Chapter 4: Assessment of Solid Waste Management Needs

The County balances a variety of competing demands to address its solid waste management needs. This chapter identifies County solid waste management needs and outlines a plan direction to address those needs. In considering how best to address County solid waste management needs, this chapter also provides an assessment of current conditions and constraints as well as existing programs and facilities designed to accommodate the solid waste generated within the County. This chapter is organized into the following subsections:

4.1 Management Needs: Municipal Solid Waste
4.2 Management Needs: Special Waste Streams
4.3 Constraints on New Solid Waste Acceptance Facilities
4.4 Solid Waste Outreach, Education and Promotion
4.5 Investigation of Compliance Issues and Enforcement of Recycling Regulations
4.6 System Approach to Greenhouse and Ozone-Related Emissions

Acronyms and solid waste terms used in this chapter and throughout this document are defined in Appendix A.

The County manages solid wastes in accordance with the following objectives:

- The County implements solid waste management practices that are both environmentally and fiscally sound and that provide reliable long-term solutions to County solid waste management needs;

- The County funds the solid waste management system through a mechanism that provides a secure, sufficient, and equitable source of funds to enable the County to operate an integrated waste management system of waste reduction, recycling, and disposal; and

- The County solicits and includes concerns of the public at an early stage and throughout the solid waste management decision-making process.

4.1 MANAGEMENT NEEDS: MUNICIPAL SOLID WASTE

As presented in Chapter 3, approximately 1,080,344 tons of MSW were generated in the County during CY 2012 and 1,260,829 tons are projected to be generated in CY 2023. To address its waste management needs, the County employs the following techniques: (1) waste reduction; (2) recycling and composting; (3) resource recovery; and (4) landfilling. All of these components are interrelated and integral to the County's solid waste management system. The success of one element within the system is often dependent on the successful implementation of others. An understanding of this interdependence is critical to the fiscal and operational health of the system.

4.1.1 Waste Reduction

Waste reduction is the preferred method in the County's solid waste management hierarchy. Reductions in waste generation lessen the burden of solid waste management by decreasing the amount of material entering the system. The County's waste reduction plan includes the following elements.

4.1.1.1 Per Capita Per Employee Waste Generation

Current Conditions and Constraints: The Department projects future waste generation based on M-NCPPC projections of future population and employment growth and on the Department's best professional assessment of per capita and per employee waste generation trends. Notwithstanding assumptions in per capita and per employee waste generation rates, the County must aggressively implement waste reduction and recycling programs.

Needs Assessment and Plan Direction: The County must regularly and systematically monitor waste per capita and per employee generation trends to refine waste generation projections. On-going monitoring and periodic revision of actual waste generation rates will assist the County in evaluating the need for adjustments to the solid waste programs in accordance with the zero growth policy.

4.1.1.2 Waste Reduction Information and Programs

Current Conditions and Constraints: The County promotes waste reduction through outreach, education, technical assistance and training using various media, including development, production and distribution of educational and motivational materials, public and private schools outreach, training and support of recycling and composting volunteers, workshops, demonstrations and seminars. The central elements of this effort are the SORRT Program (Smart Organizations Reduce and Recycle Tons), and the TRRAC Program (Think Reduce and Recycle at Apartments and Condominiums) (see Section 4.4.1 of this Plan). These programs provide waste reduction, reuse, recycling, grasscycling, composting, and buying recycled guidance to the commercial and multi-family sectors.

The County provides drop-off locations at the Shady Grove Processing Facility and Transfer Station for yard waste, reusable construction materials, electronics, scrap metal,

mixed paper, commingled containers, tires, motor oil, antifreeze, vegetable oil, textiles, household hazardous wastes, and other materials.

Needs Assessment and Plan Direction: The County will continue to promote waste reduction through outreach, education, technical assistance and training for single-family and multi-family residents, multi-family property owners, managers and staff, as well as business owners, managers and employees. Both national and local data indicate trends toward increased waste generation. Should multi-year trends indicate changes in overall waste generation, the County will adjust its baseline per capita and per employee generation assumptions.

4.1.1.3 Waste Reduction Opportunities in County Government

Current Conditions and Constraints: The County adopted an Environmental Policy on July 29, 2003, promoting recycling, waste minimization, energy conservation and environmentally responsible business practices for all of its own departments and agencies. In September 2009, the County Executive launched a paper and printing reduction initiative with the goal of reducing the government's impact on the environment and to save tax dollars. In April 2010, the County Executive introduced a new "green policy" requiring departments and offices to post all newsletters and annual reports on the County's website unless printing was required due to legal requirements or under special circumstances approved by the Chief Administrative Officer. In June 2011 the County Executive formalized this green policy by issuing Administrative Procedure 5-23 which directs County departments and offices to decrease environmental impact by evaluating operational needs and initiating waste reduction efforts which decrease the amount of paper used, the quantities of materials printed, and the amount of money spent on paper and postage. Waste reduction and reuse efforts in its operations include setting as the default setting two-sided copying in printers and copiers in offices and promoting the use of electronic mail in place of paper memoranda. In addition to two-sided copying, and use of e-mail and electronic media in education, outreach and training efforts provided

throughout County, M-NCPPC, MCPS, WSSC and other facilities, DEP advocates and encourages a “Just in Time” ordering system, a “First-in First-out” use policy, establishing inventory control procedures, date-stamping incoming materials, routing of printed materials, posting of employee notices, and use of durable, reusable items such as cloths for cleaning, ceramic mugs, durable cups, etc.

Needs Assessment and Plan Direction: Opportunities remain for the County to reduce its waste generation further, particularly office paper from offices, schools, service centers and other public facilities. The County will attempt to serve as a model for the community by implementing its Environmental Policies to perform its mission while also producing less resulting waste.

The need to carry out MDE-specified waste reduction activities is underscored by the fact that the County has adopted as part of its 70 percent recycling goal with the full 5 percent source reduction credit awardable by the State. See Section 5.2.1.8.

4.1.1.4 Regional Waste Reduction Efforts

Current Conditions and Constraints: The County participates in regional efforts to promote waste reduction, including those involving the Metropolitan Washington Council of Governments (MWCOG), MDE, the Maryland Recyclers' Network and other regional entities. Coordination of efforts also occurs within the MDE County Solid Waste and Recycling Managers groups. The County monitors and supports appropriate State and national legislative initiatives on waste reduction.

Needs Assessment and Plan Direction: Large scale waste reduction involves modifications in consumer and commercial behavior. Affecting this type of change often involves adjusting economic and societal behavior that extends beyond the boundaries of the County. A regional approach toward waste reduction will permit the leveraging of resources and increased effectiveness.

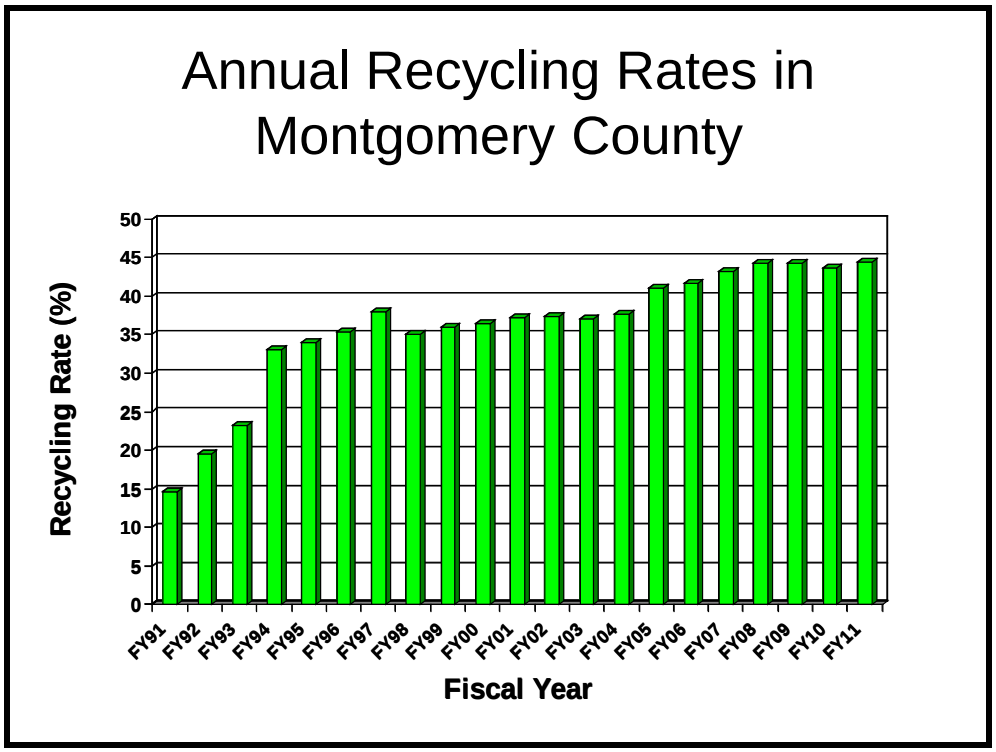
4.1.1.5 Waste Reduction Incentives

Current Conditions and Constraints: The County provides education and technical assistance to all types of waste generators emphasizing the economic benefits of waste reduction and increased recycling for lowering waste disposal costs.

Needs Assessment and Plan Direction: Refuse Tipping Fee avoidance provides an economic incentive for waste generators who pay a contractor for waste removal and disposal. In addition, the system benefit charge financing method described in Chapter 5 provides financial incentives for the non-residential sector to reduce waste generation whereby property owners who document a lower than average waste generation rate for their land use type can be assessed a reduced base system benefit charge. Independent of the benefits of simply shifting waste from disposal to recycling, the County's Cooperative Collection Methods (See Section 4.1.2.3) should continue to emphasize these fiscal incentives for waste reduction.

4.1.2 Recycling Achievement, Opportunity and Direction

Figure 4-1, below, shows the historical achievement in the total tonnage of MSW recycled in Montgomery County over the last twenty years.



The figure is presented in terms of County Fiscal Years (FY) due to the basis of accounting that the County has used up until this Plan update. Hereafter, the annual data presented in this Plan is in terms of Calendar Years, as required by MDE. Notwithstanding the FY basis, Figure 4.1 shows that the County has made nearly continuous progress in advancing its recycling achievement. As shown in Appendix B, during Calendar Year 2012, about 600,000 tons of municipal solid waste generated within Montgomery County, were recycled. In recent years, the County faced challenges in trying to continue increasing its recycling rate. These challenges included an economic downturn that resulted in less recyclable packaging associated with consumer purchasing and continuing trends in the light-weighting of containers and newsprint, and declining print news subscriptions.

MSW is comprised of many different types of materials. In fact, it is comprised of virtually every “thing” in our everyday culture. Markets determine what particular types of

material are recyclable. Thus, not all types of waste are recyclable, and the opportunities for increased recycling lay in the quantities of those materials that are recyclable, but are still being disposed.

Table 4.1, appearing on the next page, enables one to take stock of specific opportunities to increase recycling, by material type, both in terms of tonnage potential and in terms of individual "capture rates" (defined below). The table was constructed by applying the results of the County's FY12 waste composition sampling study, and applying that composition to the known disposal tonnages. It is important to note that while those disposal tonnages were based on certified truck scales (see Appendix B), the *composition* of the disposed MSW was determined on the basis of statistical sampling of disposed MSW. Thus, while a sound methodology, inferences based on Table 4.1 must be regarded as estimates. Notwithstanding that limitation, meaningful suggestions arise. Some of these inferences are in the form of "capture rates". A capture rate can be regarded as a recycling rate individualized with respect to a specific type of material, or grouping of material types. Table 4.1 reveals the locus of opportunities for increased recycling.

For example, Table 4.1 indicates that of all the waste glass bottles and jars generated in the single-family sector, 83.2 percent, or 16,017 tons, were captured for recycling, leaving 16.8 percent, or 3,234 tons of glass disposed. That 83.2 percent capture rate may be considered remarkable when it is recognized that it comes about solely as a result of the collective routine independent behavior of Montgomery County citizens. "Madison Avenue" advertising executives surely covet this sort of "market penetration".

Taking an example at the other end of the spectrum, the Table 4.1 indicates that 60 percent of the non-residential paper was captured during CY 2012, leaving 40 percent, or 53,612 tons of recyclable paper, disposed--a much larger opportunity for enhanced recycling with respect to materials that the County has banned from disposal.

Table 4.1
Waste Recycling by Material Type: Achievement and Opportunity

Basis for composition of disposed waste is the 2012 waste sorts reconciled to system-wide CY12 disposed and recycled tonnages*.		CY12 Actuals									Opportunity			
		Single-Family			Multi-Family			Non-Residential			Disposed by Sector (tons)			Currently Disposed (Tons)
		Generated (tons)	Captured (tons)	Capture Rate %	Generated (tons)	Captured (tons)	Capture Rate %	Generated (tons)	Captured (tons)	Capture Rate %	Single-Family	Multi-Family	Non-Residential	
Banned ER15-04	Subtotal, Banned Components	239,426	185,587	**77.5%**	35,324	8,474	**24.0%**	316,229	227,729	**72.0%**	**53,838**	**26,850**	**88,500**	
	Paper	92,355	59,467	64.4%	18,180	3,343	18.4%	134,171	80,559	60.0%	32,888	14,837	53,612	101,338
	Glass	19,252	16,017	83.2%	4,542	590	13.0%	14,485	6,168	42.6%	3,234	3,952	8,318	15,504
	Other Ferrous	12,294	9,211	74.9%	2,154	1,378	64.0%	71,988	68,220	94.8%	3,083	776	3,768	7,627
	Yardwaste	99,701	94,635	94.9%	4,585	3,003	65.5%	76,154	71,104	93.4%	5,066	1,582	5,050	11,697
	Narrow-Neck Plastics	8,226	3,453	42.0%	3,200	39	1.2%	9,985	256	2.6%	4,772	3,161	9,730	17,663
	Ferrous/Bimetal Containers	4,279	2,191	51.2%	1,396	104	7.4%	6,344	1,245	19.6%	2,089	1,293	5,099	8,480
	Aluminum Beverage Cans	1,587	594	37.4%	613	17	2.8%	1,754	176	10.0%	993	595	1,579	3,167
	Other Aluminum (Foil)	1,286	19	1.5%	506	0	0.0%	1,263	1	0.1%	1,267	506	1,262	3,034
	Other Non-Ferrous Metal	446	-	0.0%	148	-	0.0%	84	-	0.0%	446	148	84	678
Potential and Encouraged	Food Waste	45,605	-	0.0%	15,996	-	0.0%	87,449	7,337	8.4%	45,605	15,996	80,112	141,713
	Shopping Bags	1,021	-	0.0%	504	-	0.0%	1,229	20	1.6%	1,021	504	1,209	2,735
	Other Film Plastic	18,478	-	0.0%	5,652	-	0.0%	27,099	437	1.6%	18,478	5,652	26,662	50,792
	Plastic Flower Pots	584	58	10.0%	28	1	2.4%	475	4	0.9%	525	27	471	1,023
	Plastic Tubs and Lids	2,776	218	7.9%	1,137	2	0.2%	4,794	16	0.3%	2,558	1,135	4,777	8,470
	Other Rigid Plastic	5,232	1,309	25.0%	2,025	170	8.4%	10,252	2,932	28.6%	3,923	1,855	7,320	13,098
	Textiles & Leather (no Rugs)	13,579	100	0.7%	4,684	1	0.0%	9,804	7	0.1%	13,479	4,683	9,796	27,958
	Carpets / Rugs	1,344	-	0.0%	1,144	-	0.0%	12,181	8,894	73.0%	1,344	1,144	3,288	5,776
	Wood Waste (including Pallets)	651	-	0.0%	278	50	17.9%	5,973	3,881	65.0%	651	229	2,092	2,972
	Whole Tires (as Rubber)	2,220	2,220	100.0%	716	555	77.5%	4,030	2,776	68.9%	-	161	1,254	1,415
	Lubricants (e.g. Motor Oil)	107	6	5.6%	0	0	100.0%	344	256	74.6%	101	-	88	189
	Electronics	5,107	1,771	34.7%	1,954	20	1.0%	6,889	1,349	19.6%	3,336	1,934	5,539	10,809
	Batteries	93	93	100.0%	1	1	83.0%	2,464	2,464	100.0%	-	0	-	0
	Latex Paint	633	269	42.4%	43	3	7.1%	147	20	13.6%	365	40	127	531
	Tire Steel	278	-	0.0%	89	-	0.0%	504	-	0.0%	278	89	504	871
No Markets	Other Wood	4,316	-	0.0%	1,468	-	0.0%	8,283	-	0.0%				
	Other Glass	637	-	0.0%	396	-	0.0%	508	-	0.0%				
	Disposable Diapers	10,778	-	0.0%	5,189	-	0.0%	4,794	-	0.0%				
	Other Waste	57,048	-	0.0%	17,667	-	0.0%	72,686	983	1.4%				
	RRF Ash		62,487			15,652			53,996					
TOTAL		**409,914**	**254,119**	**62.0%**	**94,298**	**24,928**	**26.4%**	**576,131**	**313,101**	**54.3%**	**145,502**	**60,300**	**231,738**	**437,541**

Notes:

Banned ER15-04: These materials are required to be recycled under Executive Regulation 15-04, and are banned from disposal in waste from all sectors.

