owned solid waste management facilities in the District permitted to manage MSW and/or C&D. These private facilities include a MSW/C&D transfer station, a C&D transfer station, and a C&D MRF. **Appendix I** provides descriptive information about these, as well as other solid waste management facilities that are permitted to operate in Loudoun County.

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There are two WTSs in LCSWMPD. These facilities accept a variety of materials including MSW, C&D, or source-separated recyclable materials for disposal off-site. One of these facilities is located in Leesburg, Virginia and the other is in Sterling, Virginia.

Currently, one MRF is permitted to operate in the District. This facility is located in Sterling. This facility accepts C&D waste and source-separated recyclables for resale on the open market. An additional MRF may be permitted in the Chantilly area of LCSWMPD in 2003-2004.

The County currently has permitted one facility to handle 600 tons per day of MSW and has permitted two WTSs for a combined total of 770 tons per day of C&D. Applications for an additional capacity of 960 tons per day of C&D are pending and another application for 750+ tons per day of C&D is anticipated in 2003. Therefore, if all requests are approved as described by the date of adoption of this plan, the County will have 600 tons per day of MSW transfer facility capacity and 2,332 tons per day of C&D transfer facility capacity in the private sector. Transfer capacity is dependent on the availability of an economically viable receiving disposal facility.

A significant amount of the MSW generated in the District is hauled by larger private refuse companies. A large amount of this waste goes to WTSs and Waste-to-Energy (WTE) facilities located in Fairfax County and a minor amount goes to WTSs in the City of Manassas. The majority of MSW generated in the District is taken directly to the privately owned WTS located in the County, where the waste is transferred to long-haul vehicles for transport to one of several different regional disposal facilities. **Table 3-1** is a list of these regional solid waste disposal facilities.

A large portion of the C&D generated in the District is hauled directly by private companies to solid waste disposal facilities located in nearby jurisdictions. A smaller portion of the C&D generated, largely what is collected in roll-off boxes, is hauled to the WTSs and MRFs located in the County. From these facilities, the waste is hauled to several different regional disposal facilities.

3.3.1.2 Vegetative Waste Processing

There are two VWMFs permitted in the District. Of these, only one facility accepts waste from outside sources. These facilities accept a variety of materials such as grass, leaves, stumps, brush and logs. The majority of this material is recycled into saleable products such as compost, mulch, wood chips and firewood. Both facilities are located in the southeast corner of Loudoun County near Chantilly.

3.3.1.3 Waste Dirt Processing

Land development activities in Loudoun County have resulted in the generation of an increasing amount of waste dirt. The need for a disposal location for this waste dirt has

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led to the creation of businesses in the County that accept loads of waste dirt for a fee, which results in the accumulation of that dirt into large, unregulated surface piles. In addition, the incidents of unlawful dumping of waste dirt have increased in the County. In order to address the issue waste dirt, the Loudoun County Zoning Ordinance has been recently revised and now includes standards for surface stockpiles of soil. In addition, future amendments to Chapter 1080 (**Appendix J**) are anticipated in order to address the problem of unauthorized dumping of waste dirt throughout the County.

3.3.1.4 Special Waste Processing

There are a number of wastewater treatment plants in the County that generate sludge as a by-product, including publicly owned plants in the incorporated Towns, as well as a few privately owned plants. Sludge from the Town of Leesburg's and the Town of Round Hill's Water Pollution Control Facilities is converted into dry pellet fertilizer at Leesburg's permitted biosolids-processing facility. Stabilized, dewatered sludge from several treatment plants is disposed at the LCSWMF in accordance with its permit. In 2002, the County's landfill accepted 43 tons of non-hazardous sludge. Sludge generated in the County is also disposed by land application or discharged via interceptor for treatment at the Blue Plains Wastewater Treatment Plant in Washington, D.C.

Septage is disposed in the County under permit to the Loudoun County Sanitation Authority. Asbestos and spill residues are disposed outside of the County at facilities permitted to accept such wastes.

Agricultural wastes, including animal manure and bedding, pesticides and herbicides, and animal carcasses, are generated by the numerous farms in the rural western part of Loudoun County. Much of this waste is removed and disposed by private waste collectors under contract to individual farm owners. Animal manure is disposed of in the County by land application or picked up by one of several private companies that operate manure composting operations. In addition, manure and bedding from numerous horse farms in the County are collected and transported to Pennsylvania for use in mushroom production. Waste pesticides and herbicides may be brought to the County-sponsored Household Hazardous Waste and Clean Waste events. Animal carcasses are picked up by a private company and processed into fertilizer or may be disposed at the LCSWMF in accordance with its permit.

3.3.2 Role of the County

The County's role in disposal and processing is threefold:

- 1) to plan and ensure available disposal capacity to meet needs;
- 2) to operate a solid waste management facility as a public service; and,
- 3) to regulate other solid waste management facilities to ensure protection of public health, safety and the environment.

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Table 3-1: Regional Solid Waste Disposal Facilities

Facility Name and Location	Type of Facility	Type of Waste Accepted	Ownership
Atlantic Waste Disposal Sussex County Waverly, Virginia	Sanitary Landfill	MSW; C&D	Privately owned and operated
I-95 Energy/Resource Recovery Facility Fairfax County Lorton, Virginia	Incinerator	MSW	Privately owned and operated
Fauquier County Landfill Fauquier County Warrenton, Virginia	Sanitary Landfill	MSW; C&D	Owned and operated by Fauquier County
Lorton Landfill/Furnace Road Debris Landfill Fairfax County Lorton, Virginia	C&D Landfill	C&D	Privately owned and operated
King George Landfill King George County King George, Virginia	Sanitary Landfill	MSW; C&D	Owned by King George County; Privately operated
Middle Peninsula Landfill Gloucester County Gloucester, Virginia	Sanitary Landfill	MSW; C&D	Privately owned and operated
Potomac Landfill Prince William County Dumfries, Virginia	C&D Landfill	C&D	Privately owned and operated

Notes: C&D = construction and demolition; MSW = municipal solid waste

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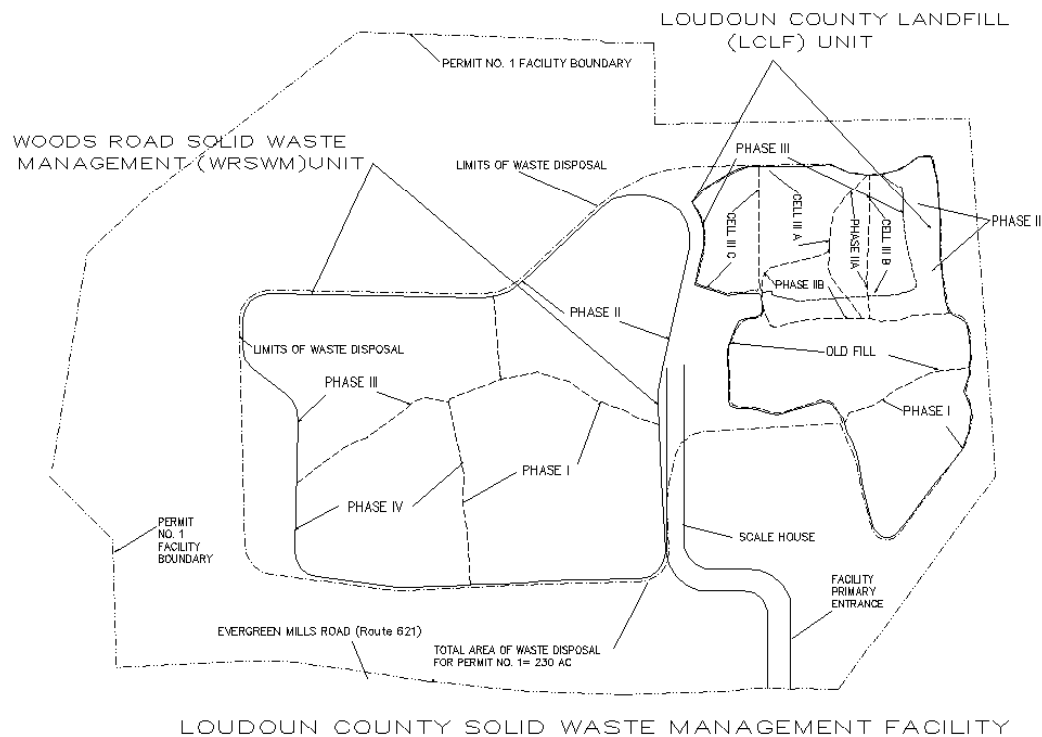
3.3.2.1 Loudoun County Solid Waste Management Facility (LCSWMF)

The LCSWMF is located four miles south of Leesburg, Virginia, on the west side of State Route 621 (20939 Evergreen Mills Road). Owned and operated by the Loudoun County government, this facility includes a sanitary landfill, a complete Recycling Dropoff Center (DOC), special recycling facilities, and a temporary HHW storage facility. The LCSWMF serves Loudoun County only, and is the only permitted disposal facility in the District. LCSWMF operates under the Board's Landfill policy as described in **Appendix K**. This facility accepts MSW, which is landfilled; C&D waste, which is landfilled or recycled; and, VW that is ground into mulch and recycled. Waste tires, scrap metal, appliances, waste oil, and waste antifreeze are collected and transported off-site for recycling.

3.3.2.2 Facility Capacity and Phasing Schedule

The facility is comprised of two discrete disposal units: the existing landfill unit (LCLF Unit) and the Woods Road Unit (WRSWM Unit). The disposal areas in the two units have been, or will be constructed, operated, and closed in a series of phases or cells. **Figure 3-2** shows the location of the two units and the phases within each of the units.

Figure 3-2: LCSWMF Location of Cells/Phases



Source: Solid Waste Services, LLC. (May 14, 2002). *Presumptive Remedy Proposal for the Loudoun County Solid Waste Management Facility*.

