2011 SOLID WASTE MANAGEMENT PLAN

COWLITZ COUNTY, WASHINGTON

Prepared for
COWLITZ COUNTY
DEPARTMENT OF PUBLIC WORKS
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Prepared by
Maul Foster & Alongi, Inc.
400 East Mill Plain Blvd., Suite 400
Vancouver, WA 98660

MAUL
FOSTER
ALONGI

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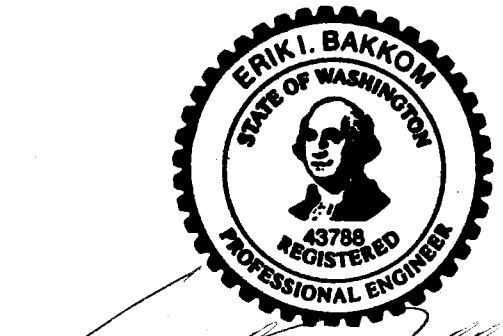
The material and data in this report were prepared under the supervision and direction of the undersigned.

MAUL FOSTER & ALONGI, INC.



Erik Bakkom, PE
Senior Engineer

Seth Otto, AICP, LEED AP
Project Planner

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ACRONYMS AND ABBREVIATIONS

ACM	asbestos-containing material
Btu/lb	British thermal units per pound
Building and Planning	County Department of Building and Planning
CCHD	Cowlitz County Health Department
CDL	construction, demolition, and land clearing
CDP	census-designated place
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFC	chlorofluorocarbon
CLCP	community litter cleanup program
CMSWL	Criteria for Municipal Solid Waste Landfills
CPG	Coordinated Prevention Grant
the County	Cowlitz County
cu yd	cubic yard
Ecology	Washington State Department of Ecology
EHU	Building and Planning Environmental Health Unit
ELF	Equipment, Land, and Facilities
HDPE	high-density polyethylene
Headquarters Landfill	Weyerhaeuser Headquarters Regional Landfill
HHW	household hazardous waste
IMEX	Industrial Materials Exchange
LDPE	low-density polyethylene
Longview Fibre	Longview Fibre Paper and Packaging, Inc.
MFS	minimum functional standards
MP	mixed waste paper
MRF	material recovery facility
MRW	moderate-risk waste
MRWP	County Moderate Risk Waste Plan
MSL	mean sea level
MSW	municipal solid waste
MTCA	Model Toxics Control Act
NIOSH	National Institute for Occupational Safety and Health
OFM	State of Washington Office of Financial Management
PCB	polychlorinated biphenyl
PET	polyethylene terephthalate
Public Works	Cowlitz County Department of Public Works
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RDF	refuse-derived fuel
SEPA	State Environmental Policy Act

ACRONYMS AND ABBREVIATIONS (CONTINUED)

SQG	small-quantity generator
SWAC	Solid Waste Advisory Committee
SWCAA	Southwest Clean Air Agency
SWHS	solid waste handling standards
SWMP	solid waste management plan
TDF	tire-derived fuel
Tennant Way Landfill	Cowlitz County Landfill at Tennant Way
TRRWP	Three Rivers Regional Wastewater Plant
USEPA	U.S. Environmental Protection Agency
UTC	Washington Utilities and Transportation Commission
WAC	Washington Administrative Code
Waste Control	Waste Control Recycling, Inc.
WGA	waste-generation area
WISHA	Washington Industrial Safety and Health Administration
WSDA	Washington State Department of Agriculture
WSESD	Washington State Employment Security Department

1 INTRODUCTION AND BACKGROUND

1.1 Introduction

1.1.1 Purpose and Need

The State of Washington has enacted legislation to establish comprehensive statewide programs for solid waste handling and solid waste recovery and/or recycling. The purpose of these requirements is to prevent land, air, and water pollution, and to conserve the natural, economic, and energy resources of the state. The statutory requirements to support these programs are contained in chapter 70.95 of the Revised Code of Washington (RCW).

Each county in the state is required by RCW 70.95.080 to prepare a comprehensive solid waste management plan (SWMP). According to Section 173-304-011 of the Washington Administrative Code (WAC), "the overall purpose of local comprehensive solid waste management planning is to determine the nature and extent of the various solid waste categories and to establish management concepts for their handling, utilization, and disposal consistent with the priorities established in RCW 70.95.010 for waste reduction, waste recycling, energy recovery and incineration, and landfill."

Cowlitz County (the County) previously satisfied the state requirements with a revision of the comprehensive SWMP dated December 2007. RCW 70.95.110 requires that each plan be reviewed and revised, if necessary, at least every five years.

The current revision of the SWMP reflects changes to the County's capacity to manage solid waste resulting from the acquisition of the Weyerhaeuser Headquarters landfill. The Headquarters landfill was acquired by the County in 2011 and creates 44 million cubic yards of new landfill disposal capacity within the county.

1.1.2 Reference Documents

As a revision of the County's 2007 SWMP, this document relies heavily on concepts, text, and information presented in the 2007 SWMP.

The 2007 SWMP was organized and written to follow guidelines published by the Washington State Department of Ecology (Ecology) in 1999 for the development of SWMPs. The 1999 Ecology document, *Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions* (Ecology, 1999), are referred to throughout the County's revised SWMP as the "Ecology guidance document" or a variation thereof. WAC 173-304-011

states that these guidelines are to be followed by local governments, and the County's revised SWMP is organized and written to follow the latest Ecology *Guidelines for the Development of Local Solid Waste Management and Plan Revisions*, issued February 2010, Publication No. 10-07-005

Other documents and sources of information were used during the preparation of specific SWMP chapters or components. These documents or sources are noted in the associated SWMP chapter or component and included in a master reference list at the end of the SWMP.

1.2 County Solid Waste Policies

The County's solid waste policy mission statement, as adopted by the County Board of Commissioners on March 19, 2002, is as follows:

Provide the residents, businesses and cities of the county with the most effective solid waste management possible considering economics, the environment, regulatory requirements, and the social and political environment of the community.

The Board of Commissioners also adopted the following seven solid waste policies:

- Policy 1—Through collaborative effort, manage the disposal of solid waste in the county utilizing the County landfill and/or through other disposal options.
- Policy 2—The County shall preserve the capacity and value of the landfill for the benefit of county residents by managing imports of solid waste from outside the county.
- Policy 3—The Solid Waste Advisory Committee (SWAC) will assist and advise the Board of County Commissioners on solid waste issues.
- Policy 4—Pursue energy recovery at the landfill, in accordance with the goals of the State and the SWMP, by conducting a study to determine the economic feasibility of collecting and marketing landfill gases generated by the landfill.
- Policy 5—Fund county solid waste utility operations and capital improvements through user fees.
- Policy 6—Evaluate an economically sound source separation program in the urban, non-incorporated areas of the county.
- Policy 7—Continue to pursue and evaluate long-term solutions for the disposal of solid waste that consider both in-county and export alternatives.

1.3 SWMP Goals and Objectives

The goal of the SWMP is to provide information and present management concepts that can be used in support of the County's solid waste policies and mission statement. The following four general objectives are used throughout the SWMP development process:

- Ensure that the County complies with applicable RCW and WAC solid waste planning requirements.
- Provide a mechanism for public participation in the County's solid waste planning process.
- Support statewide waste reduction and recycling goals by developing improved County strategies and management concepts.
- Employ sound and generally accepted cost analysis methods to determine economic effectiveness.

These general objectives are very similar to those contained in the 1993 and 2007 SWMPs. Specific objectives or action items were presented to the SWAC and discussed during the preparation of individual SWMP chapters.

1.4 Plan Participants

According to RCW 70.95.010(6c), "it is the responsibility of county and city governments to assume primary responsibility for solid waste management and to develop and implement aggressive and effective waste reduction and source separation strategies." The County is required by RCW 70.95.080 to develop the SWMP in cooperation with each city within the county. The cities have the option of preparing their own plans for integration into the County SWMP, preparing a joint city/County plan, or authorizing the County to prepare a plan for the city as part of the County SWMP.