Potential and Encouraged: Markets vary for these materials. Although not subject to the disposal ban, recycling is encouraged for all materials for which there are available markets.

No Markets: No existing or anticipated markets for these materials.

With respect to new materials for targeting enhanced recycling achievement, food waste stands out, as a potential volume opportunity. Overall, Table 4.1 confirms the feasibility of the County's new 70 percent waste reduction and recycling goal. The County finds that achieving its overall 70 percent waste reduction and recycling goal should be reasonably achievable, even if ambitious.

As reviewed in Chapter 3 and in Appendix B, the County's overall waste diversion and recycling rate for CY 2012 was 59.8 percent. By comparison, it can be seen that a shift of 109,621 tons (of any combination of materials) from disposal to recycling, would have been necessary for the County to have achieved a 70 percent waste reduction and recycling for the CY 2012 period. Thus, the incremental historical advances demonstrated by Figure 4.1 together with the material-specific capture rates and tonnage opportunities identified in Table 4.1 support, as ambitious but achievable, the County's goal of 70 percent recycling by Calendar Year 2020.

The challenges toward meeting that new goal are multiple—to annually advance recycling achievement within the fiscal constraints of approved programs, to track achievement, to continually identify new opportunities for enhanced recycling achievement, and to ultimately achieve the goal.

Needs Assessment and Plan Direction: To do this, the County maintains an ongoing recycling planning and implementation process. Formally punctuating that process, the County annually publishes its "Recycling Plan Update**"**. That Plan reports on specific program achievements, lays out how the County's recycling goal is being pursued under approved programs, and identifies potential additional initiatives that can be introduced in a subsequent budget year, if needed, to meet the County's recycling goal. The Recycling Plan Update can be obtained by contacting DEP. The County will continue to update that plan annually, and will introduce additional programs and initiatives if needed.

Montgomery County has already surpassed all State recycling requirements, and as will be discussed in subsequent sections of this Plan, the County provides a disposal system that is more than adequate to dispose of all non-recycled or non-recyclable MSW even if the recycling rate does not increase as projected in this Plan.

4.1.2.1 Single-Family Residential Sector Recycling

Current Conditions and Constraints: As mandated by Executive Regulation 15-04AM, the County provides curbside collection of recyclable materials to over 211,000 single-family residences in unincorporated areas of the County. Residents of 36,000 single-family households located in incorporated municipalities receive municipally arranged recycling service.

In 1992, separated materials recycled through the County's curbside collection program included glass, plastic, aluminum and ferrous containers and newspaper. In 1994, the County added collection of yard trim (grass, leaves and brush) to the curbside service. In 1996, the County added household scrap metal items (swing sets, iron railings, large appliances, disassembled metal sheds, etc.) to the curbside recycling program. In 2000, the County added mixed paper (unwanted mail, catalogs, books, magazines, cardboard, newspaper, office paper and telephone books) to the curbside recycling program. In 2008, the County added even more plastic items to the curbside recycling program, including plastic containers, jars, tubs, lids, cups, buckets, pails, and flower pots. In 2009, the County added non-hazardous aerosol cans, reusable durable plastic containers and lids, coated paper, milk/juice cartons, frozen food boxes, wax coated boxes, paper beverage cups, and drink/juice boxes to the curbside recycling program. In 2012, the County added #1 PET thermoform plastics to allow residents to recycle: plastic packaging such as clamshell containers, trays, deli containers, lids, domes and cups to the curbside recycling program. The County also provides leaf vacuuming services in the Leaf Collection District described in Section 3.2.4 of this Plan.

To support the recycling collection program, the County operates a MRF in Derwood, Maryland. This facility provides for separation of commingled containers and also serves as a transfer point for transport of mixed residential paper to a private recycling facility located in the County where the paper is separated into various grades before sending to market. The County also operates a leaf and grass composting facility in Dickerson, Maryland.

Field surveys have indicated that participation in the curbside recycling program has exceeded 80 percent of eligible households. Table 4.1 shows that in CY 2012, single-family homes in the County set out over 30,000 tons of commingled recyclable containers and almost 60,000 tons of tons of mixed paper.

In CY 2012, the single-family residential sector accounted for 37.7 percent of the total County municipal solid waste generation (MSW) and recycled 62.0 percent of the MSW it generated.

In addition to a strong education and outreach program, a key to this success is that the County uses large (65 gallon), heavy duty, wheeled, and lidded carts for collecting residential mixed paper (RMP) from single-family homes. Where these carts are found to be too large to be easily stored (e.g., at many townhouses) the County offers more moderately sized carts. In all cases, virtually all forms of unsoiled paper are accepted. In fact, the County has banned disposal of recyclables mixed in with disposable trash, any form of paper that could otherwise be recycled if not soiled (see County Executive Regulations 15-04AM and 18-04, Appendix I).

Needs Assessment and Plan Direction: While a large percent of residents participate in the curbside recycling program, waste composition studies conducted at the Transfer Station reveal significant quantities of recyclable materials discarded as refuse. Greater capture of existing materials may add several percentage points to the single-family residential recycling rate.

The County has developed a single-family residential recycling system that relies on source separation of recyclable paper, containers, yard trim and scrap metal at the curb in front of each resident's home. Source separation allows for more optimal and efficient re-use and marketing of recyclables. Given the County's investment in a curbside collection system and the MRF, the County does not envision a need to develop additional recycling drop-off centers (see Section 4.1.2.4). However, outreach, education and enforcement are continuing important needs in the single-family sector. Also, while the recycling effectiveness of county-wide distribution of large lidded wheeled carts has been proven, residents, in particular town houses, continue to request carts of varying sizes. DEP will attempt to accommodate cart size variation requests that it believes will foster increased recycling and monitor results.

With respect to those recyclable materials that have been banned from disposal as a group, Table 4.1 indicates a single-family recycling capture rate of 77.5 percent. Even discounting the most highly recycled component, yard waste, the single-family sector is capturing 62 percent of those materials that are banned from disposal.

A recent survey of homes receiving County collection services indicated that residents *believe* that they participate at a high rate of compliance with the County's recycling program. The same survey indicated a lack of awareness and use of the County's curbside scrap metal collection service. Indeed, relative to the multi-family and non-residential sectors, Table 4.1 indicates higher single-family recycling capture rates and thus higher overall compliance with recycling rules within the single-family sector. However, as also indicated in Table 4.1, there remained 53,838 tons of recyclable materials, banned from disposal, disposed of by single-family residences, including 42,000 tons of residential paper. This indicates that recycling outreach, education and enforcement are continuing needs in the single-family sector.

4.1.2.2 Multi-Family Residential Sector Recycling

Current Conditions and Constraints: Executive Regulation 15-04AM mandates recycling of aluminum, bi-metal, steel, glass and plastic containers, mixed paper, scrap metal, Christmas trees and yard trim at all apartment and condominium properties. While property owners and managers administer the collection of recyclables for multi-family residences, the County provides technical assistance, education, and training regarding on-site collection alternatives and management of collection contracts. Education and training is also provided directly to residents.

The County enforces multi-family recycling regulations through mandatory reporting requirements and a combination of site investigations, on-site verification of exemptions, and fines.

In CY 2012, the multi-family residential sector accounted for 8.6 percent of the total County waste generation. Multi-family residents recycled 24,928 tons or 26.4 percent of the waste generated in that sector. Waste composition studies conducted at the Transfer Station reveal significant quantities of recyclable materials from multi-family residences discarded as refuse.

Needs Assessment and Plan Direction: Advancements are necessary to maximize recycling in the multi-family sector. Opportunities exist to increase recycling by the multi-family residential sector. The primary strategy for increasing multi-family residential recycling is to conduct on-site technical assistance and training to provide specific and tailored guidance to promote full compliance with County regulations and enforcement actions, and to increase recycling participation and capture rates. In addition, DEP continues to assess the current costs of recycling and waste disposal collection experienced by multi-family properties and determine the feasibility of collection scenarios which would successfully decrease the costs of recycling, thus creating economic incentives to recycle, and to recycle more. DEP consistently evaluates market

conditions in the region, and recommends recycling of other materials for which markets are available and favorable, relative to disposal.

4.1.2.3 Non-Residential Sector Recycling

Current Conditions and Constraints: Executive Regulation 15-04AM, enacted in 2005, mandates recycling of glass, plastic, aluminum and ferrous containers, mixed paper, scrap metal, Christmas trees, and yard trim by more than 35,000 organizations in the non-residential sector. While commercial, industrial and institutional property owners and managers administer the collection of recyclables for their sites, the County provides technical assistance, education and training regarding on-site collection alternatives and management of collection contracts. Education and training is provided to business owners, managers, and employees.

The County enforces non-residential recycling regulations through mandatory reporting requirements and a combination of site investigations, on-site verification and fines.

In CY 2012, the non-residential sector accounted for 53.7 percent of the total County solid waste generation and recycled 313,101 tons or 54.3 percent of the solid waste generated by that sector. Waste composition studies conducted at the Transfer Station reveal significant quantities of recyclable materials from the non-residential sector discarded as refuse.

Needs Assessment and Plan Direction: Advancements are necessary to maximize recycling in the non-residential sector. Smaller scale businesses sometimes lack the resources, training, and experience to readily incorporate on-site recycling.

Referring again to Table 4.1, substantial opportunities exist to increase recycling in the non-residential sector. The primary strategy for increasing non-residential recycling

is to conduct direct on-site technical assistance and training, to provide specific and tailored guidance to promote full compliance with County regulations and enforcement actions. In addition, DEP has studied the costs of recycling and waste disposal collection experienced by businesses and organizations and has demonstrated repeatedly via its Cooperative Collection Methods (discussed next) the feasibility of collection scenarios which successfully decrease the realized and internalized costs of recycling, thus creating economic incentives to recycle, and to recycle more. DEP also consistently evaluates market conditions in the region, and recommends recycling of other materials for which markets are available and favorable, relative to disposal. The County Executive's Recycling Task Force plays a large role as an advocate for effective and efficient County recycling initiatives. The business community will continue to be consulted in this effort.

Cooperative Collection Methods: Small-scale business owners especially have expressed concerns over the years, such as the cost and availability of recycling and refuse collection services due to the relatively small amount of materials that they generate. Businesses in more densely developed Central Business Districts (CBDs) regularly face space constraints when it comes to placement of recycling and refuse collection containers outside of their establishments. Small businesses face an often disproportionate administrative burden when securing and contracting collection services on their own.

As a result of these concerns, DSWS has been conducting cooperative recycling and refuse collection study projects for small businesses in the Silver Spring, CBD. This same scenario has been and is applicable in settings within the Bethesda and Wheaton CBDs. DSWS support included: on-site waste analysis of each business' waste stream, determining the amount of recyclable material generated, practical advice for securing collection services, education, training and follow up.

Based upon the data collected, the implementation of cooperative recycling and refuse collection projects has saved money for every participating businesses on their

monthly refuse and recycling collection costs as well as reducing their required administrative efforts in terms of contracting for recycling and refuse collection services. Furthermore, the participating businesses have been achieving a recycling rate exceeding the County's 70 percent recycling goal. DEP will continue evaluating this and other opportunities for expanded implementation to increase recycling by businesses.

4.1.2.4 Drop-Off Programs

Current Conditions and Constraints: Collection constraints or market conditions limit the feasibility and cost effectiveness of regular collection of certain recyclables at their point of generation. The County provides receptacles at the Shady Grove Processing Facility and Transfer Station (and select other sites) for generators to unload self-hauled recyclables. The County offers drop-off services for: yard trim, mixed paper, bottles and cans, textiles, tires, books, bicycles, used motor oil, antifreeze, vegetable oil, automobile batteries, building materials, consumer electronics, household hazardous materials, and white goods/scrap metal (large home appliances). Chlorofluorocarbon (CFC) refrigerants are removed from white goods in accordance with federal and state regulations. The County also offers one-day drop-off recycling events in various locations throughout the County for shredding and recycling of confidential paper, as well as donation and reuse of household items and clothing which are in usable condition. In September 2013, bulky rigid plastics were added for recycling drop-off, including toys, playhouses, large buckets, milk/soda crates, landscape items, laundry baskets, lawn furniture, closet organizers, dish drainers, tote boxes/lids, food grade drums, pet carriers, flower pots/trays, large water bottles, garbage cans/baskets, recycling bins, shelving, trays, automotive parts, pallets, traffic signs, composite lumbers, PVC/PET blister packs, and cloth hangers.

Needs Assessment and Plan Direction: The County will continue to provide drop-off services for certain recyclable materials. The County may modify the drop-off services as needed to reflect changes in the collection program or market conditions.

DEP will continue to monitor the needs and opportunities including the need for more electronics recycling and evaluate whether there is a need to continue satellite electronics recycling events. Pending fiscal constraints, DEP will continue to offer one-day drop-off recycling events for shredding and recycling of confidential paper in various locations throughout the year.

4.1.2.5 Electronic Recycling Program

Current Conditions and Constraints: DSWS' electronics recycling program is consistent with the provisions of the Statewide Electronics Recycling Program Act ("Act"), which took effect on October 1, 2007. The program provides for the recycling of computers, which includes desktop personal computers, laptop computers and computer monitors, and is consistent with the Act. Additionally, and again consistent with Act, the program also provides for the recycling of covered electronic devices, which means a computer or video display device with a screen that is greater than 4 inches measured diagonally. Other electronics items are acceptable for recycling under the program.