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Current LCSWMF operations are conducted at the LCLF Unit which consists of six phases (Old Fill, Phase I, Phase II, Phase IIA, Phase IIB, and Phase III). This unit occupies a 71.7-acre waste disposal footprint. The construction details and disposal capacity are presented in **Table 3-2**. Several phases of the LCLF Unit overlap, and therefore, the sum of the actual acreage of the individual construction phases exceeds the area of the facility footprint. As of June 30, 2002, 308,900 cubic yards (CY) (70,000 to 85,000 tons of MSW) of constructed disposal capacity are available, and an additional 2,059,000 of permitted capacity is available upon construction.

The WRSWM Unit contains an additional 21.8 million CY of permitted design capacity. It will be developed as needed, in five phases, and has a design life of more than 50 years (**Table 3-2**). Actual design life will vary dependant upon actual gate receipts.

Approximately 40.3 of the 71.7 acres of the LCLF disposal unit have been closed and capped. Future cap and closure projects will occur as capacity is utilized. The scheduling of those projects is dependent on disposal demand. In the near term, closure projects are included in the construction of additional capacity (Cell IIIB Project).

Table 3-2: LCSWMF Capacity Summary

PHASE	BUILT	SIZE (acres)	ACTIVE	VOLUME (CY)	WEIGHT (tons)
CONSTRUCTED LCLF UNIT PHASES/CELLS					
LCLF Unit Old Fill	1971+	29.6	1971-1985	1,331,810	494,060
LCLF Unit Phase I	1984	11.8	1984-1991	600,000	225,000
LCLF Unit Phase II	1987	12.4	1987-1992	569,682	195,059
LCLF Unit Phase IIA/IIB	1992-1993	9.2	1992-2002	955,570	292,947
LCLF Unit Cell IIIA	2001	7.1	2002-2006	344,550	-
FUTURE LCLF UNIT PHASES/CELLS					
LCLF Unit Cell IIIB	2006	10.3	2005-2014	763,476	199,829
LCLF Unit Cell IIIC	2013	7.0	2014-2021	1,124,800	235,750
Facility Total (actual waste footprint)		71.7		5,689,888	1,714,526
FUTURE WRSWMF DISPOSAL UNIT PHASES/CELLS					
WR Unit Phase I	*	36.2	14 years	3,690,000	‡
WR Unit Phase II	*	29.8	8 years	3,290,000	‡
WR Unit Phase III	*	30.9	6 years	2,940,000	‡
WR Unit Phase IV	*	23.8	6 years	3,440,000	‡
WR Unit Phase V	*	0	11 years	8,420,000	‡
WR Unit Total	*	120.7	45+ years	21,780,000	‡

* Construction dependent on demand

‡ Weight buried dependent on volume and type of waste received daily

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3.3.2.3 Regulation of Facilities

Chapter 1080 of the Codified Ordinances of Loudoun County, the “Solid Waste Management Facilities Ordinance”, regulates the construction, operation, and closure of solid waste management facilities in Loudoun County. The ordinance also prohibits the open dumping of solid waste. This ordinance was substantially revised in 1998 and 1999 to include permitting and monitoring requirements for VWMFs and yard waste composting facilities. Minor revisions adopted by the Board of Supervisors in 2000 included the elimination of the reduction in the solid waste setback distance for most types of solid waste management facilities and a limit on the permitted capacity for MSW at any one facility of not more than 600 tons a day (excluding the LCSWMF).

3.3.3 Summary of System Disposal Capacity

The waste processing and disposal roles of the private sector and the public sector have been described in prior sections of this chapter. This section describes the aggregate processing and disposal capacity of the solid waste management system. For the purposes of this chapter, capacity is described as follows:

MSW Transfer capacity refers to the daily throughput or the amount of waste that a facility can receive and process each business day. The facilities are not permitted to have waste on the floor at the end of the day.

C&D Transfer and/or MRF capacity is the maximum daily throughput, which is also the total amount of waste that may be stored in or on the facility.

Disposal capacity at landfills refers to the total permitted disposal volume based on an approved (permitted) design plan. The facility may not have all of that permitted capacity available if part of the facility has not been constructed. Disposal facilities also have a daily capacity that is a function of the logistics of customer transaction processing at the scales, waste screening capability, and equipment. These parameters can be adjusted in response to demand within the conditions of the permit for the facility.

VWMF capacity normally refers to the gross amount of material that can be stored/processed on-site consistent with facility permit requirements. Daily capacity is dependent on the amount of waste that a facility can take for initial processing (such as de-bagging or grinding).

The LCSWMF is designed and permitted to handle the safe disposal of solid waste generated in the County. The cumulative available (permitted, not constructed) capacity of the facility is 7 to 8 million tons of waste. The estimated amount of MSW and C&D generation through 2025 is approximately 10 million tons. Provided that the County maintains at least 25% recycling, there is adequate disposal capacity permitted to meet the County’s projected needs if permitted capacity is constructed.

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The private sector facilities provide a buffer to this demand by outshipping waste to other facilities. This conserves capacity at the LCSWMF.

Figure 3-3 illustrates currently available MSW capacity plotted against demand, over time. The figure indicates that the County has adequate permitted capacity to address needs beyond 2010. Recycling has not been taken into account prior to 2005 and would reduce the disposal demand amounts by 10-20%.

Figure 3-3: MSW Facility Capacity

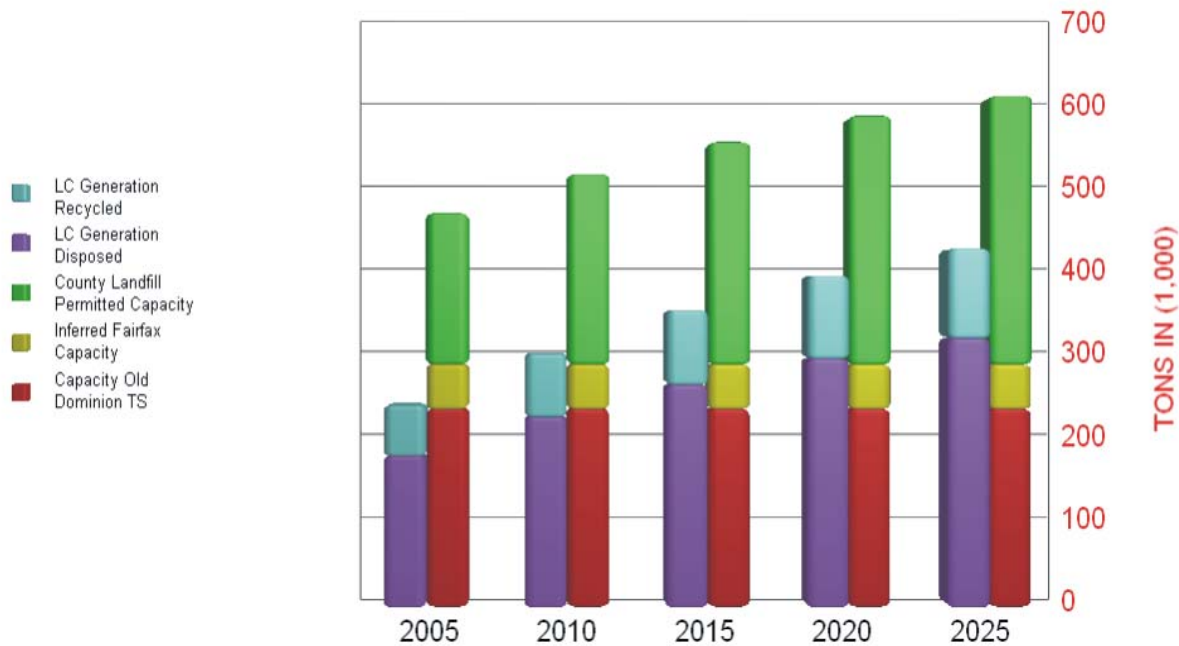


Figure 3-4 represents an assessment of C&D capacity based on current available capacity. The County has sufficient capacity permitted in C&D facilities to address generation in the County throughout the 20-year planning horizon provided that the capacity permitted is available to manage County-generated waste.

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Figure 3-4: C&D Facility Capacity