The incorporated areas of the county are Castle Rock, Kalama, Kelso, Longview, and Woodland. Each city must authorize the County to prepare a plan for each city's solid waste management for inclusion in the County's SWMP. The 2007 SWMP opted to include the County's Moderate Risk Waste Plan (MRWP) as an appendix to the plan rather than remain a standalone plan. The current revised plan will also include the MRWP, updated in 2010. Hence, each city must also authorize the County to prepare a plan for management of each city's moderate risk waste (MRW). Following completion of a preliminary draft SWMP document, the County must enter into interlocal agreements with participating jurisdictions. Following Ecology's review of the preliminary draft SWMP, the County must request a resolution of SWMP and MRWP adoption from each city. These resolutions of authorization and adoption and the interlocal agreements from each city

are then included with the revised SWMP (Appendix A). The final draft SWMP also includes a resolution of adoption from the County and a letter of participation from the SWAC.

The County may request a courtesy review of the final draft SWMP by Ecology prior to adoption by the cities and the County. Following adoption by the cities and County, the final draft is submitted to Ecology for review and approval of the final plan.

1.5 Major Stakeholders

Major stakeholders in the SWMP and the SWMP development process include the Cowlitz County Department of Public Works (Public Works), the County Department of Building and Planning (Building and Planning), the SWAC, the Board of County Commissioners, city councils, citizens, industry, collection companies, and recycling organizations.

Agencies with responsibilities related to solid waste include Ecology, Public Works, Building and Planning, and individual city solid waste management departments. Ecology is generally responsible for review and oversight of solid waste activities in Washington, but many specific solid waste responsibilities have been assigned to local agencies. For example, Ecology is responsible for review and approval of the SWMP, while Building and Planning is responsible for solid waste permitting and enforcement activities. Public Works' responsibilities include management and operation of the existing landfill facility for disposal of municipal solid waste (MSW), determining recycling service levels in unincorporated areas of the county, implementing household hazardous waste (HHW) services, administering disposal contracts and providing planning services for municipal and MRW generated within the county. Each city is responsible for solid waste collection, recycling programs, and nuisance abatement programs within its jurisdiction.

Major stakeholders contribute throughout the SWMP development process by providing comments, data, and information, and by participating in discussions. Public Works, with its solid waste management responsibilities, and the SWAC, with its advisory responsibilities, play particularly important roles because they review draft chapters of the SWMP throughout the plan development process. The SWAC by-laws are includes as Appendix F.

1.6 Public Participation

Formulating a procedure to ensure involvement of the general public at an early stage is an important part of the SWMP development process. The Ecology guidance document states, "while the local SWAC will play a key role in plan development, considerations should be made for the general public." The Ecology guidance document strongly encourages the local

SWAC to actively seek public involvement throughout the planning process, and emphasizes that the SWAC should "educate the public on the committee's work and the purpose for the planning" and "seek communication with the public to determine progress in plan implementation, evaluation, and improvement." Collaborating with the public throughout the process, rather than just informing the public at the end of the process, is also consistent with the County's mission statement.

The SWAC plays a key role in the SWMP development process. As required by RCW 70.95.165 the SWAC consists of a minimum of nine members representing a balance of interests including, but not limited to, citizens, public interest groups, business, the waste management industry, and local elected public officials. The SWAC meets periodically to assist in the development of solid waste programs and policies, as well as to review and comment on solid waste programs and policies prior to their adoption.

Ecology recommends that, before the preliminary draft SWMP is submitted to Ecology for preliminary review, there should be a 30-day public comment period as well as at least one public meeting or workshop to answer questions, collect testimony, and address issues raised during the comment period. Copies of the preliminary draft SWMP would then be sent to local planning, health, and public works departments; the public; and participating jurisdictions, and made available at local government offices and libraries.

Ecology also recommends that public hearings be included as part of the plan adoption process for each jurisdiction participating via an interlocal agreement, and that a public hearing be part of the County adoption process. Adequate public notice of meetings, hearings, workshops, and comment periods should be provided throughout the plan development process.

1.7 SWMP Requirements

RCW 70.95.090 requires each county and city comprehensive SWMP to include the following:

- A detailed inventory and description of all existing solid waste handling facilities, including an inventory of any deficiencies in meeting current solid waste handling needs.
- The estimated long-range needs for solid waste handling facilities projected 20 years into the future.
- A program for the orderly development of solid waste handling facilities in a manner consistent with the plans for the entire county that shall:
  - Meet the solid waste handling standards (SWHS) adopted by the County and all laws and regulations relating to air and

water pollution, fire prevention, flood control, and protection of public health.

  - Take into account the comprehensive land use plan of each jurisdiction.
  - Contain a six-year construction and capital acquisition program for solid waste handling facilities.
  - Contain a plan for financing both capital costs and operational expenditures of the proposed solid waste management system.

- A program for surveillance and control.
- A current inventory and description of solid waste collection needs and operations within each respective jurisdiction that shall include:
  - Any certificate for solid waste collection granted by the Washington Utilities and Transportation Commission (UTC) in the respective jurisdictions.
  - Any city solid waste operation in the county and the boundaries of such operation.
  - The population density of each area serviced by a city operation or by a certificated operation within the respective jurisdictions.
  - The projected solid waste collection needs for the respective jurisdictions for the next six years.
- A comprehensive waste reduction and recycling element that provides waste reduction, source separation, and recycling programs and includes waste reduction, source separation, and recycling strategies. RCW 70.95.090(6) and (7) list detailed program and strategy requirements.
- An assessment of the plan's impact on the costs of solid waste collection. The assessment must conform to guidelines established by the UTC.
- A review of potential areas that meet the solid waste disposal facility siting criteria outlined in RCW 70.95.165.

1.8 SWMP Review and Approval Process

As previously mentioned, draft chapters of the SWMP are reviewed by the SWAC and County personnel throughout the plan development process. Review comments are then incorporated into revised draft chapters, and the revised draft chapters are compiled into a draft of the complete document.

The complete document must be reviewed and approved or adopted by the County, the participating jurisdictions, and Ecology. The review and adoption or approval process for the complete document includes the following steps:

- Preliminary draft SWMP submitted for public review.
- Thirty-day public comment period with at least one public meeting or workshop.
- Revision of preliminary draft SWMP, as necessary, to address comments.
- Preliminary draft sent to Ecology for preliminary review.
- Meeting between Ecology and County personnel to discuss Ecology's review comments, followed by revision of preliminary draft SWMP, as necessary, to address Ecology's comments.
- Submit revised draft plan to Ecology for informal courtesy review.
- Public hearings and local adoption of the revised draft SWMP.
- Submit the adopted plan to Ecology for approval.

A State Environmental Policy Act (SEPA) checklist is prepared in conjunction with the SWMP. The submittals and meetings required for SEPA checklist review and approval are timed to facilitate the incorporation of the SEPA checklist (see Appendix B) into the final draft SWMP to be submitted to Ecology.

1.9 SWMP Outline and Project Schedule

The SWMP document consists of 13 chapters and appendices containing authorization and adoption resolutions from the cities, an adoption resolution from the County, a participation letter from the SWAC, a SEPA checklist, and a UTC cost assessment (Appendix C). The updated MRWP (Appendix D). The chapters of the updated SWMP parallel those of the 2007 SWMP.

As previously discussed, draft chapters of the SWMP were reviewed by the SWAC and County personnel throughout the plan development process. The chapters and the timeline for their initial submission to the SWAC were as follows:

- Chapter 1: Introduction and Background—March 2011
- Chapter 2: Waste Stream Description—March 2011

- Chapter 3: Waste Reduction—April 2011
- Chapter 4: Recycling—April 2011
- Chapter 5: Solid Waste Processing Technologies—May 2011
- Chapter 6: Municipal Solid Waste Collection—May 2011
- Chapter 7: Solid Waste Transfer System— May 2011
- Chapter 8: Municipal Solid Waste Disposal—June 2011
- Chapter 9: Solid Waste Import and Export—June 2011
- Chapter 10: Special and Industrial Wastes—July 2011
- Chapter 11: Administration and Enforcement—July 2011
- Chapter 12: Funding and Finance—August 2011
- Chapter 13: Plan Implementation—August 2011

A preliminary draft of the complete document was first available to the public in October 2011. Given the uncertainty associated with public comments, regulatory review, regulatory comments, and city adoption, the timing of final SWMP adoption and approval is only speculative. For example, Ecology has up to 120 days to complete its review of the preliminary draft document and up to 45 days to complete its review of the final SWMP. It is anticipated that the final revised SWMP will be adopted and approved sometime in early 2012.

