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10 Year Solid Waste Management Plan for 2013-2023

(AS AMENDED BY CITY COUNCIL RESOLUTION 15-_____)

CITY OF BALTIMORE

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BUREAU OF SOLID WASTE

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Executive Summary

Baltimore City's Ten Year Solid Waste Management Plan provides citizens with information on the City's solid waste program, infrastructure, recent accomplishments and future solid waste management plans and goals.

In broad terms, the City's solid waste management goals break down into three areas: maintaining and enhancing an efficient and user-friendly solid waste management program, continually improving the cleanliness of Baltimore City, and advancing efforts in waste reduction and recycling.

The people most responsible for achieving these goals are the staff of the Department of Public Works Bureau of Solid Waste. The Bureau has four divisions:



Baltimore City Skyline

- **Environmental and Routine Services Division** collects mixed refuse and recycling from residences; operates the Quarantine Road Landfill and the Northwest Transfer Station; operates the citizen convenience centers and services corner baskets daily; and conducts the mechanical street sweeping operation.
- **Special Services Division** collects mixed refuse and recyclables from the downtown sector and condominiums, public buildings, some businesses, and markets; cleans the City's waterways; manages the bulk trash operation; provides graffiti removal; maintains city streets, footways, and alleys; oversees special events collections.
- **Property Management Division** provides cleaning and boarding of vacant properties throughout the city; cleans and mows unsightly yards and lots; helps with the maintenance of city alleys and streets; and leads the City's rat eradication effort.
- **Office of Recycling** oversees the City's recycling program; promotes and markets the program to maximize residential and commercial participation; evaluates outreach programs; monitors recycling markets and trends.

The City's solid waste program operates under a host of federal, state, and local laws and regulations designed to protect public health and the environment. This Plan presents these laws and regulations and speaks to the impact they have on the City's program.

The Plan strives to give a clear picture of the current state of Baltimore's solid waste program. To this end, discussions of zoning laws, current and projected population figures, and current and projected waste generation figures are included. The Plan also presents information on how much waste enters and leaves the City and each publically and privately held solid waste facility.

2 10-Year Solid Waste Management Plan

In the period covered by the last Ten Year Plan, the biggest change to the City's solid waste management program was the move to single stream recycling and the One PLUS ONE collection system. These initiatives are discussed in detail, as are other efforts to improve the City's recycling rates. The Plan assesses the overall solid waste management program and then proposes a plan of action for the next ten years to achieve the City's goals.

Baltimore City is well-prepared for the next ten years of solid waste management. The Bureau of Solid Waste has secured a favorable contract with the Baltimore Refuse to Energy Systems Company which extends through 2021. The City's landfill capacity will last at least through 2026 with the possibility of extending the landfill's life to 2050. The City will use the information compiled in this Plan to chart its course in the years to come.

Introduction

Statement of Purpose

The intent of this Ten-Year Solid Waste Management Plan is to provide an accurate description of the City’s solid waste management activities to the public and to comply with Maryland regulations. The current plan is for the planning period 2013-2023 and is an update to the plan that was adopted by the Mayor and City Council in July 2002. This update has been prepared in accordance with current state planning regulations (Code of Maryland Regulations, Title 26, Subtitle 03, Chapter 03, or COMAR 26.03.03) which requires the Plan to address waste management and recycling for a period of at least 10 years.

Key issues addressed by this Plan update include reducing waste, promoting sustainable solid waste operations, and ensuring the disposal system continues to serve the City’s best interests.

This Plan provides the citizens of Baltimore with information on the City’s current and future solid waste management system. It also outlines ways in which the City can continue to successfully manage and reduce waste by meeting solid waste management goals.

Solid Waste Management Goals

- Provide citizens with waste disposal capacity, waste collection services, and waste reduction opportunities;
- Increase the efficiency and cost effectiveness of the solid waste program;
- Educate the public on recycling and maximize the number and types of materials that can be recycled;
- Formulate and achieve new local waste reduction goals;
- Minimize improper waste disposal and littering;
- Protect public health and the environment; and
- Promote the purchasing of products made from recycled materials.

Plan Organization

The Ten-Year Solid Waste Management Plan is divided into five chapters, the content of which is dictated by COMAR 26.03.03.03:

- Chapter 1** “Goals and Regulatory Setting,” the legal and institutional framework for our waste management system, including City goals and objectives;
- Chapter 2** “Population, Zoning, and Land Use Plans,” the demographic and land use information of Baltimore City;
- Chapter 3** “Waste Generation, Collection, and Disposal,” the waste generation data, estimates for waste generation and characterization, and information on current waste management facilities in the City;
- Chapter 4** “Assessment,” the evaluation of the current waste management system and its future potential; and
- Chapter 5** “Plan of Action,” the means for the City to achieve its solid waste management goals.

Plan Approval Process

This Ten-Year Solid Waste Management Plan was prepared by the Bureau of Solid Waste, a unit of the Baltimore City Department of Public Works. Within the Department of Public Works, the Bureau of Water and Waste Water was asked to provide data and review the information contained in the plan. Other entities

4 10-Year Solid Waste Management Plan

contributing to the Plan were Baltimore City Department of Planning, Northeast Maryland Waste Disposal Authority, and neighboring counties. A draft version of the plan was submitted to Maryland Department of Environment for preliminary review and comment prior to developing the final plan, which was later submitted to the Baltimore City Council. A series of public meetings and hearings were held, in addition to City Council review. Final review was completed after receiving comments during the approval process for the 2013-2023 plan. After incorporating plan comments from all stakeholders, the Mayor and City Council [approved] ADOPTED the final plan on OCTOBER 30, 2014, [and] WITH AMENDMENTS ADOPTED ON [The approval resolution is] THE ADOPTING AND AMENDATORY COUNCIL RESOLUTIONS ARE included in Appendix [E] G. THE MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVAL LETTER IS INCLUDED ON THE FOLLOWING PAGE.

[Certification]

[This Ten-Year Solid Waste Management Plan (2013-2023) is certified by _____ to be in compliance with the Code of Maryland Regulations Title 26, Subtitle 03, Chapter 03. The Planning Commission's recommendation to the City Council is included in Appendix E.]

{PLACEHOLDER PAGE FOR MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVAL LETTER}

1.0 Goals and Regulatory Settings

As required by State regulations for the development of comprehensive solid waste management plans, Chapter 1 discusses Baltimore City's goals regarding solid waste management; the structure of the City's government as it relates to solid waste management; and state, federal, and local laws and regulations which effect the planning, establishment, and operation of solid waste disposal systems by the City. These subjects are addressed in Sections 1.1, 1.2, and 1.3.

1.1 GOALS REGARDING SOLID WASTE MANAGEMENT

Since 1872, Baltimore City has provided solid waste collection and disposal services for its citizens to safeguard public health. While waste that once was collected in horse-drawn carts is now collected in trash-compacting motor vehicles, the original purpose of protecting public health remains.

Effective collection and disposal of solid waste is critical to public health, especially in high-density urban areas. Efficiently using the City's limited financial resources is crucial to meeting sanitation needs. Therefore, the City's primary solid waste management goal is to cost effectively provide and facilitate proper sanitation, including the collection and disposal of wastes generated within the City.

Materials collected and disposed of or recycled in the City consist mainly of wastes generated at single-family residences and at condominiums under contract with the City. While the City collects from some multi-family residences and commercial and industrial establishments, private contractors typically provide collection services to these customers.

The City believes it can collect and dispose of residential solid waste most effectively and efficiently through an integrated waste management system. Integrated waste management utilizes source reduction, recycling, and waste to energy technology, along with the traditional use of landfills in a comprehensive waste management strategy.

Over the next ten years, the City seeks to achieve the following goals:

- Provide citizens with waste disposal capacity, waste collection services, and waste reduction opportunities;
- Increase the efficiency and cost effectiveness of the solid waste program;
- Educate the public on recycling and maximize the number and types of materials that can be recycled;
- Formulate and achieve new local waste reduction goals;
- Minimize improper waste disposal and littering;
- Protect public health and the environment; and
- Promote the purchasing of products made from recycled materials.

Recycling issues are discussed in greater detail in the Baltimore Regional Recycling Plan. This document is incorporated by reference into this comprehensive Solid Waste Management Plan.

1.2 CITY GOVERNMENT STRUCTURE

In the City of Baltimore, the Department of Public Works (DPW) is the primary agency responsible for planning and implementing solid waste management programs. This responsibility is assigned to the Bureau of Solid Waste. Figures 1-1, and 1-2 represent the organizational charts for DPW, and the Bureau of Solid Waste, respectively. The organization that the Bureau of Solid Waste uses for the Environmental and Routine Services Division, Property Management Division, Recycling Office and the Special Services Division are shown in 1-3, 1-4, 1-5 and 1-6 respectively.

The Environmental and Routine Services Division collects mixed refuse and recycling from residences; manages the Pitch-In Program and the regular roll-off container operation; provides engineering support for the Capital Improvement Program and trash collections routing; produces the Ten-Year Solid Waste Management Plan; procures all pertinent federal, state, and local permits; produces all annual reports; operates the Quarantine Road Landfill and the Northwest Transfer Station; maintains all closed municipal landfills; provides annual reports regarding the City's recycling efforts; collects mixed refuse from residential properties; operates the citizen convenience centers and services corner baskets daily; conducts the mechanical street sweeping operation.

The Special Services Division collects mixed refuse and recyclables from the downtown sector; collects mixed refuse and recyclables from condominiums, public buildings, some businesses, and markets; cleans the inner harbor waterways; manages the bulk trash operation; provides graffiti removal; maintains city streets, footways, and alleys; oversees special events collections.

The Property Management Division provides cleaning and boarding of vacant properties throughout the city; cleans and mows unsightly yards and lots; helps with the maintenance of city alleys and streets; and leads the City's rat eradication effort.

The Office of Recycling oversees the City's recycling program; promotes and markets the program to maximize residential and commercial participation. The Office administers and manages recycling contracts; reviews and recommends acceptance of vendor proposals; evaluates outreach programs; monitors recycling markets and trends. The Office of Recycling also represents the City at local, regional, and governmental recycling meetings and workshops.

Other Bureaus and Divisions within DPW provide technical expertise and assistance for solid waste programs. The City's Health Department, in conjunction with the Maryland Department of the Environment (MDE), monitors the City's solid waste management system and periodically inspects City owned solid waste facilities to ensure that the collection, handling, and disposal of solid waste does not become a public health or environmental hazard.

Figure 1-1
Department of Public Works Structure

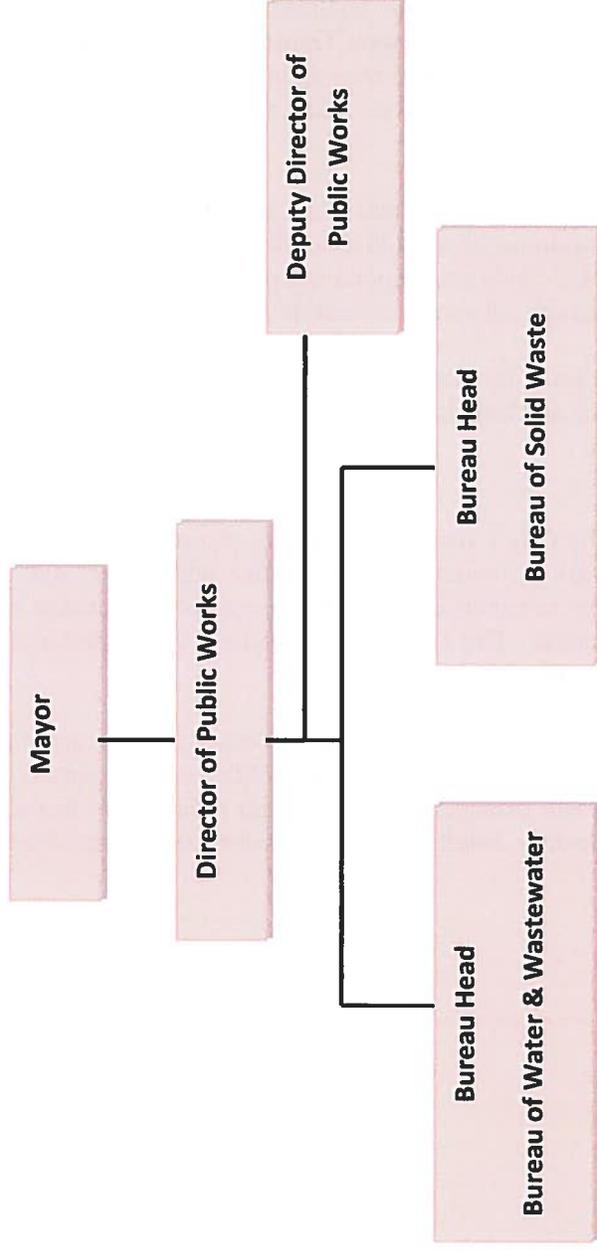


Figure 1-2
Bureau of Solid Waste Structure

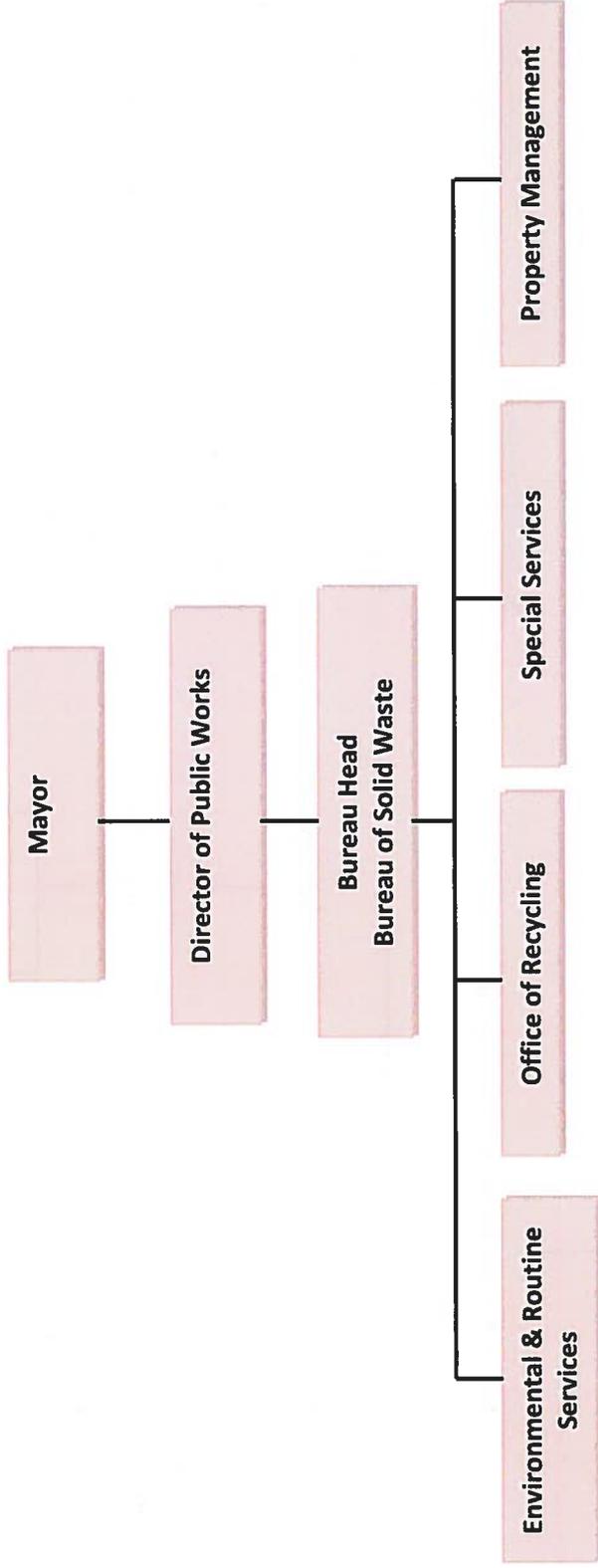


Figure 1-3
Environmental and Routine Services Division

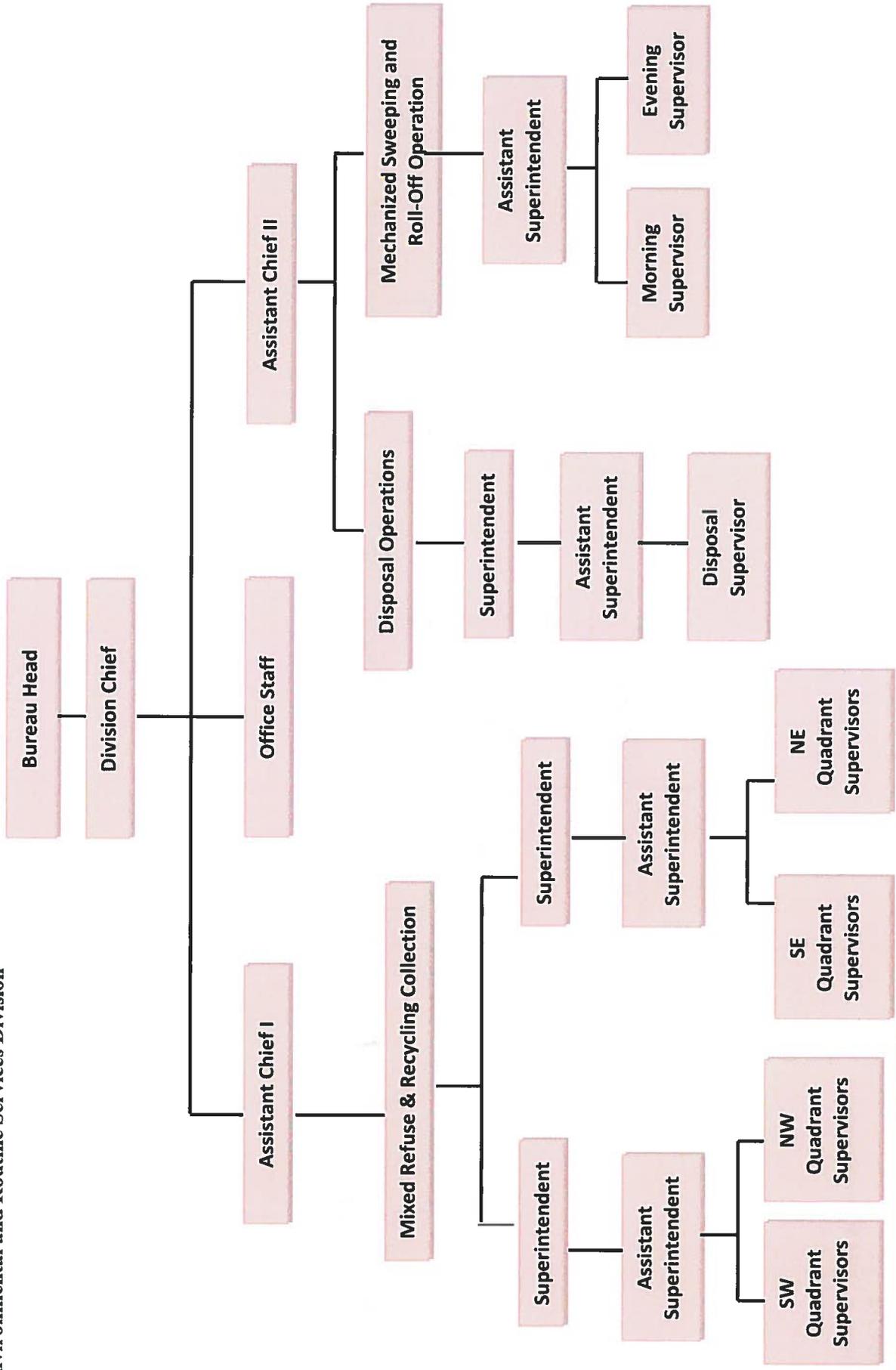
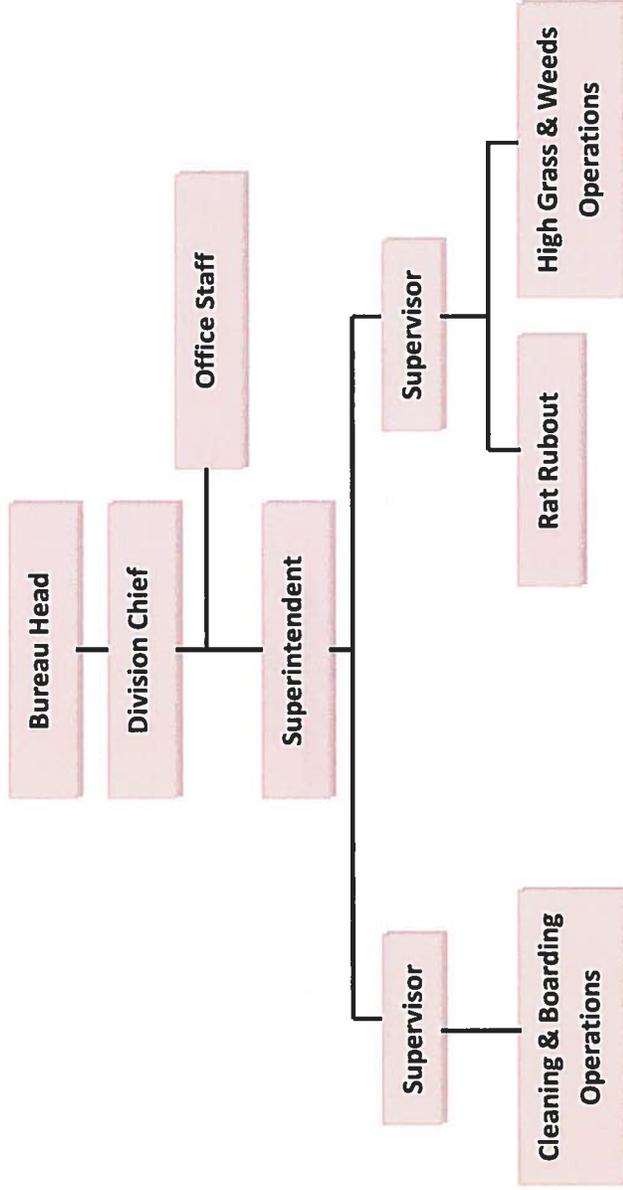
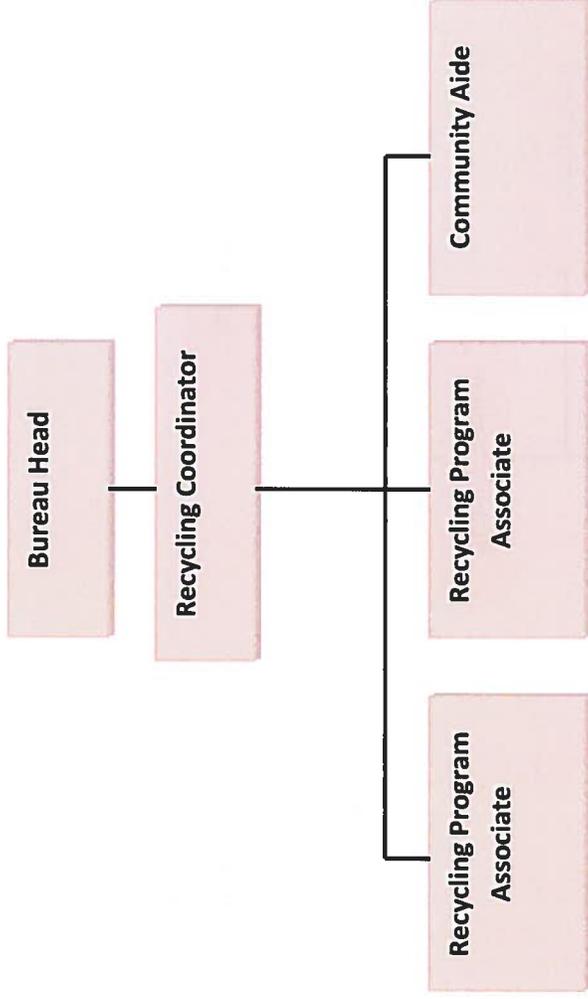