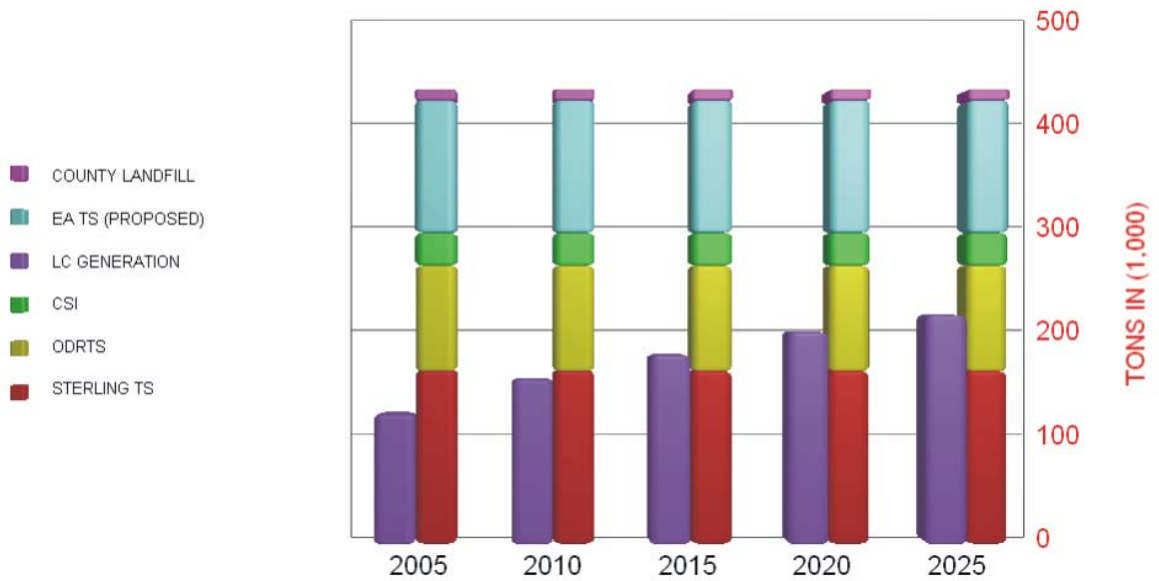
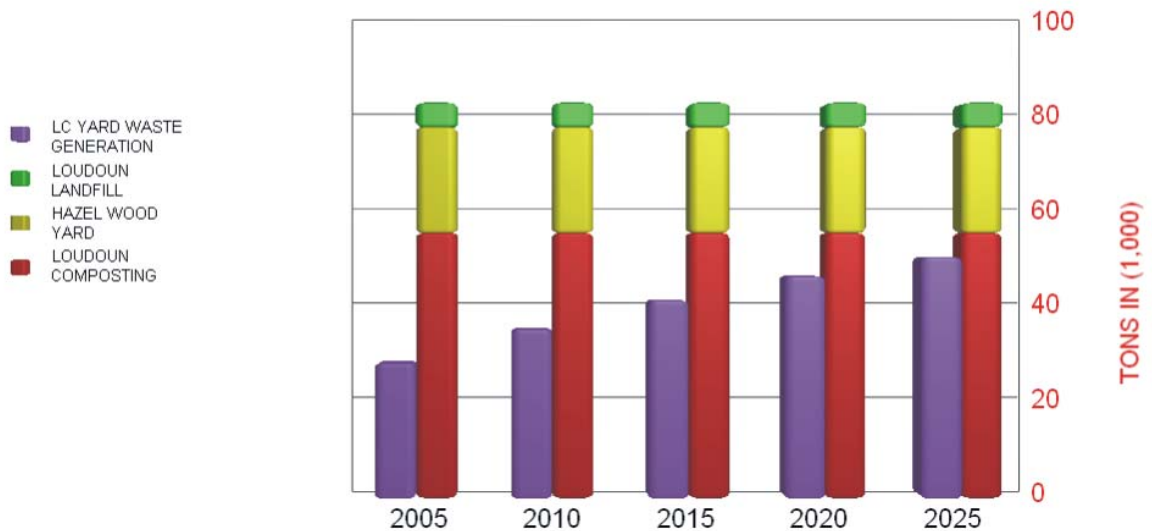


Figure 3-5 represents an assessment of VW processing capacity. While the County has permitted sufficient capacity to address generation for ten to twenty years, this capacity is not immediately available.

Figure 3-5: Vegetative Waste Capacity



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3.3.4 Inventory of Known Disposal Sites

Section 9 VAC 20-130-120 of Virginia Solid Waste Management Regulations requires localities to maintain an inventory of known disposal sites in the locality. This inventory is maintained for the District by the Office of Solid Waste Management (**Appendix L**). Any disposal sites identified in the future will be added to the inventory. In addition to these disposal sites, OSWM maintains an inventory of dump complaints, investigations, corrective actions, and last known status. Many such complaints involve relatively small amounts of waste that do not warrant the site being included in the disposal site inventory.

3.4 Solid Waste Diversion and Recycling in Loudoun County

Title 10.1-1411 of the Code of Virginia requires that local solid waste management plans identify how the State's mandated recycling rates shall be achieved. The Code established initial recycling goals of 10% by 1991, 15% by 1993 and 25% by 1995. The Code was amended in 1995 to require the 25% rate through 1997 and again in 1997 to sustain a minimum 25% recycling in perpetuity.

9 VAC 20-130-10 *et seq.* sets forth requirements for comprehensive and integrated solid waste management plans that follow a solid waste hierarchy which places source reduction, reuse and recycling above energy recovery / incineration and landfilling. This section addresses solid waste diversion or the redirection of solid waste away from energy recovery / incineration and landfilling. The solid waste hierarchy is discussed in greater detail in Chapter 4.

3.4.1 Recycling Challenges

The District faces many challenges in working toward a system that follows the hierarchy. Loudoun County, as have other northern Virginia localities, has experienced a shift in the waste handling model that was established in the early 90's when grassroots recycling efforts became part of local and State government solid waste management planning. Discounted landfill disposal fees and excess capacity at the landfills in southeastern Virginia provide a disincentive for solid waste collectors to recycle. Vertical solid waste corporate structures maximize their cash flow by retaining as much of the waste captured as possible through a continuum of services from collection to transport to disposal.

3.4.2 Recycling - The Role of the County

The County's role in solid waste diversion and recycling is to:

- Ensure that the LCSWMPD meets the State's 25% recycling mandate;
- Provide residents and businesses an opportunity to recycle in compliance with the County's Recycling and Waste Reduction Ordinance; and,
- Offer recycling and proper options for recyclable or reusable materials.

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Through contracted services, materials are collected from eight Recycling Dropoff Centers (DOCs) including operations at the LCSWMF, periodic HHW collection events, and two hazardous waste collection events for qualifying local businesses. The County's largest recycling DOC is at the LCSWMF and is the only one-stop site for collection of special wastes for recycling such as wet cell batteries, waste oil, and waste antifreeze. Additional opportunities to recycle waste tires and scrap metal are provided at the LCSWMF under a user fee schedule.

The County's Solid Waste Diversion and Recycling program also administers the Virginia Litter Prevention and Recycling Grant Program. The program receives and distributes funds from a special State tax to the seven incorporated Towns and other organizations with common goals for recycling and diversion education activities.

3.4.2.1. Recycling Compliance and Enforcement

Chapter 1084 of the County's ordinances requires refuse collectors to be permitted to operate in LCSWMPD. Revisions to Chapter 1084 occurred in 2002. Effective January 1, 2003, solid waste collectors permitted to operate in the County must provide recycling services if they are designated a "major" collector based on tonnage and number of vehicles.

Chapter 1086 of the County's ordinances requires residents as well as businesses to separate certain materials for recycling. Complaints from citizens and refuse collector reports required by Chapter 1086 suggested that materials separated for recycling, are not, in fact, being recycled and that the system was failing to provide satisfactory basic levels of service. The Board of Supervisors significantly revised Chapter 1086 in 2002. Key revisions to Chapter 1086 provide for:

- Materials to be collected for recycling;
- A compliance schedule for recycling;
- Businesses to recycle at least one principal recyclable material (PRM) from their waste stream;
- Owners/managers of apartments, commercial office buildings, strip malls or other businesses to provide a recycling system to tenants, employees and customers; and,
- All collectors to submit a quarterly report documenting total recyclable materials collected.

3.4.2.2. Loudoun County Recycling Policy

In 1992, the Board of Supervisors established a recycling policy. The policy is described in **Appendix M** as it was presented and reaffirmed in April 2001.

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3.4.2.3. Recycling Dropoff Centers (DOC's)

Loudoun County operates eight DOCs for citizens who do not currently have curbside collection of recyclables. A private contractor services these DOCs with contract management services provided by the Office of Solid Waste Management (OSWM). A listing of the centers, their locations and materials that can be recycled is included in **Appendix N**.

Many residents rely on the County's recycling / diversion programs for recycling and proper disposal of hazardous materials. Accelerated population growth is putting increasing pressure on the DOCs to handle larger quantities of recyclable materials, contaminants, and large, bulky items left for pickup.

3.4.2.4. Household Hazardous Waste (HHW) Collection

The HHW collection program is conducted through a contract with a private company that has staff trained to identify, separate, package, store and transport the materials collected according to State and Federal waste and transportation laws and regulations.

The County operates the only HHW collection program in the County for County residents only. Collection events are held periodically throughout the year and are located throughout the District to serve all areas conveniently. Residents of the LCSWMPD can participate in any of the HHW collection events.

HHWs are common materials or products used in a household that may be toxic or hazardous if not disposed of properly. These materials are exempt from State and Federal hazardous waste laws when they are the result of household usage. The County's program is intended to divert these materials from improper disposal and to encourage removal of the materials from households when they can or will no longer be used.

Household Hazardous Waste: HHW includes cleaning products, oil-based paints and varnishes, unwanted fuels, insecticide and pesticides, hobby chemicals, cleaning products, and pool chemicals. HHWs are a subset of MSW.

Conditionally Exempt Small Quantity Generators (CESQG): CESQG are non-residential hazardous waste generators of no more than 100 kilograms per month (roughly 220 pounds or 25 gallons) of hazardous waste or less than 1 kilogram per month of acutely hazardous waste. They are subject to reduced management requirements under the Virginia Hazardous Waste Management Regulations (9 VAC 20-60-12 *et. seq.*). A CESQG can participate in the Loudoun County "Clean Waste Program" after certifying they qualify as a CESQG under the VHWMR. Certain County departments have qualified as CESQGs.

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Household Hazardous Wastes and CESQGs: Loudoun County residents and CESQGs have access to household hazardous waste and CESQG hazardous waste collection programs throughout the year. Both programs must be operated in compliance with the Virginia Solid Waste Management Regulations, VHWMR, the Virginia Regulation Governing the Transportation of Hazardous Materials, and U.S. Department of Transportation Regulations for the Transportation of Hazardous Materials.

Under both programs, the participants deliver the waste to the collection site. The Contractor removes the waste from the participant's vehicle. The waste is identified and characterized according to VHWMR. Hazardous wastes are packaged and labeled in accordance with the waste character (e.g. flammables can be consolidated or bulked into a 55-gallon drum, pesticide containers can be packed into a 55-gallon drum with other pesticides, etc.) A Uniform Hazardous Waste Manifest, which identifies the waste types and number of drums/containers, is created for each CESQG and for each HHW collection event in accordance with the VHWMR. The CESQG signs as the generator for his/her wastes.

The drums or containers are loaded into a tractor-trailer for transport to an out-of-state Treatment/Storage/Disposal (TSD) facility. The Hazardous Waste Transporter must be registered with the Commonwealth and the EPA and must comply with DOT regulations for transportation of hazardous materials under 49 CFR part 172, subpart F.

The hazardous waste must be delivered to a TSD facility for off-loading within 3 days of the event. All operations at the TSD must be in accordance with Federal and State law.