The computer recycling program started in 2000, and this was expanded to include televisions in October, 2007. In April, 2008, this program was again expanded to include cell phones, PDAs, digital cameras, and CD players, and essentially all other types of consumer electronics. Currently, this program recycles about 55 tons of computers and 100 tons of televisions and other electronics per month. County residents may drop-off unwanted electronics at a dedicated drop-off site, which has an enclosure and a canopy, seven-days-a-week on the County's Transfer Station's campus. Additionally, DSWS began a satellite event electronics recycling program in June 2008, using Park & Ride lots and schools as event sites for residents and businesses that are at a distance from the Transfer Station. These satellite events are currently being conducted four to six times a year in different geographic areas of the County and will continue as long as there appears to be reasonable participation. Currently, Creative Recycling, whose main processing facility is located in Morrisville, North Carolina, receives material collected via

the County's electronics recycling programs. The contract with Creative Recycling requires the recycling of all material except residue (non-electronic material).

Needs Assessment and Plan Direction: The County will continue to provide drop-off services for certain recyclable materials. The County may modify the drop-off services as needed to reflect changes in the collection program or market conditions.

4.1.2.6 Private Sector Recycling Infrastructure

Current Conditions and Constraints: For many years, land use standards were obstacles to a recycling infrastructure in the County. In 1997, the County Council approved an amendment to the County Zoning Ordinance that provides for the location of a "recycling facility" as a permitted use in select industrial zones. There are now two large private sector paper processing facilities operating in Montgomery County—Office Paper Systems, in Gaithersburg, and Georgetown Paper Stock, in Rockville, which together recycled 193,000 tons of paper in CY 2012. The reported annual throughput capacity of these facilities is 125,000 tons per year (TPY) and 200,000 TPY, respectively. So, there is no lack of nearby paper processing capacity. Montgomery Scrap, located in Rockville, MD, illustrates the proximity of the metals recycling market. In addition, substantial quantities of other recyclables, particularly from the non-residential and multi-family residential sectors, find their way to nearby processing and recycling facilities located near but outside of the County. For food waste composting, there are two pilot scale facilities developed by Carrol and Prince George's Counties. But these facilities are not yet sized or prepared to accept substantial quantities of outside waste, and the next nearest facility accepting food waste for recycling is located in Curtis Bay, Baltimore, and otherwise the nearest food waste facilities are located in Virginia.

Needs Assessment and Plan Direction: The lack of nearby food waste acceptance and recycling facilities limit immediate expectations for increased food waste recycling, since the distance to facilities (e.g., Baltimore, Richmond) raises the cost and

thus limiting the economic feasibility of additional private sector food waste recycling. However, the State of Maryland is currently working to establish a comprehensive and centralized regulatory framework to help engender the development of food waste composting capacity in the State, and these rules are expected in early 2015. Once that regulatory framework pursuant to the 2009 Maryland General Assembly is established, the expected role for private sector deployment of food waste recycling infrastructure can be clarified. If possible, County planning will proceed in the direction of a strategy that takes most cost-effective advantage of private sector services.

4.1.3 County Provided Disposal System

While the County strives to achieve its overall 70 percent recycling goal, the County's overall solid waste management system needs to be sufficiently robust to assure proper management of all MSW generated in the County. For proper disposal of waste that is either not recycled or not recyclable, Montgomery County employs both Resource Recovery and Landfilling. Consistent with its sustainability objectives, Resource Recovery is preferred over landfilling, but the combination of both is provided to assure a complete system.

4.1.3.1 County Resource Recovery Facility

Current Conditions and Constraints: In August 1995, the County began operation of a mass-burn RRF in Dickerson, Maryland. Waste that is delivered to the County's Shady Grove Processing Facility and Transfer Station and considered processible at the RRF is transported by rail to the RRF for "waste-to-energy" processing and ferrous metals recovery. Processing at the RRF recovers heat generated from the controlled combustion of MSW to produce steam which drives a turbine to generate electricity which is competitively marketed to the grid. In addition to renewable energy recovery, ferrous metals are recovered from RRF residue and competitively sold into the scrap metal market. The permitted calendar year throughput capacity of the RRF facility

is 657,000 tons per year (indexed to waste with a higher heating value of 5,500 BTU per pound).

Needs Assessment and Plan Direction: The County will regularly monitor and evaluate all aspects of RRF operations to ensure that waste transport and processing is conducted in a cost efficient and environmentally sound manner.

4.1.3.2 County-Provided Landfilling

Current Conditions and Constraints: For disposal of RRF residue, bypass and non-processible waste, the County has secured a long term out-of-County hauling and disposal agreement with Brunswick Waste Management Facility, LLC. (BWMF). Under the agreement, the contractor must accept at the Transfer Station, RRF, or other county delivery site, handle transport and dispose of all waste delivered by or on behalf of the County in accordance with applicable law. The contractor must provide all equipment necessary and there is no upper limit on the tonnage that must be accepted and disposed by the contractor. The initial term of the County's agreement extends through 2012 but is now extended through 2017. This contract was modified in 2010 to allow the beneficial reuse and recycling of ash residue as alternate daily cover and road base for internal landfill roads at any of the landfills owned by Republic Services, the parent company of BWMF, Most of the ash processing is currently occurring at the Old Dominion Landfill in Henrico County, Virginia. The same contract also provides for back-up landfill capacity in Georgia, or other approved locations. This is discussed further in the next chapter (Section 5.2.1.5.). With respect to the FY19 planning horizon, there will be a need to secure an additional two years of capacity. A new solicitation for ash recycling and landfill services should be issued in FY15, assuring that a new contract is in place before 2017, when the current contract expires.

The County has also purchased property off Wasche Road in the Dickerson area (known as “Site 2”) for use as a future landfill site if needed, and has obtained a waste disposal permit for a landfill on this site.

Needs Assessment and Plan Direction: The County intends to retain the Site 2 property through the ten-year planning period and beyond for use in the event economic conditions or changes in law render out-of-County waste disposal infeasible. If the need arose to use the Site 2 landfill, it would provide at least ten years of disposal capacity.

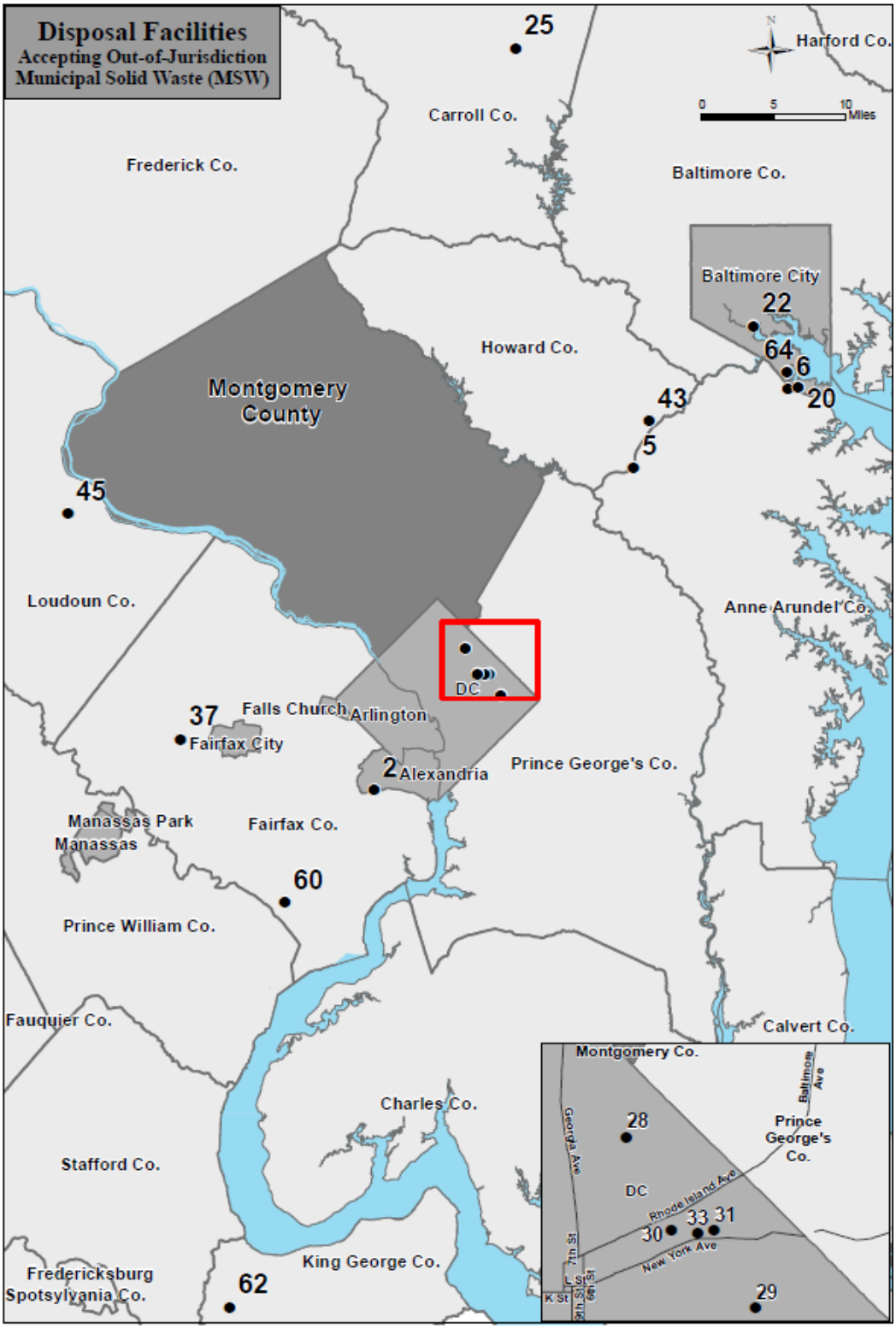
4.1.4 Regional Non-County MSW Disposal Facilities

Private sector collectors in Montgomery County have many options other than the County’s Transfer Station to take their MSW.

Current Conditions and Constraints: Figure 4-2 shows the locations of disposal facilities accepting out-of-jurisdiction MSW, and corresponding Table 4.2 shows their road-distances from the center of Montgomery County.

During CY 2012, private sector collectors chose to dispose of 154,522 tons of MSW at out-of-County facilities. The most popular of these, with respect to Montgomery County collectors, were the Annapolis Junction, and the District of Columbia transfer stations. Capacities of these facilities are not fully utilized. The Annapolis Junction facility is permitted for 3,000 TPD, but typically handles only about 2,000 TPD. The District of Columbia transfer stations have recently been expanded.

Figure 4.2
Facilities Located Outside of Montgomery County and Accepting Out-of-Jurisdiction MSW



In the District of Columbia, there are four transfer stations where private haulers who serve Montgomery County take their waste. Two of these—Fort Totten and Benning Road—are owned by the District of Columbia government and the other two are private. Both of those two DC government facilities were renovated in the 2008-2009 timeframe. Their combined annual throughput capacity is 1,000,000 TPY, and of that one million TPY capacity, DC government reports a total throughput of only 469,766 tons.[1] During CY 2012, about 46.4 percent of the MSW collected by private haulers operating in Montgomery County was delivered to the Annapolis Junction facility, and about 32.3 percent went to facilities located in the District of Columbia.

As a practical matter, private sector collectors have, and are expected to continue, to utilize regional options for disposal, and recognizing this is important to the proper management of our integrated solid waste management system.

Table 4.2

Disposal Facilities Located Outside of Montgomery County
Accepting MSW from Out-of-Their-Jurisdictions

FAC_ID	Facility	Jurisdiction	State	Road Distance
2	Alexandria WTE	Alexandria	VA	31
43	Ameriwaste	Howard	MD	30
5	Annapolis Junction PF & TS	Anne Arundel	MD	25
6	Curtis Creek PF & TS	Anne Arundel	MD	39
20	Baltimore Procesing Facility and Transfer Center	Baltimore City	MD	40
22	Southwest Resource Recovery (formerly BRESCO)	Baltimore City	MD	37
64	Chesapeake Compost Works	Baltimore City	MD	44
25	Northern Landfill PF&TS	Carroll	MD	45
28	Fort Totten Trash Transfer Station	District of Columbia	DC	22
29	Benning Road TS	District of Columbia	DC	32
30	Consolidated IPC (a.k.a) Federal IPC	District of Columbia	DC	24
31	Waste Management of MD, Inc (Northeast TS)	District of Columbia	DC	32
33	Rodgers Brothers	District of Columbia	DC	23
37	Fairfax County TS - a.k.a I-66	Fairfax	VA	28
45	Old Dominion Transfer Sstation	Loudoun	VA	37
60	Lorton WTE	Fairfax	VA	36
62	King George County Landfill	King Georges	VA	75

1 Personal communication with Jeffery Dickerson, District of Columbia, 2/5/2013.

Table 4.3
Private Sector MSW Export in CY 2012

ID	Facility	Location	Tons	Percent
5	Annapolis Junction	Jessup, MD	81,851	49.8%
28	Fort Totten	Washington, DC	37,932	23.1%
31	Waste Mgmt.	Washington, DC	13,664	8.3%
30	Federal IPC	Washington, DC	12,484	7.6%
43	Ameriwaste	Elkridge, MD	8,215	5.0%
60	Lorton WTE	Lorton, VA	5,480	3.3%
2	Alexandria WTE	Alexandria, VA	1,494	0.9%
	17 Other Facilities	Various Locations	3,125	1.9%
		Total	164,246	100.0%

4.1.5 Municipal Solid Waste Composting

Current Conditions and Constraints: With the exception of yard trim composting and a limited amount of food waste, no measurable portion of the County's MSW stream is processed through composting.

Mixed MSW composting is a developing technology that has not been included as a component of the County's solid waste management system. Moreover, no private facilities currently exist in the region to compost mixed MSW, and based on the commercial status of these technologies, none is expected in the near future.

As a categorical component of MSW, food waste represents an estimated 141,713 tons of disposed waste (13 percent of total MSW generation) according to Table 4.1, and thus the largest single categorical opportunity for increased recycling. Limited private sector efforts have been made in the region to separately collect select sources food wastes for composting, but with uncertain results and uncertain outlook. Of an estimated 142,000 tons of food waste generated in CY 2012, only about 7,000 tons of food waste

was recycled. This was essentially due to a few small collectors, working with a handful of specialized waste generators (e.g., groceries and restaurants), who have endeavored to become leaders in food waste recycling by partnering to separately collect food waste and deliver it to a fledgling few food waste composters. So far, however, food waste composting has encountered several hurdles. For example, most attempts to develop food waste composting operations in Maryland have resulted in suspension of operations due to one or another State regulation. Even the County's own food waste pilot program (County office building cafeteria in Rockville) had to find an alternate, out-of-state processor to accept its food waste for composting. Montgomery County believes that the State recognizes the need for, and is working hard to establish, a cogent set of rules to both regulate and promote composting capacity, including food waste. Another hurdle will be a clear understanding of best management practices that waste generators can follow to work with their collectors in order to take advantage of composting facilities that do come on the scene.

Needs Assessment and Plan Direction: The solid waste management system developed by the County has been designed to achieve all State and County goals and requirements without reliance on large scale mixed MSW composting. This County does not envision a need to engage in mixed MSW composting during the next ten years. However, developments in composting of separately-collected food waste should be tracked and opportunities examined as potentially contributing to increased recycling within the planning horizon. In particular, the County should continue to work with MDE to help clarify regulations governing the permitting and operation of food residual composting so as to remove impediments to the development of new food residual composting facilities in our region. Once MDE adopts clear and comprehensive regulations governing the siting, permitting, construction, and operation of food composting facilities in Maryland, DEP should develop a strategy to contractually obtain access to or promote the development of food waste composting capacity to service Montgomery County waste generators. Meanwhile, DEP should continue to conduct pilot projects and establish best management practices for food residuals collection, transportation and processing.