Figure 1-4
Property Management Division

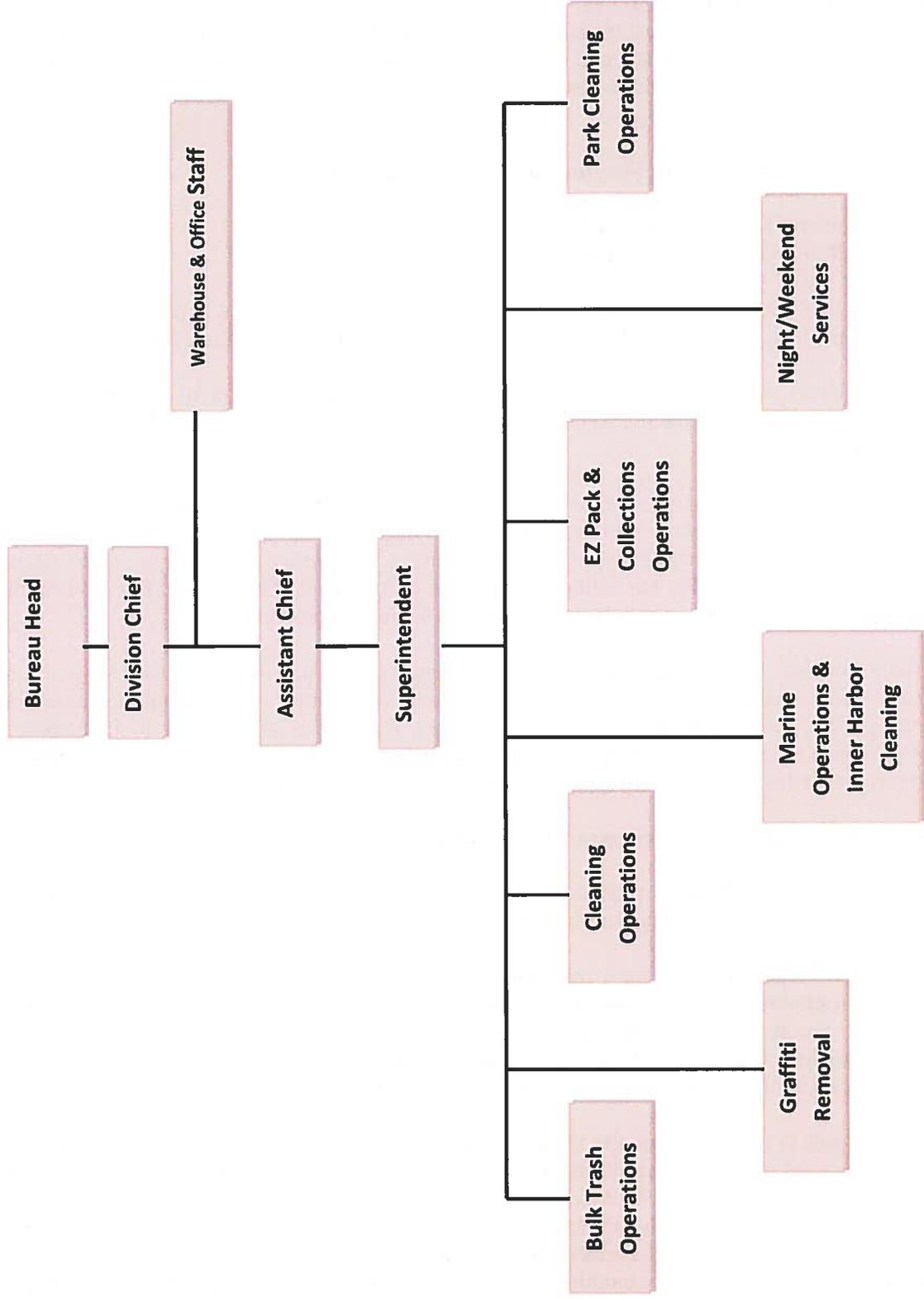


**Figure 1-5
Office of Recycling**



10-Year Solid Waste Management Plan

Figure 1-6
Special Services Division



1.3 LAWS AND REGULATIONS

Solid waste planning is a local responsibility, but is governed by federal and state laws that regulate local practices to protect public health and welfare. The major federal, state, and city laws and regulations related to solid waste management are listed below. The implications of these laws and regulations are discussed throughout this Plan.

1.3.1 Laws and Regulations Focusing on Municipal Solid Waste

1.3.1.1 Federal Laws and Regulations

Federal Resource Conservation and Recovery Act

(42 U.S.C. 6901 et seq.)

In 1976, the Federal Resource Conservation and Recovery Act (RCRA) was passed to improve solid waste disposal methods. It was amended in 1984 by the Hazardous and Solid Waste Amendments.

An expressed objective of RCRA is to “provide for the promulgation of guidelines for solid waste, collection, transport, separation, recovery, and disposal practices and systems.” RCRA is divided into nine subtitles, A through I.

Under Subtitle C, hazardous waste is regulated through standards for generators, transporters, owners, and operators of hazardous waste treatment, storage, and disposal facilities, and for the management of specific hazardous wastes and management facilities. Subtitle C established a “cradle to grave” hazardous waste management system. EPA has authorized the State of Maryland, through the MDE, to administer a State hazardous waste program, which generally parallels the federal program.

Under Subtitle D, municipal solid waste is regulated through technical standards for solid waste management facilities and a program under which states may develop and implement solid waste management plans. Subtitle F of RCRA requires the federal government to participate actively in procurement programs to foster the use of recycled materials. The role of EPA in the Subtitle F program is to prepare guidelines for procuring products made from recovered materials.

Federal Municipal Waste Management Regulations

(40 CFR Part 258)

On October 9, 1991, EPA promulgated new federal requirements for construction and operation of municipal solid waste landfills in accordance with Subtitle D of RCRA.

The federal regulations set forth minimum criteria for municipal solid waste landfills which include: location restrictions, operating requirements, design criteria, groundwater monitoring and corrective action protocol, closure and post-closure care, and financial assurance requirements. New federal regulations require random inspections of incoming loads at landfills and training of all relevant personnel. The regulations also impose an extensive record keeping protocol.

With respect to air emissions, the federal regulations require quarterly monitoring of methane levels at municipal solid waste landfills. Furthermore, the federal regulations prohibit violations of a Clean Air Act State Implementation Plan. In March 1996, EPA promulgated a regulation governing emissions from municipal solid waste landfills, which emit more than 50 mega grams of volatile organic compounds. EPA also established a New Source Performance Standard for new municipal solid waste landfills, which include those that began construction, modification, reconstruction, or began accepting waste after May 30, 1991. The New Source Performance Standard requires the owner or operator of a municipal solid waste landfill having a design capacity less than 2.5 million mega grams to submit an initial design capacity report. Larger facilities must submit a design plan for a gas collection control system.

With respect to closure, the federal regulations dictate that closure must begin within 30 days of the last deposit and must be completed within 180 days. Generally, post-closure groundwater, gas, and leachate monitoring must be performed for 30 years. Subtitle D also imposes substantial financial assurance requirements that will assure the ability to pay for closure, post-closure, and corrective action.

The effective date of the regulations was October 9, 1993, except for financial assurance requirements (effective October 9, 1994) and groundwater monitoring requirements (phased in beginning October 9, 1994). Facilities that stop receiving waste prior to the effective date are exempt from the federal rule except for the final cover requirement. Facilities that receive waste after the effective date must comply with all requirements of the federal rule.

1.3.1.2 State Laws and Regulations

State Laws Governing the Construction and Operation of Solid Waste Acceptance Facilities Generally (Environment Article of the Annotated Code of Maryland §9-101 through §9-229)

Subtitle 2, Part II of the Environment Article, establishes permit requirements to construct and operate refuse disposal systems (sanitary, rubble, and industrial landfills; transfer stations; solid waste acceptance facilities; solid waste processing facilities; and incinerators) as part of the State's overall power to regulate water supply, sewerage facilities, and refuse disposal systems. It sets forth requirements for public hearings for waste disposal facilities; landfill permit provisions (issuance, denial, revocation, term); security requirements for landfills, incinerators, and transfer stations; prohibitions on locating and accepting waste; and financial assurance requirements for sanitary landfills.

Under § 9-228, scrap tires may not be stored longer than 90 days, and a Statewide scrap tire recycling system is established. The material from scrap tires is to be recovered and reused; or, if this is impractical, the tires may be incinerated. Scrap tires may not be disposed of in a landfill.

Under §§ 9-1701 and 9-1708, a system for wood waste recycling activities is established. Recycling of tree debris, grass clippings and other natural vegetative matter is regulated under COMAR 26.04.09.

Ten-Year Solid Waste Management Plan Requirements

(Environment Article of the Annotated Code of Maryland § 9-501 through § 9-512, § 9-1703)

These sections of the Annotated Code require Maryland counties and Baltimore City to prepare comprehensive water, sewer, and solid waste plans that describe that jurisdiction's requirements for the next 10 years. The jurisdiction must review these plans at least once every 3 years. In counties with populations greater than 150,000, the plan must include a recycling plan by December 31, 2015 that provides for a reduction through recycling of at least 35 percent of the county's solid waste stream by weight. Full implementation of the recycling plans was required by January 1, 1994. The Baltimore Regional Recycling Plan is incorporated into this Solid Waste Management Plan by reference.

In July 2009, the Maryland Legislature amended § 9-1703. Maryland Counties and Baltimore City are now required to include in their recycling plans a strategy for public schools recycling, which includes the collection, processing, marketing and disposition of all materials. In April 2012 House Bill1 requires all apartment buildings and condominiums that contain more than ten dwelling units to recycle by October 1, 2014. This matter is discussed in Chapter V.

Maryland Solid Waste Management Regulations

(COMAR 26.04.07)

This chapter of COMAR includes permitting requirements, operating procedures, closure requirements, and post-closure monitoring requirements for sanitary, rubble, land clearing debris, and industrial landfills. This chapter also describes permitting and operating procedures for processing facilities, transfer stations, and

incinerators. In addition, this chapter provides guidelines and requirements for construction plans, specifications, and operation procedures for waste acceptance facilities.

Development of County Comprehensive Solid Waste Management Plans

(COMAR 26.03.03)

This chapter of COMAR describes the solid waste plan's required contents, and the proper procedures for revising and amending the plan.

Storage, Collection, Transferring, Hauling, Recycling, and Processing of Scrap Tires

(COMAR 26.04.08)

This section of COMAR establishes a regulatory system for proper management of scrap tires. MDE authorizes scrap tire facilities and haulers by issuing licenses and approvals for facilities. The regulations provide general technical and operational standards for scrap tire facilities including storage procedures, closure procedures, and financial assurances. The system is funded by a recycling fee of \$0.80 for each new tire sold in the State.

Natural Wood Waste Recycling Facilities

(COMAR 26.04.09)

Management of natural wood waste recycling facilities is regulated under this part of COMAR. Permitting requirements for processing facilities are established and general operational requirements and procedures are prescribed.

Rubble Landfill Regulations

(COMAR 26.04.07.13-26.04.07.18) These regulations require liners and leachate collection systems for any new rubble facilities or new cells at existing facilities.

1.3.1.3 City Laws

Sanitation, Article 23, Baltimore City Code Subtitles 1 through 21

Article 23 of the Baltimore City Code deals directly with the collection and disposal of solid waste in the City. It defines in detail the responsibilities of the City and the citizen regarding the handling of solid waste. There are a total of seven subtitles which are summarized below.

- **Subtitle 1: Definitions; General Provisions** - Defines terminology used within the Article.
- **Subtitle 2: Mixed Refuse Handling and Collection**- Specifies that DPW must collect mixed refuse from all dwellings subject to certain quantity limits.
- **Subtitle 4: Receptacles on Collection Days** - Specifies locations in which trash receptacles must be kept and penalties for non-compliance.
- **Subtitle 6: Markets** - Instructs that all trash generated at City Markets must be placed within a designated receptacle.
- **Subtitle 11: Solid Waste Surcharges** – Establishes the authority of the Bureau of Solid Waste to charge surcharges for hauling, permitting, and waste disposal. The subtitle also establishes exemptions to the surcharge rule.
- **Subtitle 16: Recyclable Material and Compostable Yard Waste** - Requires that the Commission on Sustainability develop and implement a comprehensive recycling plan.
- **Subtitle 21: General Penalties**- Provides for the enforcement of Article 23 through citations and criminal penalties.

Health Code of Baltimore City, Title 7

Title 7 of the Health Code deals directly with the handling and transportation of solid waste by private enterprises that choose to do so in the City of Baltimore. Synopses of the more pertinent subtitles in this article are listed below.

- **Subtitle 2: Solid Waste Collection** - Requires the Commissioner of Health to issue permits for private parties engaged in the collection and disposal of solid waste. City collection activities are exempt. These sections also regulate collection methods and times and provide for inspection of vehicles.
- **Subtitle 4: Landfills** - Requires private landfill operators to obtain an operating permit, obtain City approval of engineering plans, and post security against hazardous or unsafe operation. However, the City zoning laws do not permit anyone to operate a sanitary landfill except City government.
- **Subtitle 7: Littering-** Provides a penalty for the disposal of trash in other than a proper receptacle or a manner approved by the City. It provides for the issuance of citations by a police or an enforcement officer.

Mayor, City Council, and Municipal Agencies, Article 1, Baltimore City Code, Subtitle 40

Subtitle 40 establishes an Environmental Control Board to adjudicate civil citations issued for violations of City Code provisions pertaining to sanitation.

1.3.2 Laws and Regulations Governing Special and Hazardous Wastes

1.3.2.1 Federal Laws and Regulations

Federal Comprehensive Environmental Response, Compensation, and Liability Act
(42 U.S.C. 9601 et seq.)

In December 1980, Congress enacted the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), commonly referred to as “Superfund,” and substantially amended it in 1986 by the Superfund Amendments and Reauthorization Act. In contrast to RCRA, which generally regulates current hazardous waste handling and disposal, CERCLA focuses on both short-term and long-term remediation of past contamination. The federal government can use the Superfund trust fund to clean up a property and then sue the responsible parties for reimbursement, or the government may order responsible parties to clean up the site. Maryland has created a parallel State Superfund, the Hazardous Substance Control Fund.

CERCLA identified in its National Priorities List (NPL) two sites in Baltimore as Superfund sites. One site, located at the intersection of Kane and Lombard streets, used to contain nearly 1,200 drums of flammable solids; however, since its cleanup in the mid-1980s, it is now known as the “Super Fun” golf driving range. The other location at the Chemical Metals Industries sites at 2001 and 2103 Annapolis Road has been removed from the NPL since December 1982. It is now used by MDE as an Emergency Response Field Office.

Federal Hazardous Waste Regulations
(40 CFR Parts 264 and 265)

Regulations pursuant to Subtitle C of RCRA established the hazardous waste management system, including identifying and listing hazardous wastes; established standards for generators and transporters, and for the management of hazardous wastes for the owners and operators of hazardous waste treatment, storage, and disposal facilities. The regulations require stringent administrative and record keeping practices by permitted facilities.

1.3.2.2 State Laws and Regulations

Hazardous Materials and Hazardous Substances

(Environment Article of the Annotated Code of Maryland §§ 7-101 through 7-516)

This part of the Annotated Code defines controlled hazardous substances, establishes requirements for facility permits, imposes obligations on transporters, and provides for appropriate enforcement actions.

Maryland Used Oil Recycling

(Natural Resources Article of the Annotated Code of Maryland § 8-1401)

In this subtitle, the Maryland Legislature expressed its desire that used oil be collected and recycled to the maximum extent possible. The Department of Natural Resources is required to develop a public education program and to designate used oil collection facilities. The Act prohibits disposal of used oil into sewers, drainage systems, natural waters, by incineration, or as refuse.

Maryland Hazardous Waste Regulations

(COMAR 26.13)

These rules concern the disposal of Controlled Hazardous Substances. Included are definitions of what is considered to be hazardous waste; standards applicable to generators of hazardous waste; and standards for owners and operator of hazardous waste treatment, storage, and disposal facilities.

Management of Special Medical Wastes

(COMAR 26.13.11 through 26.13.13)

The definition of special medical wastes is set forth and standards for generators are established including a manifest system to track the transportation of special medical wastes. Standards for transport vehicles are established. Special medical wastes include anatomical material and blood-soiled articles.

Voluntary Cleanup Program

(Environment Article of the Annotated Code of Maryland §§ 7-501 through 7-516)

One problem arising from CERCLA was the extreme difficulty involved with the redevelopment of "Brownfields". Brownfields are abandoned or underutilized properties where redevelopment is complicated by real or perceived environmental contamination. Recognizing this problem, EPA devised the **Brownfields Economic Redevelopment Initiative**. This program is designed to empower states to assess, safely cleanup, and vitally reuse brownfields. From this initiative, the State of Maryland established its Voluntary Cleanup Program which provides a streamlined remediation approval process, changes the liability scheme for prospective developers, and clarifies liability for all participants in the program.

1.3.3 Laws and Regulations Controlling Air Emissions

1.3.3.1 Federal Laws and Regulations

Federal Clean Air Act

(42 U.S.C. 7401 et seq.)

The Clean Air Act Amendments of 1970 passed by Congress established the current framework for federal and State enforcement of air pollution. The Act authorizes the federal government, through the EPA, to set standards for the control of air pollution and directs the State toward achievement of these standards.

The regulation of air quality is managed through a combination of ambient air quality standards, emission standards, State planning processes, and construction and operating permits. Existing sources are subject to a different regulatory scheme than are new or modified sources.

EPA has developed National Ambient Air Quality Standards, which establish maximum allowable levels of certain pollutants, regardless of source. The primary standard is the maximum amount of pollutant that can exist in the air before public health would be endangered. An area that is in compliance with the ambient air

quality standard is called an attainment area. An area which exceeds the standard is a non-attainment area. In 1997, EPA issued a "SIP2 call" to 22 States and the District of Columbia, directing a revision of requirements. The rules were adopted in 1998. Baltimore City did not achieve attainment; however, in 2005 the 1 hour ozone standards were revoked by the EPA.^{1,2}

With respect to emission standards, the 1970 Clean Air Act Amendments established a special program entitled National Emission Standards for Hazardous Air Pollutants for the regulation of certain hazardous air pollutants. These standards are health based. Title III of the 1990 Clean Air Act Amendments established a technology based standard for the control of hazardous air pollutants, whereby sources would be required to adopt the "maximum allowable control technology" to reduce certain toxic emissions.

Federal New Source Performance Standards

These standards impose national emission standards for newly constructed or modified industrial facilities, by imposing limitations based on the pollution control technology available to each particular category of new sources.

New Source Review

EPA has published guidance for new source review, whereby requirements were promulgated to ensure that major new sources do not adversely affect states' attempts to achieve compliance with the national ambient standards.

Prevention of Significant Deterioration

This program was designed to ensure that air quality would not significantly deteriorate in areas where the ambient standards are being met, primarily controlling new sources of pollution.

1.3.3.2 State Laws and Regulations

State Ambient Air Quality Control Laws

(Environment Article of the Annotated Code of Maryland §§ 2-101 through 2-614)

This title of the State Code authorizes the regulation for the construction, modification, operation, and use of sources and controls over emissions. It authorizes the adoption of rules and regulations for air pollution control including testing, monitoring, recordkeeping, and reporting. It allows for the identification of air quality control areas and mandates that MDE set emission and ambient air quality standards for air quality control areas. Training for municipal solid waste incinerator operators is required under these provisions of the law.

Control of Incinerators

(COMAR 26.11.08)

Air emissions and operation of incinerators, which thermally destruct municipal solid waste, industrial waste, special medical waste, and sewage sludge, are regulated by this section of COMAR. The regulations require continuous monitoring of air emissions. Incinerators must also comply with general emission standards in COMAR 26.11.06.01 – 12 and 40 CPR § 60.

1.3.4 Laws and Regulations Controlling Water Pollution

1.3.4.1 Federal Laws and Regulations

Federal Clean Water Act

(33 U.S.C. 1251 et seq.)

The Clean Water Act is the framework for federal and State enforcement of water pollution control laws. The Clean Water Act's objective is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The Clean Water Act includes: water quality standards based on a waterway's designated use, a permit program for the discharge of wastewater directly into waterways, minimum effluent

standards based on the capabilities and costs of pollution control technology for each industry, pre-treatment standards for industries that discharge into publicly-owned treatment works, the handling of spills of oil and hazardous wastes, and minimization of non-point source pollution. All states are required by the Clean Water Act to consider the development of Total Maximum Daily Loads, which formulate procedures for setting upper limits on pollutants through permit discharge limits.

Every 2 years, MDE will submit a prioritized list of waterways that currently do not meet water quality standards or will not meet the standards after all technology-based controls are in place. Modeling is then used to establish the maximum load of quality standards. Once this maximum pollutant loading is defined, it must be allocated between point and non-point sources, accounting for the margin of safety and future growth.

The Clean Water Act requires solid waste disposal facilities discharging wastewater to: (1) obtain a National Pollution Discharge Elimination System (NPDES) permit to discharge into surface waters, using best available technology to control pollution; or (2) meet pre-treatment standards and discharge to a sewer system. Furthermore, stormwater management plans are required and facilities sited in wetlands must obtain a Section 404 permit. The amendments also require an increased EPA effort to establish regulations for permits for stormwater discharge associated with landfills and other treatment, storage, and disposal facilities for municipal waste.

National Pollutant Discharge Elimination System Program

(40 CFR Parts 122 through 125)

The NPDES program was created under §402 of the Clean Water Act to implement regulations, limitations, and standards promulgated for point source direct discharges, including certain stormwater discharges. It is also responsible for issuing, monitoring, and enforcing permits for direct wastewater discharges to waters of the State or the United States. NPDES permits contain applicable effluent standards (i.e., technology-based and/or water quality-based), monitoring requirements, and standard and special conditions for discharge. Part 123 describes how states may obtain approval to operate a permit program in lieu of the federal program. Maryland's permit program, administered by MDE, ordinarily operates in lieu of the federal program.

NPDES permits are now required for stormwater discharges associated with industrial activity and discharges from municipal separate storm sewer systems under 40 CFR 122.26. Among those entities considered to be engaging in industrial activity are landfills that receive or have received any industrial wastes, and facilities involved in the recycling of materials. These regulations are applicable to State NPDES programs, including Maryland's.

National Pre-Treatment Program

(40 CFR Part 403)

The National Pre-Treatment Program authorized under the Clean Water Act controls the discharge of pollutants to municipal wastewater treatment facilities. The goal of the pre-treatment program is to protect municipal wastewater treatment plants and the environment from damage that may occur when hazardous, toxic, or other non-domestic wastes are discharged into a sewer system. This objective is achieved through pre-treatment of wastewater discharged by industrial users such as incinerators. The discharge standards specify quantities or concentrations of pollutants or pollutant properties that are permitted to be discharged to the municipal wastewater collection system.

Safe Drinking Water Act

(42 U.S.C 300f et seq.)

The Safe Drinking Water Act requires EPA to establish regulations to protect human health from contaminants in drinking water. The legislation authorizes national drinking water standards and a joint

federal-State system for assuring compliance with those standards. Maximum contaminant levels and treatment techniques ensure the quality of public drinking water supplies. The 1986 amendments to the Safe Drinking Water Act established a wellhead protection program that the states may use to protect public drinking wells and springs from contaminants, including contaminants from landfills. The 1996 amendments overhauled the water standard scheme; changed enforcement mechanisms; appropriated \$1 billion for State loan funds; required EPA to develop arsenic, sulfate, and radon standards; implemented public right-to-know requirements; imposed new monitoring requirements; and budgeted federal money for source water protection and the construction, rehabilitation, and improvement of water supply systems.

1.3.4.2 State Laws and Regulations

Maryland Water Pollution Control Regulations (COMAR 26.08)

These regulations contain:

1. Water quality standards that specify the maximum permissible concentrations of pollutants in water, the minimum permissible concentrations of dissolved oxygen and other desirable matter in the water, and the temperature range for the water;
2. Effluent standards that specify the maximum loading or concentrations and the physical, thermal, chemical, biological, and radioactive properties of wastes that may be discharged into the waters of the State;
3. Procedures for water pollution incidents or emergencies that constitute an acute danger to health or the environment; and
4. Provisions for equipment and procedures for monitoring pollutants, collecting samples, and logging and reporting of monitoring results.