Each type of waste is treated by a different process and ultimately disposed of or recycled. Flammable materials are fuel-blended and burned as an industrial fuel. Toxics, such as pesticides, are incinerated at an out-of-state permitted facility and the resulting ash is handled in accordance with Federal regulations. Reactive wastes (such as Oxidizers) are treated and landfilled. Corrosives are treated, neutralized and either landfilled if a solid or discharged to a sewage treatment plant if a liquid.

3.4.2.5 Special Waste Collection

Special wastes are those solid wastes that require special handling. The Loudoun County Solid Waste Management Facility (the LCSWMF) and OSWM oversee the collection, diversion, and recycling of seven special wastes through private contractors. A waste flow description is provided for each waste type.

- Recovered refrigerant,
- Waste motor oil,

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- Antifreeze,
- Scrap tires,
- Automotive batteries,
- Scrap metals, and
- HHW and hazardous waste from CESQGs.

Recovered Refrigerant: Refrigerant (CFC and HCFCs) is removed from refrigerant containing units that enter the LCSWMF with the charge intact (e.g. refrigerators, air conditioners, dehumidifiers). The refrigerant recovery equipment and the operator must be certified by Air Reconditioning and Refrigeration Institute (ARI) or Underwriters Laboratories (UL) under the ARI 740-1993 Standard per 40 CFR Part 82, Subpart F. The County's recycling operations at the LCSWMF recover 5 different types of refrigerant (e.g. R-12, R-22, R-134a, 500, and 502). A private contractor processes the recovered refrigerant for recycling or reuse. The appliances are handled as scrap metal.

Used Motor Oil: Loudoun County residents and businesses use the Used Oil collection tank at the LCSWMF recycling center. They pour the oil into the tank (double walled, steel tank) and leave the containers (typically quarts, 5-gallon buckets to 55-gallon drums) at the LCSWMF. A contractor pumps the tank contents on a weekly basis. The used oil is ultimately transferred to an out-of-state storage facility and ultimately burned as an industrial fuel oil.

Used oil is potentially regulated as a hazardous waste in Virginia but because the used oil is recycled as a product fuel it is conditionally excluded from regulation as a hazardous waste. The waste oil must be transported in accordance with Department of Transportation (DOT) regulations 49 CFR Parts 100-185. The waste oil transporter must have an EPA identification number and must placard (identify) the product in accordance with DOT regulations.

Antifreeze: Loudoun County residents and businesses use the Used Antifreeze collection tank at the LCSWMF recycling center. They pour the antifreeze into the tank (double walled, steel tank) and usually leave the containers (typically quarts, 5-gallon buckets) at the LCSWMF. A contractor pumps the tank contents on an as-needed basis to an out-of-state storage facility. The waste antifreeze is refined or recycled to make more antifreeze.

Used antifreeze is not specifically regulated as a hazardous waste in Virginia nor is it a RCRA listed hazardous waste. However, the antifreeze must be transported in accordance with Department of Transportation (DOT) regulations 49 CFR Parts 100-185.

Scrap tires: Loudoun County residents and businesses deliver a variety of tires to the LCSWMF for disposal. The tires are sorted by type and size and transported to Fairfax County for shredding. The tire shred is either used as an alternate daily cover or liner material on a landfill cell.

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Automotive batteries: Loudoun County residents and businesses deliver automotive batteries to the LCSWMF DOC. The batteries are picked up on a weekly basis and delivered to an off-site location to be dismantled. 100% of the battery is recyclable.

Scrap metals: Loudoun County residents and businesses deliver a variety of scrap metals (e.g. appliances, swing sets, file cabinets) to the LCSWMF for recycling. LCSWMF staff loads the materials into a 60-yard roll-off container. The container is picked up at least twice a week and transported to an out-of-state shredder. The recovered metals, ferrous and non-ferrous, are marketed as raw materials.

Table 3-3 lists some of the known special and recyclable waste processors that take some of these special wastes and other materials:

Table 3-3: Special and Recyclable Waste Processors

Recyclable Material	Processor Name	Location
Antifreeze	U.S. Filter Mid States Oil Refining Co.	Alexandria, VA Baltimore, MD
Motor Oil	Safety-Kleen Corporation U.S. Filter Mid States Oil Refining Co.	Buffalo, NY Alexandria, VA Baltimore, MD
Nickel-Cadmium Batteries	Rechargeable Battery Recycling Corporation	Gainesville, FL
Tires	Fairfax County Resource Recovery Facility	Lorton VA
Computers	Subtractions, Inc.	Highland, MD
Animal Fat, Bones, and Restaurant Grease	Valley Protein	Winchester, VA
Utility Poles	Koppers Industries	Pittsburgh, PA
White Goods	Conservit	Hagerstown, MD

Source: Loudoun County. (2000). *Annual Solid Waste Collection and Recycling Report* (per Chapter 1084).

3.4.3 The Role of the Towns

Each of the LCSWMPD's Towns contracts with private waste collectors for curbside recycling collection services for their residents. These contracted services are exempt from regulation by Chapter 1086, the Loudoun County Solid Waste Reduction and Recycling Ordinance. A description of the respective Town solid waste and recycling collection services is below.

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Town of Hamilton: The Town of Hamilton, through a contract with a private solid waste collector, provides curbside solid waste and recycling collection services to its residents. The contract also provides for curbside collection of yard waste, brush and bulky items. The Town provides recycling bins to its residents.

Town of Hillsboro: The Town of Hillsboro, through a contract with a private solid waste collector, provides curbside solid waste and recycling collection services to its residents. The contract also provides for curbside collection of yard waste, brush and bulky items.

Town of Leesburg: The Town of Leesburg, through a contract with a private solid waste collector, provides curbside solid waste and recycling collection services to its residents. The contract also provides for curbside collection of yard waste and bulky items, provides dumpster service to certain Town properties and to downtown commercial establishments. The contract provides collection and service to three Recycling DOCs located in the Town. The Town provides recycling bins to its residents and operates several Recycling Dropoff Centers. Town crews collect leaves and brush.

Town of Lovettsville: The Town of Lovettsville, through a contract with a private solid waste collector, provides curbside solid waste and recycling collection services to its residents. The contract also provides for curbside collection of yard waste, brush and bulky items. The contractor provides recycling bins to Town residents.

Town of Middleburg: The Town of Middleburg, through a contract with a private solid waste collector, provides curbside solid waste and recycling collection services to its residents. The contract also provides for curbside collection of yard waste and brush. The Town provides recycling bins to its residents.

Town of Purcellville: The Town of Purcellville, through a contract with a private solid waste collector, provides curbside solid waste and recycling collection services to its residents. The contract also provides for curbside collection of yard waste, brush and bulky items and dumpster service to Town properties and operations. The Town provides recycling bins to its residents.

Town of Round Hill: The Town of Round Hill, through a contract with a private solid waste collector, provides curbside solid waste and recycling collection services to its residents. The contract also provides for curbside collection of yard waste, brush and bulky items. The Town provides recycling bins to its residents.

3.4.4 The Role of Private Sector Solid Waste Industry

Private solid waste management firms provide all residential curbside and commercial recycling services in the District, through contracts managed by local governments, businesses, HOAs, or individual subscribers. Companies that provide

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recycled materials transport out of the County, called backhaulers, typically serve large corporate stores or franchises and often transport special materials that are not recycled locally. These materials include wood pallets, scrap iron, large quantities of baled cardboard or other types of paper.

Private solid waste collectors and waste management firms in the District provide services including collection, sorting, regional marketing, and transporting of recycled materials. The materials are sent outside the County to Material Recovery Facilities or directly to manufacturers. The County contracts with a private firm for the collection of PRMs at the County's DOCs. The DOCs accept commingled containers, newspapers and cardboard, and white office paper. In turn, the private firm takes the materials to individual processing facilities and MRFs in Northern Virginia to be processed and sent to market. Likewise, private collectors in the County take recyclable materials to processors in the area. **Table 3-4** lists regional processing facilities.

Table 3-4: Regional Recycling Processors

Recyclable Material	Processor Name	Location
Cardboard	Butler Paper Environmental Recycling, Inc. Fairfax Recycling Giant of Maryland, Inc. Merrifield Transfer Station Waste Management, Inc.	Suffolk, VA Alexandria, VA Burke, VA Landover, MD Merrifield, VA Sterling, VA
Metal	Davis Industries Environmental Recycling, Inc. Fairfax Recycling Potomac Metals Waste Management, Inc.	Lorton, VA Alexandria, VA Burke, VA Sterling, VA Sterling, VA
Paper	Capitol Fiber, Inc. Environmental Recycling, Inc. Fairfax Recycling Merrifield Transfer Station Southeast Paper Recycling Universal Recycling Waste Management, Inc.	Springfield, VA Alexandria, VA Burke, VA Merrifield, VA Richmond, VA Hyattsville, MD Sterling, VA
Commingled Containers	Fairfax Recycling P.G. County MRF Waste Management, Inc.	Burke, VA Capitol Heights, MD Sterling, VA
Vegetative Yard Waste	Loudoun Composting William Hazel, Inc.	Chantilly, VA Loudoun Co., VA

Source: Loudoun County. (2000). *Summary Waste Handling Report* (per Chapter 1080).

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3.4.5 The Role of the County in Recycling Markets

In addition to the materials collected by solid waste collectors in the County, there are a number of facilities and specialty service collectors that provide service to LCSWMPD. The County does not maintain a universal recycling reporting system as do some localities, so information on regional recycling services is limited. The County contracts with vendors for collection, transport and processing of special wastes.