1.10 Solid Waste Management History

1.10.1 State Planning History

Much of the County's solid waste planning has been driven by actions taken at the state and federal levels. A brief look at the history of the State's solid waste planning will provide context for previous County planning activities, as well as give an indication of the potential future direction of solid waste management in Washington.

The Solid Waste Management Act was passed by the State legislature in 1969. This legislation established a statewide program for the comprehensive management of solid waste, required planning at the local level, and directed the closure of open burning dumps. In 1972, Ecology prepared the State's first SWMP and issued the first minimum functional standards (MFS) for the handling of wastes and the operation of landfills. In 1976, the Solid Waste Management Act was amended to deal separately with hazardous waste, to emphasize waste management rather than waste disposal, and to recognize resource conservation and recycling as important factors in the management of solid waste. Ecology produced the State's second SWMP in 1980. The

Solid Waste Management Act was amended again in 1984. The 1984 amendment established management priorities, in descending order of importance, of waste reduction, waste recycling, energy recovery/incineration, and landfilling. A new set of MFS was introduced in 1985. The 1985 MFS established siting criteria, design standards, performance standards, and closure and post-closure requirements. The Solid Waste Management Act was amended in 1989 by the passage of the "Waste Not Washington Act." This amendment established waste reduction and recycling as the fundamental solid waste management strategies, set a statewide recycling goal of 50 percent by 1995, and established the following management hierarchy, in descending order of importance:

- Waste reduction
- Recycling, with source separation of recyclable materials
- Energy recovery, incineration, or landfilling of separated waste
- Energy recovery, incineration, or landfilling of mixed waste

Ecology produced the State's third SWMP in 1991. In 1993, the legislature passed WAC 173-351, Criteria for Municipal Solid Waste Landfills (CMSWL), in response to changes in the federal solid waste program. These revisions replaced much of the MFS. In 2003, additional rules were promulgated through WAC 173-350, SWHS, which deals with solid waste facilities other than landfills. The State revised the SWMP in 2004, and renamed it the Beyond Waste Plan. The plan was updated again in 2009. A review of the document and published discussion documents indicates that the revised State plan maintains the waste management hierarchy established in 1995 and continues to promote recycling as vital to supporting the Beyond Waste vision of wastes as resources and recycling as a key to increased jobs, resource conservation and reduction of greenhouse gas emissions.

1.10.2 County Planning History

The Cowlitz-Wahkiakum Governmental Conference developed the first SWMP prepared for the County as a regional planning document in 1971.

Cowlitz and Wahkiakum SWMP, 1971—This plan focused on four problem categories: 1) indiscriminate littering and dumping, 2) open garbage dumps, 3) special and hazardous wastes, and 4) solid waste management technology. The most notable accomplishments of the 1971 plan are:

- Ordinances to prohibit illegal dumping, littering and illegal disposal, and abandoned automobiles
- Implementation of a one-year citizen education program in 1978
- Mandatory collection in the region's cities, except Castle Rock

- Implementation of a transfer station system in northern Cowlitz County
- Closure of all but two of the region's open dumps
- Development of the Central Cowlitz County Sanitary Landfill
- Improvements to the landfill operator training program

Amendments to the 1971 Cowlitz and Wahkiakum SWMP—In 1974, the County completed a study that evaluated seven alternative methods of energy recovery. This study was adopted as an SWMP amendment in 1977. The amendment recommended the use of shredded solid waste for sale as a supplemental fuel in hogged fuel boilers.

A second amendment to the plan in 1978 recommended that the County implement a refuse-derived fuel (RDF) system. However, the pilot project failed and it was later recommended that the next plan update look into a County-owned incinerator/boiler to provide steam to a nearby manufacturing company.

Cowlitz-Wahkiakum Regional SWMP, 1985—The 1985 plan recommendations were general in nature and did not include implementation of many new solid waste programs. The recommendations and status of recommended programs were tabulated in the 1993 SWMP.

Cowlitz County Comprehensive SWMP, 1993—The 1993 SWMP was written and organized to follow 1990 Ecology guidelines for the development of SWMPs. A summary of recommended implementation actions is included in the last chapter of the document. These 1993 action items and their current status will be discussed in the pertinent individual chapters of the revised SWMP.

Cowlitz County Comprehensive SWMP, 2007—The 2007 SWMP was an update of the 1993 SWMP and maintained much of the same framework, while streamlining certain elements for the sake of relevancy and efficiency. The update reflected changes in state regulations and the latest data collected by the County and its partners. The update also reflected the construction of a new transfer station and a proposed long-haul disposal program.

1.10.3 Relationship to Other Plans

This section describes other city and County planning documents that are related to the SWMP. The text describing the plan documents is taken directly from the 2007 SWMP with minor revisions.

- Cowlitz County Comprehensive Land-Use Plan and Zoning Regulations—The comprehensive land-use plan and zoning

regulations manage growth in unincorporated Cowlitz County. The County Land-Use Plan goals and policies provide guidance to public agencies and private groups in making decisions about future county development. The County Land-Use Plan designates land for agricultural, residential, commercial, and industrial use. The County Land-Use Plan provides general guidance on the siting of utility structures and facilities.

- City Comprehensive Land-Use Plans and Zoning Regulations—The comprehensive land-use plans and zoning regulations of cities within Cowlitz County identify land use policies and regulations that affect the siting of solid waste facilities. Some of the plans do not specifically address solid waste issues; however, most plans identify the solid waste collection agency in each respective community and the party responsible for transfer and disposal of solid waste. It is expected that cities will update their comprehensive land-use plans to be consistent with the adopted County SWMP.

- Cowlitz-Wahkiakum Moderate Risk Hazardous Waste Management Plan—The State Hazardous Waste Management Act requires each local government to prepare a local hazardous waste plan to manage MRW [RCW 70.105.220(1)]. The Cowlitz-Wahkiakum Moderate Risk Hazardous Waste Management Plan identifies management options that will help households and businesses practice proper hazardous waste management, thereby reducing the amount of hazardous waste disposed of in solid waste landfills and wastewater treatment systems. The plan encourages the reduction, recycling, treatment, and proper disposal of hazardous wastes. The Moderate Risk Hazardous Waste Management Plan has been updated following Ecology's update to the respective guidance document. The update was submitted to the Building and Planning Environmental Health Unit (EHU) and Ecology in 2010 and is included as Appendix D of this plan.

- Toutle Drop Box Facility Operation and Closure Plan—This plan documents Toutle drop box operations and plans for closure in compliance with the SWHS. This plan was updated in October 2010.

- Cowlitz County Landfill Operations & Maintenance Manual—WAC 173-351-210 requires all landfill facilities to have a plan of operation that "shall describe the facilities' operation and shall convey to site operating personnel the concept of operation intended by the designer." Examples of specific items to be included in each plan of operation include inspection and monitoring protocols, corrective action programs, and safety

procedures. The most recent revision to the operation plan for the County's MSW landfill occurred in December 2010.

- Cowlitz County Landfill Closure and Post-Closure Plans—The regulations also require landfill facilities to develop closure and post-closure plans. Closure and post-closure plans for the County landfill are included in the Operations & Maintenance Manual as chapters 9 and 10, respectively.
- Weyerhaeuser Regional Landfill Operations Plan—Required by WAC 173-350-400, the plan describes operational, inspection, safety, and corrective action procedures. The plan has been in place since 1993 and was last updated in June 2010. With the County's purchase of the Headquarters Landfill and associated permit modifications to allow acceptance of MSW, the Headquarters Landfill Operations Plan will be modified to reflect changes in waste acceptance operations and ownership.

1.11 Washington State's Beyond Waste Plan

A review of Washington State's Beyond Waste Plan (Ecology, 2009) shows that most goals and objectives set by the plan apply to the state-government level and may not be applicable to the county-government level (see Appendix E for complete listing of the Beyond Waste Plan actions and milestones). However, there are several objectives that may be applicable and that are discussed below in terms of how the County may meet these objectives.