As part of this regulatory scheme, these regulations require a discharge permit for discharges of wastes, wastewater, and stormwater into the waters of the State. Sanitary landfills and incinerators receive special attention to determine whether they contribute pollution to stormwater runoff.

1.3.4.3 Septage Management

Article 25 of the Baltimore City Code provides the mechanism for the City's Waste Hauler/Scavenger Program. Under the program, any company wishing to dispose of septage to the City wastewater system must first apply for and obtain a Scavenger Vehicle Permit Tag for each vehicle, and pay an annual permit and tag fee.

2.0 Population, Zoning, and Land Use Plans

An understanding of a subdivision's current population and potential for growth is central to solid waste management. Chapter 2 conforms to State regulations on comprehensive solid waste management plans by addressing Baltimore City's present and projected population, federal facilities within the City, and zoning codes pertinent to solid waste management. These subjects are addressed in Sections 2.1, 2.2, 2.3, and 2.4 of this Plan, respectively.

2.1 POPULATION

According to the U.S. Census Bureau, Baltimore's 2011 population was 619,493. In 2011 that number decreased to 619,493, though the projected total population was 644,850. Maryland Department of Planning, projections and data center, reported a population increase 0 between July, 2011 to March, 2012.

The Maryland Department of Planning released population projections in March 2012 that stated an annual increase in the population of Baltimore City by 4.6 percent in 2010, an estimated annual decrease of 0.2 percent in 2011, and a projected annual increase of 0.46 and 1.9 percent in 2015 and 2020 respectively. Using the data supplied in these projections and the 2011 estimate, the populations shown in Table 2-1 for 2015 and 2023 were calculated.

Similarly, the Maryland Department of Planning developed household population projections over the period covered by this Plan. The household population for 2011 was 594,571 while the projected household populations for 2015 and 2023 are 597,974, and 639,840 respectively. The data supporting the household projections in Table 2-1 was obtained from

http://www.mdp.state.md.us/msdc/popproj/Population_March27_2012.pdf.

2.2 FEDERAL FACILITIES IN THE CITY

Baltimore City is the largest and only incorporated municipality in the State that is also a designated subdivision.

There are eight major federal facilities located in the City of Baltimore:

- G.H. Fallon Federal Building.

Table 2-1

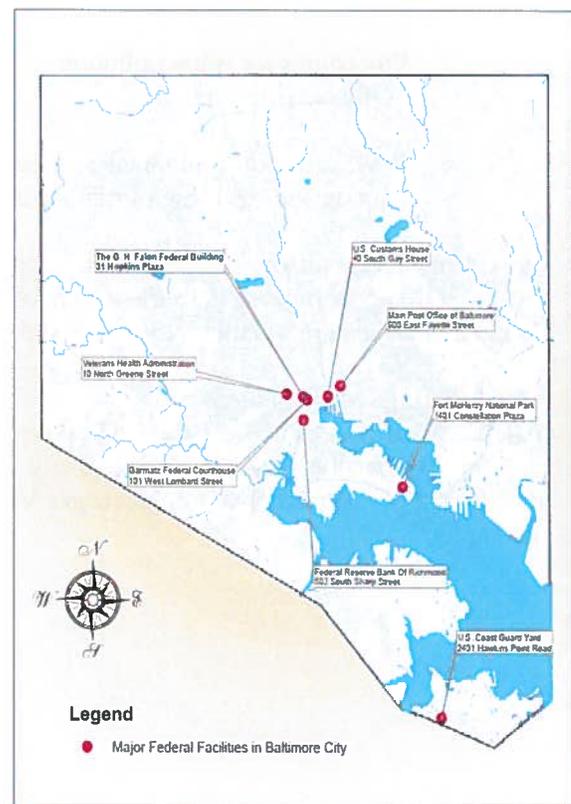
Baltimore City Population Projections

Year	Total Population	Household Population	Group Quarters Population
2011	619,493	594,571	24,922
2015	623,800	597,974	25,826
2019	631,080	604,586	26,494
2023	639,840	609,547	30,293

* Based on Maryland Office of Planning Census

data and March 2012 quinquennial projections for Baltimore City

Figure 2-1



- Garmatz Federal Courthouse.
- Federal Reserve Bank of Richmond
- US Veterans Medical Center.
- US Post Office- Baltimore City Main.
- U.S. Customs House.
- U.S. Coast Guard Yard.
- Fort McHenry National Park.³

These facilities are shown on the map in Figure 2-1. Other federal agencies with facilities within Baltimore include the Departments of Treasury, Labor, and Transportation; U.S. Army Corps of Engineers; Veterans Administration; General Services Administration; Office of Personnel Management; and the Federal District and Bankruptcy Courts. Private contractors collect solid waste generated at all federal facilities in Baltimore City.

2.3 ZONING REQUIREMENTS

This plan shall not be used to create or enforce local land use and zoning requirements. Baltimore City zoning regulations dictate the permitted location of solid waste management facilities, including incinerators, landfills, recycling collection stations, and materials recovery facilities. Typically, solid waste facilities are confined to industrial and commercial districts and designated as a conditional use. Each proposed facility site must be considered individually either by the City's Board of Municipal and Zoning Appeals or City Council.

While a draft zoning code rewrite was completed in Fall 2010, the proposed changes do not impact existing solid waste management land uses.

A summary of the zoning for solid waste facilities under the current zoning code can be found in Table 2-2. As indicated in Table 2-2, commercial or municipal incinerators built after July 1, 1987 are conditionally allowed only in the M3 (heavy industrial) district. A City ordinance is required for approval of a new commercial or municipal incinerator.

In order to operate in Baltimore, solid waste facilities must complete the following:

- Obtain zoning approval;
- Be permitted by MDE; and
- Be amended into the Ten-Year Solid Waste Management Plan via legislation passed by the Baltimore City Council.

Recycling facilities are exempt from these regulations. Recycling collection stations are conditionally allowed in all zones throughout the City. Stations are defined as portable receptacles, usually trailers or roll-offs, for the collection of paper, cans, aluminum scrap, other non-ferrous metal scrap, glass bottles, and plastics. Larger processing centers are conditionally allowed in industrial areas to facilitate recycling.

Materials recovery facilities, where recycling materials, except ferrous metals, can be mechanically processed and packaged for resale, are conditionally allowed in the M2 (general industrial) district and the M3 (heavy industrial) district with Zoning Board approval, and in the B3 (community commercial) district with enactment of a City ordinance. When located in the B3 district, the recycling materials must be stored and processed indoors.

The City's Critical Area is defined as a 1,000-foot wide strip measured adjacent to the mean high tide around the Chesapeake Bay and its tributaries. No solid waste facilities, including recycling facilities, are permitted in the Critical Area. In Baltimore City, the Patapsco River, Gwynns Falls, Jones Falls, and Colgate Creek tributaries contribute to the Critical Area.

The City’s comprehensive zoning regulations also accommodate facilities for managing special categories of solid waste. For example:

- Handling of radioactive waste is conditionally allowed, with Zoning Board approval, in the M2 (general industrial) and M3 (heavy industrial) districts.
- Handling and storage of hazardous materials (as defined in Title 7 of the Environment Article Annotated Code of Maryland) are conditionally allowed, with enactment of a City ordinance, in the M3 (heavy industrial) district. Composting of sewage sludge or yard waste is also an industrial use. These facilities require MDE and City Council approval.
- Dismantling, processing, and storing of scrap metal and discarded automobiles are conditionally allowed, with Zoning Board approval, in the M3 (heavy industrial) district. These uses are distinguished from materials recovery facilities because they require outdoor storage of large items, and include ferrous metal.

The City’s zoning regulations are included in Appendix C.

Solid Waste Management Facility	Permitted Zones	Condition
Incinerators (Commercial or Municipal)	M3	City Ordinance
City Operated Sanitary Landfill Accepting Mixed Refuse	Exempt from Zoning	City Ordinance
Landfill Not Accepting Mixed Refuse	M2, M3	Zoning Board Approval
Recyclable Materials Facilities- All Storage Indoors	B3	City Ordinance
Recyclable Materials Facilities- With Outdoor Storage	M2, M3	Zoning Board Approval
Recycling Collection Stations:		Condition
Separate	B1-5, M1-3	Zoning Board Approval
Accessory to a School, Church, Recreation or Public Facility	R1-10	Zoning Board Approval
<i>*Information drawn from Baltimore City Zoning Code "Table of Uses</i>		

2.4 LAND USE PLAN

Because Baltimore is Maryland’s premier metropolitan area and presents unique land use challenges, the City, in its entirety, is designated as a Priority Funding Area by the State. The revitalization of the City’s neighborhoods and preservation of their unique community character are major policies of the City, as articulated in the City’s Comprehensive Plan. Implemented in 1976 and **MOST RECENTLY** revised on **SEPTEMBER 9, 2009 [as recently as 2009]**, the City’s Comprehensive Plan provides the policy basis for guiding redevelopment and revitalization of the City’s developed neighborhoods. Many other programs and urban renewal plans have been adopted and are *de facto* components of the plan.

3.0 Waste Generation, Collection, and Disposal

This chapter analyzes the solid waste generation, collection, and disposal services for the City of Baltimore. Existing facilities and methods for solid waste disposal in Baltimore are evaluated, and regional facilities are discussed.

This chapter also analyzes state regulations for the development of comprehensive solid waste management plans, describes solid waste generation, import and export of wastes for disposal, solid waste collection systems, and waste acceptance facilities within the City. These subjects are addressed in Sections 3.1, 3.2, 3.3 and 3.4 of this Plan, respectively.

The key characteristics of the existing solid waste management system in Baltimore City are its mixed public/private system and its regional scope. Historically, the City has taken responsibility for collecting and disposing of most residential solid waste. Prior to July 2009, the City collected and disposed of up to 80 gallons per collection day of mixed refuse from each household and small business twice a week. In July 2009 the City implemented a new “One PLUS ONE” system in which the City moved to one weekly trash and one weekly recycling pick-up. Trash limits were decreased to 96 gallons, and recycling was unlimited. The intent was to increase recycling rates by increasing pick-up frequency. Establishments such as apartment complexes and businesses that generate larger amounts of waste arrange for private collection and disposal of their waste.



Baltimore City Trash Collection

The City has not attempted, as some jurisdictions have, to monopolize the solid waste market. Private haulers are allowed to dispose of waste generated in the City at any permitted disposal facility located inside the City limits. This is one element of a regional solid waste management system. A second element allows private haulers to dispose of wastes generated outside the City at waste acceptance facilities located within the City limits, such as the Baltimore Refuse Energy Systems Company (BRESKO) and the Quarantine Road Landfill (QRL). The constraints for importing solid waste into the City (as for exporting wastes out of the City) are the capacities of acceptance facilities and market considerations, including tipping fees and hauling costs. Since BRESKO is privately owned and operated, as are most of the other waste acceptance facilities in the City, they are free to compete in the marketplace to provide waste disposal services in response to demand from their customers.

The private component of the solid waste management system operates regionally and independently of City government. Private companies perform the same basic waste collection and management functions as the government without conflict.

The fact that so much solid waste management is independently and privately handled has implications for the City’s solid waste planning. The ability to quantify or precisely describe this privately managed

solid waste and to determine how all of the solid waste within the City's boundaries is generated is limited to available data.

In an effort to comply with State regulations on comprehensive solid waste planning, this Plan has attempted to include regional considerations for privately collected waste generated within the City's boundaries and solid waste from outside its boundaries disposed of at solid waste facilities within the City.

3.1 WASTE GENERATION

COMAR 26.03.03.03 (D) requires that Chapter 3 contain a table that shows existing and projected annual generation of specified categories of waste within the subdivision. Further, the basis for the data presented in the table must be discussed. COMAR 26.03.03.04 (B) states that projections shall be given for the succeeding ten-year period at intervals of not more than 5 years.

In compliance with these requirements, 2011 data and waste generation projections in Baltimore City for 2015, 2019, and 2023 are presented in Table 3-1.

Annual Waste Generation of Baltimore City
2013-2023

Waste Category	Annual Generation (Tons)			
	2011	2015	2019	2023
Residential (MSW)	123,678	128,700	133,926	139,363
Commercial (MSW)	109,946	114,410	119,056	123,890
Mixed (MSW)	418,840	435,847	453,544	471,959
Industrial (Solids, liquid, etc.)	25,796	26,843	27,933	29,068
Institutional (schools, hospitals etc.)	0	0	0	0
Demolition Debris (C&D)	85,784	89,267	92,892	96,664
Land Clearing	0	0	0	0
Controlled Hazardous Substance (CHS)	0	0	0	0
Dead Animals	60	60	60	60
Bulky or Special Waste	0	0	0	0
Vehicle Tires	758	789	821	854
Wastewater Treatment Plant Sludges	6,770	7,045	7,331	7,629
Wood	32	33	35	36
Asbestos	91	95	99	103
Soil*	1,615,785	0	0	0
Special Medical Waste	9,990	10,396	10,818	11,257
Asphalt	127	132	138	143
Concrete/Brick	8,414	8,756	9,111	9,481
Total MRA & NON MRA Waste	2,406,011	822,312	855,702	890,446
Total MRA & NON MRA Recyclables	456,505	349,812	364,015	378,796
Total Waste Generation*	2,736,251	1,172,124	1,219,717	1,269,242

Residential waste includes all waste generated by residents, commercial waste is waste generated by businesses, and institutional waste is generated by schools, government buildings and hospitals (with the exception of medical waste). For the purpose of this Plan, institutional waste and industrial waste are included with commercial waste. "Bulky or special wastes (automobiles, large appliances, etc.)" refers to waste that can be generated at residences, businesses or institutions.

Most of the solid waste generated from residences, businesses and institutions is referred to as "mixed refuse." Mixed refuse does not require special collection or disposal handling and it can be deposited in trashcans, collected in trash collection vehicles (load packers), and processed by incineration. It consists

largely of paper, cardboard, plastic containers and packaging, glass containers, metal containers, food waste/garbage, and yard waste (grass clippings, leaves, etc.). Much of the mixed refuse stream can be and is recycled.

3.1.1 Residential Waste

The estimates in Table 3-1 were derived from 2011 waste collection data recorded by the City and an estimate of the residential waste collected by private haulers. Per capita generation rates were calculated for City-collected wastes and then used to estimate amounts collected by private haulers. The same generation rates were used to project amounts for 2015, 2019 and 2023, based on population, school enrollment and employment.

Projections are based on the actual amount of mixed refuse collected annually by the City since this amount is the most reliable indicator of waste generation available to the City. Daily records are kept of the amount of materials delivered by City collection crews to the waste acceptance facilities. These records show that 418,840 tons of mixed refuse was collected by City crews in 2011. This section of the plan does not pertain to residential recycling, as it will be addressed in Section 3.3.3.

3.1.2 Commercial Waste

In Baltimore City, commercial waste is collected by private haulers so the City does not have precise information on the tonnages generated but is able to extrapolate approximate numbers from available data. In 2011, 109,946 tons of commercial waste was delivered to Baltimore Refuse Energy Systems Company (BRESKO) for incineration (See Table 3-2). This amount includes commercial waste brought to BRESKO from outside of Baltimore City. The estimated total amounts of commercial waste were generated using per capita generation rates. The per capita rates were also used to estimate how waste generation may vary in the future. The method by which mixed refuse collection data was used to calculate per capita generation rates and project future amounts is presented in Appendix A.

Institutional Waste

The State regulations define hospitals, schools and government buildings as institutions generating “institutional waste.” As explained in Appendix A, school students and government employees data obtained from the Maryland Office of Planning was utilized to prepare the data. For the purpose of this Plan institutional and industrial waste will be included with commercial waste.

Industrial (Non-Hazardous) Wastes

Industrial (non-hazardous) wastes are solids, liquids and sludge generated by manufacturing or industrial processes that are not regulated under Subtitle C of the Federal Resource Conservation and Recovery Act (RCRA). In general, the City does not collect information on the character and quantity of this waste from the generators. Several industries dispose of industrial non-hazardous waste at QRL, and the amounts and types of these wastes are included in the projections.

3.1.3 Land Clearing and Demolition Debris

Land clearing and demolition debris is refuse generated from demolishing buildings, streets and other improvements and clearing of sites to prepare them for new construction, rehabilitation, street improvements or utility installation. In the City, with little undeveloped land, this refuse is primarily inorganic, consisting of concrete, brick, bituminous paving material, lumber, drywall, plaster, roofing material and insulation.

The estimates of debris land clearing and demolition debris generation in Table 3-1 are based on the actual amount of refuse identified as rubble that was accepted in 2011 at the City’s Quarantine Road Landfill. Most of this debris is generated by City operations. Private demolition and construction contractors find it more economical to use private facilities to dispose of any such debris, given the current tipping fee of \$67.50 per ton at QRL (includes \$7.50 per ton surcharge). No information is

available to the City on the total amount of debris handled by the private sector and disposed of beyond the City's boundaries.

There is no foreseeable significant increase in the amount of demolition in the period covered by this plan. The amount of debris disposed of is assumed to remain constant or increase slightly in the next ten years

Materials containing friable asbestos are not permitted to be disposed of at QRL. Any debris containing friable asbestos that is generated in the City must be exported for disposal, since there are no waste acceptance facilities in the City at this time that accepts this material.

3.1.4 Controlled Hazardous Substances

Controlled hazardous substances are those wastes whose disposal is regulated under Subtitle C of the Federal Resource Conservation and Recovery Act (RCRA, see Section 1.3.1.1). Local governments in Maryland have not been granted authority to enforce federal or State regulations on the disposal of hazardous wastes. MDE, however, compiles information on the generators and the amounts of hazardous wastes being handled within Baltimore City limits and reports this information to EPA. MDE has the ability to enforce RCRA.

Each generator/facility is responsible for proper handling and disposal of its hazardous waste. These firms are required to use out-of-state processing plants or emplacement facilities. Though there are several closed hazardous waste landfill cells within Baltimore City, there is no landfill currently accepting hazardous waste within the city limits.⁴

3.1.5 Dead Animals

Since Baltimore City is fully urbanized, most animal carcasses requiring disposal in the City are those of stray or unwanted cats and dogs. The division of Animal Control under Baltimore City's Department of Health is responsible for removing animal carcasses from public property and for removing live animals that are defined as strays under the law. Animal carcasses are currently collected for disposal by private companies under contract with the City (see Section 3.2.5). In 2011, the City collected and sent to incineration approximately 59.75 tons of animal carcasses.

3.1.6 Bulky or Special Wastes

Bulky or special wastes as cited in the State regulations are automobiles and large appliances. The tonnage of automobiles is based on the proportion of motor vehicles registered to owners in the City as opposed to the entire state in 2011 (7.6 percent or 334,668 of 4,735,627 registered in the entire state.). The estimated tonnage of scrapped vehicles is derived by applying the 2011 U.S. vehicle scrap rate of 6.1%⁵ and the average vehicle weight 4,500 lbs⁶ to the number of vehicles registered in Baltimore City. It is estimated that City residents generated 45,933 tons of scrapped vehicles.

The tonnage of appliances is based on the number that is accepted by the Bureau of Solid Waste or deposited at one of the City's drop-off centers. In 2011, 1,348 tons were processed in the City. It is assumed that this will remain relatively constant for the next ten years. The 2011 tonnage of approximately 45,933 tons of scrapped automobiles is combined with the 2011 tonnage of appliances to equal a total bulk tonnage of approximately 47,281 tons.

3.1.7 Vehicle Tires

There was 758 tons of tire waste generated in the City in 2011 This number is largely representative of tires that have been recovered by City forces at drop-off locations and collected by City forces at illegal dumping locations. It is assumed that this tonnage will fluctuate from year to year, but not change significantly over the next ten years.

3.1.8 Treatment Plant Sludge and Septage

Treatment plant sludge is the solids remaining after wastewater and raw drinking water treatment. The estimates presented in Table 3-1 of sludge generation in the City reflect the proportion of the sludge generated at the City's three water filtration and two wastewater treatment plants and the septage accepted.

The Back River Wastewater Treatment Plant (BRWWTP) currently generates approximately 50,000 wet tons of sludge annually. In 2011 the plant generated about 46,500 tons of sludge. Through City contracts, private firms utilize all of the sludge. The Baltimore City Compost Facility in Hawkins Point, a private company, utilizes approximately 30% of the treatment plant's sludge on a dry weight basis for production for horticultural compost. The Baltimore Pelletech Facility (Synagro) processes the remaining 70% of the sewage sludge into a pelletized product for fertilizer and as soil amendment.

The City's Waste Hauler/Scavenger Program was implemented on January 1, 1987. Under the program, any company wishing to dispose of septage into the City wastewater system must obtain a Waste Hauler Permit, Vehicle Permit Tag for each vehicle, and pay annual permit and vehicle tag fees. The program is regional in scope, recognizing programs developed cooperatively with the City program in Baltimore, Howard and Anne Arundel Counties. The program dictates the types of wastes to be accepted, allows for City sampling of the septage, and reserves the City's right to refuse acceptance of any load. Any violation of the program conditions can result in fines, revocation of permits and/or prosecution of the permit holder.

Septage is only accepted at the Back River Waste Water Treatment Plant. The septage discharge becomes part of the plant flows and is subject to the same treatment processes. The solids also become part of the overall sludge production and are subject to the same solids processing and disposal. The cost for disposal is \$.05/gallon.

The number of wet tons of sludge generated at the Patapsco Wastewater Treatment Plant (PWWTP) increases each year as the population it serves grows. In 2011, the average daily flow was about 62.8 MGD and the plant wet sludge generation grew to about 19.25 wet tons (3.06% solids content).⁷ The wet sludge is then heat dried for stabilization. Synagro Water Technologies of Baltimore handles sewage sludge for PWWTP.⁸

The Bureau of Water and Wastewater expects sludge generated at PWWTP and BRWWTP to increase by less than 5% over the next ten years. This increase will result mostly from growth in the surrounding counties and is not expected to be attributable to City residents. It is expected that the population served by both waste water treatment plants will increase by approximately 5%, with less than 1% of that increase occurring within the City limits. Furthermore, BRWWTP currently operates near peak capacity and there are no planned improvements that would generate additional sludge production.

The City operates three water treatment plants: Montebello I, Montebello II, and Ashburton. The facilities are currently generating 2,211.1 tons per year of sludge. Montebello I is responsible for approximately 646.8 tons, Montebello II approximately 604.1 tons and Ashburton approximately 960.2 tons.

Sludge production at the three water filtration plants is not expected to increase appreciably. An increase in water demand is expected to be approximately 6% between 2011 and 2023. Baltimore City water demand is expected to remain flat over the next 15 years, while growth is anticipated in Anne Arundel, Baltimore and Howard Counties.

3.1.9 Yard waste

The City collects leaves and yard waste by load packers along with refuse on trash collection day. The collection crew will pick up to five bags of leaves every week per household. Beginning in October and ending in January, residents can call 311 for special Monday pickups of up to 20 bags. Residents can make multiple appointments until all the bags are collected. Crews will not take tree branches larger than four inches in diameter or longer than 3 feet. The yard waste is taken to the BRESKO WTE facility for energy recovery.

3.1.10 Christmas Trees

During the month of January the City offers both curbside pickups of Christmas trees, and mulching at designated locations. In 2011, residents could drop off trees at the community drop-off location at 701 Reedbird Avenue. Residents were also allowed to take home their tree mulch if they chose.

According to the recycling records, approximately 510 tons of Christmas tree mulch was generated in the City in 2011. This number does not include the amount of trees collected by private haulers. The tonnage of Christmas trees is expected to remain constant over the next ten years.

3.1.11 Marine Debris

Marine Operations removes trash and other floatables from local waters such as the Inner Harbor. Thirteen boats are utilized by the Marine Operations Section, including four skimmer boats which collect floating debris. Six bass boats, one skiff, and two whalers operated by Marine Operations scoop trash and debris from the water. In 2011 this fleet collected 316 tons of debris.

3.1.12 Parks

The tonnage of waste collected from parks as shown in Table 3-1 is generated mainly from the major parks. The five major parks, Druid Hill, Leakin, Patterson, Carroll, and Clifton are cleaned on a weekly basis by the Special Services Division within the Bureau of Solid Waste. The bureau incorporated this cleaning as well as for all the smaller parks from the Bureau of Recreation and Parks in January 2012. This task is completed utilizing Special Services employees along with the Maryland Correctional Institute's inmates worker program.