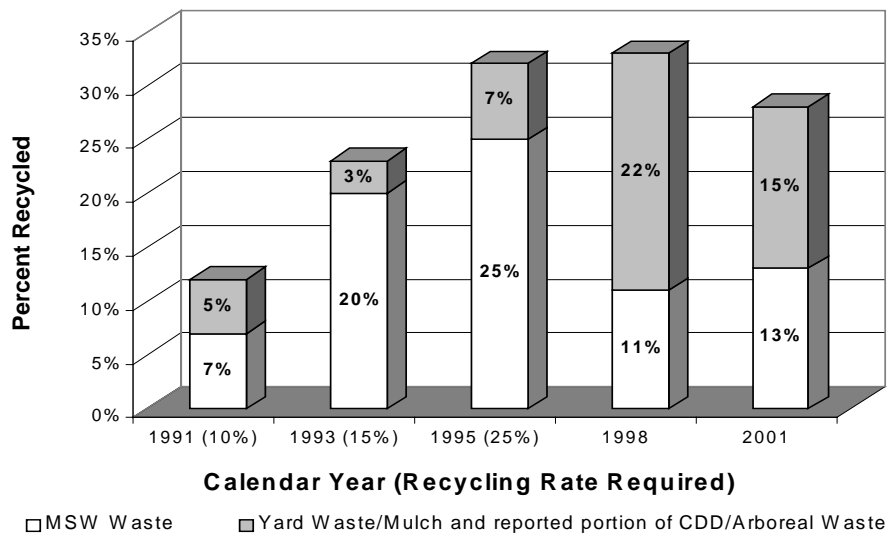
Through the Household Hazardous Waste Collection Program, as well as through private collectors, the County collects SRMs, which are sent to various processors throughout the country to be processed and sent to market.

The above information is not an all-inclusive picture of the County's role in recycling markets. Recycling reporting requirements have been increased in recent amendments to Chapters 1084 and 1086. Additionally, staff will continue to identify major producers and processors of special wastes and recyclables to target information and assistance that can help the County meet its recycling goals.

3.4.6 Recycling Rates

The District annually completes a recycling rate report in compliance with State regulations 9 VAC 20-130-10 *et seq.* State regulations specify that PRMs and SRMs be included in calculating the rate. The District uses the State formula for the recycling rate (**Appendix O**). **Appendix O** provides a copy of the Commonwealth of Virginia's Locality Recycling Rate Report. Prior regulations required reports in 1991, 1993, and 1995. Interim rates were calculated by staff and an interim report was filed with the State in 2000 and in compliance with new 2001 regulations for the Calendar Year 2001. **Figure 3-6** shows the rates reported to the State.

Figure 3-6: Recycling Rates Reported to VA DEQ



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3.4.6.1 Loudoun County's Recycling Rate

While the County has technically met the 25% recycling rate, the chart demonstrates the County's increasing reliance on VW recycling to meet the mandated rate. The effective rate of MSW recycled, therefore, has actually decreased over time.

3.4.6.2 Materials Recycled in Loudoun County

The Virginia DEQ specifies PRMs and SRMs that can be included in the LCSWMPD recycling rate calculations toward achieving the mandatory recycling rates established by the Code of Virginia, Chapter 14, Title 10.1-1411.

PRMs collected in LCSWMPD include paper, glass, metal, plastic, and yard waste.

The greatest percentage of residential recyclable materials is collected through curbside recycling programs and typically include newspaper, magazines, and commingled plastic, glass, and metal food, beverage, and detergent containers, and yard waste. Cardboard and paperboard will be included in most curbside programs beginning July 2003.

The County of Loudoun operates recycling DOCs throughout the County for the collection of residential newspaper, magazines, phonebooks, catalogs, cardboard, paperboard, and commingled plastic, glass, and metal food, beverage and detergent containers. In addition to these materials, sorted white ledger paper is collected at the LCSWMF recycling DOC. Scrap metal, white goods, and yard waste are also accepted at the LCSWMF.

The Town of Leesburg operates recycling DOCs at shopping centers in the Town for the collection of newspaper, and commingled plastic, glass, and metal food, beverage and detergent containers.

PRMs collected from businesses in the County typically include cardboard, sorted white ledger paper, mixed paper and metals. Beginning October 2003, businesses located in the unincorporated areas of the County are required to recycle their PRM generated in the greatest quantity.

SRMs collected in the District for recycling include waste tires, waste oil and oil filters, waste antifreeze, automobile bodies, automobile batteries, C&D waste and debris waste. The majority of SRMs are generated by businesses. Businesses rely primarily on private waste collectors/recyclers for SRM collection. The LCSWMF, however, offers residents and businesses the opportunity to recycle items including tires, automotive batteries, waste oil, waste antifreeze, debris waste, and C&D wastes including concrete, broken brick, and paving materials.

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3.4.7 Community Organizations

Community organizations offer an array of specialized services including annual litter removal campaigns, beautification projects, recycling opportunities, and environmental education in local schools.

3.5 Strategy for Public Education in Solid Waste Management

Successful implementation of this solid waste management plan will require an ongoing comprehensive public education and recycling information strategy. The strategy will use the County's current and planned public outreach programs to educate and involve the public through active participation in the planning and decision-making process.

The County maintains a Recycling Hotline used regularly by the public to answer questions and to provide general information to the public regarding recycling services and programs. The County also publishes numerous brochures and leaflets describing the County's recycling services and distributes these Countywide.

Citizen requests for information about solid waste services, reduction and recycling continue to increase. New residents are especially confused by the lack of standardized procedures for solid waste collection and recycling and expect the County to provide service and to safeguard recycling efforts. Sending a clear message to residents about refuse collection and recycling will continue to be a challenge in an environment where most services are privately contracted.

3.6 Dump Complaints/Litter Control

Illegal dumping includes trash, brush, furniture, or C&D dumped along a roadway, vacant lot, field, or wooded area. Illegal dumping also includes the unauthorized use of a dumpster or leaving unwanted items at the County's DOCs. Chapter 1080 of the Loudoun County Codified Ordinances prohibits disposal of solid waste at any location other than a legal disposal facility and specifies that property owners are responsible for any illegal dumping that occurs on their land.

3.7 Public/Private Partnerships

Previous LCSWMPD planning documents have discussed the possibility of developing public/private partnerships to assist in the delivery of solid waste management services in the County. No such formal agreements exist at this time. However, the County makes extensive use of contracted services with the private sector in the delivery of County solid waste programs. Recycling Dropoff Center services, HHW collection and disposal, solid waste engineering services, and environmental monitoring services are all delivered through contracted services with County staff oversight.

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3.8 Waste System Flow

The majority of solid waste generated in LCSWMPD is collected by private companies at the curbside and taken to either an in-County WTS or hauled directly to an out-of-County disposal facility. Some of the solid waste generated in the County is hauled by individuals and disposed of at the LCSWMF.

3.8.1 Changes in Waste Flow Patterns

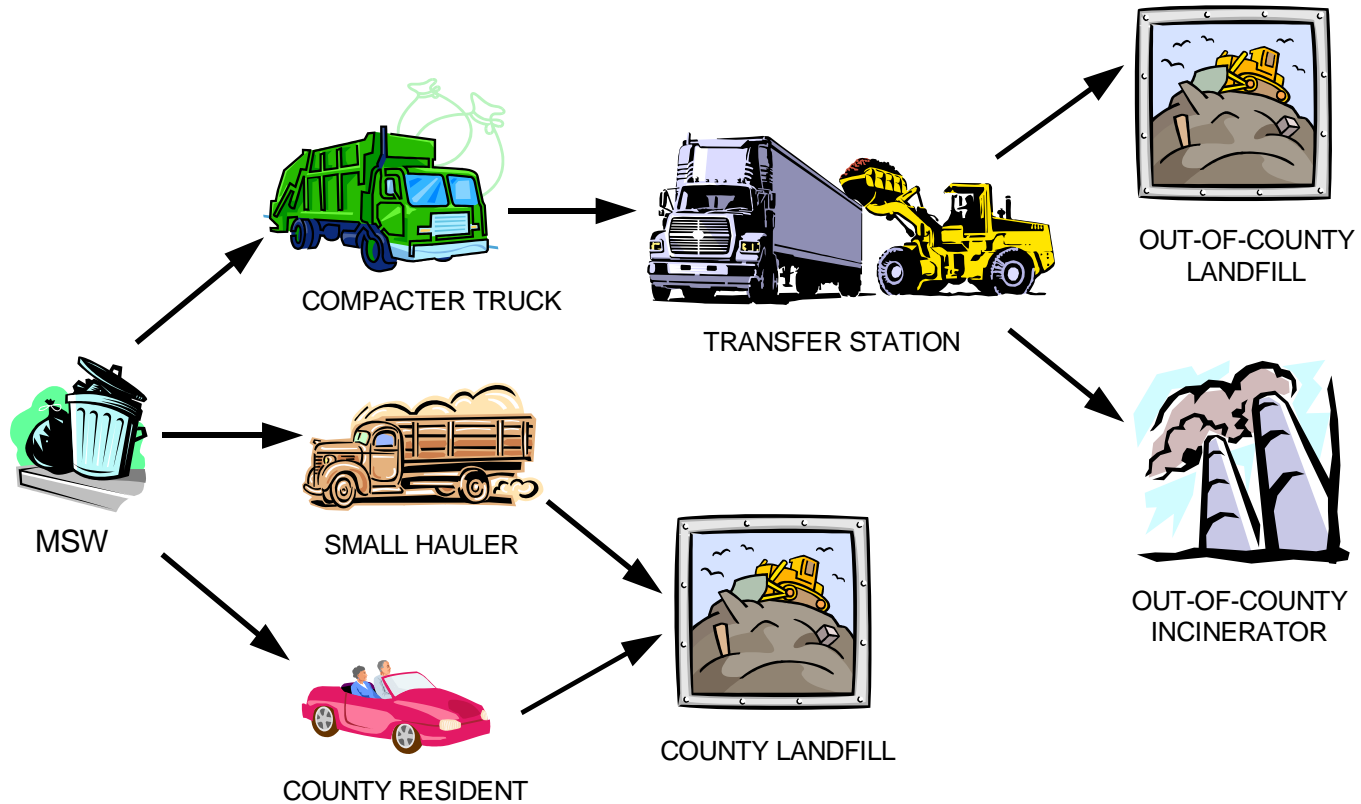
In the past decade, solid waste has become a highly mobile commodity; its final destination changes daily without advance notice. Local governments, public solid waste authorities, and private companies nationwide have constructed landfills, incinerators and other expensive waste disposal facilities anticipating use by their residents and payment for the facilities by tipping fees. In some instances, private sector entrepreneurs offer short-term disposal rates lower than the public disposal facilities causing usage and anticipated public revenues to fall short. Government attempts to preserve a customer and revenue base by requiring all residents to use the government facility was a practice called flow control. Flow control was found to be unconstitutional on the basis of affecting interstate commerce in a landmark 1994 Supreme Court decision (Carbone v. Clarkstown, 128 L.Ed. 399 (1994)).