4.1.6 Solid Waste with Hazardous Characteristics

Current Conditions and Constraints: Some common household and business waste materials in MSW may have hazardous characteristics (toxicity, ignitability, corrosivity, or reactivity). Waste materials with hazardous characteristics that may be found in homes and small businesses include: pesticides, oil-based paints, paint thinners and solvents, batteries[2], fuels, used motor oil, brake fluid, antifreeze, photographic chemicals and compact fluorescent light bulbs (CFLs).

Household hazardous waste (HHW) is not required to be handled separately as hazardous waste under state and federal law if certain conditions are met. However, DEP programs have been implemented to promote the source separation of these materials from MSW, along with a program for handling waste from businesses that qualify under USEPA rules as small quantity generators.

In July 2004, the HHW program began operation of a permanently staffed site at the Shady Grove Processing Facility and Transfer Station. In August of 2006, the HHW program expanded its operations from approximately four days per week to seven days a week. Since 2010, the HHW program expanded its hours to exactly match the 83 hours per week that the Transfer Station is open. This has resulted in participation increasing to 80,000 drop-offs by residents per year. Participation at satellite events substantially decreased after the expansion of HHW program hours at the Transfer Station, so satellite events are currently not being conducted. Since its inception, the HHW program has processed hundreds of tons of toxic, flammable, corrosive and reactive materials.

In 1996, the County launched the ECOWISE program to receive materials from businesses that generate small quantities of such wastes. Businesses served by this

2 The battery types that require special disposal are: rechargeable nickel-cadmium (Ni-Cd) and nickel metal hydride (NiMH) batteries, small sealed and automotive lead acid batteries, and lithium, mercuric oxide, silver oxide batteries.

program are known as "small quantity generators." Montgomery County is the only jurisdiction in the State of Maryland to provide this service to businesses.

DEP currently accepts CFLs as part of its Household Hazardous Waste program. Since CFLs and fluorescent tubes are Universal Wastes, not hazardous wastes, the County's HHW contractor accepts them from businesses at any time for a small fee, and they do not need to wait for the once-a-month ECOWISE program which serves small quantity generators. Also, for electronics recycling, see discussion in Section 4.1.2.4., above.

Needs Assessment and Plan Direction: DEP will pursue additional opportunities that are cost effective to expand participation in both the County's HHW and small quantity generator programs.

There is growing use of and interest in CFLs. Some private retailers such as Home Depot and IKEA stores have begun to offer CFL recycling opportunities at their stores. These retailers contract CFL collection services with their current hazardous waste collection company or through designated CFL recycling collection companies and programs. DEP will encourage retailers in the County to offer recycling opportunities of this nature to their customers. DEP will also maintain updated information of retailers' locations and recycling opportunities offered on its website.

4.2 MANAGEMENT NEEDS: SPECIAL WASTE STREAMS

4.2.1 Rubble and Demolition Type Waste Needs

As reported in Table 3.1, there was a total of 210,060 tons of non-MSW, demolition type waste generated in the County during CY 2012 (broken out as: 191,455 tons of land clearing and demolition, 2,817 tons of concrete brick and dirt, 15,735 tons of soil, and 53 tons of asbestos). Those tons were disposed. Another 30,077 tons of this type of

material was generated in the County and recycled (though not counted in the County's recycling rate), for a total of 240,137 tons generated in CY 2012 of non-MSW, rubble and demolition type waste to be managed. Historically, the bulk of this type of waste was handled almost exclusively by the private sector, but in recent years, the County's role has increased.

Current Conditions and Constraints: As reported in Chapter 3, during CY 2012, the County received at its transfer station 106,382 tons (or 44 percent of the total C&D generated), and private facilities received about 133,755 tons (or 56 percent of the C&D total generated). Table 4.4, below, presents more specifically, the generation and disposition of the 240,137 tons of C&D generated in the County during CY 2012.

Table 4.4
C&D Generation and Disposal

Total C&D Generation, CY12	**240,137**	**100%**	**Breakouts**	100.0%
Received by Montgomery County	**106,382**	**44%**		
Recycled by County (does not count toward recyclying rate)			30,077	12.5%
Disposed by County via its Out-of-County (OOC) Landfill Contract			4,825	2.0%
Burned by County in RRF (remaining ash also disposed in OOC Landfill)			71,480	29.8%
Handled Entirely by the Private Sector	**133,755**	**56%**		
Clarksburg C&D (This in-County facility is permitted for 250,000 TPY)			46,425	19.3%
32 Other private facilities, located outside of Montgomery County			87,330	36.4%

In addition to the County's Transfer Station, there is one facility located within the borders of the County, Clarksburg, Maryland, which is permitted to accept and process C&D for recycling. The Clarksburg facility opened in 2005, and is permitted to receive up to 250,000 TPY of C&D. During CY 2012, however, that facility accepted only 46,425 tons. Most of this was delivered by collectors affiliated with the owner. This apparent underutilization of capacity is at least partly attributable to the fact that not all types of C&D can be processed at the facility due to limitations on the separations that can be achieved at this facility relative to the conditions of the mix collected and potentially delivered, together with the abundance of alternate C&D acceptance facilities in the region (discussed below). There may also be private and economic circumstances. The Clarksburg facility appears to maintain its tipping fee slightly higher than the County's.

As noted in Table 4.4, above, there are another 32 facilities, located outside of the County, that accept C&D from Montgomery County sources.

Recently, the County modified its out-of-County hauling and disposal contract to enable select recyclable C&D received by the County at its transfer station to be transported for recycling at the Honeygo Run facility located northeast of Baltimore (facility identification number 13 in Figure 4.3 and Table 4.5). This modification provides for the recycling of mixed dirt, rocks, brick, concrete as well as any remaining metal, dimensioned lumber and cardboard in the C&D loads and is a promising avenue for recycling mixed loads this type of material received by the County.

Some of the facilities noted above accepted quite small quantities of C&D, in particular those located farther away. Figure 4.3, below, shows a map of most of these facilities.

Figure 4-3 map show all available privately run options in jurisdictions adjacent to Montgomery County in Maryland which are known to accept C&D type materials. With respect to facilities in Virginia and DC the map only shows those reported by private haulers as being or having been used for disposition of C&D generated within Montgomery County. As a consequence Figure 4-3 does not necessarily represent the total number of available facilities for C&D.

Figure 4.3

Facilities Accepting Out-of-Jurisdiction C&D

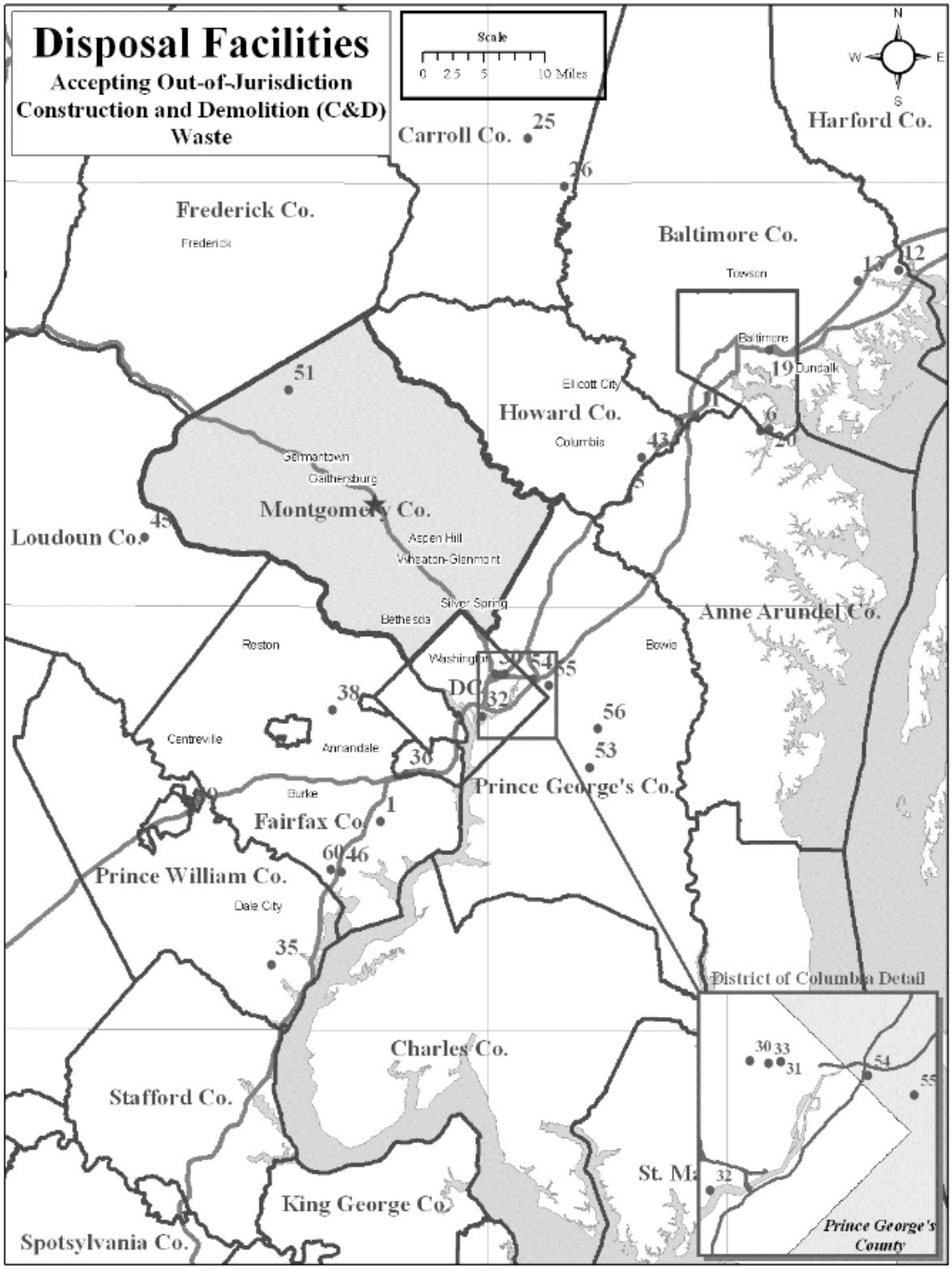


Table 4.5
Disposal Facilities Accepting Out-of-Jurisdiction C&D Materials

FAC_ID	Facility	County	State	Road Distance
1	Hilltop Sand and Gravel	Alexandria	VA	35
5	Annapolis Junction PF & TS	Anne Arundel	MD	25
6	Curtis Creek PF & TS	Anne Arundel	MD	39
11	Recovermat Mid-Atlantic, LLC PF	Baltimore	MD	31
12	Days Cove Rubble Landfill	Baltimore	MD	65
13	Honeygo Run Rubble Landfill SE	Baltimore	MD	61
19	Edison Processing Facility	Baltimore City	MD	51
20	Baltimore Procesing Facility and Transfer Center	Baltimore City	MD	40
25	Northern Landfill PF&TS	Carroll	MD	45
26	Roll-Off Express PF	Carroll	MD	64
30	Consolidated IPC (a.k.a) Federal IPC	District of Columbia	DC	24
31	Waste Management of MD, Inc (Northeast TS)	District of Columbia	DC	32
32	DC Rock, Washington	District of Columbia	DC	28
33	Rodgers Brothers	District of Columbia	DC	32
35	Potomac Landfill	Dumfries	VA	46
36	Alexandria Waste Recovery Facility	Alexandria	VA	31
38	Merrifield	Fairfax	VA	22
43	Ameriwaste PF & TS	Howard	MD	35
45	Old Dominion Transfer Sstation	Leesburg	VA	37
46	Rainwater Landfill	Lorton	VA	37
51	C & D Recovery PF	Montgomery	MD	13
53	Dower House PF	Prince George's	MD	38
54	Kenilworth PF	Prince George's	MD	30
55	Sheriff Road PF & TS	Prince George's	MD	32
56	Ritchie Land Rubble LF	Prince George's	MD	34
59	Manassas Transfer Station	Prince William	VA	39
60	Lorton C D D Landfill	Lorton	VA	36

Needs Assessment and Plan Direction: As noted above, the amount of C&D generated in the County in CY 2012 was 240,137 tons. Because this type of waste is a byproduct of construction, the generation rate of land clearing and demolition debris is linked, for planning projections, to population and employment increases. Therefore, this amount is projected to increase, by CY 2023, to 246,699 TPY. With developable land comprising less and less of the County, it is assumed that the nature, or composition, of this type of waste may shift, with reductions in the proportion comprised of land clearing type materials (e.g., large stumps and earth) to a greater portion being comprised of tear-down and renovation type materials, which could increase the challenge of recycling and disposal of that material.

As Figure 4-3 and Table 4-5 show, there is no shortage of destinations in addition to Clarksburg or the County Transfer Station which can and do receive C&D generated in Montgomery County. In addition, seven of the 27 facilities inventoried above are equipped for some type of processing for recycling C&D.

Based on the foregoing, no additional County program for C&D appears to be needed at present to provide disposal capacity for private sector generated C&D.

However, the County's hierarchical preference that waste be recycled rather than disposed dictates a planning direction with respect to C&D management. Specifically, the County will, to the maximum extent practicable, utilize its newly amended out-of-County haul contract to recycle the C&D that it receives at its transfer station, and also will continue to explore the fiscal and operational feasibility of increased recycling for land clearing and demolition debris generated from County roadway construction projects.

It should be understood that C&D recycling does not influence the County's recycling rate calculation since C&D is not Municipal Solid Waste (MSW) and is not eligible for recycling credit under the Maryland Recycling Act.

4.2.2 Asbestos Disposal

Current Conditions and Constraints: Since the closing of the County's Oaks Landfill in 1997, The County's solid waste facilities no longer accept Regulated Asbestos Containing Material (RACM) generated in the County. The County does not use its out-of-County landfill, in Brunswick County, VA, for RACM disposal either. Generators of this type of waste contact licensed and permitted asbestos contractors who are experienced in the proper removal, handling, transportation and disposal of RACM in a regulated disposal facility.

Needs Assessment and Plan Direction: There is no need for change to the existing County asbestos disposal policy.

4.2.3 Controlled Hazardous Substances

The term, "Controlled Hazardous Substances (CHS)," refers to hazardous waste as defined in COMAR 26.13.01 and special medical waste as defined in COMAR 26.13.11. These waste materials must be source separated from MSW and require special handling and disposal practices to protect public health and the environment. The management needs of hazardous waste and special medical waste are discussed below.

4.2.3.1 Hazardous Waste Management

Current Conditions and Constraints: Montgomery County generates less hazardous waste than many communities because of its relatively low level of industrial and manufacturing activity. County regulation requires any business that uses, stores, treats, or transfers 50 pounds or more of hazardous materials, including hazardous waste to obtain a Hazardous Materials Use Permit and to register annually with the County FRS, Local Emergency Planning Council (as mandated by federal law). The WSSC regulates the industrial waste discharges into the sanitary sewer system.