3.1.13 Street Sweepers

Street sweepers consist of mechanical street sweepers and sidewalk sweepers. The sweepers collect litter and dirt from the main streets and sidewalks. Mechanical sweeper operations include 74 routes on a weekly basis. Sidewalk sweepers operate on a daily basis, usually in the business district areas. In 2011, mechanical street sweepers and sidewalk sweepers gathered 7193 tons of debris.

3.1.14 Animal Manure

The City's major producer of manure is the Maryland Zoo. The City makes multiple scheduled pickups from the zoo each week. The City sends a roll-off truck to collect the waste. In 2011 536.46 tons of material were removed from the zoo. In 2012 the total waste removed was 592.55 tons.

3.2 IMPORT AND EXPORT OF SOLID WASTE

COMAR 26.03.03.03 (D) (3) requires that Chapter 3 of the comprehensive solid waste management plan include a discussion of the types and quantities of solid waste, if significant, which are entering or leaving the subdivision for processing, recovery or disposal. In compliance with this requirement, the types and quantities of solid waste imported to the City for disposal which are known to be significant are discussed

below. These wastes include residential mixed refuse, commercial/institutional mixed refuse, scrapped automobiles, special hospital waste, and wastewater treatment plant sludge. Wastes believed to be exported are also listed; however, the City has very little information concerning exported waste amounts.

3.2.1 Imported Mixed Refuse

The Wheelabrator Baltimore L.P. facility accepts waste from Baltimore City, and Harford, Howard, Anne Arundel, Montgomery, and Prince George's Counties. In 2011, Wheelabrator Baltimore, L.P. accepted 701,636 tons of commercial and residential refuse. A majority of this waste, 415,865 tons, is mixed MSW from Baltimore City. All of the ash produced by processing the waste at Wheelabrator is delivered to Quarantine Road Landfill. In 2011, Wheelabrator Baltimore L.P. generated approximately 202,664 tons of ash, which represents the single largest category of waste delivered to Quarantine Road Landfill and used as alternative daily cover at the facility. Approximately, 57 percent of the net weight of material disposed at Quarantine Road Landfill was Wheelabrator produced ash.

Hospital-generated mixed refuse and special hospital waste is delivered to the Baltimore Regional Medical Waste Facility (see subsection 3.4.3). The most recent data indicated that the facility processed approximately 25 tons per day of imported refuse (about 9,000 tons per year). The ash residue remaining after processing is exported to an out-of-state landfill.

3.2.2 Imported Scrapped Automobiles

Scrapped automobiles from wrecking yards throughout the metropolitan area are imported to the 11 licensed automobile scrap processors and recyclers located in the City. Although metal from these automobiles is ultimately reused inside or outside the City, processing also generates 0.3 tons per automobile of non-recycling material (fluff) that requires disposal. Fluff is no longer accepted at QRL.

3.2.3 Imported Scrap Tires

The major tire recycler in the City is Emanuel Tire Company (Emanuel). Emanuel has the capacity to process 6 million scrapped tires annually. Approximately half of the scrap tires that Emanuel processes are non-Maryland scrap tires.

3.2.4 Imported Special Medical Waste

As previously discussed in Section 3.2.1, special medical waste and mixed refuse from medical facilities is imported to the Baltimore Regional Medical Waste Facility. In addition, special hospital waste is imported for processing at the Stericycle incinerator, although the ash residue generated at this facility is exported for disposal (see Subsection 3.4.4).

3.2.5 Exported Wastes

The vast majority of waste that is collected by City forces is disposed of in the City at either the Quarantine Road Landfill (3.4.2) or at BRESKO (3.4.1). Most of the City's exported waste is hauled by private waste collectors. It is assumed that a percentage of the waste collected by private waste haulers is exported. This assumption is based on the limited number of disposal facilities available within the City and the amount of waste collected by private haulers. It is believed that most of the controlled hazardous substances generated in the City are exported, since there are a very limited number of disposal facilities permitted to accept hazardous waste. While the City is aware of treatment facilities in the City (such as Clean Harbors of Baltimore referred to in Subsection 3.4.9), it is not aware of facilities located in the City for ultimate disposal of sludge or residues remaining after treatment.

Scrap tires collected at City facilities are exported to Harford County for recycling and disposal.

Animal carcasses collected by Animal Control are picked up by Valley Pets and transported to Greenlawn Cemetery where they are incinerated. The contract allows for a flat fee per pound of animal carcasses.

3.3 WASTE COLLECTION

COMAR 26.03.03.03 (D) (4) requires that Chapter 3 of the comprehensive solid waste management plan includes a description of existing solid waste collection systems, including service areas. The description is presented below, with more detail provided on the public than the private collection system (see introduction to this chapter).

Baltimore City is served by the public waste collection system. Under Article 23 of the Baltimore City Code, the City is responsible for collecting all “mixed refuse” from dwelling houses, apartment houses, tenant houses, boarding houses, hotels, restaurants, hospitals and other places where such refuse is accumulated (see Section 1.3.1.3).

Property owners whose accumulated solid waste is not collected by the City are served by the private waste collection system. The private system consists of numerous haulers who contract individually with property owners to provide collection services (and who also may contract with waste acceptance facilities). Beyond the City’s Health Department hauling permit, the City is not involved in the management of the private waste collection system. Consequently, discussion of the private waste collection system is limited in scope.

3.3.1 Collection System and Service Areas

The City of Baltimore provides a wide variety of sanitation services with the goal of maintaining a clean and safe city. These services are provided primarily by the Environmental and Routine Services Division of the Bureau of Solid Waste (the organizational structure of this Division is shown in Figure 1-3). The Bureau of Solid Waste offices are located in Room 1000 of the Abel Wolman Municipal Building, 200 N. Holliday Street in Baltimore.

Though the Bureau has operations seven days a week, excluding holidays, residential collections occur Tuesday through Friday. Legal holidays when no collection services are provided are New Year’s Day, Martin Luther King’s Birthday, Presidents’ Day, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, General Election Day, Veterans Day, Thanksgiving Day, and Christmas Day. Operations include both collections, and operation of public drop-off locations.

While the Bureau of Solid Waste is primarily responsible for trash collection in the City, other agencies provide waste collection services as well. Agencies such as the Department of Housing and Community Development and the Department of Education collect waste from their respective facilities.

Mixed Refuse Collection

Residential mixed refuse collection is provided by the Bureau of Solid Waste’s Environmental and Routine Services Division to over 210,000 homes. Post July 2009, regular mixed refuse collection services are provided once a week by the City to each location served, Tuesday through Friday with Saturday being a make-up day for missed holiday collections. This service change is referred to as One PLUS ONE.

With the implementation of One PLUS ONE the following changes have been made to mixed refuse collection:

- Effective July 13, 2009, trash and recycling are collected once per week;

- Maximum waste volume limit of mixed refuse reduced from 160 gallons of waste per address per week to 96 gallons;
- Unlimited volume of recycling accepted; and
- Re-routed service zones – most neighborhoods will have one collection schedule, whereas prior to One PLUS ONE routes had not been changed since 1970.

The Bureau of Solid Waste's collections operations are divided into four quadrants: Northeast, Northwest, Southeast and Southwest.

The City's Environmental and Routine Services Division collects all mixed refuse generated at City parks, single-family residences, and City litter baskets. In its residential operation, the City utilizes three-person crews on two different-sized rear load packer vehicles; one vehicle holds a compacted load of approximately 16 cubic yards of material and the other holds 20 cubic yards of material.

The Special Services Division provides mixed refuse collection services for those multi-family residences (generally condominiums) that the City is obligated to service through the utilization of front-end loaders. This operation is based out of 111 Kane Street.

The Special Services Division also provides regularly-scheduled cleaning of business districts, streets and alleys and some City-owned lots and parks. These operations are coordinated by the same borough supervisors responsible for the residential mixed refuse operation.

The amount of residential mixed refuse collected by City crews varies by season. Generally, collected waste tonnage is higher in spring and summer compared to the winter season, with the largest amounts collected in May and July. In FY 2011, approximately 211,107 tons of mixed refuse was collected by City residential mixed refuse crews (see Table 3-1).

Bulk Trash Collection

The City is divided into 8 bulk trash collection zones that are serviced one day per month. In order to have bulk trash picked up, residents must call 311 three or more working days prior to their scheduled bulk pickup date and provide the following:

- Address
- Telephone number
- Description of items

Items that qualify for removal include furniture, appliances, and tires (without rims). Construction material such as sheet rock, siding, wood pieces or roofing are not included in the bulk items eligible for pickup by the City. Once collected, bulk that is not recyclable is transported to the Northwest Transfer Station, BRESCO facility or directly to QRL.

Other Waste Collection Operations

The Solid Waste Special Services Division Marine Operations and Inner Harbor Cleaning unit cleans the shores and waterways of the Inner Harbor and the Middle Branch and Northwest Branch of the Patapsco River. The operation removes over 250 tons of debris from these waterways on an annual basis. In 2011, approximately 316 tons of debris were removed from the City's waterways.

The Special Services Division also performs various seasonal duties that require weekend cleaning attention (e.g. Community Clean-ups, Parades and Festivals, Leaf Collection, etc.), with temporary employees. The temporary employees allow for the efficient operation of these intermittent services without affecting year-round waste collection services. The duties of the Special Services Division also include providing mechanical street sweeping services along major thoroughfares and in neighborhoods, and graffiti removal.

The Property Management Division is responsible for the removal of fire debris and materials that are illegally dumped in the City’s rights-of-way. Additionally, this section maintains the City’s rat eradication program.

White Goods Collection

White goods are collected from homes as part of the bulk trash collection program described previously. These white goods are separated at sanitation yards, the Northwest Transfer Station (NWTS) and the QRL, where they are placed in trailers for recycling. Trailers for recycling appliances are also placed at public housing renovation sites to facilitate collections. The City’s vendor, United Iron and Metal, removes its loaded containers upon request by the City. Prior to materials with refrigerants being picked up by the vendor, chlorofluorocarbons and hydrochlorofluorocarbons (HCFCs) are removed at the sites by licensed contractors. The City can also deliver materials directly to the facility provided the materials do not contain refrigerants.

Collection of Leaves

The City collects leaves using mechanical sweepers and load packers each fall. Leaves have historically been taken to mulch sites operated by the Department of Recreation and Parks. The principal mulch site is located at Camp Small (See subsection 3.1.9).

3.3.2 Private Waste Collection System

Although the City is obligated to collect solid waste within the City limits, stipulations in the City Code that limit the amount and type of waste to be collected allow hauling opportunities for private waste haulers. The haulers range in size from multi-billion dollar international corporations to small operators owning single pick-up trucks. These private haulers are a significant part of the City’s integrated solid waste management system.

The Baltimore City Health Department issues hauling permits based upon the type of wastes and the hauling vehicle size. Large haulers are defined as those companies whose vehicles have a gross vehicle weight (GVW) over 7,000 pounds. Haulers with eligible loads are permitted to dump at QRL for a tipping fee of \$67.50 per ton.

The City has no means to determine the types and amounts of wastes collected by these haulers. The City can only determine what portion of their waste is delivered to QRL (see Section 3.4.2). It is assumed that the majority of the waste is disposed of at private facilities in the City or exported from the City.

In accordance with the City Code, citizens with proof of residency may dispose of their wastes at City-owned facilities at no cost. This is limited to wastes that are carried in personal vehicles, including unmodified pickup trucks that are rated ¼ ton or less.

Metal Recovered at BRESCO

**Table 3-2
Acceptable and Non-Acceptable Recyclable Materials
in Baltimore City**

Acceptable	Not Acceptable
Aerosol Cans	Plastic Bags
Aluminum	Carry out or deli food containers
Cans	Cat litter
Beverage	Chemicals
Food Containers	Cook ware and plates (plastic)
Clean Foil	Containers of toxic substances
Pie Pans	Contaminated paper products
Books	Contaminated plastic products
Hardbound	Dry cleaning bags
Paperback	Food Waste
Textbooks	Furniture of any kind
Cardboard	Glass (window and mirror)
Paperboard Boxes	Paint and paint cans
Corrugated Boxes	Utensils (plastic)
Egg Containers	Waxed paper
Food Boxes	
Mailing Boxes	
Show Boxes	
Juice Boxes	
Cartons (waxed)	
Glass containers	
Mail Envelopes	
Paper (all types and colors)	
Plastic Bottles #1-7	
Plastic Jars #1-7	
Steel	
Beverage Containers	
Food Containers	
Tin	
Cans	
Foil	

The BRESKO facility is equipped to remove ferrous and non-ferrous scrap metal from the ash of the waste-to-energy operation. Since City-collected mixed refuse represents approximately 70 percent of the waste processed at BRESKO, 70 percent of the recovered metals can be considered as part of the City’s recycling program. This percentage equaled 5,904 tons of ferrous metals in 2011.

1. 2840 Sisson Street	2. 5030 Reisterstown Road
(410) 396-6070	(410) 396-2706
Mon. – Sat. 9am – 5pm (Fall/Winter) & 9am – 7pm (Spring/Summer)	Mon. – Sat. 7am – 3pm
3. 6101 Bowleys Lane	4. 6100 Quarantine Road
(410) 396-9950	(410) 396-3772
Mon. – Sat. 9am – 5pm (Fall/Winter) & 9am – 7pm (Spring/Summer)	Mon. – Sat. 9am – 5pm (Citizen Drop-off) & Mon. – Sat. 8am – 4pm
5. 701 Reedbird Avenue	6. 4325 York Road
(410) 396-3367	(410) 396-6551
Mon. – Sat. 9am – 5pm (Fall/Winter) & 9am – 7pm (Spring/Summer)	Mon. – Fri. 7am – 10:30pm (Single Stream Recyclable Items Only)
7. 4410 Lewin Avenue	
(410) 396-0210	
Mon. – Fri. 7am – 10:30pm (Single Stream Recyclable Items Only)	

3.3.3 Recycling Collection

Collection of Household Recycling

The Bureau of Solid Waste provides residential recycling collection service. The operation is part of the City’s 1+1 collection program. As of July 2009, all recycling is single stream (i.e. all recyclable materials are placed in the same bin) and collected once per week. A list of acceptable and non-acceptable recyclable materials is provided in Table 3-2.

Citizens’ Convenience Centers

Five full service citizens’ convenience centers and two facilities that accept only commingled recycling provide additional and vital disposal capabilities for City residents. The locations of these centers are listed in Table 3-3. Besides general wastes, the full service centers accept commingled goods, tires, scrap metal, white goods, used oil, and electronics.

Commercial Recycling Programs

The Bureau of Solid Waste also collects recycling from Baltimore City businesses. While many businesses set out recyclables for once-a-week collection by the Environmental & Routine Services Division, some commercial entities require multiple weekly pickups. In total, 101 businesses have received multiple collections from our Special Services Division or are new recyclers since January 2012.

The total number of businesses that recycle in Baltimore City is unknown since many set out for curbside recycling collection along with our residential consumers and there is no method of counting them.

The Bureau of Solid Waste also collects recycling from city buildings and on for Earth Day 2012 hosted a "Clean Your Files Day" which resulted in 8.5 tons of materials being recycled in one day. The Office of Recycling is working on outreach to City employees to increase the amount of materials they recycle.

Baltimore City Public Schools

A. It is the responsibility of the Baltimore City Public School System (BCPSS) to ensure the implementation of the City Public Schools' recycling programs. The Baltimore City Department of Public Works, Solid Waste Recycling Office, Ten Year Solid Waste Plan has directed that BCPSS have the responsibility for developing the recycling plans and implementing the recycling programs for all of their respective schools. If needed, the BCPSS may also participate in the Department of Public Works, Division of Solid Waste School Recycling Program to develop plans and implement recycling programs for respective schools.

B. Public School Recycling Plan

The Baltimore City, Department of Public Works, Bureau of Solid Waste, assisted BCPSS in their recycling collection plan by supplying 65-gallon bins to 205 schools and provides weekly pickups on a rotating schedule by city quadrant – Southeast, Northeast, Northwest and Southwest. Senate Bill 473 requires the revision of the Baltimore City Recycling Plan By October 1, 2010, to Address The Requirements of Subsection (B) (10).

Purpose

BCPSS must recycle:

- All types of mixed paper and cardboard.

BCPSS and the City of Baltimore will to the maximum extent fiscally possible recycle:

- Glass bottles, ferrous and non-ferrous metals and electronics, plastic bottles, tin and metal cans.
- Fluorescent light tubes and bulbs
- Computer monitors

Traditional Recycling Material (Paper cardboard, glass, plastic, tin and metal)

Steps to ensure successful recycling efforts:

1. The Principal and Facilities Operations designee will oversee the administration and implementation of a recycling program at each school and or building.
2. The City of Baltimore has supplied 65-gallon bins to all BCPSS schools.
3. The school principal and staff are responsible for promoting the recycling program.
4. The containers are taken to a pre-designated location in building by custodial staff or student volunteers.
5. All recyclables (paper, plastic, metal, tin and glass) will be collected from each school, by Bureau of Solid Waste Recycling Crews (currently) and/or a designated BCPSS selected vendor. Recyclables will be transported by either a BCPSS selected vendor and/or Bureau of Solid Waste

Recycling Crews and then transported to a selected vendor's processing facility. If the collection vendor is the Bureau of Solid Waste, material will be transported to the Waste Management, Recycle America (WMRA), Elkridge, Maryland MRF. Here the material will be sorted and baled by commodity type and then exported to various vendors contracted with WMRA.

Fluorescent Lamp Recycling

Fluorescent lamps shall be recycled and not disposed of as waste. Recycling of the lamps will be coordinated through the Facility Operations Engineering Section of the BCPSS.

Steps to ensure successful recycling efforts:

1. Engineering designees will upon the replacement of burnt out fluorescent tubes and bulbs transport the discarded lamps to a designated holding area.
2. They will be collected and stored in a transport container until there are enough collected to justify a pickup from certified vendor.
3. Notification and coordination for pickup and removal will be arranged by Engineering.

Computer Monitors (e-Cycle)

Steps to ensure successful recycling efforts:

1. Upon the identification of the need to dispose of a computer monitors, the Principal and or Facilities Operations designee will coordinate the removal and placement of items in the pre-determined recycling holding area.
2. Computer Monitors will remain in the recycling holding area until the Principal and/or Facilities Operations Designee arranges for the proper recycling of the material.
3. Monitors shall be recycled and not disposed of in the waste containers.

Participating Schools

- a) Newly opened schools will begin participating in the recycling collection program within 60 days of the new school year session.

All Baltimore City Public Schools must participate in the Baltimore City Recycling Public School Plan. The schools include (list sent in earlier correspondence). List of all participating schools included in Appendix B.

Program Implementation Schedule

- b) All Baltimore City's Public Schools were participating in the Baltimore City Recycling Public School Program as of March 14, 2012.
- c) To ensure compliance with the Baltimore City Public School Plan, BCPSS will complete an evaluation of the public school recycling program by FY 2014.
- d) Corrective actions to the deficiencies identified in the public school recycling evaluation will begin within 90 days from the date when the deficiencies are identified.

C. Community College of Baltimore City (CCBC) Recycling Plan:

The City of Baltimore, Department of Public Works, Bureau of Solid Waste, will offer assistance to all Community Colleges who ask for guidance in setting up an official recycling collection program.

Community Colleges will be independent in establishing collection programs, putting out a contract and selecting a vendor to haul and process material. The City of Baltimore will not service Community colleges at this time.

Introduction of Recycling Program – Please see Appendix C.

Materials to be recycled at CCBC Campuses:

1. Aluminum Cans
2. Steel Cans
3. Natural HDPE
4. Colored HDPE
5. PET
6. Clear Glass
7. Green Glass
8. Amber Glass
9. Mixed Broken Glass
10. Mixed Paper

Responsibilities for Executing CCBC Recycling Plan:

1. Windsor Taylor, 410-462-8541/wtaylor@bccc.edu, will be responsible for monitoring the program and selecting facilitators at each CCBC campus.
2. Windsor Taylor is responsible for securing a recycling contract for the CCBC's campuses and the contract will be awarded March 1, 2012 and effective at that time. It will be a one year contract.
3. The recycling contractor's role and responsibilities in executing the contract will be to collect all recyclables from each campus and recycle them.
4. Recycling contractor will be required to report on total collected recyclables every month to Windsor Taylor and break down recyclables by Aluminum Cans, Steel Cans, Natural HDPE, Colored HDPE, PET, Clear Glass, Green Glass, Amber Glass, Mixed Broken Glass, Mixed Paper and Residue.
5. CCBC will purchase all recycling bins and dumpsters as needed. Waste Management will be responsible for collecting and transporting the recyclables from the CCBC locations.
6. All CCBC campuses subject to the law are the Liberty Campus, BCED (Harbor), Reisterstown Plaza, MCCT, Wolfe Street (Weatherization) and BioPark.

Program Monitoring and Contingencies

BCPSS and the CCBC shall report annually by June 30 of each calendar year the types and amounts of materials collected at each school to the Recycling Coordinator of Baltimore City. Following this report and at minimum annually, DPW's Bureau of Solid Waste and the Recycling Coordinator will meet with BCPSS facilities staff and CCBC staff to discuss the state of the public school recycling program.

If public schools are determined to be out of compliance with the public school recycling plan, the Baltimore City Recycling Coordinator will notify, within 30 days of the determination, the schools of non-compliance issues and recommended solutions. The school will then have 30 days to respond and implement corrections to the identified non-compliance issues.

Status of School Recycling Program

Tracking of BCPSS schools thus far shows inconsistent participation with only approximately one-third of all schools recycling on a consistent weekly basis. In CY 2012, 232.61 tons of materials were recycled and 2013 YTD shows 169.06 tons of material recycled – a marked improvement in amount of material

collected. The Recycling Office is working on additional outreach and networking with the schools to increase participation rates for BCPSS.

Fluorescent and Compact Fluorescent Lights that Contain Mercury

Baltimore City began collecting fluorescent lighting in conjunction with the Household Hazardous Waste (HHW) Drop-off Program in 1997.

Since 1997, Baltimore City had been conducting generally two HHW Drop-off Days per year. The events were held at the Old Memorial Stadium parking lot, the Polytechnic Institute and Patterson High School. The events were free of charge to residents of Baltimore City. The HHW events were conducted by a licensed hazardous waste collection contractor. Their responsibilities with fluorescent light collection included proper containerization, transportation and recycling of all collected material

Baltimore City established a Household Hazardous Waste Drop-Off program at its Northwest Citizens Convenience Center in October 2011. The program runs yearly, the first Friday and Saturday of the month from April through October and allows residents to drop off the fluorescent lighting. The first event was October 28 and 29, 2011.

In addition to directing residents to our HHW Drop-off Days to dispose of fluorescent lighting, the City also directs them to local retail establishments that also offer the service free to the public on a year-round basis.

Our current vendor for our Household Hazardous Waste Drop-Off Program at the Northwest Citizens Convenience Center is Clean Harbors Environmental Services. The recycling destinations of the material collected from the Household Hazardous Waste Drop-Off Program is either the Clean Harbors TSDF at 309 American Circle in El Dorado, AR, 71730 or their TSDF at 4879 Spring Grove Ave., Cincinnati, OH, 45232. Mr. Christopher Maciejewski, Technical Services Specialist, with Clean Harbors is one the Bureau's contacts. For further information, he can be reached at 301-939-6019.

A calendar will be sent to all City residents with drop-off dates for the Household Hazardous Waste events and the dates will be announced through the mainstream and social media.

CITY OF BALTIMORE SPECIAL EVENTS RECYCLING

A. SPECIAL EVENTS SUBJECT TO THE RECYCLING PROGRAM:

ENVIRONMENT ARTICLE, §9-1712, ANNOTATED CODE OF MARYLAND, REQUIRES SPECIAL EVENTS ORGANIZERS TO PROVIDE FOR RECYCLING AT SPECIAL EVENTS THAT MEET THE FOLLOWING THREE CRITERIA:

1. INCLUDES TEMPORARY OR PERIODIC USE OF A PUBLIC STREET, PUBLICLY OWNED SITE OR FACILITY, OR PUBLIC PARK;
2. SERVES FOOD OR DRINK; AND
3. IS EXPECTED TO HAVE 200 OR MORE PERSONS IN ATTENDANCE.