1.11.1 Moving Toward Beyond Waste with Industries

There are 14 recommended actions and 17 milestones defined by Ecology, which are mainly focused on actions available at the state level. However, the County and cities provide assistance with two of these items. The first is to encourage waste handlers to become materials brokers. The County would be in line with the definition provided in Beyond Waste by focusing more attention at the landfill and other waste management facilities on the recovery of materials that have a beneficial value, and developing partnerships to collect and/or offer these materials for reuse or recycling. The addition of the Waste Control Recycling, Inc. (Waste Control) transfer station to the existing material recovery facility (MRF) has enabled Waste Control to divert a larger percentage of materials by selectively targeting materials in the transfer station for sorting and recovery.

Additionally, the County and cities can address the milestone of government leading by example in generating significantly less waste and decreasing the use of toxic substances at the local level. By actively instituting waste-reduction and recycling programs throughout the County and city offices, the

local governments will help to demonstrate support of Ecology's program. The programs can also be offered to businesses as demonstrations of effective waste-reduction and recycling measures that can be implemented.

1.11.2 Reducing Small-Volume Hazardous Materials and Wastes

Of the twelve recommended actions and sixteen milestones defined in Beyond Waste, the County and cities may address several categories. The County can continue to support e-waste initiatives and provide services in accordance with the e-waste efforts that are being implemented by Ecology. The County and cities can help to lead by example by implementing environmentally preferred purchasing policies with regard to vehicles, grounds maintenance, electronics, building materials, cleaning products, and flame retardants.

The County's MRW program is a very effective means of ensuring that locally generated hazardous materials are properly managed, and the program will need to adapt to evolving state regulations in the future. The County should also continue to update their local hazardous waste plan to make sure that it remains up to date, and to update their facilities as needed.

The County currently supports education programs on prevention, proper use, storage and disposal of hazardous products and wastes. Specifically, the County advertises the availability of the HHW facility and the small quantity generator (SQG) program, provides mobile HHW collection events, and advertises the drop off locations for used oil and antifreeze. Customers of the County landfill found disposing of unacceptable wastes are contacted and educated through mandatory waste screening programs.

1.11.3 Increasing Recycling for Organic Materials

Ecology identifies six recommended actions and thirteen milestones for addressing organics recycling, several of which are applicable at the local level. The County and cities have the opportunity to lead by example with regard to recycling of organic materials by maximizing the amount of recycled organic products that are used at government offices, by implementing on-site collection of organic wastes (including food wastes and soiled paper) for recycling, and by advertising the success of their programs to the public. Food wastes generated within the county could be addressed at a future date, however the existing compost operation at the landfill is not equipped to manage this material stream. The addition of food waste management within the various jurisdictions in the county would need to rely on the identification of a compost operation capable of processing food waste. Currently these facilities include Silver Springs Organics in Thurston County or Cedar Grove Composting in King County. In addition to

consideration of an out-of-county facility to provide this service, the County could encourage the private development of a food waste composting facility in the future. Once a program is in place local governments can also help to develop incentives for business and institutional participation in organics recycling, and advertise their successes.

The County's current composting program is directly supportive of Ecology's goal. It is important that the cities develop their own or participate in the County's program to ensure its success. The County can also provide support to local agri-businesses in the proper management of organic wastes generated on farms, and promote land stewardship within the county.

The County and local cities have supported home composting programs by making approximately 5,000 home composting bins available to the public since the mid 1990's

1.11.4 Making Green Building Practices Mainstream

There are seven recommended actions and eleven milestones identified by Ecology, most of which are applicable at the state level. However, local support can be developed in several areas. The County and cities can lead by example by adopting procurement processes and environmentally preferred purchasing policies to ensure that green building materials are purchased at the city and county level. The County can also help to provide better access to recycling and reuse opportunities to the local construction industry.

1.11.5 Measuring Progress Toward Beyond Waste

There are five recommended actions and seven milestones identified by Ecology, most of which are applicable at the state level. However, the County and cities provide data to Ecology that are incorporated into various reports and databases that Ecology uses to track waste generation, disposal and recycling activities. These data are used to measure progress toward the Beyond Waste goals, and for planning and education purposes. The data are available to the public on the Ecology Web site: http://www.ecy.wa.gov/beyondwaste/measureProgress.html.

1.12 Background

A review of county characteristics and the county's solid waste history will help provide a framework for understanding current conditions and future solid waste planning options. A comprehensive review of county characteristics and the county's solid waste history was presented in the 2007 SWMP, and language in this section is in some cases based on, or taken directly from, the 2007 SWMP.

1.12.1 Natural Features

Cowlitz County is located in southwestern Washington and has a land area of 1,139 square miles. The lower Cowlitz River valley dominates the landscape, with the Columbia River to the south, the Willapa Hills to the west, and the Cascade Range to the east. A map of the county is presented in Figure 1-1.

Topography—Elevations in Cowlitz County are quite varied, from less than 10 feet above sea level along the Columbia River to elevations approaching 5,000 feet on the eastern edge of the county. Topography in the eastern two-thirds of the county is dominated by several major drainage basins that are separated by upland ridges radiating from the Cascade crest. The ridges and peaks of this part of the county are characterized by very rugged relief and steep slopes. The western one-third of the county contains the Willapa Hills, with elevations approaching 2,600 feet. The topography becomes level and open along the Cowlitz and Columbia rivers.

Site topography can have both negative and positive impacts on solid waste facilities. Steeply sloping land has a greater potential for slope instability and may exceed maximum grade constraints for truck and equipment access. However, a gentle grade can provide noise and visual buffers, and may lessen the need for excessive filling.

Geology and Soils—Geologic processes shaped the soils and topography of Cowlitz County through uplift, volcanism, glaciation, erosion, and sedimentation. The rock types of Cowlitz County consist chiefly of the Columbia River Basalt Group, the Cowlitz Formation, and alluvial deposits. The Columbia River Basalt Group is prevalent adjacent to the Columbia River and the western portion of the county and represents a great volcanic pile of flood lavas originating east of the Cascades. The Cowlitz Formation is prevalent in the eastern two-thirds of the county and is best described as uplifted marine and non-marine shale, sandstone, siltstone, and coral beds. Interbedded in this material are basalt flows, pyroclastic rocks, andesite, and breccia, overlain in some areas by alpine till. Large alluvial deposits are common throughout Cowlitz County near and adjacent to both the Cowlitz and Columbia rivers. The material is commonly associated with loosely consolidated silt, sand, mud, and gravel.

Geologic conditions have a direct impact on the siting and operation of landfill sites and other solid waste facilities. The geologic conditions of a landfill site determine the location and degree of natural protection of groundwater, and can either decrease or increase the potential for groundwater contamination. For other solid waste facilities, the geology of a site is important in determining foundation stabilities for roadways and structures.

The U.S. Department of Agriculture Natural Resources Conservation Service issued an update of the February 1974 version of the Cowlitz County soil survey in 2004. A generalized soil map is presented in Figure 1-2.

Climate—Cowlitz County has a rainy climate in winter, marked by relatively mild temperatures and cloudy skies. Summers are pleasantly mild, with northwesterly winds and very little precipitation. Fall and spring are transitional in nature. Fog occurs frequently in fall and winter. At all times, incursions of marine air are a moderating influence. Extremes in winter and summer come from the continental interior. Destructive winds are infrequent.

The average annual precipitation in the region varies widely, depending on elevation and aspect. The Longview-Kelso urban area has an annual rainfall of 45 inches per year as compared to slopes adjacent to Mt. St. Helens, which receive 140 inches per year (see Figure 1-3). The SWHS also require that solid waste handling facilities provide peak rate runoff control for the 25-year, 24-hour storm event.

The Cowlitz County area is generally immune to severe storms. The combination of climatic controls is not conducive to the formation of hurricanes, thunderstorms, or tornadoes. Extreme meteorological events in the Cowlitz County area are usually restricted to high winds and rain from mid-latitude cyclones, or high winds and very cold temperatures from the strong easterly flow of cold continental air through the Columbia Gorge. The latter, if combined with moist air from the west, sometimes results in a freezing rain event commonly termed a silver thaw.

Surface Water—Both the Cowlitz and the Columbia rivers pass through the county. Additionally, Cowlitz County contains four major river basins: the Toutle, Coweeman, Kalama, and Lewis. The major rivers in these basins originate in the Cascades, flow in a westerly direction, and empty into the Cowlitz or Columbia River. Sizable creeks flow out of the Willapa Hills, the largest ones being the Abernathy and the Arkansas. The three lakes of significant size in the county are Silver Lake and parts of Lake Merwin and Yale Lake. Major surface water features of Cowlitz County are shown on Figure 1-1.