3.8.2 Changes in Municipal Solid Waste Flow

Since 1992, the County's MSW waste flow pattern has changed radically. The County handled nearly 100 % of its solid waste in the early 1990's. Beginning in 1993 with the opening of the first private WTS in the County, much of the solid waste is now transported out of the County for disposal. From the mid to late 1990's, the solid waste industry became vertically integrated, with large solid waste companies merging and providing "cradle to grave" solid waste services from curbside collection to transport out of the County to disposal in large "mega" landfills in the Southeastern part of Virginia. Also during that time period, Virginia assumed its place as the second largest waste importing State in the nation, importing large amounts of waste from the Northeast. A waste flow diagram for MSW is presented in **Figure 3-7**. The location of long-haul MSW disposal facilities located in Virginia is shown in **Figure 3-8**.

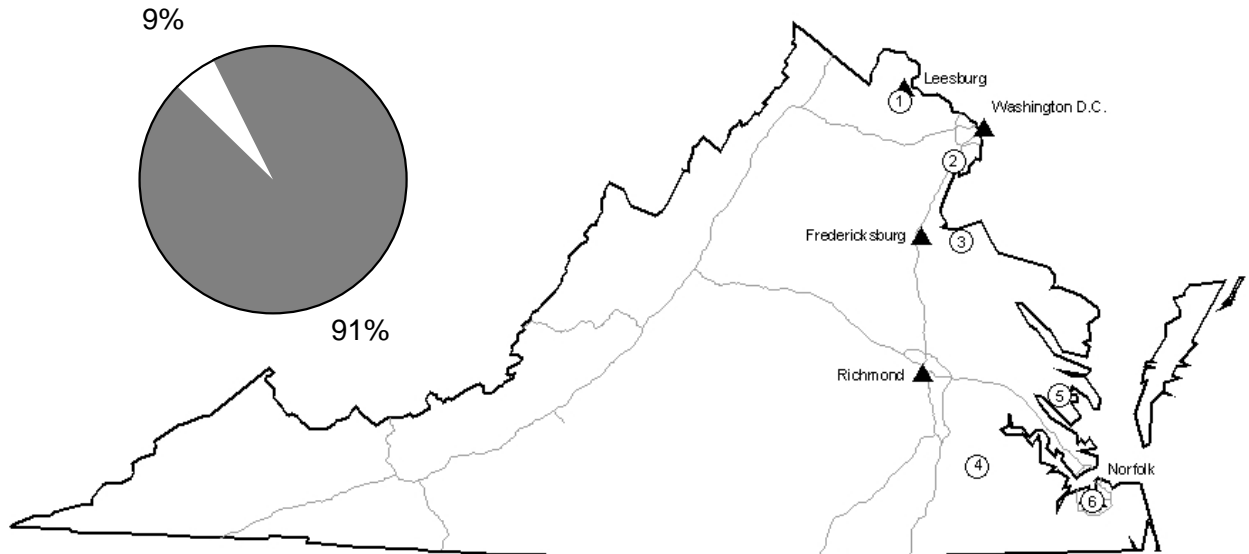
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Figure 3-7: Waste Flow Model — MSW



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Figure 3-8: Disposition of MSW Generated in Loudoun County, Calendar Year 2002 (MSW generated that is recycled is excluded)
(In pie chart, dark = MSW transferred out of the District, light = MSW landfilled at LCSWMF)



Map Source: Loudoun County OMAGI

Final Disposition of MSW Transferred out of Loudoun County:

1. Loudoun County Solid Waste Management Facility
2. Fairfax County Incinerator, Lorton, Fairfax County, Virginia; ~45 miles one way
3. King George Sanitary Landfill, King George, King George County, Virginia (operated by Waste Management or subsidiary); ~100 miles one way
4. Atlantic Waste Disposal Sanitary Landfill, Waverly, Sussex County, Virginia (owned by Waste Management or subsidiary); ~175 miles one way
5. Middle Peninsula Sanitary Landfill, Gloucester, Gloucester County, Virginia (owned by Waste Management or subsidiary); ~170 miles one way
6. SPSA Incinerator, City of Portsmouth, Virginia; ~220 miles one way

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3.8.3 Construction and Demolition Waste Flow

The District's growth over the last decade is projected to continue. Most of the resultant C&D waste is exported to privately operated processing facilities or to C&D landfills. While MSW landfill capacity for Virginia is estimated at 32 years, C&D landfill capacity is estimated at 8 years. The regional C&D landfill capacity is less certain and with the fast growth in Northern Virginia, the C&D waste being generated in ever increasing quantities warrants review for options to landfilling. A diagram of C&D waste flow is presented in **Figure 3-9**. **Figure 3-10** shows the disposition of the C&D waste generated in the LCSWPD.

3.8.4 Vegetative Waste Flow

VW generated in the District travels in several directions. Of the yard waste collected at residential curbs in the District, reports indicate that some goes to landfills and some goes to a private yard waste composting facility in the County. One of the permitted companies processes only the waste generated from its own land clearing activities. Land clearing material from other companies' activities is hauled out of the County, where it is processed into saw logs, mulch, and wood chips. Waste flow diagrams for VW are presented in **Figures 3-11 and 3-12**.

3.9 External/Regional Factors

There are a variety of factors that could impact solid waste management in LCSWMPD at any time. Understanding potential factors and their effects on the County will assist in planning a solid waste management strategy that will ensure maintenance of adequate solid waste management services for the community.

3.9.1 Federal/State Legislation

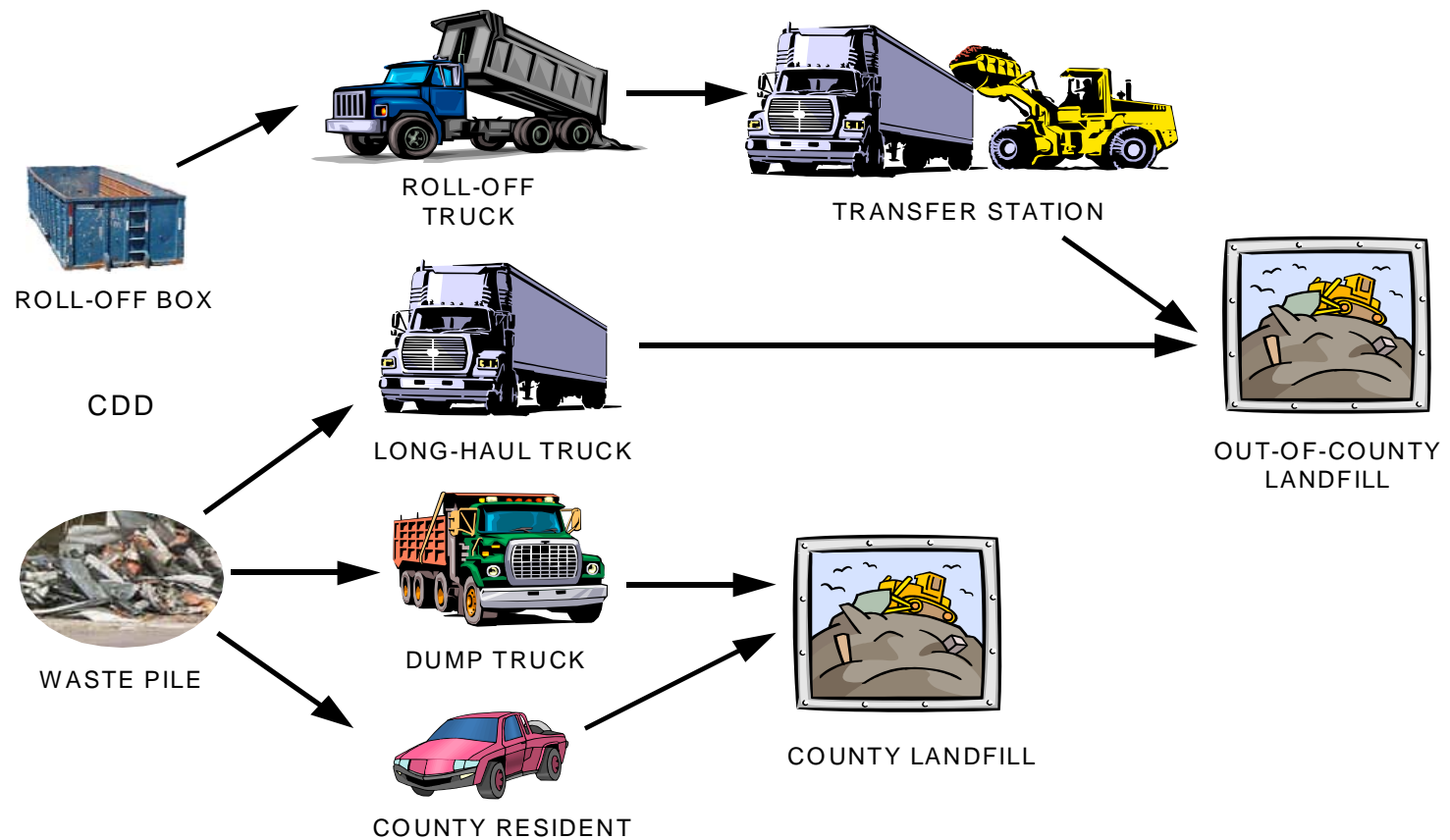
Federal and State solid waste management legislation affects local waste management at all levels, such as collecting, processing, transporting and disposing of wastes. Legislative action could lead to a greater influx of waste and diminished long-term capacity at local disposal facilities, shifts in local services, and additional requirements for residents, businesses, and government. Legislation targeting control over waste transport, increasing recycling rates, and changing disposal procedures for certain wastes could have an impact on waste disposal and recycling.