PROJECTED ATTENDANCE MAY BE ESTIMATED BASED ON PAST ATTENDANCE, NUMBER REGISTERED TO ATTEND, THE VENUE'S SEATING CAPACITY OR OTHER SIMILAR METHODS.

THE CITY OF BALTIMORE HAS IDENTIFIED THE FOLLOWING PUBLIC SITES WITHIN THE CITY THAT HOST OR MAY HOST SPECIAL EVENTS MEETING THE ABOVE CRITERIA. IN ADDITION TO THE SITES LISTED INDIVIDUALLY, SPECIAL EVENTS TAKING PLACE ON ANY LOCAL, STATE, OR FEDERALLY OWNED STREETS ARE ALSO INCLUDED IN THE SPECIAL EVENTS RECYCLING PROGRAM (SERP).

CITY-OWNED SITES:

APPENDIX H LISTS ALL CITY-OWNED SITES THAT HOST OR MAY HOST SPECIAL EVENTS MEETING THE ABOVE CRITERIA.

IT IS UNDERSTOOD THAT ANY BLOCK ON ANY CITY OF BALTIMORE STREET MAY BE ISSUED A PERMIT FOR A "BLOCK PARTY" WHICH MAY OR MAY NOT BE SUBJECT TO §9-1712; THEREFORE EVERY BLOCK IS A POTENTIAL SITE.

STATE-OWNED SITES:

THERE ARE NO STATE-OWNED SITES THAT HOST OR MAY HOST SPECIAL EVENTS MEETING THE ABOVE CRITERIA.

FEDERALLY-OWNED SITES:

NATIONAL PARK SERVICE

FORT MCHENRY NATIONAL MONUMENT & HISTORIC SHRINE

2400 EAST FORT AVE., BALTIMORE, MD 21230 – 5393

B. MATERIALS AND OBLIGATIONS:

SPECIAL EVENTS ORGANIZERS ARE RESPONSIBLE FOR:

1. PROVIDING AND PLACING RECYCLING RECEPTACLES ADJACENT TO EACH TRASH RECEPTACLE AT THE EVENT (EXCEPT WHERE ALREADY EXISTING ON SITE);
2. ENSURING THAT RECYCLING RECEPTACLES ARE CLEARLY DISTINGUISHED FROM TRASH RECEPTACLES BY COLOR OR SIGNAGE;
3. PROVIDING ANY OTHER LABOR AND EQUIPMENT NECESSARY TO CARRY OUT RECYCLING AT THE EVENT;
4. ENSURING THAT MATERIAL PLACED IN RECYCLING RECEPTACLES ARE COLLECTED AND DELIVERED FOR RECYCLING; AND
5. PAYING ANY COSTS ASSOCIATED WITH RECYCLING AT THE SPECIAL EVENT.

SPECIAL EVENTS ORGANIZERS MAY FULFILL THE REQUIREMENT TO ENSURE MATERIALS ARE COLLECTED AND DELIVERED FOR RECYCLING THROUGH ONE OR MORE OF THE FOLLOWING METHODS:

1. SELF-HAULING THE MATERIALS TO A BALTIMORE CITY RECYCLING DROP-OFF LOCATION;
2. CONTRACTING WITH A RECYCLING HAULER TO COLLECT THE MATERIALS AND DELIVER THEM FOR RECYCLING; OR
3. RECEIVING PRIOR AGREEMENT FOR THE SITE OWNER TO USE AN EXISTING RECYCLING COLLECTION SYSTEM AVAILABLE AT THE SITE.

THE SPECIAL EVENTS RECYCLING PROGRAM MUST INCLUDE COLLECTION OF AT LEAST PLASTIC, METAL AND GLASS CONTAINERS AND PAPER. THE SPECIAL EVENTS ORGANIZER MUST ASSESS THE AVAILABILITY OF FOOD SCRAPS RECYCLING SERVICES FOR THE EVENTS. IF SERVICES ARE AVAILABLE, THE SPECIAL EVENTS ORGANIZER MUST PROVIDE FOR FOOD SCRAPS RECYCLING, INCLUDING PROVISION OF SEPARATE CONTAINERS FOR ORGANIC AND NON-ORGANIC RECYCLABLE.

RECYCLING AT A STATE-OWNED SITE MUST FOLLOW THE STATE AGENCY'S RECYCLING PLAN, IF AVAILABLE. RECYCLING AT A FEDERALLY-OWNED SITE MUST FOLLOW ANY APPLICABLE FEDERAL RECYCLING PLAN. IF NO STATE OF FEDERAL RECYCLING PROGRAM IS AVAILABLE FOR THE SITE, THE SPECIAL EVENT ORGANIZER MUST SET UP A RECYCLING PROGRAM IN ACCORDANCE WITH THE SERP. RECYCLING AT MUNICIPALLY-OWNED SITES MUST FOLLOW ANY ADDITIONAL REGULATIONS ESTABLISHED BY THE CITY OF BALTIMORE.

C. STAKEHOLDERS:

THE FOLLOWING STAKEHOLDERS WILL BE INVOLVED IN THE SERP:

1. BUREAU OF SOLID WASTE: RESPONSIBLE FOR OVERSEEING THE RECYCLING OFFICE ACTIVITIES AND ASSURING THAT ALL PROPERTIES THAT POTENTIALLY HOST EVENTS FALLING UNDER THE RECYCLING MANDATE IN §9-1712 ARE INCLUDED IN THE SERP.
2. RECYCLING OFFICE IN COOPERATION WITH THE BALTIMORE CITY DEPARTMENT OF TRANSPORTATION, SPECIAL EVENTS AND STREET VENDORS SECTION: RESPONSIBLE FOR COMMUNICATING THE REQUIREMENTS OF THE LAW TO PROSPECTIVE SPECIAL EVENTS ORGANIZERS AND OWNERS/OPERATORS OF PUBLICLY-OWNED SITES IN THE CITY OF BALTIMORE. THE BUREAU OF SOLID WASTE WILL ALSO ASSIST EVENT ORGANIZERS BY OFFERING FESTIVAL RECYCLING BINS AS THEY ARE AVAILABLE AND RESOURCES ALLOW. THE SPECIAL EVENT RECYCLING NOTICE CAN BE FOUND IN APPENDIX I.
3. SPECIAL EVENTS ORGANIZER: RESPONSIBLE FOR PROVIDING RECYCLING BINS AND ENSURING COLLECTION FOR RECYCLING IN ACCORDANCE WITH THE REQUIREMENTS IN THE PREVIOUS SECTION B BEGINNING ON THE DATE THAT THIS RECYCLING PLAN IS ADOPTED.

D. PROGRAM MONITORING:

THE BUREAU OF SOLID WASTE, RECYCLING OFFICE AND SPECIAL EVENTS ORGANIZERS WILL MONITOR PROGRESS AND PERFORMANCE OF THE SERP.

RECYCLING AT EVENTS SUBJECT TO THE SERP WILL BE ENSURED AS FOLLOWS:

1. SPECIAL EVENTS PERMITS ISSUED FOR USE OF CITY OF BALTIMORE SITES WILL INCLUDE A STATEMENT ON THE PERMIT APPLICATION THAT RECYCLING IS REQUIRED FOR EVENTS SUBJECT TO THE SERP. THE APPLICATION FORM WILL REQUIRE A CERTIFICATION THAT THE SPECIAL EVENT ORGANIZER WILL PROVIDE FOR RECYCLING IN ACCORDANCE WITH THE REQUIREMENT OF THE SERP.
2. SPECIAL EVENTS PERMITS ISSUED BY THE CITY OF BALTIMORE WILL INCLUDE PROVISIONS FOR COMPLIANCE WITH THE SERP.
3. A FACT SHEET OR OTHER INFORMATIONAL DOCUMENT OUTLINING THE REQUIREMENTS OF THE SERP WILL BE DISTRIBUTED WITH EACH SPECIAL EVENT PERMIT ISSUED THE CITY OF BALTIMORE.

THE SPECIAL EVENT ORGANIZER IS RESPONSIBLE FOR MONITORING THE IMPLEMENTATION OF RECYCLING AT THE SPECIAL EVENT. SPECIAL EVENT ORGANIZERS MUST OVERSEE PLACEMENT OF LABELING OF RECYCLING RECEPTACLES AND COLLECTION AND RECYCLING OF RECYCLABLES. PERFORMANCE OF ANY RECYCLING CONTRACTOR ENGAGED FOR COMPLIANCE WITH THE SERP MUST BE MONITORED BY THE SPECIAL EVENTS ORGANIZER. THE SPECIAL EVENT ORGANIZER MUST PROMPTLY TAKE ACTION TO CORRECT ANY DEFICIENCIES IN THE CONTRACTOR'S PERFORMANCE.

E. PROGRAM ENFORCEMENT:

THE BALTIMORE CITY RECYCLING OFFICE WILL CONDUCT INSPECTIONS OF EVENTS TO ENSURE COMPLIANCE WITH THE SERP. IF A VIOLATION OF THE SERP IS DETECTED, THE RECYCLING OFFICE WILL REFER THE VIOLATION TO THE BALTIMORE CITY DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT, CODE ENFORCEMENT SECTION TO PURSUE ENFORCEMENT ACTION AGAINST THE SPECIAL EVENT ORGANIZER.

A PERSON THAT VIOLATES THE SERP IS SUBJECT TO A CIVIL PENALTY NOT EXCEEDING \$50 FOR EACH DAY THE VIOLATION EXISTS. ANY PENALTIES COLLECTED FOR VIOLATION OF THE SERP WILL BE PAID TO THE CITY OF BALTIMORE.

Recycling Program Achievements

In CY 2011, the Bureau of Solid Waste collected 24,221.63 tons of recycling. The City collected 456,505 tons of Maryland Recycling Act and non-MRA items. The MRA and Waste Diversion Rate for CY 2011 was 27.89%.

In 2011, the Bureau of Solid Waste reached a Memorandum of Understanding with Dart Container Corporation to offer polystyrene recycling at the Northwest Citizens' Convenience Center at 2840 Sisson Street. Dart Container Corporation provided a roll off where residents can drop off polystyrene No. 6 (commonly referred to as Styrofoam). This is the first time City residents have been given the opportunity to recycle polystyrene and Baltimore was the second municipality to establish such a program.

The Bureau of Solid Waste received a generous donation from Under Armour, Inc., of 20 new Big Belly Solar Trash and Recycling Compactors and 20 new Big Belly Solar Recycling Units with an estimated value of \$141,357. These units have been placed throughout the Inner Harbor and the Downtown area. A wireless component on the Big Belly containers alerts us to when they are full and can be monitored from a computer.

The Recycling Office worked with the Environmental & Routine Services Division to help establish a permanent Household Hazardous Waste drop off program at the Northwest Citizens' Convenience Center. The program allows residents to drop off household hazardous waste the last Friday and Saturday of every month from April to November.

Public Education, Monitoring and Feedback

The Bureau of Solid Waste's Office of Recycling oversees single stream recycling, school recycling, annual household hazardous waste drop off's, and the daily citizen drop off of single stream recycling, electronics, white goods, tires, and scrap metal.

As part of the school recycling program, the Office of Recycling visits schools to conduct presentations educating students on recycling, trash, landfills and rats. Similar presentations are presented at neighborhood community meetings in an effort to educate residents on recycling in the hopes of boosting recycling rates. During the summertime, student employees are sent out to canvass neighborhoods to speak with residents and educate them about recycling.

Additionally, the Office of Recycling participates in most of Baltimore's yearly festivals. During these festivals the Office of Recycling displays recycled arts and crafts, and recycling literature and has staff on hand to answer community questions about recycling. The Office of Recycling also utilizes DPW's *Facebook* and *Twitter* accounts to inform and educate the public and the DPW calendar, which is delivered to each year to all households.

The Recycling Office is also looking at ways to work with other municipalities on joint recycling efforts and events in possibly teaming up for special collections and/or joint publicity efforts, outreach and advertising.

3.4 WASTE DISPOSAL

COMAR 26.03.03.03 (D) (5) requires that Chapter 3 of comprehensive solid waste management plans include information on each existing public or private solid waste acceptance facility in the subdivision. According to the regulations, solid waste acceptance facilities are "incinerators, transfer stations, major composting sites, sanitary and rubble landfills, major resource recovery facilities, controlled hazardous substances facilities, injection wells and industrial waste liquid holding impoundments."

In compliance with this requirement, information is presented in this section on the public and private waste acceptance facilities located in Baltimore City. Private facility information is primarily obtained from MDE records. Geographic coordinates for each facility are indicated below the facility name.

Currently, the City disposes the majority of its solid waste at BRESKO pursuant to a contract with the Northeast Maryland Waste Disposal Authority. The BRESKO facility has contracted with the City to dispose of their ash residue at QRL.

3.4.1 Baltimore Refuse Energy Systems Company

(BRESKO) (N 523,500; E 905,000)

The BRESKO plant is located at 1801 Annapolis Road on 15 acres of land owned by the Mayor and City Council of Baltimore. The plant itself is privately owned by the Connecticut Bank and Trust Company, National Association, as trustee, and leased back for operation by BRESKO, an indirect subsidiary of Waste Management Inc. It was constructed in 1984 and became fully operational in 1985. **THE ANTICIPATED REMAINING SERVICE LIFE OF THE PLANT IS OVER 20 YEARS.**

The BRESKO plant is structured around three mass-burning, water wall furnaces. These furnaces can burn up to 2,250 tons of refuse per day at temperatures between 2400 and 2800 degrees Fahrenheit, thereby reducing the volume of waste by up to 90 percent.

This combustion process generates heat that is used to convert water into steam. Operating at full capacity, BRESKO can produce as much as 500,000 pounds of steam per hour. Part of the steam is used to drive turbines and generate electricity. The rest is sold to the district heating and cooling system operated by the Trigen Company located in downtown Baltimore.

During optimal conditions, approximately 10 percent of the waste by volume and 27 percent by weight remains in the form of ash residue after combustion, and ferrous and non-ferrous materials are removed. Ferrous and non-ferrous metals removed from this ash are sold to a scrap dealer. The ash is delivered to QRL.

According to its audited records for 2011, BRESKO accepted a total of approximately 701,634 tons of debris. Approximately 9,910 tons of scrap metal was recovered from the ash, and 202,664 tons of ash remained for disposal.

BRESKO has obtained and operates in compliance with necessary City, State and federal permits. Emissions from the electrostatic-precipitator-equipped smokestacks are monitored by the Maryland Department of the Environment.

Type of Waste	Tons
BRESKO Ash	202664
Harford County Ash	33580
Patapsco WWTP Grit	6770
City and Private Ruble	53552
City Mixed Refuse	24066
Nonprofit Organizations	5357
Industrial Waste	5850
Private Haulers	8230
Public Agencies, Bulk Debris	9645
RECYCLING	1383
Total	[349,714] 350,791

3.4.2 Quarantine Road Landfill

(N 500,000; E 925,000)

The Quarantine Road Landfill (QRL) is located at 6100 Quarantine Road on a 153-acre site in Hawkins Point, 126 acres of which will be utilized as a landfill. It is owned by the Mayor and City Council of Baltimore and operated by the City's Department of Public Works, Bureau of Solid Waste.

The first cell of the landfill was constructed and began accepting waste in August, 1985. Originally, the landfill was designed as six cells surrounding a central core that was to remain in place. The design capacity was approximately 11.2 million cubic yards with an expected 9.1 million cubic yards or approximately 5.4 million tons allocated for waste. The remaining volume was allocated for cover material. These calculations were based on an industry standard factor of 1 ton of mixed refuse and bulk material occupies 1.67 cubic yards of landfill space. In 1989, QRL was redesigned to remove the central core and raise the overall landfill elevation. The capacity was thereby enlarged to approximately 18.3 million cubic yards. Using the same industry standard of 1.67 cubic yards/ton, it was anticipated that 15.8 million cubic yards or 9.4 million tons of solid waste could be placed. The expansion was necessary to accommodate future disposal volume.

In August 1994, the City extended the life expectancy estimate of the landfill. The life expectancy studies determined that the industry standard of 1.67 cubic yards/ton should not be applied at QRL due to the high percentage of ash. (Ash is much denser than the predicted industry standard that was used in the original life projections.) Actual operations indicated that 1 ton of QRL debris was occupying 1.12 cubic yards of volume. In October 1996, a second life-expectancy study was performed. Actual operations indicated that 1 ton of debris was occupying 1.08 cubic yards of volume. The estimated life of the landfill was revised to 2019 +/- a year. In 2010, an aerial life-expectancy study was performed that indicated that 1.18 ton of debris was occupying one cubic yard of volume, which would extend the life of the landfill to sometime around 2026.

In 2011, QRL accepted approximately 350,791 tons of waste. The amounts and kinds of waste that comprised this total are shown in Table 3-5. It can be seen that the majority of waste accepted is non-organic material; ash, rubble and bulk. The largest single category of waste accepted at the landfill was incinerator ash, accounting for approximately 65-percent by weight and 4-percent by volume.

City and State permits have been obtained for the entire QRL site. A leachate collection system and a groundwater monitoring system are currently maintained.

3.4.3 Baltimore Regional Medical Waste Facility

(N 498,500; E 926,000)

The Baltimore Regional Medical Waste Facility is located on a 4-acre site at 3200 Hawkins Point Road. This facility, which is privately owned by Curtis Bay Energy, is the country's largest incinerator permitted for and dedicated to medical waste. The facility has two consummate units that are permitted to burn 85 tons per day (170 tons combined) and an air permit that allows for combustion of 150 tons per day, for a total of 62,050 tons per year. The facility operates 24 hours per day, 365 days per year. **THE FACILITY ACCEPTED 25,300 TONS OF WASTE IN 2011. THE FACILITY IS EXPECTED TO REMAIN IN OPERATION FOR OVER 20 YEARS.**

Last available numbers indicate that 44-percent of waste received came from medical facilities within the City, while 56-percent was imported. The ash residue remaining after incineration (approximately 10-percent of the original volume and approximately 35-percent of the original weight) is disposed of at an out-of-state facility.

3.4.4 Stericycle Inc.*(N 500,000; E 921,500)*

Stericycle Inc., formerly Med Net and MEDEX, is a privately owned autoclave facility located on a 2.4 acre site at 5901 Chemical Road. The facility has an annual capacity of 22,800 tons⁹. Before 2004, the site was used as an incinerator which accepted red-bag waste; today the site still accepts chemotherapeutic, pharmaceutical, and pathological waste, however that waste is then shipped to its facility in Haw River, North Carolina where it is incinerated.¹⁰ THE FACILITY ACCEPTED 23,427 TONS OF WASTE IN 2011. THE FACILITY HAS AN ANTICIPATED REMAINING SERVICE LIFE OF OVER 20 YEARS.

3.4.5 Chesapeake Compost Works, Inc.*(N39° 13.5167', W076° 35.2093')*

Chesapeake Compost Works, Inc. is a privately owned and operated food and yard-waste composting facility located at 4501 Curtis Avenue. This indoor facility uses semi-static aerated bays to aerobically degrade the organic material into stable compost that is sold and distributed to urban and regional farmers, gardeners, landscapers, municipal projects, and others. The facility has an annual capacity of 14,400 tons of organic material. This material ranges from chipped wood, street leaves, herbaceous animal manure, and pre- and post-consumer food scraps. The material is mixed with a front-end loader and / or a soil mixer to create the correct recipe based on chemical composition, moisture level, and bulk density, and is loaded into one of fourteen aerated bays. The material composts for a minimum of 28 days or until the State standards have been met, and then is screened and stored outside under cover. THE FACILITY STARTED RECEIVING MATERIAL AT THE END OF 2012 AND CLOSED AT THE END OF 2014. THE COMPANY HAS BEEN IN THE PROCESS OF SEEKING A NEW LOCATION WHERE IT CAN OPERATE AND HAS IDENTIFIED A POTENTIAL LOCATION - BLOCK 7004, LOT 05, NS FORT ARMISTEAD ROAD. THE COMPANY HAS THE 5 ACRE PROPERTY UNDER CONTRACT TO PURCHASE.

3.4.6 Baltimore City Composting Facility*(N 501,000; E 928,000)*

The Baltimore City Composting Facility is located at 5800 Quarantine Road on seven and a half acres of the 157-acre QRL site. The plant itself is privately owned by Veolia Water North America Operating Services. The facility is permitted to receive sewage sludge generated at the City's Back River and Patapsco Wastewater Treatment plants. The plant has a design capacity of 200 wet tons per day. The sludge is mixed with wood chips and aerated to produce 75,000 cubic tons/year of biosolids compost that is marketed in the Mid-Atlantic region to landscapers, nurserymen, contractors, topsoil manufactures, golf courses, and commercial growers.¹¹ IN 2011 THE FACILITY ACCEPTED 28,038 WET TONS OF BIO-SOLIDS AND GENERATED 33,968 CUBIC YARD OF COMPOST TO MARKET. THE FACILITY LIFE DEPENDS ON THE UP-KEEP WHICH COULD POTENTIALLY PROVIDE ANOTHER TWENTY YEARS OR MORE OF SERVICE.

3.4.7 Northwest Transfer Station*(N 549,500; E 890,000)*

The 6.595-acre Northwest Transfer Station (NWTs) at 5030 Reisterstown Road is owned and operated by the City. The station's design capacity is 600 tons of mixed refuse per day. Approximately 450,000 tons of mixed refuse and maintenance debris per year (an average of 1,232 tons per day) is transferred at this station from collection trucks to trailers for hauling to BRESKO.

In 2010 City has renewed the facility permit with capacity of 150,000 tons per year. In 2011 the facility transferred 39,800 tons of material. THE FACILITY HAS AN ANTICIPATED SERVICE LIFE OF MORE THAN 20 YEARS.

3.4.8 Clean Harbors of Baltimore, Inc. Treatment Facility*(N 524,000; E 903,500)*

Clean Harbors of Baltimore, Inc., owns and operates a major waste treatment facility on a 5.5 acre site at 1910 Russell Street. Hazardous and non-hazardous liquid wastes are treated on site, with non-hazardous wastewater discharged into the public sewer system, while the sludge remaining after processing is being exported to out-of-state landfills. The company also transports oil, oily debris, non-hazardous industrial solids and hazardous solids generated both inside and outside the City and the State, exporting them for disposal out-of-state. **CLEAN HARBORS IS OPERATING UNDER ITS CURRENT PERMIT WHICH EXPIRES IN 2018 AND THE FACILITY PLANS TO RENEW FOR ADDITIONAL 10 YEARS.**

3.4.9 Baltimore Processing and Transfer Center*(N 500,000; E 920,500)*

The Baltimore Processing Center is located at 5800 Chemical Road. The processing center is both a materials recovery center and a waste transfer station. **THE FACILITY ACCEPTED 74,257 TONS OF WASTE IN 2011. THE FACILITY HAS AN ACTIVE PERMIT WHICH EXPIRES IN 2019 BUT IT HAS NOT ACCEPTED ANY WASTE STREAM SINCE 2014 AND THE FACILITY LIFE IS UNKNOWN.**

3.4.10 Millennium Hawkins Point Plant Industrial Landfill*(N 498,250; E 927,500)*

The landfill is located at 3901 Fort Armistead Road on a 95 acre parcel of land which is split into two sections. The first, a 30 acre parcel, contains a 28.3 acre landfill that previously accepted industrial waste. **THE FACILITY ACCEPTED 1,629,278 TONS OF WASTE IN 2011. THE LANDFILL STOPPED ACCEPTING WASTE IN 2013; THUS THE REMAINING LANDFILL LIFE IS UNDETERMINED.** The second, a 65 acre parcel, is permitted for industrial waste, but the landfill has not been constructed. Constellation Energy will construct a 28.7 acre landfill cell to accept coal combustion by-products (CCB) from its Brandon Shores, H.A. Wagner and C.O. Crane coal power plants. The estimated lifetime of the not-yet constructed landfill is eleven years from construction completion date.