The SWHS and CMSWL do not allow municipal or limited purpose landfills to be located within 200 feet of a stream, lake, pond, river, or salt water body [WAC 173-350-400(2)(c) and WAC 173-351-140(2)]. An inert waste landfill is not allowed to be located within 200 feet of a stream, lake, pond, river, or salt water body (WAC 173-350-410(2)(d)). Careful attention must be given to surface water management and leachate control at solid waste facilities, particularly landfill sites, to prevent water quality degradation. In addition, the CMSWL require that all municipal landfills located in a 100-year floodplain comply with local floodplain management ordinances, and that they be

designed so as not to restrict the flow of the base flood, reduce the temporary water storage capacity of the floodplain, or result in a washout of solid waste [WAC 173-351-130(3)].

Groundwater—Groundwater is generally available throughout Cowlitz County. Most rural areas rely on groundwater as the principal source of potable water. Of all solid waste facilities, landfills have the greatest potential for groundwater impacts. The SWHS and CMSWL specify that an owner or operator of a landfill cannot contaminate the groundwater underlying the facility [WAC 173-304-460(2)(a) and WAC 173-351-400 through 450]. Furthermore, groundwater monitoring is required for all landfills, waste piles, land-spreading disposal facilities, and surface impoundments [WAC 173-304-490, WAC 173-350-500, and WAC 173-351-400 through 450].

Most potential groundwater impacts associated with solid waste landfills can be mitigated during the siting process. In general, the position of a landfill site with respect to groundwater increases or decreases the potential for contamination. Ideally, a disposal site would be located as far as possible from existing, active drinking water wells; utilize geologic barriers to minimize the movement of contaminants; and have as much distance as possible between the lowest liner and the seasonal high level of groundwater.

Plants—In general, different habitat types give rise to different plant communities. In Cowlitz County, there are two major habitat types that support vegetation: forests and wetlands. Forest habitat dominates in Cowlitz County.

In the forests of Cowlitz County, three vegetation zones are prevalent: (1) the Western Hemlock Zone (lowland forests), which occurs at elevations up to 2,000 feet mean sea level (MSL); (2) the Pacific Silver Fir Zone (mid-montane forests), which occurs at elevations from 2,000 to 4,300 MSL; and (3) the Mountain Hemlock Zone (upper-montane forests), which occurs at elevations from 4,300 to 6,000 MSL.

The Western Hemlock Zone is the principal forest habitat in Cowlitz County, and is the habitat most likely to be disturbed by construction of solid waste facilities. The CMSWL prohibit the placement of a land disposal facility in areas designated as critical habitat for endangered or threatened species of plants [WAC 173-351-140].

Wetlands are common and widespread in Cowlitz County. Marshes, swamps, bogs, estuaries, and other saturated soil environments are among the most productive habitats. In addition to their habitat value, wetlands perform vital functions such as water storage and stream flow regulation of water basins, and protection of lakeshore and riverbank areas against severe storms. Wetlands also improve water quality by trapping and filtering sediments and pollutants. The SWHS and CMSWL prohibit the placement of a landfill's

active area within a wetland [WAC 173-350-400(2)(c) and WAC 173-351-130(4)(a)].

Animals—Although human settlement and associated development have displaced animal life in Cowlitz County, significant areas still harbor a variety of wildlife species. Key animals in Cowlitz County include herbivores such as deer and elk; omnivores such as black bear, raccoons, and ravens; and carnivores such as cougar, fox, coyote, bobcat, owls, hawks, and eagles. The CMSWL prohibit the siting of a landfill within areas designated as critical habitat for endangered or threatened species of wildlife by the U.S. Fish and Wildlife Service or the Washington State Department of Wildlife [WAC 173-351-130 and WAC 173-351-140].

1.12.2 Land Use and Transportation

Land-Use Patterns—The topography of the county generally has dictated the settlement of the area as a transportation corridor between the lower Columbia River and the Puget Sound Basin. This pattern, begun in the late nineteenth century, is still prevalent today with all incorporated areas and most unincorporated development adjacent to the Interstate 5 (I-5) corridor. The most highly urbanized area of the county is in the Longview-Kelso area.

Transportation—The roadway transportation system in Cowlitz County includes an interstate freeway, state highways, regional arterials, and local collectors. The main travel route is the I-5 freeway that runs north and south through the county. The majority of county residents and businesses are very well served by I-5, allowing for quick travel between outlying areas and the population center of the county at Longview-Kelso. Most rural travel is accommodated on county and state roads and highways. Urban areas are well served by local arterial systems.

Although vehicle congestion is still relatively rare in most locations of the county, a number of trouble areas have been identified. At times these trouble areas experience failing, or near failing, levels of service. According to Public Works, the three areas of greatest concern, and a number of proposed long-term solutions, are as follows:

- ***S.R. 432/I-5***—This freeway interchange has become heavily congested in recent years and includes weaving areas that do not meet current design standards. It is anticipated that this area will experience failing level-of-service conditions by 2017. A complete reconstruction of this interchange should be complete in 2012.
- ***S.R. 432***—This heavily congested industrial corridor connects the Port of Longview and the cities of Longview and Kelso to I-5. Twenty-five percent of the traffic volume comes from truck traffic accessing the port and industrial areas along the corridor.

The corridor includes multiple intersections operating at failing or near failing level-of-service conditions coupled with several at-grade rail crossings as well as numerous access points contributing to unmitigated turning movements. The SR 432/433 intersection has been improved to allow for greater turning volumes and some of the SR 432 right of way has been widened. Proposed improvements under consideration are further intersection modifications, rail extensions and connections, and construction of a new single point urban interchange at SR 432/433 to eliminate at-grade rail crossings (Harvey, 2011).

- ***S.R. 4 (Ocean Beach Highway)/S.R. 411***—This heavily congested corridor has become the focus of a statewide safety corridor designation, as well as the development of access management strategies in the Longview-Kelso urban area. The corridor is currently subject to traffic volumes in excess of 30,000 vehicles per day and is projected to see a 40 percent increase in these volumes by 2017. Proposed solutions include modification of the connection between SR-4 and the Allen Street Bridge, as well as a combination of intersection improvements, signal re-timing, and access management techniques (Public Works, 2000).

- ***SR 411*** – The State Route 411/West Side Highway corridor will be evaluated in the near future regarding its capabilities to accommodate future trips, especially if the county acquires the Weyerhaeuser landfill and trucks are used to haul waste to the site (Harvey, 2011).

Because most solid waste transportation in Cowlitz County occurs on freeways and arterials, these roadways are an integral component of the solid waste management system. Any planning for expansion of solid waste facilities or construction of new facilities must consider existing and future traffic levels on haul routes, and the capacity of roadways to handle additional truck traffic. In some cases, it may be necessary to improve roadways, or adjust haul routes or schedules, to mitigate potential impacts.

In addition to roadways, the county is well served by other modes of transportation, most notably rail and barge. The main line of the Burlington Northern Santa Fe Railroad, also shared by the Union Pacific Railroad, runs parallel to I-5 through Cowlitz County. Numerous spur lines provide rail access from the county's industrial areas. Ports along the Columbia River are well developed, with river ports located at Longview and Kalama. There is also a land port in Woodland. A wide range of cargo shipments is transported year-round along the 465-mile Columbia/Snake river navigation system. Rail and barge will likely play an important role in transporting waste into the county or transport of in-county waste to an out-of-county facility.

1.12.3 Economic Factors

As of November 2010, according to information from the Washington State Employment Security Department (WSESD), approximately 35,900 people were employed in Cowlitz County (see Table 1-1). This is a decrease from the total of 38,500 total employed in 2007 according to the WSESD. The four largest sectors of the local economy are manufacturing, the service industry, retail trade, and government.

For comparative purposes, 1991 and 2007 data from the 2007 SWMP have also been included in the table along with the most recent data from 2010. The data indicate a continued decrease in the percentage of jobs supplied by the manufacturing sector, and a continued increase in the percentage of jobs supplied by the services sectors. Health services sector jobs have increased from 2007. Otherwise, much of the overall distribution of jobs by sector remains similar to what the County experienced in 2007.