A 1994 Supreme Court decision declared "solid waste flow control," or the ability of jurisdictions to direct where their waste would go, to be unconstitutional on the grounds that it restricted interstate commerce.¹ Federal legislation restoring options for flow control at the State or local level could (text continued on page 33)

¹ Municipal Solid Waste Management, *Commerce Claws Grips Government*. MSW Elements 2001. Available from www.forester.net/msw_0011_commerce.html. Internet.

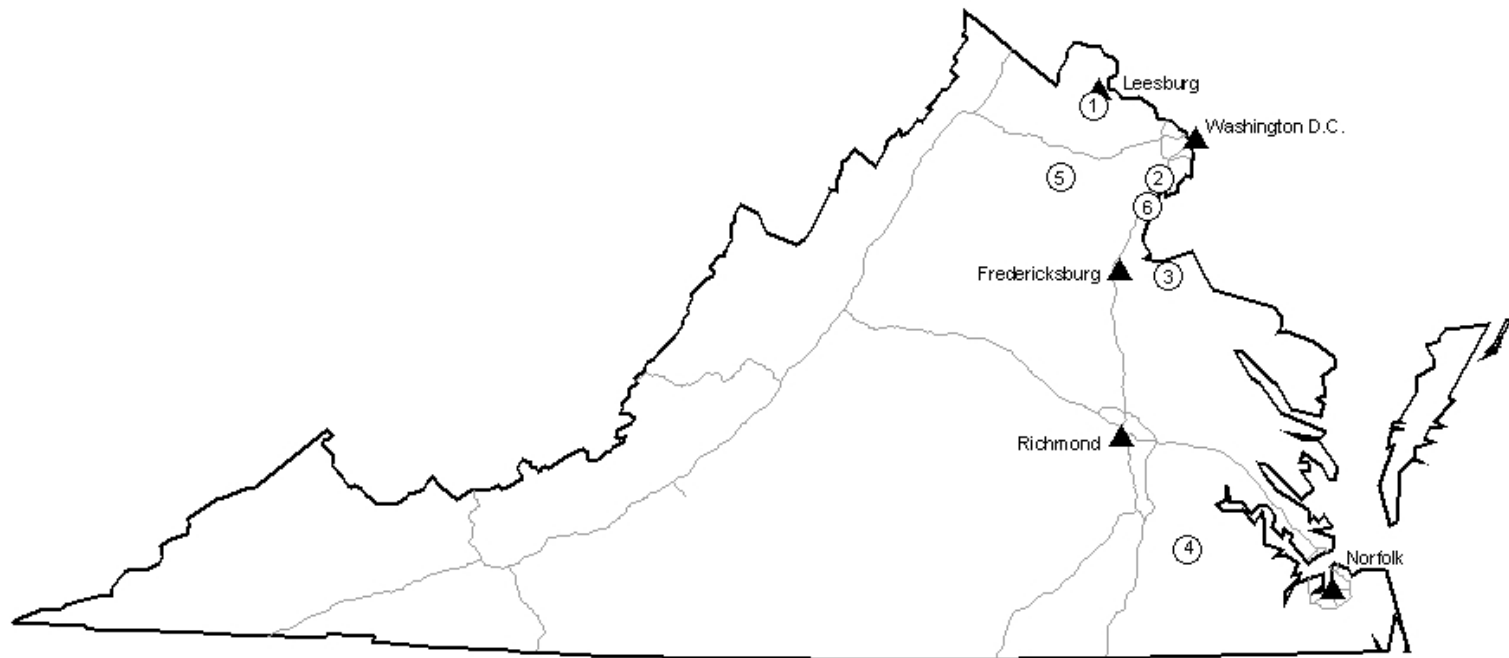
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Figure 3-9: Waste Flow Model — C&D



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Figure 3-10: Disposition of C&D Waste Generated In Loudoun County



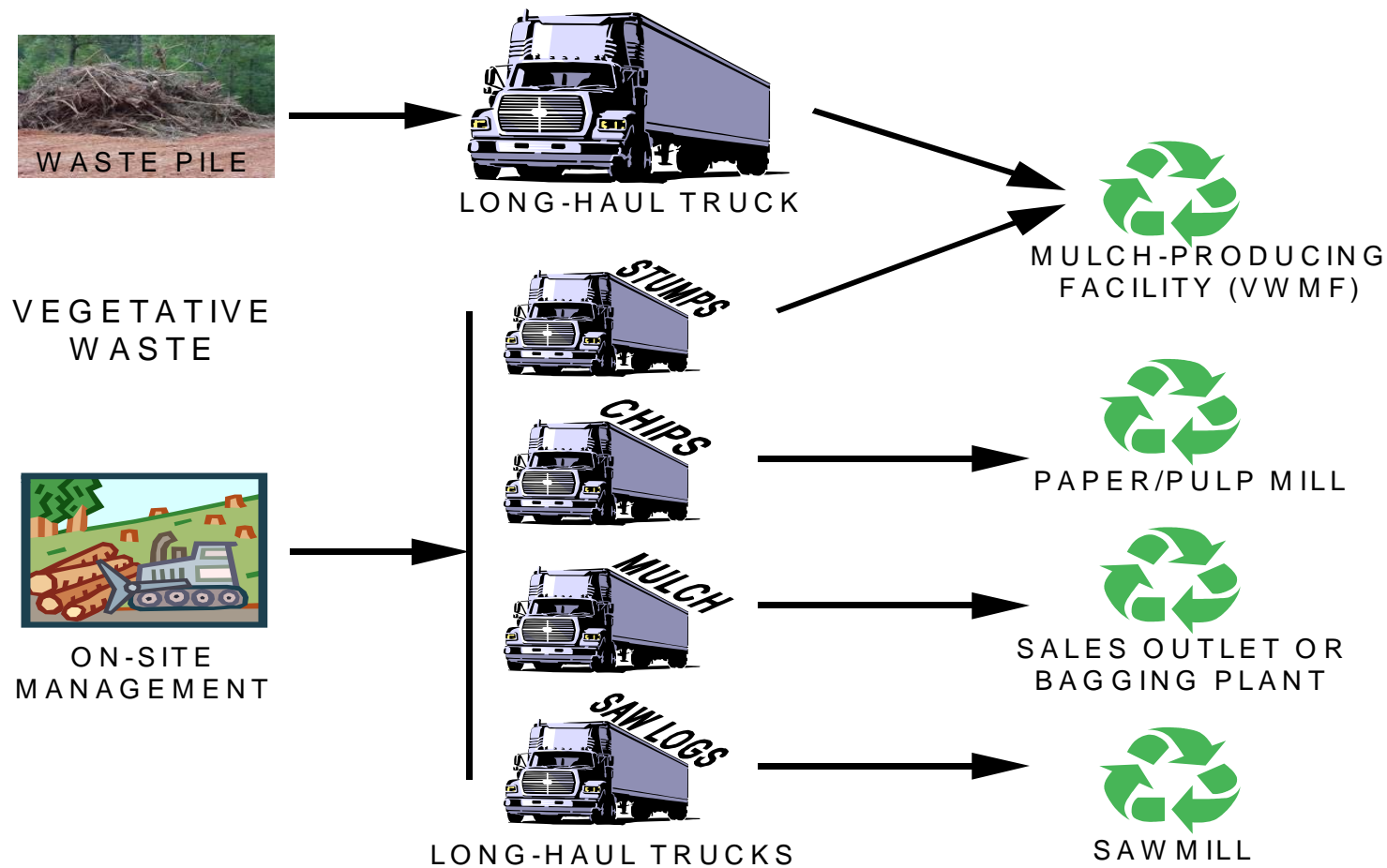
Map Source: Loudoun County OMAGI

Final Disposition of C&D Generated in Loudoun County:

1. Loudoun County Solid Waste Management Facility
2. Lorton C&D Landfill, Fairfax, Virginia (privately owned facility); ~45 miles one way
3. King George Sanitary Landfill, King George, King George County, Virginia (operated by Waste Management or subsidiary); ~90 miles one way
4. Atlantic Waste Disposal Sanitary Landfill, Waverly, Sussex County, Virginia (owned by Waste Management or subsidiary); ~165 miles one way
5. Fauquier County Sanitary Landfill, Warrenton, Virginia; ~35 miles one way
6. Potomac C&D Landfill, Dumfries, Prince William County, Virginia (privately owned facility); ~45 miles one way