3.4.11 Baltimore Recycling Center*(N 535,000; E 920,000)*

The Baltimore Recycling Center, formerly the Edison Processing Facility is located on the western side of the former Armco Steel Property at 1030 Edison Highway. Currently this 12.5-acre site, accepts only construction and demolition debris. **THE FACILITY IS CURRENTLY OPERATING UNDER PERMIT 2014-WPT-0631 AND ACCEPTED 50,354 TONS OF WASTE IN 2011. THE ANTICIPATED REMAINING SERVICE LIFE OF THE FACILITY IS OVER 20 YEARS.**

3.4.12 Daniel's Sharpsmart*(Latitude/Longitude 39.2701/-76.5305)*

The Daniel's Sharpsmart facility is located 6611 Chandlery Street. **IN 2011 THIS 0.939 ACRES SITE ACCEPTED 1,519 TONS OF MEDICAL WASTE. THE FACILITY IS CURRENTLY OPERATING UNDER PERMIT 2015-WPT-0633 AND ITS ANTICIPATED REMAINING SERVICE LIFE IS AT LEAST TWENTY YEARS.**

3.4.13 W.R Grace & Co.*(N 304851; E 15730)*

W.R. Grace & Co Industrial Landfill encompasses 10.7 Acres fill are on a 157 acre site in Curtis Bay area located 5500 Chemical Road. W.R. Grace owns the property and has been on site for over 100 years. The facility is a major chemical manufacturing center for silica based adsorbents and related products, hydroprocessing catalysts, polyolefin catalysts used in plastic and packaging and fluid catalysts used in

petroleum refining. The landfill only accepts industrial waste generated at the facility. In 2011, 24,910 tons of industrial wastes were landfilled. The permitted landfill capacity is 495,000 tons and anticipated to reach its capacity in 2038. THE FACILITY IS CURRENTLY OPERATING UNDER PERMIT 2012-WIF-0613, WHICH WAS ISSUED IN 2012 AND IS VALID UNTIL 2017.

3.4.14 L&J Waste Recycling, LLC

(Latitude 39.17.27, Longitude 76.39.38)

L & J Waste Recycling, LLC is located at 222 North Calverton Road, on 0.932 Acres site. The facility accepts and process construction and demolition waste for reuse. THE FACILITY STARTED ACCEPTING WASTE IN OCTOBER 2011; THUS IT ONLY ACCEPTED 850 TONS OF WASTE IN 2011. IN 2013 IT ACCEPTED OVER 30,000 TONS OF WASTE. THE FACILITY IS OPERATING UNDER AN ACTIVE PERMIT GOOD UNTIL 2016 AND THE REMAINING LIFE IS MORE THAN TEN YEARS.

3.4.15 University of Maryland (Medical Waste Incinerator)

(Latitude 39.287593, Longitude -76.626739)

The Facility was built in 1983 as part of The University of Maryland Baltimore. The actual facility is on less than 0.25 acre of 65 acres campus community. The waste processed thru the facility is pathological (animal) and special medical waste generated as a result of the biomedical research conducted in the Schools of Medicine, Nursing, Pharmacy and Dental. In 2011, 166 tons of medical waste was processed. THE FACILITY CURRENTLY OPERATES UNDER ACTIVE AIR PERMIT NO. 510-03032 AND MEDICAL WASTE INCINERATOR PERMIT NO. 2010-WMI-0512. THE ANTICIPATED SERVICE LIFE REMAINING IS 20 YEARS OR MORE.

3.4.16 Recycling Companies and Facilities

State regulations do not require that recycling facilities be included under the category of waste acceptance facilities. A list of recycling companies including wastepaper, scrap and multiple materials businesses in the greater Baltimore area is provided for reference in Appendix D. This list is not intended to be comprehensive and is provided for informational purposes only.

3.4.17 Fort Armistead Road – Lot 15 Landfill

(N 498,250; E 927,500)

The landfill is located at 3901 Fort Armistead Road on a 65 acre parcel of land owned by Millenniums. [The Department is currently reviewing a separate Industrial Landfill Permit Application for Fort Armistead Road – Lot 15 Landfill.] THE STATE ISSUED A REFUSE DISPOSAL PERMIT NO. 2011-WIF-0653 FOR THIS INDUSTRIAL LANDFILL ON SEPTEMBER 27, 2013. The Lot-15 landfill has been in operation under Millenniums' current Industrial Landfill Permit. THE LANDFILL LIFE IS EXPECTED TO LAST UNTIL 2075.

3.4.18 A2Z Scrap Tire Facility

(Latitude 39.17.24, Longitude 76.33.36)

The facility is located 240 S Kresson Street. This 0.45 Acre site is owned by Kresson Industries and leased to A2Z Environmental Group, LLC. The facility accepts and process tires.

Solid Waste facilities in Baltimore City

4.0 Assessment

Chapter 4 is required by COMAR 26.03.03.03(E) to assess Baltimore City's need to alter, modify, or add to existing solid waste disposal systems throughout the upcoming decade. The state provides a definition of "solid waste disposal systems" that includes the following components:

1. Collection of waste
2. Transport of waste
3. Treatment and disposal of waste at acceptance facilities

Additionally, Chapter 4 is intended to evaluate the City's use of recycling and resource recovery as a means to reduce landfill disposal needs.

Since 2000, the City has used CitiStat, a database-driven performance measurement tool, to monitor and assess public service delivery and operation. Solid waste management performance is evaluated in a branch of CitiStat called CleanStat, which assists DPW in deciding how to provide more efficient service. Continued use of CleanStat, and continued feedback from citizens and employees is essential in developing a proper assessment of the City's solid waste management needs now and in the period covered by this Plan.

4.1 COLLECTION AND TRANSPORT OF WASTE

4.1.1 Single Stream Recycling and One PLUS ONE

The City reached a two-year minimum in mixed refuse pick-up complaints in 2008 but was still driven to make service more efficient and green by improving the collection system. Single stream recycling, which eliminates sorting and allows residents to place all recyclables in the same bin for collection, was introduced in January 2008. In the year that followed the initiation of the single stream method, recycling increased by 35-percent. This new recycling initiative was a departure from requiring residents to set out different recyclables on different days.

Waste collection is designed to be convenient for residents; mixed refuse is collected at the rear of many homes, allowing residents to store and use garbage cans without carrying cans to the front curb on mixed refuse days. Seeking to further serve citizens, promote recycling, and save tax dollars, the City adopted One PLUS ONE in July 2009. One PLUS ONE reduced mixed refuse collection from twice a week to once a week. The amount of mixed refuse was limited to 96 gallons. Curbside collection of single stream recyclables was increased from twice a month to weekly collections. As part of the One PLUS ONE initiative, the first comprehensive collections rerouting schedule in 35 years was designed to account for the population shifts that have taken place since the creation of the original routes. Additionally, yard waste, which was once a concern, is now picked up with mixed refuse when it is separately bagged and labeled as part of the new collection program.

DPW modified its trash collection schedule from the prior six-day operation to a four-day, 10-hour work week as a result of One PLUS ONE. Waste and recycling collections are provided Tuesday through Friday with Saturday as the automatic make-up day for missed holiday collections. Residents can put out their trash and recyclables between 6:00 p.m. and 6:00 a.m. the night before/day of collections.

A waste management consulting firm conducted a study that examined five different trash and recycling schedules. According to their analysis, implementing a 4-day, 10-hour work week with one trash and one recycling pickup each day would result in the following:

- Decrease by 5,296 the number of person hours required for trash pickup
- Increase by 1,456 the number of person hours required for recycling pickup
- Decrease by 12 the number of vehicles needed for trash pickup
- Increase by 1 the number of vehicles needed for recycling pickup¹²

The new schedule reduced City expenses by incorporating the recycling routes with the former mixed refuse-only operation. Equipment and manpower requirements were actually reduced. Those employees formally assigned to the every other week recycling collection operation became fully dedicated to cleaning alleys and streets, providing yet another exemplary benefit.

Efficiency of the routes is monitored using multiple methods including automatic vehicle location (AVL) technology, overtime hours, route times and tonnage collected.

The One PLUS ONE program greatly improved the efficiency of the collection systems through its rerouting, and adjustments in curbside collections. Reducing mixed refuse collection to one day per week encouraged more citizens to take advantage of the curbside recycling program. Curbside recycling tonnage has doubled since the inception of One PLUS ONE.

For the southwest, central, some of the northeast, and southeast quadrants of the City, BRESCO is centrally located for mixed refuse disposal. QRL is reasonably accessible for disposal of bulk items. The Northwest Transfer Station (NWTS) serves northeast and north central sectors as well as the northwest. This facility permits the transfer of waste from load packers into trailers for hauling to BRESCO and QRL. The Waste Management facility on Quad Avenue serves as the primary drop off location for curbside recycling load packers, though those in the northwest utilize the Northwest Transfer Station as the residential mixed refuse collection in that quadrant.

4.1.2 Private Haulers

Private haulers in Baltimore City are divided into registered small and large haulers. Large haulers are those who have a rate capacity of over 1,500 pounds and a gross vehicle rating of over 7,000 pounds. Large haulers are charged a flat rate of \$100 for an operating permit, and are charged a tipping fee of \$67.50 per ton at QRL.

Small haulers are those who have a rated capacity of 1,500 pounds or less, and a gross vehicle rating of 7,000 pounds or less. Until 2004, the City charged small haulers, vehicles with a ¾ ton or less capacity permitted by the City Health Department, to dispose of their loads of debris at QRL for \$5.00 per load with an additional charge for loads over 7,000lbs. In 2003, the City auditor discovered that tipping fees were not being properly collected from small haulers and a change in tipping fees was initiated which has simplified the system and increased revenues for the City. Now small haulers are charged a flat rate of \$20 for the first 7,000 pounds, and a prorated amount of \$67.50 for all weight above the 7,000 pound limit.¹³ Additionally, the Health Department charges private small haulers \$35 for an operating permit.

4.1.3 Citizens' Convenience Centers

Citizens also have the option of dropping off waste at one of the seven designated Citizens' Convenience Centers. There are five convenience centers that provide full services which include refuse disposal, multiple recycling for different types of recycling (i.e., commingled goods, scrap metal, tires), and electronics containers. Three other facilities offer only commingled goods recycling. On a weekly basis more than 400 tons of waste and more than 50 tons of recycled goods are received at the Citizens' Convenience Centers. This service has received multiple awards for the service it provides to the citizenry.

4.1.4 Household Hazardous Waste (HHW)

The City's curbside collection system does not include provisions for collecting HHW. This issue was identified as a regional need and is being pursued on a regional basis. In the past, the City studied alternative approaches to the management of these waste materials in Montgomery County (mobile collection), Lancaster County, PA (permanent facility), and Fairfax City, VA (curbside collection). While HHW are not defined as hazardous for regulatory purposes, their chemical composition may present an environmental health concern if they are handled improperly. These wastes include household cleaners, batteries, paints, oil, pesticides, mercury-containing fluorescent and compact fluorescent lights and solvents. Some residents expressed a need for City collection of household hazardous wastes. Previously, the City provided HHW collection days twice a year, during spring and fall, at the Poly/Western High School Complex. In 2011, the City opened the first HHW drop-off area located at 2840 Sisson Street. This facility is open one weekend per month from April through October. Information about retailers that accept rechargeable, lead-acid, and button batteries is available on the City's website. The City collects lithium and laptop batteries, along with electronics, in designated *eCycling* containers located at citizen drop-off centers.

4.1.5 Asbestos

The disposal of asbestos is largely unaddressed. Private companies that remove asbestos from older buildings in the City are mandated to transport it out of Baltimore for disposal. Asbestos removal from City owned buildings is contracted out to private firms.

4.1.6 Construction and Demolition Debris (C&DD)

QRL currently accepts C&DD. The quantity that arrives at QRL is currently manageable; however the City will have to examine options to dispose of C&DD in the future as older buildings are demolished and the capacity of QRL continues to shrink. A viable solution may involve cooperation with a neighboring jurisdiction.

4.1.7 Sanitation Enforcement

Recently, more emphasis has been placed on educating the public about recycling and enforcing sanitation laws. Sanitation Enforcement Officers of the Department of Housing and Community Development issue citations for violation of sanitation laws and also distribute educational materials that outline the waste collection services provided by the City. Citations can also be issued by special enforcement officers from the Health, Police, and Fire departments. Fines associated with sanitation citations range from \$50 - \$500 for activities such as leaving trash out on the wrong day, littering, and failing to remove abandoned vehicles from property (for what constitutes a sanitation violation, see Baltimore City Code Article 1, Subtitle 40). Penalties can either be paid, or accused violators can appear before the Environmental Control Board.

The Environmental Control Board consists of five city Agency Department Heads, (Fire Department, Police Department, Housing and Community Development, Health Department and the Department of Public Works) and five environmental experts (who constitute the Board's scientific panel), two members of the general public, and one member of the Baltimore City Council. The Baltimore City Environmental Crimes Unit, established in 2001, investigates illegal dumping activities on public and private property throughout Baltimore City.

4.2 TREATMENT AND DISPOSAL OF WASTE

Baltimore City's non-recyclable waste ultimately ends up at QRL or BRESKO. Assessing Baltimore's need to alter, extend, modify, or add to the existing solid waste disposal system with regards to waste treatment and disposal depends on the capacity of these facilities.

Prior to using QRL and BRESKO, the City's solid waste treatment and disposal system consisted of Bowleys Lane Landfill, Woodberry Quarry Landfill, and the Pulaski Incinerator. On average, the old system accepted about 560,000 tons of waste generated annually by Baltimore's residents. With the two functioning landfills nearing capacity and the incinerator functioning inefficiently, the City built QRL and issued public revenue bonds to help finance BRESKO.

4.2.1 Quarantine Road Landfill Assessment

4.2.1.1 Development

The site for QRL was purchased by the City in 1984 for \$9.3 million. Funding came from state grants, the 5th Solid Waste Disposal Loan of 1980, \$1.9 million in General Obligation bonds, and \$2.75 million from the Northeast Maryland Waste Disposal Authority. Other costs related to acquisition, design of the landfill and construction of the first cell, totaled \$4.1 million. A portion of the necessary funding came from current City revenues. The balance of the initial development cost (\$3.5 million) was financed through a conditional purchase agreement. The first cell was completed in 1985.

Construction of the second cell began in 1986 and was completed in 1987. Construction and inspection costs for the second cell totaled \$2.4 million. Revenues were used to fund the construction of Cell 2.

Revenues were also used to construct Cell 3. Construction contract and inspection costs for the third cell totaled \$860,000, with construction beginning in late 1987 and completed in the summer of 1988. Other costs related to the design and construction of the second and third cells totaled \$190,000. These costs were funded through the 1st Solid Waste Loan of 1984 and revenues.

Construction of the fourth cell began in the fall of 1988 and was completed 13 months later. The construction contract and inspection costs of \$3.2 million were funded with borrowed funds (a \$2.6 million conditional purchase agreement and approximately \$375,000 in General Obligation bonds) and revenues.

Construction of Cell 5 began in the spring of 1990, and was completed in fall of the same year. Construction contract and inspection costs for the fifth cell totaled \$4.4 million. These costs were funded with a conditional purchase agreement.

Other costs for site preparation for Cell 5 and landfill design and construction incurred while Cell 4 and Cell 5 were under construction and totaled approximately \$1.3 million. These costs were funded by conditional purchase agreement funds (\$390,000) and General Obligation bonds and revenue.

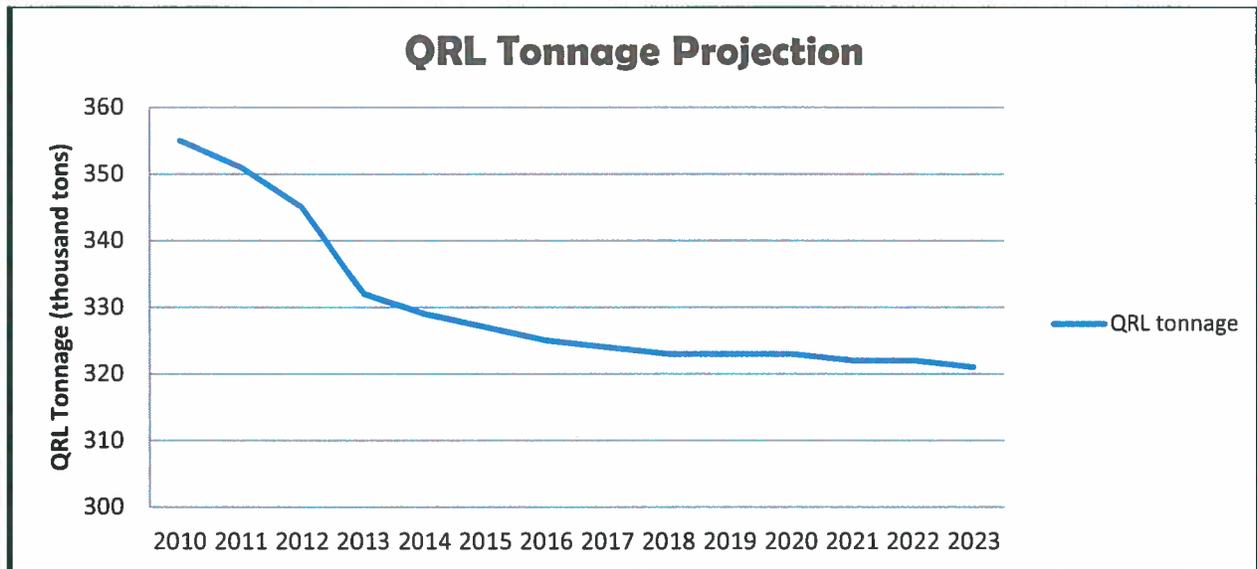
Construction of Cell 6, Phase I began in June 1992 and was completed in November 1993 at a cost of \$8.4 million (General Obligation bond proceeds). For the development of QRL Cells 1 through 6, capital expenditures totaled \$34.6 million. In addition to the \$10 million in conditional purchase agreement funds used to meet these costs, a combination of state grants, General Obligation bonds, and City revenue was used.

In 2008, the landfill gas collection (LFG) and control system at QRL was completed for use by the U.S. Coast Guard. A 15-year contract signed in October 2007 between the City and the US Coast Guard, allows the Coast Guard to utilize landfill methane extracted from QRL. The Coast Guard paid for the installation which was completed in April 2009. The system is expected to cost a total of approximately

\$41 million dollars which includes the cost of maintenance, installation of the gas extraction system processing plant and pipeline, and the \$200,000 to be paid annually to City.¹⁴ The LFG system is consistent with the City’s green approach to governance and solid waste management.

4.2.1.2 Current Usage

The amount of waste accepted at QRL has fluctuated since its introduction into the solid waste disposal system and is currently in decline. Annual tonnage disposed at QRL reached an all-time low in 2012, the last year for which there was comprehensive data for this report. A major change to the landfill daily operation occurred in September 2012 when soil became the daily cover material, replacing the ash that had been used since the inception of the Quarantine Road Landfill. Since 1984, the reduction resulted from the operation of BRESCO; however, in recent years the decline can also be attributed to recycling and source reduction. The final cell at QRL has been opened, and is expected to exhaust its waste disposal capacity in 2026.



4.2.1.3 Future

The future of residential mixed refuse disposal is uncertain. Though Baltimore City will remain in contract with BRESCO to incinerate refuse, it is uncertain of where the resulting ash will be placed after QRL reaches its capacity (expected in 2026). The City may consider an out-of-city disposal site.

4.2.2 Wheelabrator Baltimore Waste-to-Energy Facility (BRESCO) Assessment

4.2.2.1 Development

Since 1985 BRESCO has been processing waste generated in Baltimore City and County and providing clean, renewable energy. Negotiations between the City and NWMDA to support the construction and development of the waste-to-energy facility located in southwest Baltimore began in 1982. It is estimated that BRESCO reduces the volume of landfill space that the debris occupies by up to 90 percent. The dense compaction of BRESCO ash has extended QRL’s life expectancy. The facility was designed, built, and continues to be owned by Wheelabrator Technologies.

4.2.2.2 Current Usage

BRESCO incinerates Baltimore's waste 24 hours a day, 7 days a week, and produces 510,000 pounds of steam per hour that is sold to Trigen and distributed through the City's steam heating loop or sent through power turbines that can produce 60 megawatts; enough to power 68,000 homes.¹⁵ From Baltimore City alone, BRESCO processed 416,347 tons of waste in 2011. Including Baltimore County and commercial waste in 2011, BRESCO accepted and disposed of 701,634 tons of waste.¹⁶ The electricity generated at BRESCO is purchased by Baltimore Gas and Electric Company (BGE). Additionally, BRESCO is granted renewable energy credits from a Maryland renewable energy program for producing energy in a sustainable manner, and the plant sells these credits to BGE. Renewable energy credits are equivalent to 1 kilowatt hour of energy produced by renewable means and are tradable commodities in the energy industry.

4.2.2.3 Future

A new agreement for the City to dispose of wastes at BRESCO was ratified in July 2011 by the City's Board of Estimates. This new agreement between Wheelabrator and the City is for ten years and provides many benefits to the City beyond disposal capacity including preferred energy purchase rates.

4.2.3 Northwest Transfer Station Assessment

4.2.3.1 Northwest Transfer Station Development

The Northwest Transfer Station has been in operation since the late 1970s. The original design provided for a totally enclosed tipping floor with collection vehicles dumping into three pits with hydraulic push plates to compact and push the waste into transfer trailers. The facility was originally designed for a maximum peak hourly capacity of 80 tons and a daily average of 400 tons.

In the mid-1980s, a two-position outdoor open top transfer addition was built north of the building. The facility is comprised of reinforced concrete-faced retaining walls with an upper concrete paved apron that can accommodate up to seven discharge vehicles. The facility was originally intended to accept bulky trash items, but is now used for the small hauler program (see Section 4.1.2). Bulky items are brought into the building and dumped into one of the three pits and compacted.

While the tonnage brought to NWTS has generally remained the same throughout its existence, the types of vehicles and waste brought there have changed significantly. When originally opened, the transfer station was used primarily by residential waste collection load packers. Until recently, the push pits not only compacted residential waste, but also compacted heavier, bulky wastes, thus putting extra strain on the equipment.

With this in mind, the City planned a \$1.5 million upgrade for the replacement of these compactors and to improve the flow of traffic within the facility, completed in 2003. Also, a project to build a facility for the collection of street sweeping debris from the City's mechanical street sweeping vehicles was completed in the spring of 2001.

4.2.3.2 Northwest Transfer Station Current and Future Usage

With the construction of the aforementioned improvements to the facility, combined with a projected minimal increase in trash generation over the period covered by this plan, the Northwest Transfer Station will have sufficient capacity for the projected tonnage over the next ten years. Projections of tonnage to be brought to the transfer station are based on the projected tonnage generated by the City as described in Chapter 3.

4.3 FUTURE DISPOSAL OPTIONS

An alternative to source reduction and innovative solid waste disposal methods would be to simply develop a new City-owned facility either inside or outside of the City; however, based on public concerns and a lack of readily available 200 acre tracts, especially in the City, there will be no “new” City landfill constructed. What Baltimore City will pursue is the expansion of its Quarantine Road Landfill. The expansion envisioned is to incorporate the existing landfill footprint with the City-owned property at 5901 Quarantine Road, the former Millennium industrial landfill. The concept is to form a singular land mass by filling across Quarantine Road. This, along with a significant vertical elevation increase, would provide a minimum of 25 operating years to the City’s landfill capacity, ensuring the City’s independence in disposal needs. The recently renegotiated and ratified disposal agreement with Wheelabrator also helps to assure the City’s capabilities of safely and properly disposing of wastes far into the future.

Not willing to merely rest on the merits of its continued disposal self-sufficiency, the City will continue to investigate other techniques and technologies to further enhance not only its disposal capability but also its recycling and reuse strategies. A proven strategy such as reusing landfill space through "landfill mining" will be explored. This could prove especially effective at the aforementioned Millennium site, where red gypsum makes up the majority of the current fill material. Finding an end user for this material would allow the City to remove millions of cubic yards of gypsum, providing millions of cubic yards of waste capacity not presently factored in to the expected landfill expansion capacity. One innovative technology the City is especially interested in is plasma arc gasification, a process that converts organic matter into synthetic gas, electricity, and slag. With further advancements in this technology, the City would seek to partner with other jurisdictions and/or private entities to construct a facility. The long term benefits being the non-use of landfills; production of syngas; few, if any, harmful emissions; and the reuse of the slag material as construction products.