As shown in the table, local government, which includes primary and secondary education, employs 4,400 people, making it the single largest employer category of any sector in the county. Other notable sectors include the natural resources and mining sector (3,100 employees); the transportation and warehousing sector (1,700 employees); the wholesale trade sector (1,400 employees); and the financial, activities sector (1,200 employees).

It is estimated that in 2009 approximately 79 percent of the total solid waste disposed of in Cowlitz County came from the nonresidential sector (commercial; industrial; and construction, demolition, and land clearing [CDL] waste). Therefore, programs geared specifically to nonresidential waste generators must be an integral part of the County solid waste system. The distribution of jobs remains concentrated in the Longview-Kelso urban area. Therefore, programs geared specifically to nonresidential waste generators may be most effective in the Longview-Kelso urban area.

Table 1-1
Employment Figures

Sector and Employee Groups	SIC Code[4]	November 2010		October 2007		March 1991	
		Number of Employees	Percent of County Total	Number of Employees	Percent of County Total	Number of Employees	Percent of County Total
Manufacturing, Total		6,000	17%	7,000	18% 9	,763	28%
Paper and Allied	26	2,000	6%	2,700	7%	3,990	
Lumber and Wood	24	900	3%	1,200	3%	2,875	
Primary Metal Industries	33	--[5]		--[5]		1,258	
Other Durable Goods	none	1,800	5%	1,800	5%		
Other Non-Durable	none	1,300	4%	1,300	3%		
Services						6,157	18%
Health Services	80	5,500	15%	5,100[7]	13%	2,752	
Business Services	73	1,500	4%	1,900	5%		
Retail Trade, Total		4,600	13%	4,700	12% 6	,086	17%
Eating and Drinking	58	*[6]		*[6]		2,311	
Food Stores	54	900	3%	900	2%	1,081	
General Merchandise	53	1,300	4%	1,100	3%		
Government, Total		5,900	16%	5,600	16%		
Local	none	4,400	12%	4,500	12%		
State	none	1,300	4%	1,300	3%		
Natural Resources and Mining	none	3,100	9%	3,800	10%		
Transportation and Warehousing	none	1,700	5%	1,700	4%		
Wholesale Trade	none	1,400	4%	1,400	4%		
Financial Activities	none	1,200	3%	1,400	4%		

NOTES:
1. The March 1991 data are taken from the 1993 SWMP.
2. The WSESD lists many employer groups under each sector heading. However, only those groups with more than 1,000 employees or have data from 1991for comparison are included; therefore, the employer group numbers shown here do not add up to the sector total.
3. Percent of County total values is based on the following 1991and 2007 employment base values: 34,797 (1991), 38,500 (2007)
4. SIC Codes apply to 1991 employment data only.
5. Metal industries were not listed in 2007 or 2010 data.
6. In 2007 and 2010, eating and drinking places are included under the leisure and hospitality sector as accommodation and food services, which totaled 3,100, 8% in 2007.
7. This number also includes education services.

1.12.4 Population

1.12.4.1 Cowlitz County

The 2000 census data at the State of Washington Office of Financial Management (OFM) Web site list the total county population as 92,948 in 2000 (OFM, 2002). The population of the incorporated areas is 54,156, while the population of the unincorporated area is 38,792. Table 1-2 provides a more detailed breakdown of different areas in the county from the federal census data. New census data were collected in 2010; however, that information was not available at this time of this revision.

In unincorporated areas, the U.S. Census Bureau delineates boundaries for census-designated places (CDPs). CDPs are closely settled, named, unincorporated communities that generally contain a mixture of residential, commercial, and retail areas similar to those found in incorporated places of similar size. For the 2000 census, there are no minimum or maximum population criteria for recognition as a CDP.

A range of population densities for the county is illustrated in Figure 1-4. As can be seen on this figure, the county's population is concentrated along the I-5 corridor and the Columbia and Cowlitz rivers. Two pieces of legislation passed by the Washington State legislature in 1999 define rural counties as those with a population density of less than 100 persons per square mile. As can be seen in Figure 1-4, the majority of the county's land base has a population of fewer than 100 persons per square mile. Most of the low population density areas consist of private timber holdings or land owned by the federal government. The OFM Web site lists a county population density of approximately 87.5 people per square mile (OFM, 2011).

Table 1-2
Cowlitz County Population and Housing Units for 1990, 2000, and 2009
(1990 and 2000 Federal Census; 2010 OFM)

PLACE	1990 POPULATION	2000 POPULATION	2009 POPULATION	1990 SF (1-2)[2]	2000 SF (1-2)[2]	1990 MF (3 & UP)[3]	2000 MF (3 & UP)[3]
Kelso	11,820	11,895	11,840	3,648	4,042	1,182	1,049
Longview	31,499	34,660	36,010	9,691	11,268	3,672	3,947
Longview Heights CDP (unincorporated)	3,310	3,513	3,563[6]	1,015	1,264	193	130
West Longview CDP (unincorporated)	3,163	2,882	2,723[6]	754	955	511	209
West Side Highway CDP (unincorporated)	3,641	4,565	4,869[6]	950	1,598	419	90
Woodland[1]	- -[4]	3,688	5,110	- -[4]	1,207	- -[4]	276
Kalama	[5]	[5]	2,505				
Total Urban	**53,433**	**61,203**	**66,620[8]**	**16,058**	**20,334**	**5,977**	**5,701**
Castle Rock	2,067	2,130	2,145	703	750	133	137
Kalama	1,210	1,783	[5]	401	688	84	154
Woodland	2,406	- -[4]	- -[4]	694	- -[4]	223	- -[4]
Total Incorporated Rural	**5,683**	**3,913**	**997[9]**	**1,681**	**1,438**	**440**	**291**
Total Unincorporated Rural	**23,003**	**27,832**	**29,920[9]**	**8,747**	**10,737**	**57**	**123**
County Total	**82,119**	**92,948**	**99,600[6]**	**26,603**	**32,509**	**6,474**	**6,115**

NOTES:
OFM = Washington State Office of Financial Management.
CDP = census-designated place.
[1]In addition to the Cowlitz County residents shown above, 2000 census data also indicate 92 Woodland residents live in Clark County.
[2]Data from the mobile home census designation (12% of the county total) were included with the two units or fewer category.
[3]Data from the boat, RV, van, etc., census designation (0.4% of the county total) were included with the three units or greater category.
[4]Since the 1993 SWMP the population of Woodland has surpassed the 2,500 mark so that it is now considered urban for the purposes of the SWMP.
[5]According to the 2009 projections, Kalama has surpassed the 2,500 mark so that it is now considered urban for the purposes of the SWMP.
[6]2009 data for the CDP was sourced from the OFM Small Area Estimates Program (SAEP) Although the 2010 estimate is available, 2009 data was used for consistency.
[7]County Total figure from OFM County Profile April 1, 2009 data sheet (OFM, 2010).
[8]This figure is the sum of two separate data sets (OFM and OFM SAEP).
[9]The rural population figures were estimated based on trends from 1990 and 2000.

1.12.4.2 Wahkiakum County

The County also offers Wahkiakum County residents the same public solid waste services as Cowlitz County residents. Wahkiakum County had a 2000 census population of 3,824 people, and estimated 2009 population of 4,100. Although the exact number of Wahkiakum County residents utilizing County solid waste services is unknown, these Wahkiakum County residents comprise a relatively small percentage of the overall population contributing to the Cowlitz County waste stream.

1.12.4.3 Urban and Rural Designations

The provision of solid waste management services, particularly collection of waste and recyclables, is most efficient within a well-developed urban infrastructure. As a result, solid waste program design and implementation typically differ from urban areas to rural areas. The RCW rules and Ecology guidelines emphasize that rural and urban areas must be clearly designated for waste reduction and recycling planning purposes. RCW 70.95.092 states that when designating urban areas, "local governments shall consider the planning guidelines adopted by the department, total population, population density, and any applicable land use or utility service plans."

The 1993 and 2007 SWMP defined urban areas of the county as:

- Incorporated areas with populations of at least 2,500 inhabitants
- CDPs with populations of at least 2,500 inhabitants

All areas not classified as urban were considered rural by the 1993 and 2007 SWMP. The County intends to use these same definitions of urban and rural in the current SWMP.