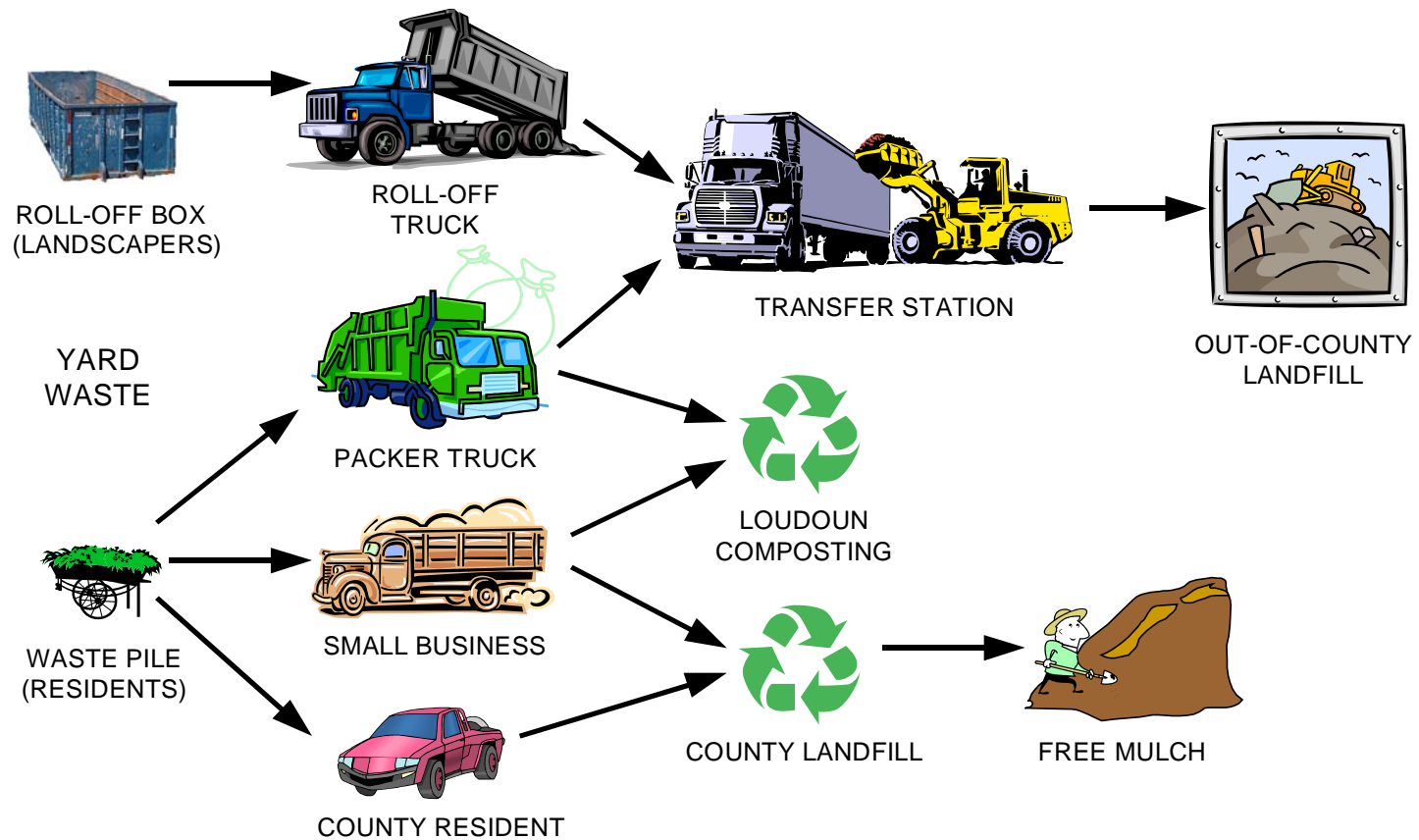
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Figure 3-11: Waste Flow Model — VW



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Figure 3-12: Waste Flow Model — Yard Waste



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redirect waste flow in Virginia modifying many current waste management system conditions. Examples of other Congressional and State legislative activities that could affect the solid waste management system include:

- A 2002 bill introduced in the U. S. Senate that would require national beverage container deposits and recycling,
- Proposed EPA changes to hazardous waste regulations to encourage CRT recycling,
- A 2002 bill in the General Assembly to increase the State recycling rate to 35%, and
- Two electronics recycling bills in the 2003 Virginia General Assembly.

3.9.2 Diminished Processing Capacity

The majority of the District's solid waste is exported for disposal at solid waste management facilities outside the County. Increasing disposal fees, more favorable contracts from other sources, or other conditions may make this external capacity less available to County transfer businesses. These conditions could redirect waste collected in the District to disposal facilities located in the District.

Publicly available processing capacity in LCSWMPD for landclearing debris has decreased to the point of being nearly non-existent. One facility operates but only collects landclearing debris waste that its own company generates. Currently, there is one yard waste processing facility that operates in the County and is openly available. This facility accepts waste delivered by waste collectors, 80% of which is imported from Fairfax County. The LCSWMF processed 1,569 tons of VW in 2002, less than 10% of the County's estimated VW stream.² Population growth and revisions to the County recycling ordinance to increase mandatory recycling requirements for yard waste will only place greater demands on local processing capacity.

Processing capacity for commingled recyclable materials including bottles, cans and paper is currently limited to a few facilities that possess the ability to sort recyclables by type. Two of the facilities, located in Alexandria, Virginia and Prince George's County, Maryland report that they are operating at only 50% capacity. There are also several facilities around the Metropolitan Washington D.C. area that are receiving various grades of paper. A recycling WTS in Merrifield, Virginia is reported to be operating at 25% capacity, processing over 700 tons of paper per day. Loss of one or more of these facilities could lead to greater distances to deliver materials for recycling, and place greater demands on local processing facilities, both of which could lead to significant service cost increases.

² This figure assumes 69,458 households generating 500 pounds each annually for disposal.

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3.9.3 Increasing Fuel/Transportation Costs

The cost of fuel is one of many factors affecting the choice of disposal options made by solid waste collectors. Fuel costs are unlikely to be a deciding factor that would create a major shift in destinations for waste disposal. The amount of waste directed to the LCSWMF likely depends more on the difference between the LCSWMF tipping fee and that of other facilities. If tipping fees increased drastically elsewhere, solid waste collectors that normally transport waste to other jurisdictions could have to decide between coming to LCSWMF or raising their service charges.

3.9.4 Declining Market Value of Recyclable Materials

The value of recyclable materials has a direct impact on the viability of local recycling programs, in regard to cost and service availability. Rising market value for recyclable commodities can help restrain rising program costs, and likewise the devaluation of commodities can increase program costs and even lead to the elimination of certain recyclable materials from collection programs. Sustained lulls in the market for one or more commodities could force local recycling programs to drop certain materials from collection programs which could threaten the County's ability to meet the Virginia mandatory recycling rate.

3.10 Issues With Solid Waste Management System

3.10.1 Current System Has No Warranty, Expressed or Implied

The solid waste management system in LCSWMPD is primarily operated by the private sector guided by market forces. As long as profits can be maintained, services will continue. There is no contractual bond with the County to ensure that these essential services will continue. The County can steer these efforts to some degree through regulation. The County would be ill equipped to assume any one of the primary functions of collection, transportation and disposal should the private sector efforts fail.

3.10.2 Waste Changes Every Five Years or so

The last 35 years have seen multiple erratic swings in the solid waste industry, and the industry has not proven an accurate prognosticator of the next major trend. For example, in 1990, waste experts were predicting exhaustion of all landfill disposal capacity with 5-10 years and disposal rates of over \$100 per ton. In contrast, excess short-term capacity was constructed and the financial stability of many local jurisdiction waste facilities was undermined by loss of flow control. A new trend is likely to occur in the near future but it is uncertain what the nature, timing, or impact will be. Rising fuel prices, national flow control legislation, sweeping new environmental legislation, and acts of terrorism are all factors that could alter the current solid waste management system.

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3.10.3 Recycling of MSW Declining

Recycling rates appear to be declining in Loudoun County and many other localities. Funding for recycling programs has been decreased in areas under substantial financial stress. The future appears to hold increases in Federal and State recycling rate requirements without financial assistance. The three most important elements of successful recycling programs are public education, consistency and ease of compliance. In LCSWMPD, it is difficult to mount a sustained public education message on recycling because each collector, HOA, Town government, or business has to develop its own recycling systems. There is little consistency in operations, sometimes individuals or businesses that wish to recycle find it challenging to do so.

3.10.4 Disposal of Consumer Recyclables

As curbside collection became more prevalent in the mid-to-late 1990's, there were increasing reports of sorted recyclables being disposed by collection companies. These practices discouraged citizens who had made the effort to recycle. In 2002, the Board of Supervisors addressed this issue and added a prohibition on disposal of consumer-separated recyclables in the Solid Waste Ordinance amendments. Full implementation of the amendments will take time to determine if the problem is solved.

3.10.5 Service Gaps in Rural Loudoun

Solid waste collectors in the rural areas are largely an aging workforce with few family members who wish to continue the business. These collectors remain a vital part of the system in the District. Many rural residents find collection is too expensive and transport their trash directly to the LCSWMF or improperly dispose of it by burning it, burying it on their property, or dumping it. Recycling services in rural areas are typically not provided at the curbside. Rural residents rely on the County-operated DOCs for recycling; unfortunately, these facilities and services are not maintained at the level envisioned in the early 1990s.

3.10.6 County Has Responsibility for Special Waste

The private sector provides solid waste services that are profitable. Handling special wastes does not typically fall into the profit category, and thus the private sector has not offered broad-based programs to collect waste oil and antifreeze, HHW, tires, Ni-Cd batteries, or electronic devices. It falls to government to develop and fund programs that will help avoid improper disposal and the resultant environmental consequences. From the 1970's until 1996, the County used surplus revenues from the profitable sectors of the public system to offset these program costs. As new programs and special waste requirements are promulgated, it is likely that the local government will be responsible for funding these efforts.

CHAPTER 3.0

SOLID WASTE MANAGEMENT SYSTEM

3.10.7 County Cannot Direct the Allocation of Private Facility Capacity

The County system utilizes numerous private sector waste management facilities, both within the County and beyond. There is sufficient capacity in most areas to address near-term needs. However, there is no guarantee that the capacity of any facility will be available to provide for County needs. As an example, the capacity of the only yard waste facility in the County is largely consumed by yard waste disposal from Fairfax County. The WTSs that operate in the County are dependent on facilities in other jurisdictions to accept the waste that they collect. The County has no way of knowing that the current capacity will be sustained for any specific period of time.

3.10.8 Disaster/Emergency Response

The ability of the County's solid waste management system to absorb sudden shifts resulting from emergencies will depend on the preparedness of its local coordinating agency in emergency response, the role of public and private entities in solid waste collection and disposal, and local disposal capacity. The County's Emergency Management Agency is currently incorporating solid waste management into "The Loudoun County Emergency Operations Plan," which is expected to be complete by 2003.

The need for extra landfill capacity could confront the County following a disaster. The current solid waste management system is capable of handling situations that create minimal debris, but solid waste resources to respond to a catastrophic event are insufficient. 9 VAC 20-80-485B provides for the issuance of a 90-day emergency solid waste facility permit in the event of a qualifying disaster. The District must have applied for pre-approval prior to such an event.

3.10.9 County Cannot Ensure the Preservation of the Status Quo

Major portions of the solid waste management system in the LCSWMPD rest with the private sector. As a result, the ability of the District members to ensure that the system will remain in place is limited.