4.4 WASTE PREVENTION, SEPARATION, AND REDUCTION

Waste prevention and source reduction are the most cost effective ways to cope with declining landfill capacity. The City of Baltimore is actively promoting waste reduction within City government, among its citizens, and within the Baltimore region. In the same way that the American public has embraced the concepts of recycling and demanded of their governments and institutions that recycling programs be initiated, waste prevention and reduction are developing increased support.

Local government exercises responsibility over its own waste stream and strongly encourages its citizens to act positively in this area. The City has used technology to reduce the amount of paper used in communication. Additionally, project management, data archiving, and contract management databases are being used by an increasing number of departments at the City. The City’s website (www.baltimorecity.gov) gives useful information regarding City services and programs. Baltimore City also adopted procurement policies within the Bureau of Purchases that underscore and actualize the commitment of the City to waste prevention and reduction. These policies are outlined in each contract let by the City. In addition, the City has encouraged double-sided printing of government documents and has begun to educate its citizens on the advantages of using mulching lawn mowers. In Chapter Five a Plan of Action is presented to maximize the potential for waste prevention and reduction in the City of Baltimore.

4.5 EMERGENCY RESPONSE SYSTEM

State regulations for the development of comprehensive solid waste management plans require that Chapter 4 evaluates programs and procedures for responding to the unplanned (emergency) spilling or leaking of hazardous wastes within the local jurisdiction. In compliance with this requirement, the City's emergency response system for hazardous wastes is summarized below.

Under the leadership of the Baltimore City Fire Department, which has the principle responsibility for responding to hazardous material emergencies in the City, Baltimore's Local Emergency Planning Committee developed a Hazardous Materials Action Plan. The plan includes instructions for handling hazardous material emergencies, sources of information, and parties to be notified.

The City's emergency response system is activated by telephone calls to 911. Callers are asked to provide as much information as possible about the nature of the hazardous material, impending danger, and location and extent of the incident. The facility where the incident occurred, or the transporter, is required to notify the National Response Center of the incident after calling 911.

The Fire Department responds to 911 hazardous materials calls by dispatching a hazardous material task force of fire engines/trucks and a rescue team. Other agencies and resources are notified as required. At the site of the incident, an operations command post is established and the severity of the incident is determined based on the likelihood of public impact. Depending on the public impact and its probable extent, the incident commander may initiate "secure premises," "public relocation," or a "general information" procedure to protect the public until the hazard has been neutralized.

The entire response to the emergency is coordinated by the Fire Department, whose personnel are trained and equipped to handle hazardous material emergencies. Other agencies respond only at the direction of the Fire Department's incident commander, to avoid any duplication of efforts or confusion.

The City's Hazardous Materials Action Plan is incorporated by reference into this solid waste plan. The plan is available for public review in the Maryland Room at the Enoch Pratt Central Library in downtown Baltimore. Also, copies of the plan may be obtained from the Fire Department.

4.6 EDUCATION

All information about what can be recycled, where convenience centers are located, and how to dispose of household hazardous waste can be found on the City's website and is promoted through DPW's Social Media outlets on *Facebook* and *Twitter*. The Office of Recycling assures that all useful sanitation information is included in the DPW calendar which is distributed to each household. Promoting waste reduction and reuse occurs in all the aforementioned forums as well as at spring and summer festivals and special events throughout the year. The Office of Recycling also conducts direct mail campaigns quarterly by targeting specific city neighborhoods and sending informational postcards.

4.7 311

From 6:00 a.m. to 10:00 p.m. every day, the citizens of Baltimore can call 311 to report non-emergency situations related to crime or public service requests. Residents can also use 311 online to log complaints or ask for services such as graffiti removal, rat rub outs, or to log environmental health complaints regarding items such as hazardous waste, sewage, or water quality.

4.8 MIXED SOLID WASTE COMPOSTING

THERE IS POTENTIAL FOR MIXED SOLID WASTE COMPOSTING, CONSIDERING THAT BALTIMORE CITY PRODUCES SIGNIFICANT AMOUNTS OF ORGANIC MATERIALS THAT ARE CURRENTLY DISPOSED WITH OTHER TYPES OF WASTE. IN 2012, THE CITY COMMISSIONED A BIOMASS STUDY TO INVESTIGATE THE POSSIBILITIES OF BIOMASS REUSE. A CITY OWNED AND OPERATED PROGRAM WOULD REQUIRE A LARGE CAPITAL EXPENDITURE. PARTNERING WITH AN OUTSIDE PROVIDER COULD HELP CUT THESE EXPENSES. THE CITY HAS WORKED WITH THE NORTHEAST MARYLAND WASTE DISPOSAL AUTHORITY TO SEEK INTERESTED QUALIFIED OPERATORS IN ESTABLISHING A REGIONAL FACILITY BUT THE ECONOMICS OF SUCH PARTNERSHIP HAVE FAILED TO MATERIALIZE. THE CITY WILL CONTINUE TO PURSUE THE

POSSIBILITY OF ESTABLISHING A COMPOSTING FACILITY EITHER ALONE OR IN PARTNERSHIP WITH A PRIVATE ENTITY TO PROCESS ITS CONSIDERABLE CARBON ORGANICS.



5.0 Plan of Action

COMAR 26.03.03.03 (F) requires that Chapter 5 contain a Plan of Action for the succeeding ten-year period with respect to all types of solid waste and all phases of solid waste management. This Plan of Action is to be based on the background information and assessment presented in the preceding chapters of the plan. The overall purpose of the entire Plan of Action is to demonstrate that the existing and/or planned solid waste management system in the jurisdiction is adequate to support proposed development or redevelopment.

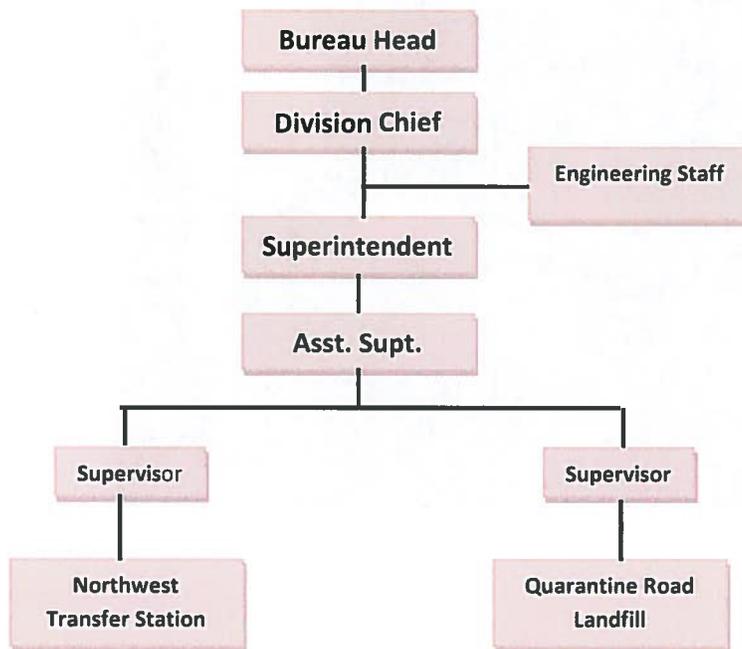
In conformance with these requirements, the City's Ten-Year Solid Waste Management Plan of Action is presented in the following sections:

- 5.1 Solid Waste Disposal Systems
- 5.2 Solid Waste Facilities
- 5.3 Managing Wastes
- 5.4 Implementation Schedule
- 5.5 Financing Waste Disposal Systems
- 5.6 Changes Due to Assessment

In general, the City expects to retain the mixed public/private solid waste management system described in Chapter 3 and elsewhere in this plan for the next ten years, however, the City will continue to work with the private sector to enhance solid waste management capabilities in the City. Since the City's

primary concern is with the public component of the system, its Plan of Action focuses primarily on this area in each section of this chapter. Though much of the City's solid waste disposal system has already been implemented, the City will continue to investigate and consider improved technologies and innovations to advance the overall solid waste management program. The City will be creating a new division to enhance its solid waste disposal operation. The organization chart is shown below.

Figure 1-4
Proposed Environmental Services and Disposal Division [2013]



5.1 SOLID WASTE DISPOSAL SYSTEM

5.1.1 Public Waste Disposal System Future

Any discussion of the future of the City's solid waste disposal system must deal with fiscal resources.

The City plans to take the following actions in order to increase the collection of recycling and improve the efficiency of its mixed refuse collection/transport system.

1. The City will continue to educate citizens with regards to sanitation and recycling through outreach efforts. Mayor Rawlings-Blake has tasked the Department of Public Works to develop a program that will resonate with the citizenry in the manner that the Schaefer administration's "Trash Ball" campaign did.
2. The City will promote recycling through a combination of direct mail, promotional events, social media, community and business meeting, media relations, festivals and fairs, e-mail blasts, the recycling newsletter, and door-to-door canvassing..
3. The City is proceeding with a feasibility study for a Municipal Container Program that will provide wheeled totes to each City household for mixed refuse collections. The benefits to such a program include maximizing labor productivity and morale, increased

recycling participation, reduction in the rat population, reduction of litter in the streets and waterways, fewer worker injuries, and fewer property damage claims. Having standard containers throughout the City also will positively affect not only the citizenry's perception of the City's cleanliness but the national and international perception as well.

5.1.1.1 Technology

The City has outfitted a majority of its fleet with AVL tracking devices to enhance worker performance and allow for more efficiently designed routes. However, this manager's tool has many more applications that will be reviewed and considered in the upcoming years. Having the vehicles equipped with GPS and routing software can assist the crews in completing their route in its entirety and assure no blocks are missed. Problems can be transmitted in real time to supervisors and crews without messages being passed through second and third parties, greatly enhancing response times.

There are many companies that market software that is compatible with the City's ArcMap GIS system that will establish or refine existing solid waste collections' routes as well as being useful in other operations. The capabilities of these software packages are and will continue to be analyzed to see if they will be useful in our future waste collection and removal operations.

5.1.2 Private Solid Waste Disposal System

The City plans to continue working with entities such as the Northeast Maryland Waste Disposal Authority and Baltimore Development Corporation to encourage the private sector to construct and operate solid waste facilities, especially for the recycling of materials such as yard waste, food waste, construction and demolition debris, and those products associated with residential hazardous wastes, such as paint, batteries, and fertilizers. The goal is to maximize private recycling in the Baltimore region. The City has been encouraged by the number of developers who have approached it in the last few years regarding development of some sort of waste disposal/processing/recycling facility, especially those seeking to redevelop "brownfields" sites. As has been the case for the last two decades the City will also continue to develop its own underutilized properties, especially focused on the closed municipal landfills.

5.1.3 Solid Waste Enterprise Fund

In April 2009, the City hired a consulting firm to carry out Full-Cost Accounting (FCA) Study of the components of the Solid Waste Management System. The purpose of the study was to provide the City with an analysis of "full costs" of the Municipal Solid Waste (MSW) management system's elements and activities and create a model for a Solid Waste Enterprise Fund.

Multiple models have been produced and are currently being reviewed by City officials. The City believes that having an enterprise fund to conduct solid waste activities will be more economical for the citizenry while freeing more of the City's General Fund monies to be distributed to other City agencies. The Bureau of Solid Waste would have more control over funding its operations and its capital improvement program through the enterprise fund mechanism.

5.2 SOLID WASTE DISPOSAL FACILITIES

The assessments conducted of the City's solid waste disposal facilities indicate that they are more than adequate to accommodate the solid waste expected to be generated by the City over the period covered by this Plan. Still, there are several modifications that are to be made to these facilities to improve and facilitate their operations.

5.2.1 Quarantine Road Landfill

As discussed in Chapter 4 of this Plan, the City is responsible for disposing of approximately 370,000 tons of solid waste per year. Mixed refuse and its incinerated remains represent by far the largest category of solid waste that the City handles. In addition to mixed refuse, the landfill receives materials from commercial haulers including “small haulers”, and other City agencies such as Water and Wastewater, Transportation, and Housing and Community Development. QRL's existing permitted capacity is sufficient to accommodate these wastes until 2026. The City plans to conduct flyovers of QRL every March to better estimate the landfill's remaining capacity and plan accordingly.

The City is addressing its needs for landfill capacity moving forward. It is highly unlikely that a landfill could be sited anywhere else in the City, making the expansion of the Quarantine Road Landfill the most plausible solution for assuring that the City remains “disposal independent” beyond 2050. This expansion will incorporate the City-owned property at 5901 Quarantine Road, a closed industrial landfill. By integrating two existing landfills into one, the City is not turning any “greenspace” into a disposal site, and is providing the proper closure cover for the aforementioned industrial landfill formerly operated by Millennium Inorganics. This plan of action for the landfill expansion has been discussed at length with both state and federal regulators and has been deemed a reasonable project. This advanced, proactive planning is prudent considering the City is currently operating in the final cell of QRL. This cell along with the overall vertical filling that is still available as part of the original permitted landfill will provide waste disposal capacity through 2026, as previously discussed; however, the City is working to have the expanded landfill permit in place long before 2020.

The City will also explore other projects at the Quarantine Road Landfill such as:

1. Constructing a segregated “small haulers” convenience center in order to improve both citizen and employee safety on the working face of the landfill. By having the licensed small haulers dispose of their materials in a fashion similar to how residents use the drop-off centers, far less truck traffic will be entering the working face where bull dozers compacting wastes are actively operating.
2. Though the City as a whole will be seeking to construct a modern composting facility, the concept of having a portion of the landfill utilized as a composting area will be investigated with the idea of saving landfill space.
3. As part of the investigation and design of the Quarantine Road Landfill expansion project, the City will evaluate the merits of mining the considerable amount of red gypsum that was buried by Millennium Inorganics Chemicals. This could not only provide an unexpected revenue stream, but by having the 50 feet of red gypsum removed from the 50-acre site, the available volume of landfill capacity would be greatly enhanced.
4. Recirculation of leachate is a technology that has been around for some time; however, because of the liner system installed at most of the landfill, the City was unable to truly explore the opportunity. Since the last two landfill cell construction projects include both a synthetic liner and a segregated leachate collection system, it is possible that the City could take advantage of this technology. Recirculating leachate enhances decomposition of the buried wastes, which in turn creates additional landfill space and promotes landfill gas generation. Landfill gas, fifty percent of which is methane, is a commodity. The City could choose to utilize this additional fuel for its own use or to sell to the United States Coast Guard, with whom a long term agreement for gas sales has been in place since 2007.

5. Similar in concept to the compost area, the City will seek to complete a feasibility study for a waste processing facility to sort and convert wastes into fuel as well as to increase the recycling effort. Approximately 100,000 tons of MSW is disposed at the landfill each year. Determining the proper techniques for sorting these materials and then processing them into a viable end use fuel would again save valuable landfill capacity, greatly increase the recycling rate, produce a renewable energy source, and add to the City's revenue stream.

A project that has been studied previously but is certainly worthy of reconsideration is the installation of solar panels not only at the Quarantine Road Landfill but at the closed municipal landfills in the effort to reduce the City's carbon footprint by producing and utilizing energy without fossil fuels.

5.2.2 Northwest Transfer Station

The Northwest Transfer Station will continue to play a major role in the City's solid waste management effort over the next ten years. The implementation of the One Plus ONE residential collections program has shown how vital this facility is to the City's collections' operations.

In order to assure the long-term vitality of this solid waste institution, improvements to the Northwest Transfer Station (NWTS) were completed in September 2012. These improvements included a total tipping floor reconstruction and replacement of push pits/compactors as well as ancillary site work. Another construction project is envisioned for late 2014. This project will primarily focus on the exterior walls of the facility and the roof.

The City continues to operate the NWTS. As it has in the past, the City will continue to investigate public/private partnerships for the operation and maintenance of the transfer station in the hopes of operating more efficiently and cost-effectively in addition to continually seeking mechanisms to enhance revenue generation.

5.2.3 Wheelabrator Technologies Waste-to-Energy Plant (BRESKO)

The City has utilized the BRESKO plant through contracts with the NMWDA since 1984. The most recently ratified contract began on January 1, 2012 and ends on December 31, 2021, a total of ten years. The BRESKO facility is expected to continue to operate, at a minimum, at its current level through 2020. The plant is the only permitted waste-to-energy facility in the City. By continuing to utilize this facility for about 200,000 tons annually of collected waste, the City saves valuable landfill space while also contributing to vital, alternative energy production. This method of disposal is an integral part of the City's Ten-Year Solid Waste Management Plan. The tipping fee rates over the term are favorable, and the contract will provide revenues from property taxes, a site lease, host fees, and the solid waste surcharge. Utilizing the Wheelabrator plant is in accord with the City's sustainability goals because the facility generates renewable energy, providing a net carbon reduction and recovery of metals from the waste stream. Additionally, this new agreement allows for the City to purchase power beginning on July 1, 2011, at rates that will save \$1.8M annually over the first five years of the contract. The combined aspects of reliable, cost-effective waste disposal and below market energy costs provide operational efficiencies and much needed revenue to the City.

Hawkins Point Disposal Contract: This agreement was renegotiated and approved as part of the new contract between the City and Wheelabrator for the City to continue using the BRESKO facility. This contract is for the City to accept the ash generated at BRESKO for disposal. This contract is a revenue source only. The City pays nothing to receive the ash, but rather is paid a per ton ash fee. The agreement is also for ten years. The expected revenue from accepting the ash is estimated at \$42 million over the length of the agreement.

5.2.4 Other Private Disposal Facilities

The City expects to maintain its position of allowing private companies to initiate waste acceptance and transfer facility projects to serve the private sector based on the assessment of supply and demand. The City plans to continue to review such private projects on a case-by-case basis according to City, State and federal laws, zoning requirements, community sentiment and conformity with the City's overall policies on import and export of solid waste. As highlighted in Chapter 3, over the past several years the City has seen the addition of multiple disposal/processing/recycling facilities located within its borders.

TJP RECOVERY PROCESSING FACILITY: THE REFUSE DISPOSAL PERMIT APPLICATION FOR THIS PROPOSED PRIVATE PROCESSING FACILITY IS CURRENTLY UNDER REVIEW BY MDE. THE LOCATION IS CURRENTLY IN OPERATION AS A CONSTRUCTION COMPANY FACILITY AND THE OWNERS HAVE PLANS TO EXPAND OPERATIONS TO INCLUDE A WASTE PROCESSING FACILITY. THE ADDRESS OF THE FACILITY IS 4300 SHANNON DRIVE, BALTIMORE, MD, 21213. THE PERMIT APPLICATION REQUESTS TO OPERATE ON 3 ACRES AND TO INTAKE CLEAN DIRT, CLEAN CONCRETE, AND CLEAN BRICK. THE APPLICATION ESTIMATES THAT THE FACILITY WILL INTAKE UP TO 25,000 TONS OF CONSTRUCTION AND DEMOLITION MATERIAL EACH YEAR. THE ANTICIPATED YEARS OF SERVICE LIFE FOR THIS FACILITY IS OVER 15 YEARS. THE COMPANY HOPES TO BEGIN OPERATIONS OF THE FACILITY IN LATE 2015.

5.3 MANAGING WASTE

As part of the Ten-Year Solid Waste Management Plan, the City has developed a plan of action for each of the waste streams it will encounter over the next ten years. The strategy for each waste stream is described below.

5.3.1 Residential Waste

The projections for the amount of residential waste to be managed over the ten year period covered in this plan is based primarily on the projected population in the City during this period (see Chapters 2 and 3). In general, it is expected that the residential population in the City will increase over the next ten years at an annual growth rate of around 0.41%.¹⁷ Thus, it is a reasonable assumption that residential waste generation will similarly increase and the City will increase residential waste collection accordingly.

In conjunction with the residential collection of mixed refuse and recycling, the City operates five citizens' convenience centers throughout Baltimore. These centers are strictly for residential use. Each facility is equipped to accept household wastes, single stream recycling, hard plastics for recycling, scrap tires, scrap metal, used oil, and scrap electronics. Due to the success of the upgrades completed at the Northwest Citizens' Convenience Center located at 2840 Sisson Street, which also is a station for polystyrene recycling and has a permanent on-site household hazardous waste containment structure for monthly events, the City intends to upgrade the Eastern Citizens' Convenience Center in a similar manner. This will mean four of the five centers have elevated platforms from which residents can readily dispose of their materials.

5.3.2 Commercial Waste

Commercial waste, which includes institutional and industrial (non-hazardous) wastes are managed by private entities in the City. Our projections show a steady decline in the generation of commercial waste throughout the next ten years. With 531 private hauling operations currently permitted to collect and dispose of waste in the City, and the existence of state-of-the-art disposal facilities in and near the City, the management of commercial waste is securely established for the next ten years.

5.3.3 Land Clearing and Demolition Debris

An overall increase in land clearing and demolition debris is projected over the next ten years. A huge increase is expected over the first five years after which it is expected to level off and decline over the following five years. This expectation is based on a projected increase in building demolitions within the next several years. It is expected that private recycling companies that use rubble in their recycling processes will continue to thrive and be the first disposal option of many businesses that will be disposing of this debris. Should that be the case, QRL has the capacity and ability to handle the increased rubble.

5.3.4 Controlled Hazardous Substances

Those who generate controlled hazardous substances are required by State law to properly handle and dispose of this waste. This waste is shipped out of Maryland for final disposal. There are no facilities in the City or State that handles these wastes, nor are there any places that are projected to handle these wastes in the period covered by this plan.

The Bureau of Solid Waste will continue its successful recycling programs and add others as needed. The City will continue to hold its Household Hazardous Waste Collection Day monthly from April through November. Citizens will drop off selected household hazardous waste at the designated location. Long-term planning for a comprehensive regional program will continue at the regional level. Educational efforts to encourage the reduction and alternatives to household hazardous waste will be intensified. This includes the encouragement of sharing excess latex paint between neighbors.

5.3.5 Dead Animals

The City's Department of Health, Animal Control Program is the lead agency for dead animal removal and disposal; however, residents are encouraged to bring their deceased pets directly to the Animal Control Shelter to assist in the process. A private rendering plant is used for the cremation of dead animals. This process is expected to continue into the foreseeable future.

5.3.6 Rat Eradication Operation

The Rat Rubout program was transferred to Solid Waste from the Health Department in 2010. This program now comes under the Property Management Division within Solid Waste. The sole function is for the Pest Control Workers to inspect and bait residential properties for active rat burrows. Solid Waste makes these inspections based on either a citizen complaint that comes in as a 311 Service Request or as a proactive blitz. Rats have been known to be a nuisance and can wreak havoc on a property. It is Solid Waste's goal to limit the rat population within the City by baiting rat burrows and teaching residents how to keep their properties clean and free of trash and debris, so that they don't attract rats. In 2012 the division performed about 20,000 proactive inspections and responded to 8200 citizen complaint for rats. The goal for 2013 is to reduce the citizen complaints by increasing our proactive inspections to 30,000. With the hiring of two new Pest Control Workers to fill vacancies, this target will be reached. Solid Waste conducts frequent proactive sweeps of communities and individual city blocks to treat and eradicate infestations. Solid Waste conducted a successful community multiagency effort in Belair Edison which included proactive baiting, enforcement of trash can use, enhanced communications and rapid request response, and community engagement and outreach. Further into the future Solid Waste will look to increase the number of pest control workers to 20; will implement monthly sewer baiting; and seek to partner with the private sector such as the Abell Foundation to work on programs that would include sterilization in order to get as close to complete eradication of the rat population as possible.

5.3.7 Bulky or Special Wastes

The City's scheduled monthly residential bulk pickup is expected to be continued into the foreseeable future. The annual pickups should remain in the 60,000 range with tonnage expected to remain steady

around 2,000 tons per year. The City will seek to incorporate a special bulk pickup service for residents to pay a fee for the City entering a resident's property in order to remove materials.

5.3.8 Vehicle Tires

The City recognizes that private recyclers of scrap tires currently operate in the City. It is also recognized that a statewide system for scrap tire processing has been developed. The City expects that continued development and refinement of the State authorized scrap tire processing industry will take place over the next ten years. The City expects to continue its partnership with Harford County regarding scrap tire recycling.