All other hazardous waste regulations are implemented and enforced by the State and Federal governments. MDE uses a manifest system to regulate hazardous waste from its point of generation, through its transportation, interim processing and storage, and finally to its ultimate disposal facility. MDE has responsibility for the permitting of TSD facilities, including hazardous waste disposal facilities.

Businesses which generate less than 100 kilograms of hazardous waste (or 1 kilogram of acute hazardous waste) per month, or which store less than 100 kilograms of hazardous waste are considered "small quantity generators" and are exempt from most

State hazardous waste management regulations. Small quantity generators operating in Montgomery County may be eligible to dispose of hazardous waste materials through a special drop-off collection program sponsored by DEP (see Section 4.1.6).

Needs Assessment and Plan Direction: No changes in the County's involvement in hazardous waste management are anticipated in the next decade.

4.2.3.2 Hazardous Waste Emergency Response

Current Conditions and Constraints: Under the County's Emergency Operations Plan, the Fire and Rescue Services (FRS) is the primary agency for Oil and Hazardous Materials Response. DEP is responsible to provide FRS support to hazardous material response by providing limited detection, monitoring, and sampling and analysis operations in accordance with DEP Response Procedures for Hazardous Materials Spills. DEP is also responsible to provide support to manage hazardous material incident clean-up operations including coordinating the county's efforts in decontaminating public and private properties and the environment.

DEP periodically updates a Response Procedures Manual to provide specific guidance dealing with releases of hazardous material. Items such as sewage releases are also included in the manual.

Hazardous waste spill incidents, when outside assistance is required, are reported through calls made to "911" within the County are referred to the County Emergency Communications Center. All spills are reported to MDE in accordance with the County's approved Storm Water Management Prevention Plans. The County FRS hazardous incident response team responds to spills of oil and other hazardous substances. Larger spills may require assistance from the MDE spill team and/or a private cleanup contractor. FRS is responsible for on-site materials containment and stabilization. Once FRS has

rendered the incident site safe, DEPC coordinates for the removal of the hazardous materials.

Under the County's Water Quality Ordinance (Montgomery County Code, Chapter 19, Section 19-35), DEP can issue fines for illegal dumping on County roads, rights-of-way, streams and storm drains. Through the County's Water Quality Ordinance, DEP established specific procedural guidelines to address any illegal storm drain connections. If an illegal storm drain connection is identified, DEPC may write a Notice of Violation to the responsible party and require corrective actions, including the cleanup of any spilled material and requiring a legal means of discharge. Enforcement of illegal connections is the responsibility of DEPC and the WSSC.

Needs Assessment and Plan Direction: The hazardous waste spill response system adequately serves County needs. No major structural modifications to the system are envisioned during the next 10 years.

4.2.3.3 Special Medical Waste

Current Conditions and Constraints: Special medical waste is generated by hospitals, doctors' offices, medical and research laboratories. State regulations govern the transport and disposal of special medical waste. Special medical waste must be transported by state-licensed haulers and processed at permitted facilities under a State manifest reporting system.

State law provides a residential use exemption (e.g., for home insulin users) for disposal of home medication material as MSW.

Special medical waste incinerators operate under State permits. At present, no permitted special medical waste incinerators operate in Montgomery County (see Table 3.12).

DEPC enforces air quality provisions of the County Code, reviews State installation and operating permits, and works with the County DPS to enforce compliance with the ventilation requirements of County building standards in relation to any incinerator which operates in the County.

Investigations of improper disposal of special medical waste are conducted by DEPC. If suspicious waste is identified at the Transfer Station, the facility manager contacts DEPC. DEPC investigates and supervises the removal of any improperly disposed special medical waste.

Needs Assessment and Plan Direction: Aside from the licensing and investigative efforts listed in the paragraphs above, the County does not participate in special medical waste management or regulation. Currently all special medical waste generated in the County is processed at private facilities located outside of the County.

4.2.4 Animal Carcass Waste

Current Conditions and Constraints: There are no animal carcass waste rendering facilities in the County. In CY 2012, private renders in Virginia and Pennsylvania processed an estimated 246 tons of animal carcasses, bone and fat originating from the County. In addition, one privately owned pet crematorium operates under State permit in the County.

Needs Assessment and Plan Direction: Rendering facilities primarily collect meat byproducts from farms, restaurants, institutions and grocery stores. Domestic pet carcass generators include the County Police Department Animal Services Division, the Montgomery County Animal Shelter, and pet crematoria. Given facility siting constraints, new rendering facilities and incinerators are unlikely to set up operation in Montgomery

County. Over the next ten years, County animal waste generators likely will remain dependent on out-of-County rendering facilities.

4.2.5 Bulky Wastes

Current Conditions and Constraints: Bulky wastes include large household appliances (also known as white goods), other scrap metals and building materials. Bulky items are directed to different areas of the Transfer Station for recycling or disposal depending upon the materials. White goods and other scrap metals are sent to scrap metal dealers for recycling. Reusable building materials dropped off at the Transfer Station are picked up by non-profit organizations. Other bulky items that are unsuitable for disposal at the RRF are included with other non-processible waste sent for disposal at a private landfill under contract to the County.

Needs Assessment and Plan Direction: Existing facilities and programs appear sufficient to accommodate bulky waste materials.

4.2.6 Automobiles

Current Conditions and Constraints: Two automobile parts salvage companies operate in Montgomery County. However, no full scale automobile recycling facilities exist within the County. Retired automobiles generally are hauled to auto recyclers located outside of the County. The Montgomery County Police dispose of abandoned vehicles primarily through public auction. The police send approximately ten automobiles per year to scrap dealers.

Needs Assessment and Plan Direction: No further County involvement in automobile waste management appears warranted for the next decade.

4.2.7 Vehicle Tires

Current Conditions and Constraints: The State of Maryland developed a scrap tire program for the management of scrap tires in Maryland. Many auto service centers in the County arrange for private recycling of their customers' tires at facilities outside of the County. County residents may drop five or fewer scrap tires per year at the County's Transfer Station for recycling.

Needs Assessment and Plan Direction: The existing State scrap tire management system has sufficient capacity to recycle scrap tires generated in the County.

4.2.8 Wastewater Treatment Biosolids

Current Conditions and Constraints: The four wastewater treatment plants located in the County currently treat approximately 20 million gallons per day (MGD) of domestic wastewater and generate about 6,900 dry tons per year of biosolids.

There are currently six farms in the County with active permits issued by MDE authorizing Sewage Sludge Utilization for beneficial land use. These permits are held by Synagro Mid Atlantic, Inc., located in Baltimore, Maryland. Biosolids applied under these permits may originate from anywhere in the region. The testing standards and application guidelines for the land application of biosolids are regulated by MDE and the Maryland Department of Agriculture (MDA).

Needs Assessment and Plan Direction: WSSC is in the design phase of its Anaerobic Digestion/Combined Heat & Power (AD/CHP) project which will be located at the Piscataway WWTP. This project represents a major change in how biosolids will be dealt with in Montgomery County and Prince George's County. The project would receive biosolids from WSSC's other wastewater treatment plants (including the Seneca

and Damascus wastewater treatment plants in Montgomery County). Fats, oils, and grease collected by WSSC would also be sent through this process.

4.2.9 Septage

Current Conditions and Constraints: Approximately 50,000 homes in Montgomery County use a private septic system rather than the public sanitary sewerage system. In addition, about two dozen homes rely on sewage holding tanks. Septic system tanks and holding tanks are periodically pumped by private haulers permitted by the County. Pumped sewage is discharged into the WSSC or other municipal sanitary sewerage systems at controlled entry points.

Using assumed tank capacities and discharge frequencies, the County estimates current and future septic and holding tank septage generation is 18,000 wet tons annually.

Needs Assessment and Plan Direction: Current septage management practices are being reviewed by WSSC and DEP. WSSC has a “Septage Discharge Facility Planning & Implementation” project in the CIP which would result in the construction of three discharge facilities (the abandoned Rock Creek WWTP, Anacostia Wastewater Pumping Station No. 2, and Piscataway WWTP.

4.2.10 Other Wastes

Current Conditions and Constraints: As stated in Chapter 3, Montgomery County generates insignificant quantities of agricultural wastes and mining wastes.

Ferrous metals are extracted from the mix of RRF ash and residue are recycled for beneficial use, as described in Section 3.3.2.3.

Litter is considered MSW and is processed along with all other MSW received at County facilities.

Street sweepings are blended with MSW and sent to the RRF.

Needs Assessment and Plan Direction: The County has established appropriate and sufficient facilities and programs for the management of agricultural wastes, mining wastes, litter, recreational wastes, and street sweepings. No significant change in the management of these wastes appears warranted during the life of this plan.

4.3 CONSTRAINTS ON NEW SOLID WASTE ACCEPTANCE FACILITIES

4.3.1 Physical Constraints on Waste Acceptance Facilities

Current Conditions and Constraints: Several physical characteristics of the land in Montgomery County influence the siting of new solid waste acceptance facilities. These constraints include: topography, soil types, geologic conditions, aquifers, wetlands and surface waters.

A. Topography – The general topography of Montgomery County is illustrated by Figure 4.4. The County is dominated by a rolling plain or "low hill" landscape. Hills are concentrated in the northern part of the County and adjacent to the major stream valleys. The highest point in the County is 873 feet above sea level; the lowest point in the County is 52 feet above sea level. The average elevation gradient is 29 feet per mile.

In general, the effort and costs of site preparation for most solid waste facilities increase as the topographic variation increases. County Council Resolution 11-787 (1988) established County criterion for preferred landfill topography specifying that "gently rolling uplands will be preferred as landfill sites to flat, steeply sloping, or valley bottom areas." The complete list of County landfill site selection criteria appears in Appendix C. Although grading costs may increase as a result, this criterion intends to avoid low, flat areas, where poor drainage could result in ground water or surface water problems.

Steep areas would be prone to erosion; and valley bottom areas are crucial for watershed drainage and maintaining water quality.

B. Soil Types[3] – The soils of Montgomery County consist of one of six general descriptions. The locations of these soil types appear in Figure 4.5.

"Glenelg-Gaila-Occoquan" soils are nearly level to strong sloping, well drained, deep and very deep soils that are loamy throughout. This soil type is found in the central part of the County and extends to the east and south. It is found on broad ridgetops and side slopes. Glenelg-Gaila-Occoquan soils make up approximately 41 percent of the County.

"Brinklow-Baile-Occoquan" soils are nearly level to moderately steep, well and poorly drained, moderately deep soils that are loamy throughout. This soil type is found in the northern part of the County. It is found on broad ridgetops and side slopes. Brinklow-Baile-Occoquan soils make up approximately 16 percent of the County.

"Urban Land-Wheaton-Glenelg" soils are nearly level to strongly sloping, well drained, very deep soils that are loamy throughout. This soil type is found in primarily in the Germantown area and in southern and eastern portions of the County. It is found on broad ridgetops and side slopes. Urban Land-Wheaton-Glenelg soils make up approximately 16 percent of the County.

"Penn-Brentsville-Readington" soils are nearly level to steep, well and moderately well drained, moderately deep and deep soils that are loamy throughout. This soil type is found in the western part of the County. It is found on broad ridgetops and side slopes. Penn-Brentsville-Readington soils make up approximately 14 percent of the County.

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3 Source: Soil Survey of Montgomery County, Maryland, USDA Natural Resource Conservation Service in cooperation with the Montgomery Soil Conservation District, July 1995.

“Blocktown-Brinklow-Linganore” soils are gently sloping to steep, well drained and moderately deep soils that are loamy throughout. This soil type is found in the northern part of the County. It is found on broad ridgetops and side slopes. Blocktown-Brinklow-Linganore soils make up approximately 10 percent of the County.

“Chillum-Croom-Beltsville” soils are nearly level to steep, well drained and moderately well drained, very deep soils. This soil type is found in the eastern part of the County along the Prince George’s County line. It is found on broad ridgetops and side slopes. Chillum-Croom-Beltsville soils make up approximately 3 percent of the County.

C. Geologic Conditions[4] – The County lies almost entirely in the Piedmont physiographic province where the bedrock consists predominantly of metamorphic rocks of the Paleozoic age. Consolidated sedimentary rocks of Early Triassic age occupy a down-faulted basin in the western part of the County. On hills and ridges along the eastern border, small erosional remnants of unconsolidated Cretaceous sedimentary rocks extend westward from the Coastal Plain in Prince George's County (see Figure 4.6).

[4]Source: "Bedrock Geology of Montgomery County," compiled by Jonathan Edwards, Jr., Maryland Geological Survey, Baltimore, MD. December 1992.