At the time of the 2007 SWMP, this definition of urban included Kalama, Kelso, Longview, Longview Heights CDP, West Longview CDP, and West Side Highway CDP, while the rest of the county (including the incorporated areas of Castle Rock and Woodland) was considered rural. Since 2000, the population of Kalama has been projected to also surpass the 2,500 people and is therefore considered urban for purposes of solid waste management.

These designated urban areas are shown on Figure 1-5. These urban areas include approximately 66,620 county residents, or approximately 67 percent of the county population.

Projections prepared by the Cowlitz-Wahkiakum Council of Governments predict that the population of Castle Rock will exceed 2,500 people between 2010 and 2015.

The urban or rural distinction is a required aspect of the Waste Reduction and Recycling components of the SWMP. Minimum urban and rural service levels within the context of the urban and rural designations will be discussed as part of the Waste Reduction and Recycling plan elements.

1.13 Chapter Highlights

- RCW 70.95.080 requires each county to prepare an SWMP, and RCW 70.95.110 requires that each plan be reviewed and revised, if necessary, at least every five years.
- Approximately 67 percent of the county population lives in the designated urban areas of the county.
- It is estimated that in 2009, approximately 79 percent of the total solid waste disposed of in Cowlitz County came from the nonresidential sector (commercial, industrial, and CDL).

2 WASTE STREAM DESCRIPTION

Identifying and characterizing the waste stream will provide the information needed to evaluate existing programs, develop new strategies, and implement new or revised planning measures.

2.1 Solid Waste Definitions

The following definitions describe general categories of waste discussed in this Plan:

Solid Waste—For the purposes of this Plan, the term "solid waste" encompasses the total waste stream, which is made up of MSW, special wastes, and industrial waste.

MSW—The entire waste stream from residential, commercial, and institutional sources and a portion of the waste stream from industrial sources comprise MSW. MSW in Cowlitz County is limited to wastes that are managed by the principal MSW handling and disposal system, as represented by all waste delivered to the Cowlitz County Landfill at Tennant Way (the Tennant Way Landfill) and the Headquarters Landfill or solid waste originating in Cowlitz County handled by the Waste Control MRF.

MRW—MRW is composed of chemical materials that are poisonous, toxic, flammable, reactive, or corrosive. These products include but are not limited to pesticides, herbicides, mercury and mercury thermometers, some types of batteries, gasoline, kerosene, motor oil, antifreeze, oil-based paint, paint thinner, turpentine, pool chemicals, and drain cleaners. MRW is divided into two categories: HHW and SQG hazardous waste.

Problem Wastes—Problem wastes include CDL waste, agricultural waste, auto hulks, asbestos wastes, petroleum-contaminated soil, white goods, tires, sewage sludge, and biomedical waste. Problem wastes are defined as wastes that require separate handling due to their bulk, water content, or dangerous constituents.

Industrial Waste—Industrial waste includes by-products from manufacturing operations, such as scraps, trimmings, packaging, boiler ash, wood-product residuals, and other discarded materials not otherwise designated as a dangerous waste under Chapter 173-303 WAC. The County's industrial waste is generated principally by the forest products industry, which includes companies such as Longview Fibre Paper and Packaging, Inc. (Longview Fibre) and Weyerhaeuser. Most of the forest products industrial

waste has historically been directed to private facilities, such as the Weyerhaeuser Landfill. With the conditional purchase of the Weyerhaeuser Headquarters Landfill, the County will assume responsibility for the management and disposal of industrial waste that arrives and is delivered to that facility. Relatively small quantities of non-forest product industrial waste are handled by the Tennant Way Landfill.

Recycling—Recycling is the separation of a given waste material from the waste stream and processing it so that it may be used again as a useful material for products that may or may not be similar to the original. Ecology's definition of recyclable materials generally includes paper, metal, glass, plastic, and organics.

Diversion—Diversion represents materials that have been diverted from disposal for reuse, and are separate from recycled materials. Diverted materials include those which do not fit the definition of recycling as promulgated by Ecology, such as anti-freeze, concrete, ash and sand used in asphalt production, land clearing debris, and materials for energy recovery (wood, used oil, and tires).

2.2 Historical Waste Disposal and Recycling Data

Solid waste disposal in Cowlitz County occurs at the Tennant Way Landfill and the Weyerhaeuser Landfill. The Weyerhaeuser facility opened in November 1993 to provide capacity for the disposal of forest product industrial waste generated by Weyerhaeuser. The County conditionally purchased the Weyerhaeuser Landfill in 2011 and will take over operations once a solid waste disposal permit is obtained.

Table 2-1 summarizes historical data collected at the Tennant Way Landfill from 1976 to 2010. Yearly fluctuations can be linked to historical events such as the installation of scales in 1981 or the temporary closure of the Mount Solo Landfill, which resulted in the Cowlitz County Landfill accepting 7,993 tons of industrial waste from Weyerhaeuser on a temporary basis in January 1991. In 1992, the Waste Control MRF expanded and began operations related to curbside recycling. The City of Longview started curbside recycling in 1992. In 1997, Kelso started operation of recycling drop-off centers. Curbside recycling was started in Woodland in 1999. A notable reduction in the total waste disposed or recycled is shown in 2008 and 2009, resulting from a significant economic recession which had similar impacts state-wide. Recycling data in Table 2-1 are based on the annual Ecology Recycling Survey. Yearly totals fluctuate dramatically due to variances in reporting related to the voluntary nature of the survey and misunderstandings about what is reportable. Also, the numbers reflect fluctuations in business activities, such as long-term stockpiling or operations going out of business.

Table 2-1
Solid Waste Historical Data
Cowlitz County Landfill

Year	Tons Landfilled	Annual Percent Change	Tons Recycled	Annual Percent Change in Tons Recycled
1976	48,500	—	n/a	n/a
1977	41,000	-15.46	n/a	n/a
1978	48,000	17.07	n/a	n/a
1979	47,000	-2.08	n/a	n/a
1980	47,000	0.00	n/a	n/a
1981	44,000	-6.38	n/a	n/a
1982	42,000	-4.55	n/a	n/a
1983	46,331	10.31	n/a	n/a
1984	51,128	10.35	n/a	n/a
1985	50,927	-0.39	n/a	n/a
1986	60,331	18.47	n/a	n/a
1987	64,589	7.06	n/a	n/a
1988	77,794	20.44	n/a	n/a
1989	85,696	10.16	n/a	n/a
1990	84,080	-1.89	21,522	—
1991	91,729	9.10	15,069	-29.98
1992	85,735	-6.53	88,411	486.71
1993	86,901	1.36	40,303	-54.41
1994	89,331	2.80	81,734	102.80
1995	95,518	6.93	47,115	-42.36
1996	82,952	-13.16	39,753	-15.63
1997	81,842	-1.34	61,021	53.50
1998	81,527	-0.38	38,229	-37.35
1999	81,770	0.30	33,621	-12.05
2000	81,669	-0.12	43,844	30.41
2001	78,406	-4.00	48,280	10.12
2002	82,806	5.61	57,515	19.13
2003	85,778	3.59	60,599	5.36
2004	92,151	7.43	69,194	14.18
2005	102,307	11.02	73,823	6.40
2006	106,885	4.47	102,649	39.05
2007	109,134	2.10	118,853	15.78
2008	103,865	-4.83	112,735	-5.15
2009	96,165	-7.41	99,336	-11.89
2010	98,519	2.45	-	

NOTES:

Tons landfilled data for 1976–1990 are taken from the 1993 SWMP (Public Works and SCS Engineers, 1993).
Tons landfilled data for 1991–2010 are from County disposal records.
Recycled tons are taken from yearly Ecology Recycling Survey.
-: Not available at time of printing.

2.3 Current Solid Waste Disposal

The total amount of solid waste disposed of in Cowlitz County is represented by waste received at the Tennant Way and Weyerhaeuser landfills and materials from Cowlitz County that are disposed of in other counties. Before 2005, the waste material from the Waste Control MRF was being sent to the Roosevelt Regional Landfill, but this material is now being sent to the Tennant Way Landfill. The discussion presented below is based mainly on data obtained from the County, City of Longview, City of Kelso, Weyerhaeuser, and Waste Control. Additional information was obtained from the State of Washington's Eighteenth Annual Status Report on Solid Waste, which summarizes solid waste information collected by Ecology for the year 2009 (Ecology, 2011). Population estimates from the Washington Office of Financial Management for 2010 are used as a basis for the discussion below (OFM, 2011).