5.3.9 Treatment Plant Sludge and Septage

The City expects that three quarters of the 27,000 dry tons of sludge generated annually at the Back River Wastewater Treatment Plant will be treated and stabilized at the onsite heat/drying pelletization plant. Of the remaining sludge approximately 25 percent is processed at the Baltimore Composting Facility and converted to compost. It is expected that the approximately 16,000 dry tons of sludge generated at the Patapsco Wastewater Treatment Plant will continue to be heat dried on site prior to distribution and marketing.

The City plans to complete several capital improvement projects that will optimize water treatment plant process residual (sludge) collection and conveyance to wastewater treatment plants for processing and subsequent disposal.

5.3.10 Leaves

The City collects bagged leaves on each resident's mixed refuse collection day throughout the year. Additionally, the City has instituted a Monday leaf collection program that permits residents to have additional quantities of bagged leaves picked up at the curb.

The City will investigate the possibility of constructing a yard waste composting facility to properly recycle all yard waste including leaves, which are expected to grow in volume as the City's tree canopy continues to grow.

5.3.11 Christmas Trees

Similarly to leaf collection, the City will continue the seasonal collection of Christmas trees. The City will continue its popular program of mulching Christmas trees in January at the Western District Collections facility, providing residents with bags of mulch if they bring their trees. Additionally, for those who do not wish to have their trees mulched, the City will continue to collect the trees on resident's designated mixed refuse day as well as receiving the trees at any of the Citizens' Convenience Centers.

5.3.12 Marine Debris

The City will continue to provide cleaning services for the inner harbor and surrounding waterways through the use of watercraft. Pending adequate funding, the City will increase its fleet of boats so that these waterways may be more thoroughly cleaned.

It is difficult to predict the future generation of marine debris, since it is typically independent of population projections. It is assumed, however that marine debris will increase over the span of this plan. The Maryland Department of the Environment is in the process of developing a TMDL (Total Maximum Daily Load) for trash in the Baltimore Harbor. As a result the City will have to install more debris collection systems as a part of surface water management. This will also result in an increase in trash tonnage delivered to BRESKO and QRL.

5.3.13 Parks

The City will continue to provide park services as an important part of an integrated urban landscape. The City will provide waste collection and cleaning services at the five major parks and at other designated parks in the City. Park waste generation is also largely independent of population fluctuations. However, it is assumed that the waste generated will remain constant throughout the next ten years.

5.3.14 Street Sweeping

The City will continue to provide street and alley sweeping services, likely utilizing significantly updated equipment to do so. Tonnage from street sweeping is expected to increase over the next ten years, based upon the street sweeping program's expansion, due in part to a new MS4 permit from the Maryland Department of the Environment. The expansion will include many additional routes which will see more than 90 percent of city streets receiving scheduled mechanized street sweeping. The City is considering funding street sweeping operations with funding from the State-mandated stormwater fee if allowed.

5.3.15 Animal Manure

While the City will continue to collect animal manure from the Maryland Zoo, it may be used as compost or fertilizer in the future, rather than just as alternative cover at QRL. The amount of manure to be generated at the zoo over the next ten years cannot be precisely estimated, but the City will continue to provide collection and disposal services as needed.

5.3.16 Waste Prevention and Reduction

A significant platform of the City's Ten-Year Solid Waste Management Plan involves the reduction of waste. The City of Baltimore plans to take the following actions to maximize waste prevention and reduction:

1. Poll City businesses to identify current waste reduction activities being practiced and publicize their strategies;
2. Incorporate waste prevention and reduction in all educational and outreach materials and activities of the Recycling Office of the Bureau of Solid Waste;
3. Continue to develop public service ads and educational messages about waste prevention and education with regional partners. Seek corporate sponsors to broadcast these messages as widely as possible;
4. Work with the Northeast Maryland Waste Disposal Authority to promote waste reduction strategies in the commercial sector through support of the business recycling forum, performance of waste audits, and providing training programs to businesses;
5. Expand the diversion of reusable items from the city's waste stream to charitable, non-profit organizations. Promote citizen donations to non-profit organizations;
6. Encourage owners/managers of multi-family dwellings and apartment complexes to provide recycling facilities (bins, dumpsters, etc.) for their tenants in compliance with new State regulations that become effective October 1, 2014; and
7. Investigate the need for a waste prevention/waste reduction committee, possibly as a part of the City's newly appointed Recycling Committee.

5.3.17 Recycling

On May 22, 2012 House Bill 929 was passed requiring that all Maryland jurisdictions, including the City of Baltimore, recycle 35% of their municipal waste. Currently, the City is only recycling 25% of its municipal waste which means we must divert 10% more trash into recycling in order to stay in compliance with the law. In an effort to reach the state mandated recycling rate, the Solid Waste Recycling Office instituted a campaign challenge called *The Drive to 35: Baltimore's Race to Reach a 35% Recycling Rate*. The *Drive to 35* is a citywide movement to raise recycling awareness among the citizens of Baltimore City in an effort to increase recycling tonnage equal to or surpassing the State-mandated goal of 35%. Several events will fall under the Drive to 35 including the recycled art show *Salvage: A Waste of Materials, a Wealth of Art*. Mandated apartment complex recycling is another objective the City will implement in order to maximize its recycling efforts. Continuing with its current programs beyond single stream recycling such as scrap metal, tires, polystyrene, household hazardous waste, etc. is an imperative now and over the course of the next ten years. Consideration for implementing mandatory recycling laws will be vetted.

5.3.18 Baltimore City's Apartment Building and Condominium Recycling (ABCR) Program

In April, 2012, the Maryland General Assembly passed House Bill 1, Environmental Recycling - Apartment Buildings and Condominiums Recycling (ABCR) Program, requiring recycling in all apartment buildings and condominiums that contain 10 or more dwelling units. The law became effective on October 1, 2012 (amending Section 9-1703 of the Environment Article, Annotated Code of Maryland).

Section 9-1703 (b) (12) of the Environment Article, Annotated Code of Maryland requires that the City of Baltimore revise its recycling plan within the Solid Waste Management Plan. Apartment buildings and condominiums must implement a recycling plan by October 1, 2014.

The Baltimore City Department of Public Works, Bureau of Solid Waste with the cooperation of the Department of Housing and Community Development has identified one thousand two hundred and fifty-three (1,253) apartment buildings including sixty-four (64) condominiums that fall under the scope of the law (Appendix F). The Recycling Office has confirmed recycling programs with the condominiums and, in fact, the Bureau of Solid Waste provides collection from these condominiums. The Recycling Office is following up with a letter to the letter send by MDE on February 23, 2013 to apartment buildings and condominium officials that discuss the requirements of the law including that the materials that must be recycled are, at a minimum, acceptable plastic, metal and glass beverage containers and acceptable paper products.

The list of apartment buildings and condominiums that fall under House Bill 1 (Appendix F) will be made available to the public on the Baltimore City website: www.baltimorecity.gov on the Department of Public Works home page and the Department of Housing and Community Development homepage. Residents may request a copy of the list by downloading it from the website or by requesting a copy by contacting the Recycling Office by mail, email or by phone at:

Recycling Office
Department of Public Works
Bureau of Solid Waste
Abel Wolman Municipal Building
200 Holliday Street, Room 1001
Baltimore, MD 21202

Apartment and condominium officials shall complete and send to the Recycling Office a Maryland Recycling Act (MRA) Survey Form, reporting to the City on an annual basis details on the required recycling activities.

Collection of Materials

Apartment and condominium officials directly, or through contracting with a private sector company are responsible for providing all containers, labor, and equipment necessary to fulfill recycling requirements throughout their buildings unless condominiums qualify under Article 23 of the Baltimore City code. By Baltimore City law, condominiums with 50%+ owner occupied units qualify for mixed refuse and recycling collection from the Bureau of Solid Waste upon request from the property owner and review and approval of the Bureau Head. Sixty-four of these qualified condominiums currently receive city services and are recycling acceptable plastic, metal and glass beverage containers and acceptable paper products. Non-qualifying condominiums will be notified to comply with the law.

The apartment and non-qualifying condominium officials must ensure collection and transportation of recyclable materials from apartment and condominium locations to markets or other legal recycling destinations. Residents will be responsible for placing recyclables in recycling containers prior to their removal on the scheduled pick up day.

Marketing of Materials

Apartment and non-qualifying condominium officials are responsible for the marketing or other legal recycling disposition of their recyclables. The apartment and condominium officials shall submit an annual report (survey form) detailing the recycling tonnage removed from the apartment and condominium and the markets or legal recycling destinations for the materials.

Materials Required to be Recycled

Apartment and non-qualifying condominium officials shall ensure, at a minimum, that the following materials are recycled:

- Acceptable Plastic
- Metal Beverage Containers
- Glass Beverage Containers
- Paper

Responsible Parties

Entities that will be involved in implementing the law are:

A. Mayor and City Council of Baltimore - Responsible for adopting the MOE approved language of the ABCR Program for the 10 Year Solid Waste Plan/Recycling Management Plan amendments.

B. Department of Public Works, Bureau of Solid Waste, Recycling Office:

• Shall provide the ABCR Program information received from the State regarding the requirements of the Annotated Code of Maryland with the apartment and condominium officials to develop a recycling program for residents and facilities.

• Develop the requirements of an ABCR Program.

• Update/amend the 10-Year Solid Waste Management Plan to include the ABCR Program with revisions to the sections relating to the Baltimore City Recycling Plan.

• Provide a copy of the annual MRA recycling survey form to be used by apartment and condominium officials in reporting recycling activities at the end of each year.

• Monitor the progress and performance of the ABCR Program.

C. Owner or Manager of the Apartment Building or Councils of the Unit Owners of Condominiums:

• Responsible for providing recycling services to the residents of each apartment building or condominium by October 1, 2014.

• Secure and manage recycling contracts with the contractor for providing material collection and recycling services from the building locations.

- Provide material collection bins and containers of suitable quantity and size for occupants to collect and transfer recyclables to designated areas on site for transporting of the materials from the buildings to recycling markets.
- Perform record keeping and submit a recycling survey form to the City on an annual basis.

D. Development/Implementation Schedule for the ABCR Program:

- Prior to October 31, 2013, Baltimore City will distribute approved language of the ABCR Program to the apartment and condominium officials for program implementation.
- Prior to March 1, 2014, apartment and condominium officials will educate the residents about the ABCR Program and discuss the requirements of the law.
- Prior to May 1, 2014, apartment and condominium officials will provide training or assistance to the residents and advise them of the date when the residents can start recycling the materials.
- Prior to July 1, 2014, apartment and condominium officials will finalize arrangements for the transportation of collected recyclables to acceptable recycling markets.
- On or before October 1, 2014, residents start recycling the materials at the apartment buildings or condominiums.

ABCR Program Monitoring

The Bureau of Solid Waste, Recycling Office will monitor the progress and performance of the ABCR Program and shall have the right to inspect for compliance, containers utilized and review records.

The apartment and condominium officials shall be responsible to keep the residents current on new regulations, laws, and mandates affecting recycling and provide new materials, practices, and procedures when needed.

The apartment and condominium officials shall initiate actions to correct all deficiencies within 60 days of being notified and perform any other tasks necessary to achieve compliance with State and Baltimore City law.

Newly Established Apartment Buildings and Condominiums

New apartment buildings and condominiums that meet the Annotated Code of Maryland ABCR Program requirements shall begin participating in the program within 90 days of being notified by the Baltimore City Bureau of Solid Waste, Recycling Office.

Program Enforcement

The Baltimore City Bureau of Solid Waste, Recycling Office will ensure that the recycling at apartment and condominiums will be implemented in accordance with the Annotated Code of Maryland.

Upon receiving a complaint or report of violation, the Baltimore City Bureau of Solid Waste, Recycling Office shall investigate and if a violation exists, a notice will be issued, in writing, to the responsible party requiring them to correct all deficiencies and perform any other tasks necessary to achieve compliance with the law.

- Any person, firm or corporation who or which fails to correct, within thirty (30) days from notice from Baltimore City, all cited in said violation notice shall be subject to citation for a civil infraction, in accordance with § 9-1711 of the Environment Article of the Annotated Code of Maryland, punishable by a fine of not exceeding \$50 for each day on which the violation occurs and each day said violation shall be permitted to exist shall constitute a separate offense.

- If the citation is not paid in a timely fashion, Baltimore City may enforce the fine by an action in a Maryland court of competent jurisdiction.

5.5 FINANCING WASTE DISPOSAL SYSTEMS

Baltimore City has serious financial challenges, and it is essential that monetary costs and benefits are analyzed for the City's solid waste management system, and taken into account for future plans. The implementation of a solid waste enterprise fund would provide the financial support to assure that the City upgrades its existing waste disposal systems, while exploring other techniques/technologies such as plasma arc gasification.

5.5.1 Costs of Solid Waste Management

In Fiscal Year 2011, the City spent a total of approximately \$66.7 million to collect and dispose of solid waste. As shown in Table 5-2, \$25.1 million of this was spent as part of the overall City cleanliness effort. This consisted of street, alley, lot and park cleaning, business district cleaning, mechanical street cleaning, graffiti removal and eviction and fire debris removal. An additional \$39.2 million was spent on residential waste collection and disposal including \$24 million for waste collection and transport, \$15.2 million for disposal, \$2.4 million for administration, engineering, office and field support. These expenditures were funded through the City's operating budget and are considered as an annual operating cost.

In addition to these operating costs, the City expended \$1.5 million for interior renovations to the Northwest Transfer Station. The primary tasks completed during this project were to rehabilitate the tipping floor and to replace push pits and compactor units. Also, the City has undertaken several projects at the Quarantine Road Landfill. An erosion and sediment control project was completed in December 2011. This project incorporated both QRL as well as the City-owned industrial landfill at 5901 Quarantine Road. This project entailed upgrading all sediment controls and complete stabilization of both sites. The cost incurred was \$5.4 million. The City also hired two consulting firms to work on all aspects of the proposed landfill expansion. The cost incurred was \$6 million.



Table 5-1: Solid Waste Management Operational Expenditures

	Budgeted Fiscal 2011	Budgeted Fiscal 2012
Special Services / Street & Alley Cleaning		
Graffiti Removal	\$921,963	\$759,344
Removal of Eviction Chattels	\$0	\$0
Removal of Fire Debris	\$0	\$0
Business District Cleaning	\$2,324,000	\$2,345,505
Street and Alley Cleaning Operations	\$17,434,318	\$17,409,815
Mechanical Sweeping Operations	\$3,849,503	\$3,975,247
Seasonal Operations	\$0	\$0
Rat Control	\$592,855	\$744,588
SUBTOTAL: Special Services	\$25,122,639	\$25,234,499
Collection/Transport		
Mixed Refuse Collection	\$15,945,737	\$15,788,698
Condo/Public Building Collections	\$324,733	\$310,736
Bulk Trash Collection	\$1,100,000	\$528,570
Property Management Cleaning and Boarding	\$3,977,886	\$2,091,431
Marine Operations	\$1,109,730	\$1,138,735
Northwest Transfer Station	\$1,533,560	\$1,408,013
SUBTOTAL: Collection/Transport	\$23,991,646	\$21,266,183
Disposal		
Landfill	\$3,825,521	\$4,784,195
BRESCO Tipping Fees	\$11,360,327	\$11,360,327
SUBTOTAL: Disposal	\$15,185,848	\$16,144,522
Other:		
Landfill Trust	\$0	\$800,000
Landfill Development	\$0	\$0
SUBTOTAL: Other	\$0	\$800,000
Administration		
Bureau Administration*	\$2,366,396	\$2,236,680
SUBTOTAL: Administration	\$2,366,396	\$2,236,680
GRAND TOTAL:	\$66,666,529	\$65,681,884

10-Year Solid Waste Management Plan

The City's future capital investment in solid waste management is dependent upon the availability of funds and funding sources for projects. Table 5-3 outlines the City's allocation requests for solid waste management capital funding through Fiscal Year 2015 and also predicts some future costs. The City's Department of Planning is responsible for the allocation of capital funds to City agencies based on agency needs and the availability of funds.

Table 5-2: City's Capital Expenditures for Solid Waste Management

CIP NO.	PROJECT DESCRIPTION	2014	2015	2016	2017	2018	2019	FUTURE	TOTAL
517-047	Quarantine Road Landfill Expansion	\$0	\$10,000	\$10,000	\$4,000	\$4,000	\$5,000	\$5,000	\$38,000
517-911	Quarantine Road Landfill Site Improvements	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL OTHER FUNDS' REQUEST	\$0	\$10,000	\$10,000	\$4,000	\$4,000	\$5,000	\$5,000	\$38,000
517-500	Solid Waste Facility Renovations	\$0	\$0	\$350	\$350	\$500	\$500	\$0	\$1,700
517-911	Quarantine Road Landfill Site Improvements	\$0	\$0	\$250	\$250	\$500	\$500	\$500	\$2,000
517-002	Urgent Needs - Solid Waste Infrastructure	\$0	\$0	\$0	\$0	\$0	\$0	\$500	\$500
	TOTAL GENERAL OBLIGATION BONDS' REQUEST	\$0	\$0	\$600	\$600	\$1,000	\$1,000	\$1,000	\$4,200
517-500	Solid Waste Facility Renovations	\$0	\$400	\$350	\$0	\$0	\$0	\$500	\$1,250
517-002	Urgent Needs - Solid Waste Infrastructure	\$250	\$100	\$100	\$100	\$100	\$100	\$500	\$1,250
	TOTAL GENERAL-HUR FUND REQUEST	\$250	\$500	\$450	\$100	\$100	\$100	\$1,000	\$2,500
517-500	Solid Waste Facility Renovations	\$0	\$100	\$200	\$200	\$100	\$100	\$250	\$950
517-010	Eastside Waste Transfer Station/ C&D Processing Facility	\$0	\$300	\$0	\$0	\$0	\$0	\$0	\$300
517-501	Methane Gas Collection System	\$0	\$0	\$250	\$250	\$500	\$500	\$500	\$2,000
517-911	Quarantine Road Landfill Site Improvements	\$800	\$400	\$300	\$300	\$300	\$300	\$600	\$3,000
517-002	Urgent Needs - Solid Waste Infrastructure	\$200	\$200	\$250	\$250	\$100	\$100	\$500	\$1,600
	TOTAL GENERAL FUND REQUEST	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,850	\$7,850
	TOTAL SOLID WASTE CIP	\$1,250	\$11,500	\$12,050	\$5,700	\$6,100	\$7,100	\$8,850	\$52,550

[Figures shown in Thousands]

Table 5-3: City's Schedule of Outstanding Debt for the Bureau of Solid Waste

Industrial Development Authority Quarantine Road Landfill Debt Service Schedule			
Addendum	Year Issued	Final Payment Date	Outstanding Debt Service
33	2005	7/1/2016	\$3,234,000
34	2006	7/1/2016	\$1,548,000
38	2007	7/1/2016	\$1,000,000
39	2008	7/1/2016	\$2,570,000
40	2012	7/1/2016	\$13,828,000
Total -			\$22,180,000

The referenced debt remaining is related to the Quarantine Road Landfill Cell No. 6, Phase II, and the proposed Quarantine Road Landfill Expansion project.

Waste Categories:	Tons	Revenues(\$)
Rolloff	1,486.35	0.00
City Mixed Resuse	24,066.57	0.00
City Street Dirt	2,079.78	0.00
Sweepers	59.55	0.00
City Public Use Center	9,645.66	0.00
E-Cycling Electronics	17.09	0.00
Harford Co.Tires [RECYCLED]	93.13	0.00
City Agencies Charge	4,172.01	250,320.60
City Combined	0.00	0.00
Private Haulers	6,192.40	417,999.22
BRESCO Ash	202,663.25	3,216,265.78
Transportation	24,425.45	1,465,527.00
Charities	118.86	0.00
Zoo Manure	0.00	0.00
Wastewater Gritscreen	5,850.20	394,890.83
Harford County ASH	33,850.21	202,762.65
Small Haulers	4,887.42	189,240.00
Small Haulers over 7000 lbs	2,038.06	45,860.00
Special Cleanups	672.79	0.00
Mc Henry Row soil	3,738.77	93,469.25
White Goods	103.14	0.00
Charities ~ 100 Ton	5,357.33	321,439.80
Water Wstewater	18,194.49	1,228,133.21
BGE Fly Ash	1.32	89.10
Evic. Chattel from Landlords	0.00	0.00
Total	349,713.83	7,825,997.44

5.5.2 Revenues from Solid Waste Management

In Fiscal Year 2010, the City received a total of \$8.23 million in revenues derived from solid waste collection and disposal. As shown in Table 5-5, most of these revenues (93 percent) were generated at QRL. Payments from BRESCO, including tipping fees for ash disposal, totaled \$7.75 million.

Detailed information on landfill tipping fee revenue for Fiscal Year 2010 is presented in Table 5-6. Actual tonnages of wastes accepted are listed, together with charges that accrued for those tonnages. The largest tonnages of wastes accepted do not necessarily yield the highest revenue, because tipping fees vary for different users of the landfill. For example, the fees charged for BRESCO ash, and other wastes were considerably lower than the standard \$67.50 per ton fee. No tipping fees are charged for disposal of

wastes collected by the Bureau of Solid Waste or City agencies whose work is supported by the City's General Fund.

5.6 CHANGES DUE TO THE ASSESSMENT

The assessment of the solid waste disposal systems performed in Chapter 4 has revealed a comprehensive plan for the management of solid waste throughout the next ten years. CitiStat provides a powerful tool for the analysis and modification of the solid waste disposal system in the City.

The City's most pressing issues are decreasing the cost burden of solid waste collection and disposal on the City's General Fund and what the City's plan of action will be once QRL reaches capacity in 2026. The City is currently examining other opportunities for revenue generation to generate funds for solid waste management. These opportunities include, but are not limited to, potential bottle and/or bag taxes, waste management fees based upon the services provided to residents, non-profits, and business entities (instituting a solid waste enterprise fund), fees for private haulers using public drop-off centers, and a significant increase in sanitation code enforcement through the creation of a Department of Public Works sanitation violation investigation squad.



6.0 REFERENCES

- ¹ MDE "Modification to Phase II Attainment Plan for the Baltimore Nonattainment Area and Cecil County: Revising the Mobile Source Emission Budgets" Nov 1999
- ² EPA "1-Hour Ozone Information" Jan 25, 2010
- ³ Maryland State Archives Feb 19, 2010 <http://www.msa.md.gov/msa/mdmanual/36loc/bcity/html/bcityus.html>
- ⁴ MDE
- ⁵ R.L. Polk & Co. "Polk Finds More Vehicles Scrapped than Added to Fleet" March 30, 2010
- ⁶ Braitman, et al. "Changes in Driver Fatality Rates and Vehicle Incompatibility Concurrent with Changes in the Passenger Vehicle Fleet" May 2007
- ⁷ 2009 Annual Sewage Sludge Generator Report for Patapsco WWTP
- ⁸ 2008 Annual Sewage Sludge Generator Report for Patapsco WWTP
- ⁹ Medical Waste in MD, 2004 <http://www.policyarchive.org/handle/10207/bitstreams/5161.pdf>
- ¹⁰ Stericycle Inc, <http://www.chwmeg.org/asp/search/detail.asp?ID=6071>
- ¹¹ Baltimore City Composting Facility <http://www.orgro.cc/about/index.html>
- ¹² GBB Nov 28, 2008 "City of Baltimore Collection Day Change Analysis"
- ¹³ www.comptroller.baltimorecity.gov/audits%20info/Audit%20Reports/Landfill%20Follow%20Up.pdf: *DPW Cash Handling and Collection Procedures for Revenues Generated at the Quarantine Road Landfill: Follow-Up Review April 2004*
- ¹⁴ US Coast Guard April 22, 2009 http://www.uscg.mil/hq/cg4/yard/Landfill_gas_project.asp
- ¹⁵ <http://www.wheelabratortechnologies.com/plants/waste-to-energy/wheelabrator-baltimore/>
- ¹⁶ Wheelabrator Baltimore L.P. *Performance Parameter Report- Tonnage Allocation 2008*
- ¹⁷ Maryland Department of Planning, 2008