Figure 4.4
County Topographic Map

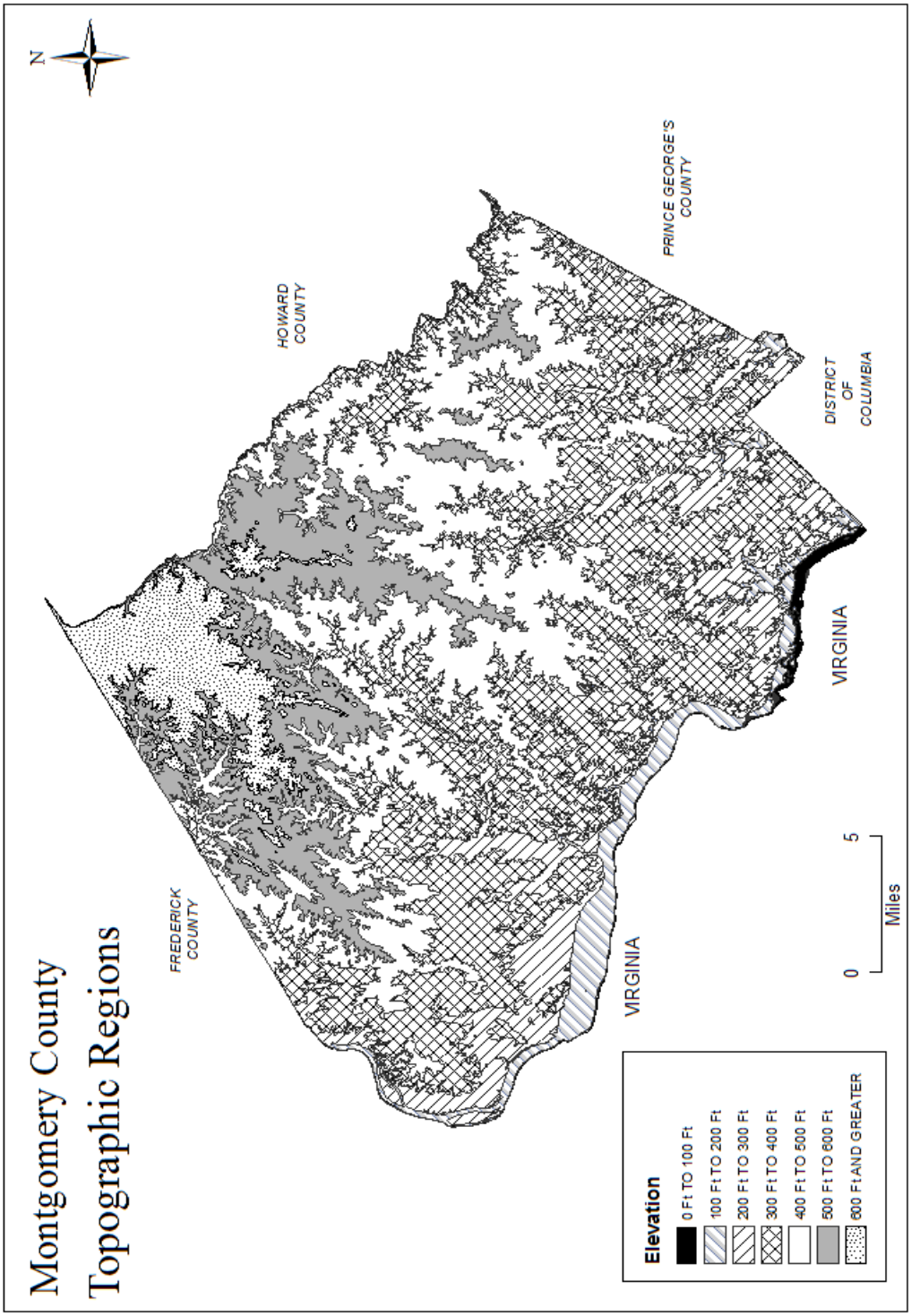
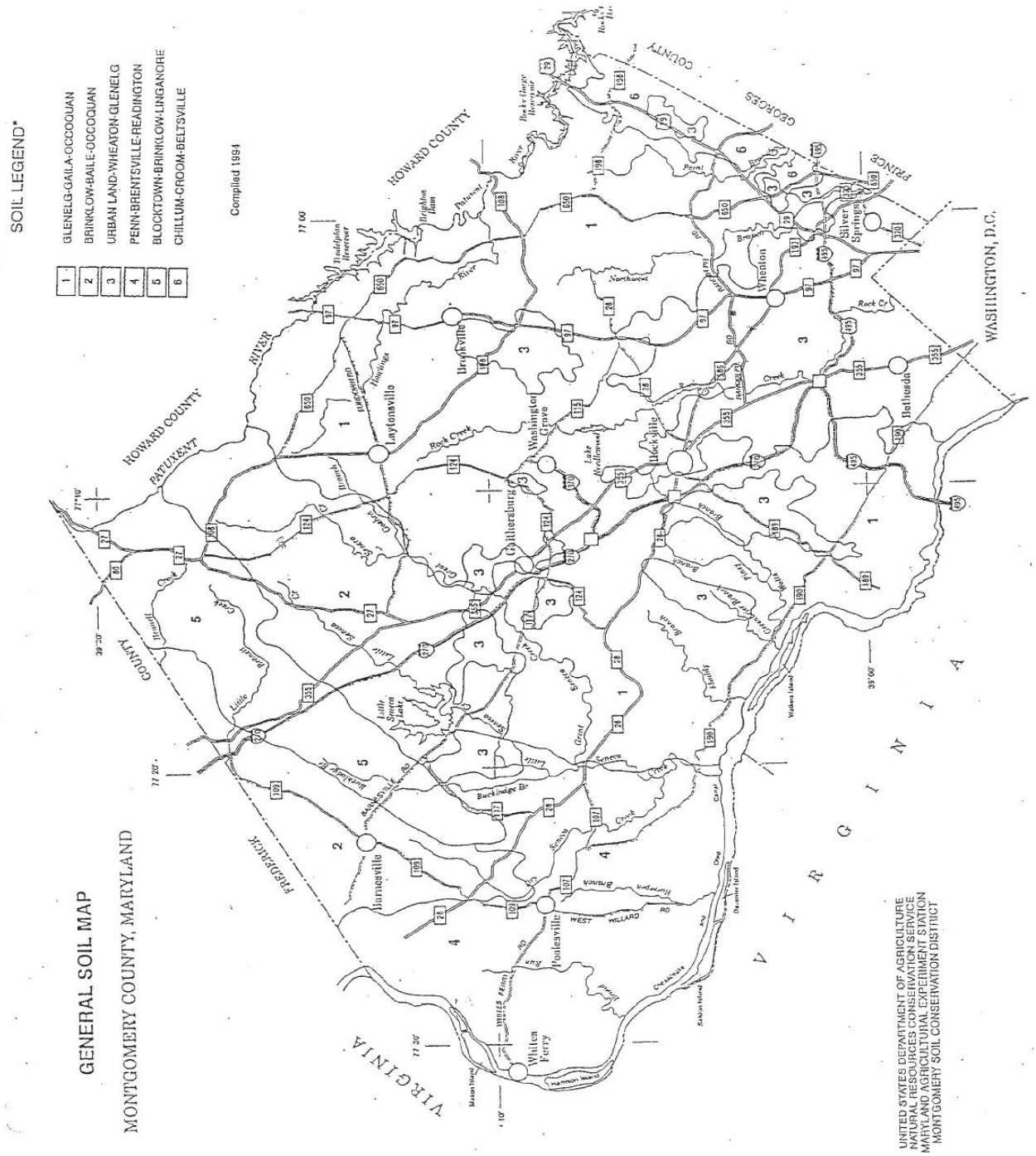


Figure 4.5
County General Soil Map



The bedrock in the eastern two-thirds of the Piedmont consists of rocks of the Wissahickon Group. The best example of these rocks is exposed in the quarry of Rockville Crushed Stone Company south of Hunting Hill. The serpentinite here is quarried for use as crushed stone aggregate. Quarries for building stone in the micaceous quartzite are located in several places of the western schist belt.

Fine-grained slaty rocks mapped as the Urbana (e.g., Harpers), Ijamsville, and Marburg phyllites occupy the Piedmont of Montgomery County west of a line running north-northeast from Blockhouse Point on the Potomac River to a point on the Patuxent River due north of Etchison, at Annapolis Rock. A large area in the western corner of the County is underlain by consolidated sedimentary rocks of Triassic age. This represents a small portion of the large Culpepper Basin in neighboring Virginia. Red Triassic sandstone was quarried for building stone at several places along the bluffs north of the Potomac River during the 19th century.

The general trend of the bedrock units across Montgomery County and the strike of the foliation and cleavage are northeast-southwest, but no one particular lithology appears to have had significant control on the topography.

Alluvial deposits consisting of gravel, sand, silt, and clay of recent age are present along the Potomac River, particularly in the wide bottomlands in the area of Triassic rocks west of Seneca. This alluvial fill is much less developed where the river channel has been cut into hard metamorphic rocks such as along the Potomac east of Seneca, along the Patuxent River, and in the larger streams tributary to these rivers.

Figure 4.6
County Geologic Conditions Map

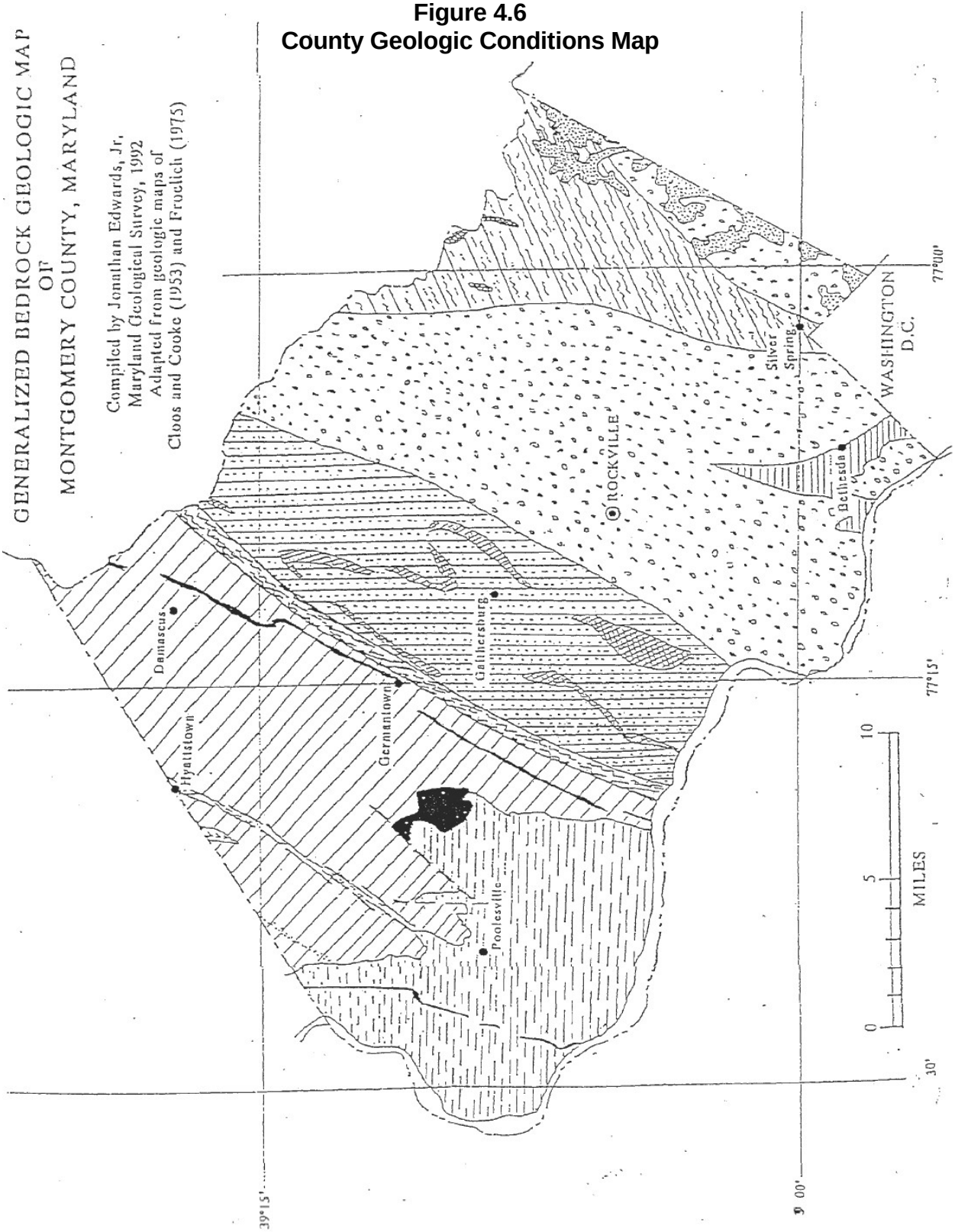


Figure 4.6 (con't)

EXPLANATION OF GEOLOGIC MAP

MESOZOIC

CRETACEOUS

Potomac Group: Unconsolidated deposits of quartz-pebble gravel; white, tan, and pink sand; and gray, white, tan, and pink clay of the Patuxent, Arundel, and Patapsco Formations

JURASSIC

Diabase Dikes and sills: Fine-grained, black basalt dikes and medium- to coarse-grained, black to dark greenish-gray diabase sill.

TRIASSIC

New Oxford Formation: Brick-red shale, siltstone, and red to gray sandstone. Cobble to pebble conglomerate at base.

EARLY PALEOZOIC

Pleasant Grove Formation: Fine-grained, dark greenish-gray metagraywacke and chlorite-muscovite-plagioclase-quartz phyllite*. Strongly sheared with tight internal isoclinal folds.

Marburg, Ijamsville, and Urbana, Formations: Fine-grained, greenish-gray, gray-tan, and purple-gray phyllite. Some phyllites are interlaminated with thin, tan, fine-grained silty quartz layers.

quartzite: Fine- to medium-grained, gray-tan to white quartzite with rounded grains of quartz. Some layers of pebble conglomerate occur.

Georgetown Mafic Complex: Medium- to coarse-grained, dark green metagabbro, black amphibolite, and gray metadiorite.

Wissahickon Group:

Sykesville Formation and Laurel Gneiss: Gray, medium- to coarse-grained plagioclase-muscovite-quartz gneiss containing deformed and metamorphosed pebbles and boulders of vein quartz, mica schist, granite gneiss, serpentinite, and amphibolite. Occurs with schist and metagraywacke identical to those of the western facies of the Wissahickon.

ultramafic and related rocks: Medium- to fine-grained, green to black chlorite-actinolite schist, chlorite-talc schist, and serpentinite.

Eastern schist facies: Medium- to coarse-grained, gray to brownish-gray, garnet-bearing biotite-plagioclase-muscovite-quartz schist interlayered with biotite-muscovite-quartz-plagioclase gneiss.

Western schist facies: Fine-grained greenish-gray to gray, chlorite-muscovite-quartz-plagioclase schist.

LATE PRECAMBRIAN

Metabasalt (Sams Creek Formation): Fine-grained, chlorite-epidote schist and medium- to coarse-grained plagioclase-actinolite diabase.

* Mineral constituents listed in order of increasing abundance.

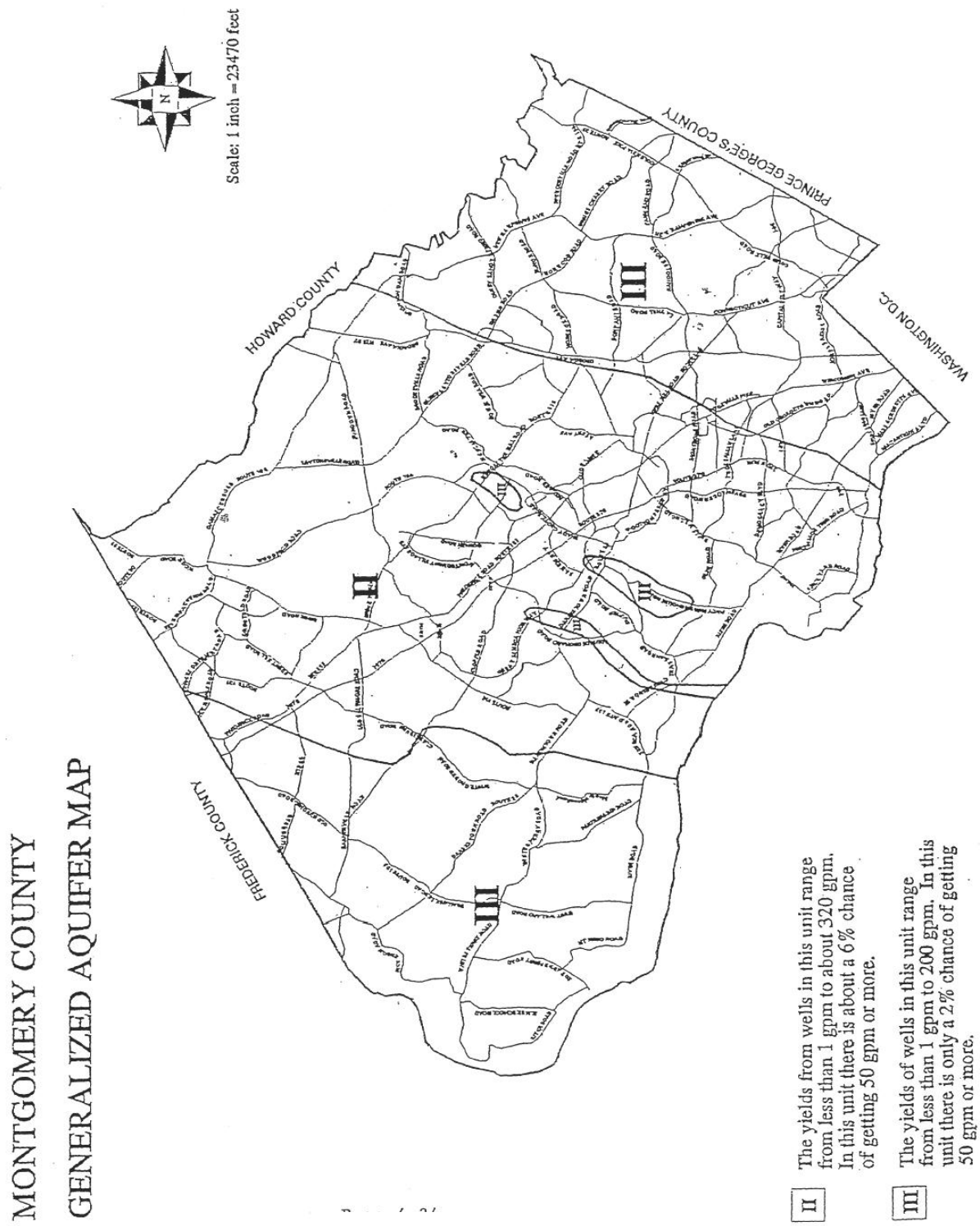
A large remnant of a high-level gravel terrace lies on Triassic bedrock between Martinsburg Road and Elmer School Road in the western part of the County. These gravels are floodplain deposits of the Potomac River when it flowed at a higher level in the late Tertiary or early Quaternary time, before eroding to its present channel. Smaller patches of this same material occur to the south along the bluffs overlooking the floodplain of the Potomac River.

D. Ground water and Aquifers[5] – The major hydrogeologic units in the County are shown in Figure 4.7. Most of the ground water in these units occurs in the soil and weathered surface mantle which have an average thickness of 20-50 feet. Other ground water occurs in cracks and pores of the underlying rock.

The average annual depth of the ground water table in Montgomery County varies considerably from place to place depending on the type of rock, and the topographic situation as well as the annual rainfall. At an observation well at Fairland, in the Wissahickon schist of the eastern part of the County, average annual depth to ground water is between 8 to 10 feet. The comparable depth at an observation well at Damascus in the Ijamsville phyllite and a more rugged topography is between 30-45 feet. In the Manassas (New Oxford) siltstones and sandstones, the water table, as shown in scattered wells, lies at about 70-120 feet. However, this formation contains thin, saturated zones five to ten feet thick at lesser depths from which small quantities of water can be obtained. It is noteworthy that water at significantly greater depths in the Manassas formation has been reported from a well adjacent to the Potomac River. In general, however, the water in the ground lies chiefly in a surface zone about 150-250 feet thick.

5 Sources: 1986 Comprehensive Montgomery County Water Supply and Sewerage Systems Plan; U. S. EPA, FR57165-168 (1980), as per the Sole Source Aquifer Program, established under Section 1424(e) of the Safe Drinking Water Act of 1974.

Figure 4.7
County Hydrogeologic Units Map



The U.S. EPA designated parts of Montgomery, Frederick, Howard, and Carroll Counties as the Maryland Piedmont Aquifer. Areas in Montgomery County encompassed in this designation include the following drainage basins: Monocacy River, Little Seneca Creek above its confluence with Great Seneca Creek, and the Patuxent River above its confluence with Cabin Branch Creek. Most of these basins are underlain by crystalline igneous and metamorphic rocks of the Piedmont, although small areas of Triassic sedimentary rocks are also included along the lower reach of Little Seneca Creek and near Dickerson.

In February 1998, the U.S. EPA determined that the Poolesville Area Aquifer System “is the sole source or principal source of drinking water for this area and if the aquifer system were contaminated would create a significant hazard to public health.” The sole source designation subjects all federally assisted projects to EPA review to ensure that the project’s design, construction and operation will not contaminate the aquifer so as to create a significant hazard to public health.

E. Wetlands – Regulations regarding the definition of, and allowable impacts to, wetlands continue to evolve. Wetlands are defined by the Planning Board's guidelines of February 1997 for Environmental Management of Development in Montgomery County as "an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation."

Information on the location of major wetland areas in the County is available through National Fish and Wildlife Service maps. The County's Department of Parks and Planning requires more accurate delineations of wetlands by a developer's engineer during the development review process. This detailed delineation is also required by federal and state agencies as a part of their wetland permit review processes.

In 1989, the Maryland Department of Natural Resources (DNR) prepared Nontidal Wetland Guidance Maps that showed the relative locations of large nontidal wetlands in Montgomery County. However, as stated in the instructions for the use of these maps, exact wetland boundaries and locations must be field determined using guidance that is provided by the Federal Government. Any new solid waste facility must address current federal and state wetlands requirements.

F. Surface Waters, Floodplains and Watersheds – The County's rivers, lakes, and streams provide drinking water, recreational opportunities, and wildlife habitat. Most of this surface water comes from naturally occurring run-off from rain and snow. All of the lakes in the County are man-made. The larger lakes were built for flood and sediment control and water supply. Some County waters also are used to receive treated sewage and excess storm water run-off. Ultimately, all waterways flow into the Chesapeake Bay. The major surface drainage patterns are illustrated in Figure 4.8.

The County has 26 drainage basins, flowing into four rivers. The County is bordered by two rivers, the Potomac and the Patuxent. Seventy percent of the County drains directly into the Potomac River and its major tributaries. Twelve percent of the County drains to the Anacostia River and then to the Potomac River. Six percent of the County north of Comus Road and MD 121 (east of I-270) drain toward the Monocacy River and on to the Potomac River via Bennett and Little Bennett Creeks. The remaining twelve percent of the County along the Howard County line, northeast of Route 198 and New Hampshire Avenue, drains into the Patuxent River. The above-mentioned roads generally follow ridge lines.

Montgomery County Subdivision Regulations prohibit building in a one-hundred year flood plain, except for certain transportation structures. Flood plains comprise low lying areas expected to be inundated by floods recurring every 100 years. The Department of Parks and Planning has flood plain maps for most streams in the County. The Federal Emergency Management Agency also publishes maps of flood plain zones

for the purposes of federal flood insurance programs. Flood plain location can affect the design of solid waste facilities. Engineering studies to identify the extent of flood plains have been performed for the RRF site and for the landfill property currently being held in reserve by the County.

G. Existing Water Quality Designations – MDE water quality standards identify water use designations for all surface waters in the County. Specific water quality criteria apply to each use designation. The use designation of County surface waters are listed below and shown in Figure 4.9.

Use I Water contact recreation and protection of aquatic life: Waters which are suitable for: water contact sports, play and leisure time activities where the human body may come in direct contact with the surface water; fishing; the growth and propagation of fish (other than trout); other aquatic life, and wildlife; agricultural water supply; and industrial water supply.

Use I-P Water contact recreation, protection of aquatic life and public water supply: Waters which are suited for all uses identified in Use I and are used as a public water supply.

Use III Natural trout waters: Waters which are suitable for the growth and propagation of trout, and which are capable of supporting self-sustaining trout populations and their associated food organisms.

Use III-P Natural trout waters and public water supply: Waters which include all uses identified for Use III waters and are used as a public water supply.

Use IV Recreational trout waters: Waters which are capable of holding or supporting adult trout for put and take fishing, and which are managed

as a special fishery by periodic stocking and seasonal catching (cold or warm waters).

Use IV-P Recreational trout waters and public water supply: Waters which include all uses identified for Use IV waters and are used as a public water supply.

Needs Assessment and Plan Direction: Limited sites remain in the County with physical characteristics which are suitable for development of large new solid waste facilities, particularly landfills. As described in the next section, both the physical characteristics of the land and previous land development patterns have reduced the availability of in-county locations appropriate for siting large new solid waste facilities. As such, the County has and will consider both in-County and out-of-County alternatives to meet its long-term solid waste facility needs (see next section and Chapter 5).

4.3.2 Land Use Constraints

Current Conditions and Constraints: The County regulates the siting of solid waste facilities through provisions of this Plan, the County Code (primarily Chapter 48), and the Zoning Ordinance.

The County Zoning Ordinance includes standards for solid waste facilities.[6] The Zoning Ordinance restricts privately owned transfer stations, landfills, incinerators and recycling facilities to select industrial zones. The County Zoning Ordinance expressly prohibits privately owned and operated incinerators in industrial zones.[7] Privately owned incinerators are allowed in industrial zones only if publicly operated.

6 This plan shall not be used to create or enforce local land use and zoning requirements.

7 See Section 59-C-5.22 of the County Zoning Ordinance.

Figure 4.8
Surface Drainage Patterns Map

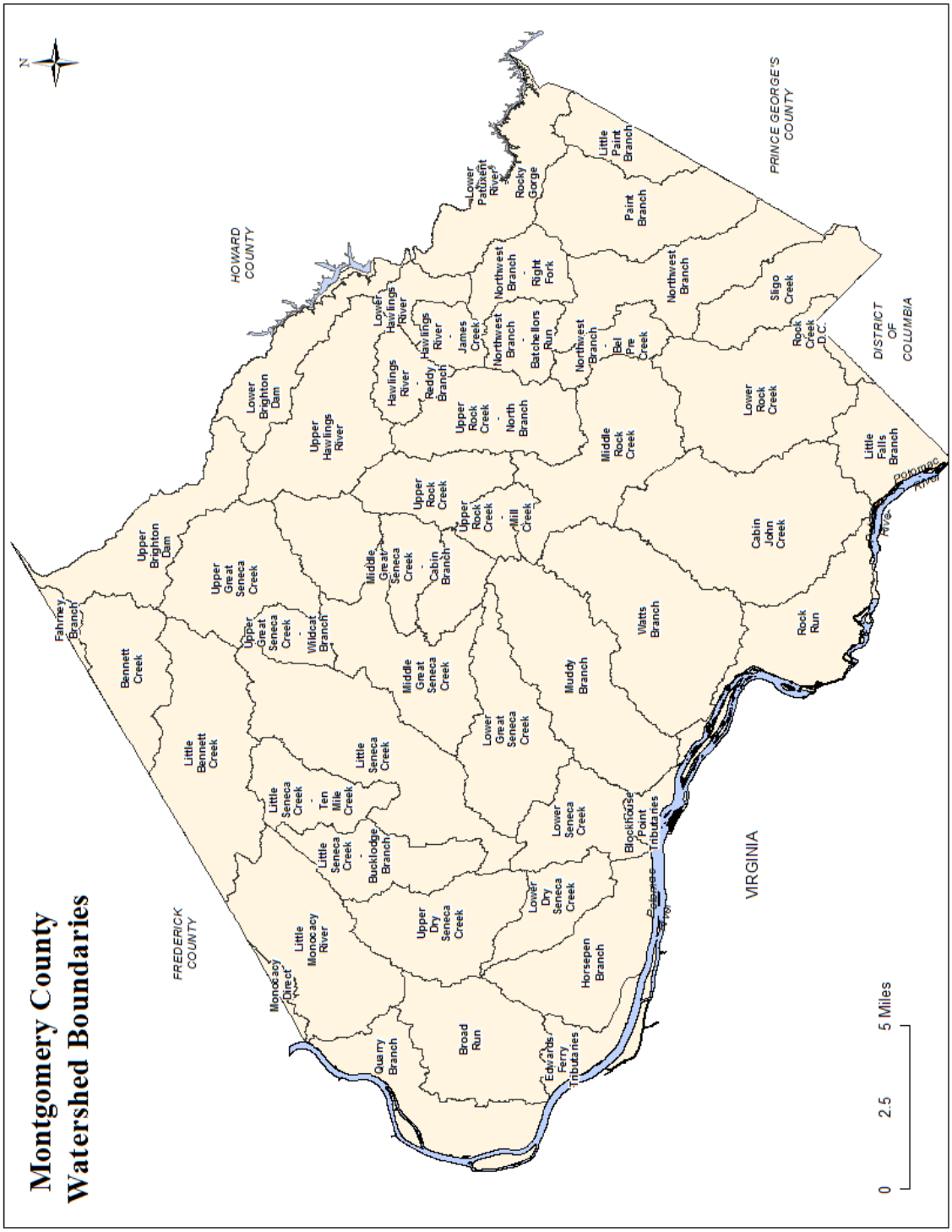
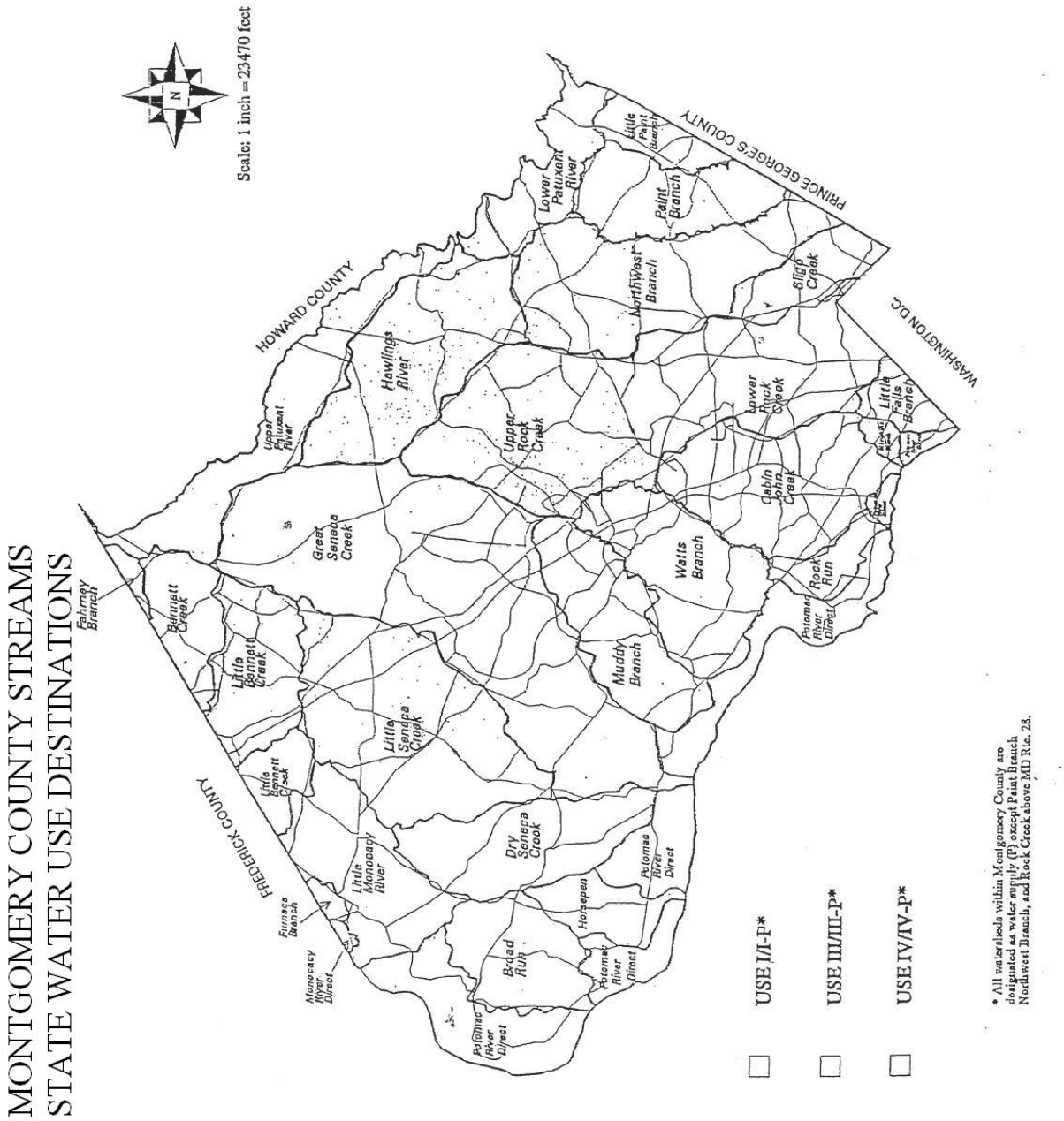


Figure 4.9
County Surface Water Use Designations Map



The Zoning Ordinance limits privately owned transfer stations, landfills and incinerators to the I-2 heavy industrial zone. Moreover, these facilities are permitted in the I-2 zone only if the County Board of Appeals grants a special exception determining that the specific I-2 parcel is suitable for a transfer station, landfill or incinerator. At present, no privately owned MSW transfer station, landfill or incinerator has satisfied both local land use requirements and MDE solid waste disposal facility permitting requirements. The County historically has reserved relatively small amounts of land for industrial uses. No more than seven vacant or re-developable (i.e., parcels where the value of the land exceeds the value of existing improvements) I-2 parcels of five acres or more exist in the County. The creation of new I-2 land seems unlikely during the life of this Plan given existing land use patterns as well as County and State land development policies.

The Zoning Ordinance allows a construction debris recycling facility in a Rural Service Zone provided that the facility meets special development standards set forth in Section 59-C-9.83 of the County Zoning Ordinance. These requirements set minimum standards for lot size, road frontage, distance to an interstate interchange, building set back, and on-site screening and landscaping. The facility also requires a construction debris recycling permit that satisfies the materials handling and reporting requirements of Section 59-C-9.84 of the County Zoning Ordinance.

Most of the southern and central portions of the County are unavailable for solid waste management uses given existing development and land use patterns. Extensive areas throughout the County, primarily along rivers and streams, are dedicated for parks and conservation purposes. A large portion of the northern land area of the County is designated as an Agricultural Reserve which is intended for the preservation of farmland and open spaces. The County Yard Trim Composting Facility, the RRF, as well as the land reserved for a potential future in-County landfill, are located within the Agricultural Reserve and in an area identified by the EPA as a Sole Source Aquifer (SSA) system. This designation requires that federally assisted projects in this area are subject to EPA review to ensure that the project's design, construction and operation will not contaminate

the aquifer so as to create a significant hazard to public health. Although this would not apply to a County financed project, these solid waste processing facilities must comply with State design and permit requirements that provide a high standard of environmental and public health protection.

A 1990 County study evaluated 16 in-County candidate landfill sites using 26 criteria adopted by the County Council in Resolution 11-787. County Council Resolution 11-1947 (1990) identified two potential future in-County landfill sites, “Site 2” in the vicinity of Dickerson, and another site in the vicinity of Boyds, both in the Agricultural Reserve. The County purchased 820 acres at Site 2 which will be held in reserve in the event economic conditions, changes in law or other circumstances render out-of-County waste disposal infeasible.

The County does not intend to site any new major solid waste processing facilities within the County during the next ten years. The sites for currently operating solid waste processing facilities as well as land reserved for potential future solid waste facility needs have been selected in the context of County land use master plans as discussed in Chapter 2 of this Plan. While only a few parcels of land use remain undeveloped in the County that are zoned to permit private solid waste processing facilities, existing solid waste processing facilities are adequate to handle projected waste generation for the next decade and beyond. Recent modifications to the County zoning ordinance will promote the suitable siting of new private recycling facilities in the County.

Needs Assessment and Plan Direction: The County's principal solid waste management facilities, including the RRF, the Yard Trim Compost Facility, the Shady Grove Processing Facility and Transfer Station and the MRF, have expected useful lives beyond the term of this Plan. The above land use constraints do not bear on the landfill used by the County, via contract, as it is located outside of the County. However, that facility has more than sufficient capacity and useful life for the balance of its contract period (see section 5.2.1.5.) as does the County’s Site 2 back-up in-County landfill.

4.4 SOLID WASTE OUTREACH, EDUCATION, TECHNICAL ASSISTANCE, AND TRAINING

Education, technical assistance and training programs have become an essential component of the County's integrated solid waste management system. The County government has devoted considerable resources to solid waste education and outreach programs. Montgomery County residents and businesses receive information about their critical role in reducing waste, recycling, and using their purchasing power to support demand for recycled materials and products.

4.4.1 Public Outreach and Consumer Education

Current Conditions and Constraints: Montgomery County has conducted public information and outreach activities for many solid waste programs. The County has pursued an ongoing educational campaign to inform residents and businesses about recycling, waste reduction, and other solid waste management concerns. These efforts include the following subject matter:

- Single-family residential curbside recycling;
- Multi-family recycling;
- Non-residential recycling (by businesses, organizations, both for-profit and non-profit, as well as government facilities);
- Yard trim composting and grasscycling;
- Waste reduction;
- Reuse, including donation programs;

- Resident and business purchase of recycled/recyclable products; and
- HHW reduction and proper disposal.

Outreach activities employ a variety of information dissemination techniques designed to deliver the message in the most educationally effective, cost effective and appropriate manner. Information and education efforts employ the following techniques:

- Tours of solid waste facilities including, the Transfer Station, MRF, Yard Trim Composting Facility, and RRF;
- Brochures and fact sheets specific to various programs (including commercial recycling, multi-family recycling, curbside recycling, grasscycling, composting, special materials drop-offs, and HHW);
- A comprehensive Resident's Guide for recycling and solid waste services distributed to single-family residents;
- Development and distribution of specialized handbooks and resource guides (including the Business Recycling Handbook, the Multi-Family Recycling Handbook and the Handbook for Businesses Generating Small Quantities of Hazardous Waste);
- Video presentations regarding business recycling, single-family residential recycling, recycling in schools, multi-family recycling, waste reduction, buying recycled products and backyard composting;
- Cable television programs featuring current topics in solid waste management;
- Targeted direct mail campaigns;
- Multi-media educational campaigns to increase recycling awareness;

- Presentations to civic groups, schools, chambers of commerce, business associations and at special events;
- Outreach through the Solid Waste Services website;
- Training of volunteers to provide peer recycling outreach to citizen groups and increase the educational reach of staff;
- Educational materials and offerings in multiple languages, and utilizing graphics and illustrations to the maximum extent possible;
- Seminars and workshops on varied topics (including business recycling regulations and backyard/on-site composting techniques); and
- Incentives, including compost bins and lawn care products at no additional charge, to promote grasscycling and backyard composting.

On-going outreach activities include the Recycling Volunteer Program, the SORRT Program, the TRRAC Program, efforts to educate grasscycling and composting on-site, and a program to teach waste reduction and recycling in the County Public Schools.

Recycling Volunteer Program: This program is intended to increase citizen knowledge of, and participation in, County recycling, composting, grasscycling, waste reduction and HHW programs through effective use of community volunteers.

The County trains volunteer members of the community to perform several functions, including: (1) giving speeches and making presentations to civic associations, service clubs, and other organizations requesting information regarding the County's solid waste programs; (2) providing neighborhood-based waste reduction, recycling and buying recycled products information to peers; and (3) staffing recycling booths and exhibits at special events, such as the County Fair.

Recycling volunteers augment County resources through grass roots efforts to increase participation in the County's waste reduction and recycling programs. From its inception the Recycler/Composter citizen volunteers have contributed tens of thousands of hours of service and directly reached hundreds of thousands of people. The hours served by volunteers from 2008 are listed below.

CY Year	Hours Served by Volunteers
2008	1514
2009	1217
2010	1960
2011	1719
2012	1844

SORRT: The SORRT Program (Smart Organizations Reduce and Recycle Tons) serves as an information network that promotes and supports business recycling. Through SORRT, the County provides businesses, government agencies and private institutions with technical support, education materials, seminars and workshops and other guidance to advance waste reduction, recycling and procurement of recycling materials and products in the non-residential sector. SORRT provides this direct assistance to the owners, managers, employees and customers/patrons of businesses and organizations.

The SORRT Program reaches thousands of County businesses and organizations annually. A 1997 study determined that the average business or organization which directly received technical assistance through the SORRT program increased its recycling by 82 tons per year over the level achieved prior to their participation in SORRT.

TRRAC: The TRRAC Program (Think Reduce and Recycle at Apartments and Condominiums) serves as an information network that promotes and supports recycling in multi-family apartment and condominium developments. Through TRRAC, the County provides building owners, managers and residents with technical support, education materials, seminars and workshops and other guidance to advance waste reduction, recycling and procurement of recycling materials and products in multi-family residential buildings.

Waste Reduction and Recycling Education in Public Schools: DEP provides waste reduction and recycling outreach and education upon request by specific schools or teachers. In addition, DEP will support individual teachers who request assistance in developing, reviewing, updating or using instructional materials on waste reduction and recycling. As mentioned in Chapter 1, the County expects all public agencies including the public school system to comply with all waste reduction and recycling requirements imposed on County businesses.

The Department appraises the effectiveness of alternative education and outreach strategies and focuses its efforts on initiatives quantifiably demonstrated to have measurable positive effect on recycling performance. The County Executive's annual operating budget submission must include summary findings of participation studies, focus groups, surveys and other research used to evaluate the effectiveness of alternative techniques and must describe how these findings justify the specific outreach, education, and technical assistance proposed for funding in the upcoming fiscal year.

Needs Assessment and Plan Direction: As indicated in Chapter 3, the County recycled over 59.8 percent of its MSW stream in CY 2012. This rate has been achieved by creating recycling programs and by encouraging residents and employees to participate in the programs. The County recognizes that on-going outreach and education efforts are a critical element in both maintaining and expanding recycling and waste reduction achievements. Outreach and education, technical assistance and training will

play a central role in County strategies to meet its goal of 70 percent recycling (see Chapter 5).

4.4.2 Recycled Goods Procurement

Current Conditions and Constraints: Section 11B-56 of the Montgomery County Code includes the County goal that recycled paper and paper products should constitute at least 50 percent of the total dollar value of paper and paper products purchased by or for the County government. The same section of the County Code also mandates that County agencies either require the use of goods containing recycled materials or use of a percentage price preference (up to 10 percent) for recycled materials when purchasing goods. The Office of Procurement reviews all purchasing agreements to ensure compliance with the requirements of the County Code. DEP distributes information on the availability of products containing recycled materials to County businesses and municipalities to encourage them to use these materials.

Needs Assessment and Plan Direction: The Office of Procurement and DEP will take all practicable efforts to promote maximum use of recycled materials by County agencies.

4.4.3 Promotion of Recovered Material Markets

Current Conditions and Constraints: County procurement regulations requiring the use of materials containing recycled materials promote the development of the recycled products market. Furthermore, the SORRT and TRRAC Programs promote recycling market development by encouraging County businesses and organizations to purchase recycled materials and products. County consumer education and outreach campaigns endorse “environmental shopping,” including the purchase of products with recycled content.

Contractual arrangements between the County and those entities which market County collected recyclables provide incentives for the vendor to obtain the best market price and to minimize the amount of residue (non-marketable) material generated.

The County RRF produces ash equal to approximately 25 to 30 percent (by weight) of the inputted solid waste. Reuse of ash for secondary purposes is a developing technology.

Needs Assessment and Plan Direction: The County will continue to promote the development of markets for recyclable materials through County procurement requirements, and outreach efforts to the residential and business communities.

The County will continue to manage its recycling contract to maximize materials recovery. The County will evaluate the feasibility and cost effectiveness of the reuse of RRF ash in road aggregate, construction materials and other specialized products.

4.5 INVESTIGATION OF COMPLIANCE ISSUES AND ENFORCEMENT OF RECYCLING REGULATIONS

Montgomery County Executive Regulation 15-04AM mandates recycling in Montgomery County. The goal of the County is for compliance with the recycling requirements. In order to ensure compliance with the County's recycling regulation by the multi-family and non-residential sectors, DSWS has dedicated staff (Recycling Investigators) responsible for investigating and applying enforcement measures as necessary and appropriate to enforce the County's recycling laws.

DSWS uses a progressive method of ensuring compliance with the recycling regulation. Multi-family property or business owners, managers and/or official representatives must initiate actions to correct violations and compliance deficiencies when notified by the County. Notifications may take the form of verbal warnings, Notices of Violation and Citations. Depending on the nature of the violation or compliance

deficiency, the County will provide a specific timeframe within which the violation or deficiency must be rectified. This process begins with DSWS outreach and education to ensure awareness and understanding of the requirements. DSWS uses technical assistance, training and hands-on guidance, and further provides tailored and specific recommendations on how a multi-family (apartment and condominium) property or a business can set-up, maintain and expand their recycling program in compliance with the regulation. In instances where these techniques do not bring about compliance by a multi-family property or business, DSWS has the authority, ability and responsibility to use stronger means of enforcement to bring about compliance. Again, there is a progression of methods used, beginning with verbal warnings, issuance of notices of violation, and citations (which include levying of fines).

4.6 SYSTEM APPROACH TO GREENHOUSE AND OZONE-RELATED EMISSIONS

Montgomery County is dedicated to the goal of providing healthy and sustainable communities, and solid waste management plays a part.

4.6.1 Greenhouse Gas (GHG) Emissions

A scientific consensus has arisen that carbon dioxide (CO_2) and other greenhouse gases (GHG) released into the atmosphere will have a profound effect on the Earth's climate.

Current Conditions and Constraints: In order to assist local jurisdictions in evaluating the GHG effects of its solid waste management system decisions, the USEPA has developed its Waste Reduction Model ("WARM"). One constraint on the task of evaluating GHG effects is that the computer models and protocols available for complex functions such as waste management are in a state of flux. For example, the current model WARM model is in its 13th revision.

Needs Assessment and Plan Direction: Montgomery County's solid waste management system is comprised of a great variety of inter-related activities. A system-wide GHG emission inventory of Montgomery County solid waste management will need to account specifically for net emissions from: waste collection activities, the intra-facility vehicular transportation (e.g., rail and truck hauling), and other emissions intrinsic to the scope of Montgomery County's integrated solid waste management. The available, but evolving, USEPA "WARM" model can aid in assessing any significant net GHG impacts of future changes in the solid waste management system. Special efforts may be needed to gather data related to private sector waste collection.

4.6.2 Ozone-Related Emissions

Montgomery County is located in a non-attainment area with respect to National Ambient Air Quality Standards (e.g., for ground level ozone). As has been noted, the County's solid waste management system is comprised of many and various interrelated components. Collection trucks, intra-facility transfer trucks and trains, facility processes, equipment and intra-facility rolling stock, etc. — all contribute to ozone-related emissions (e.g., nitrogen oxides and volatile organic carbon). Reducing these emissions can contribute toward attaining a healthier community.

Current Conditions and Constraints: Any combustion process produces nitrogen oxides (NOx). This includes all vehicles with internal combustion engines and any power generation based on combustion. In March of 2009, as part of a capital improvement program carried out at the County's RRF, NOx emissions from that facility were reduced by approximately 50 percent—the equivalent of removing about 70,000 cars from the road. As noted above, the County's solid waste management system is comprised of many and various interrelated components. Many other components involve combustion, with attendant NOx emissions, and also some significant sources of volatile organic compound (VOC) emissions. During 2012, the County completed a total

change out of its contract trash and recyclable materials collection vehicle fleet to Compressed Natural Gas (CNG), resulting in further NOx, VOC and other emissions.

Needs Assessment and Plan Direction: In order to identify additional opportunities to assist with ozone-related emission reductions, the County should complete development of a solid waste system-wide emission generation inventory tool, to be used to aid in evaluating impacts of future changes in the solid waste management system and public outreach.