2.3.1 Residential Waste Disposal

Residential waste is defined as waste material generated at a residential dwelling unit, including single-family homes, apartments, and mobile homes. In 2009, 56,719 tons of residential waste was disposed of at the Cowlitz County Landfill, which was approximately 60 percent of the waste delivered to the Cowlitz County Landfill (Table 2-2). Less the Wahkiakum County waste of 1,500 tons, Cowlitz County residents account for 55,219 tons of the residential waste received at the landfill. These numbers do not include solid waste diverted for recycling. Beginning in 2006, Waste Control stopped long-haul disposal of waste to the Rabanco Solid Waste Facility in Roosevelt, Washington.[1] With an estimated population of 99,600 in 2009 (OFM, 2011), Cowlitz County has a residential disposal rate of 1,109 pounds per person per year or 3.04 pounds per person per day. With approximately 37,238 occupied housing units in Cowlitz County,[2] the rate per housing unit is approximately 3,227 pounds per housing unit per year or 8.8 pounds per housing unit per day.

2.3.2 Commercial Waste Disposal

Commercial waste is defined as waste materials originating in wholesale, retail, institutional, or service establishments such as office buildings, stores, markets, theaters, hotels, and warehouses.

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[1] In 2005, 7,477 tons were long-hauled to the Rabanco Solid Waste Facility in Roosevelt, Washington.
[2] Using 2005 data. 2010 data not currently available from the U.S. Census.

In 2009, 30,541 tons of commercial waste was disposed of at the Cowlitz County Landfill (Table 2-2). This represents 613 pounds of commercial waste per person per year, or 1.7 pounds per person per day.

2.3.3 Construction, Demolition and Land-Clearing Waste Disposal

A subcategory of problem waste, CDL waste, is made up of three separate waste streams that only rarely are mixed when they arrive at a disposal site. However, all three have common generation and composition characteristics.

Construction waste is defined as materials resulting from the construction, remodeling, and repair of buildings and other structures. Demolition waste is defined as solid, partially inert waste resulting from the demolition or razing of buildings, roads, and other manmade structures. Land-clearing waste is defined as organic waste, such as leaves, grass, prunings, or stumps resulting from land-clearing operations.

In 2009, 5,988 tons of CDL waste was disposed of at the Tennant Way Landfill (Table 2-2). Approximately 4,800 tons of CDL waste was disposed of at the Weyerhaeuser Landfill in 2009 (Table 2-3). The total amount of CDL waste disposed of in Cowlitz County in 2009 was 10,788 tons. The per capita CDL waste disposal rate is approximately 217 pounds per person per year or 0.6 pounds per person per day.

2.3.4 Industrial Waste Disposal

Industrial waste in Cowlitz County consists primarily of forest product waste. In 2009, the Cowlitz County Landfill accepted 2,915 tons of industrial waste and 2 tons of asbestos (Table 2-2). The Weyerhaeuser Landfill accepted 162,300 tons of industrial waste (Table 2-3). In total, 165,215 tons of industrial waste generated in Cowlitz County was disposed of in the county in 2009. On a per capita basis, 3,318 pounds per person per year were disposed of in 2009, which is 9.1 pounds per person per day.

2.3.5 Total Solid Waste Disposal

The total amount of Cowlitz County MSW received by the Tennant Way Landfill in 2009 is estimated to be 85,760 tons, not including Wahkiakum County MSW disposed of at the landfill. At the Waste Control MRF, all residuals from processing Cowlitz County recyclables are sent to the Tennant Way Landfill as a result of the Waste Control agreement (as of 2006). With a 2009 population of 99,600, Cowlitz County has an MSW disposal rate of 1,722 pounds per person per year or 4.7 pounds per person per day (Table 2-4).

Combined with the total amount of industrial waste received in 2009 by the Tennant Way Landfill and the Weyerhaeuser Landfill (162,300 tons), and the CDL waste received by the facilities (10,788 tons), the total amount of solid waste disposed of in Cowlitz County in 2009 was 258,848 tons. With a 2009 population of 99,600, Cowlitz County has a solid waste disposal rate of 5,198 pounds per person per year or 14.2 pounds per person per day (see Table 2-5).

Table 2-2
Waste Breakdown
Cowlitz County Tennant Way Landfill
(tons)

Year	Residential Municipal Solid Waste	Demolition Waste	Industrial Waste	Inert Waste	Commercial Waste	Wood Waste	Asbestos	PCS	Tires	Medical	Other	Total Waste
1991	52,180	5,659	16,581*		17,309		535					91,729
1992	51,568	6,846	7,714		19,607		70					85,735
1993	50,848	4,301	4,817		26,668		267					86,901
1994	51,478	4,407	4,936		27,324		1,060		126			89,331
1995	53,554	6,849	7,918		26,983		99		115			95,518
1996	49,771	5,806	4,067		23,066		81		161			82,952
1997	47,305	4,012	4,623		25,586		154		161			81,842
1998	47,285	4,076	3,978		26,097		91					81,527
1999	47,707	2,807	6,726		24,471		59					81,770
2000	47,765	2,860	6,533		24,500		11					81,669
2001	45,475	3,882	4,704		24,305		16		24			78,406
2002	48,029	4,104	4,962		25,669		6					82,806
2003	49,751	5,141	2,565		28,307		7		7			85,778
2004	53,668	5,619	2,674		30,184		6					92,151
2005	58,928	7,164	3,062		33,146		7					102,307
2006	61,993	7,611	3,065		34,203		13					106,885
2007	62,899	7,312	5,040		33,870		13					109,134
2008	59,409	7,270	5,193		31,989		4					103,865
2009	56,719	5,988	2,915		30,541		2					96,165
2010	59,099	5,820	1,778		31,822		0					98,519

*1991 industrial waste includes 7,993 tons of Weyerhaeuser ash disposed of in January 1991 on an emergency basis.

Table 2-3
Waste Breakdown (tons)
Weyerhaeuser Landfill

Year	Tons Landfilled	Weyerhaeuser-Cowlitz County Waste	CDL-Cowlitz County Waste	Non-Weyerhaeuser Forest Products-Cowlitz County Waste	Total Cowlitz County Origin Waste	Other Out of County Weyerhaeuser Waste	Other Out of County Non-Weyerhaeuser Waste
1993	15,846	15,846	-	-	15,846	-	0
1994	177,900	157,300	-	-	157,300	20,600	-
1995	233,300	194,100	700	-	194,800	38,500	-
1996	283,872	243,743	648	-	244,391	40,065	-
1997	282,592	222,042	536	-	222,578	39,458	576
1998	269,687	230,348	3,183	11	233,542	34,719	1,427
1999	244,656	205,802	4,252	-	210,054	27,814	6,788
2000	257,606	218,545	3,483	5	222,033	30,309	5,264
2001	256,531	208,600	6,817	138	215,555	30,203	10,773
2002	261,200	203,200	6,700	700	210,600	27,300	23,300
2003	278,800	214,000	4,200	23,200	241,400	24,200	13,400
2004	255,000	196,000	2,900	17,100	216,000	23,400	15,600
2005	234,000	161,000	3,300	5,100	169,400	29,500	35,100
2006	297,900	198,000	14,600	3,200	215,700	31,800	50,300
2007	259,200	180,700	4,500	5,500	190,700	17,700	50,800
2008	218,500	174,900	4,200	4,900	184,000	9,300	25,200
2009	234,500	144,700	4,800	17,600	167,100	1,900	65,500
2010	246,200	167,700	5,300	7,700	180,700	6,400	59,100

Table 2-4
MSW and Solid Waste
Disposal Rates for 2009[A]

Source	Solid Waste Disposed Of Tons/Year	Solid Waste Disposed Of Lbs/Capita/Year	Solid Waste Disposed Of Lbs/Capita/Day
Residential	55,219	1,109	3.0
Commercial	30,541	613	1.7
TOTAL MSW	85,760	1,722	4.7
CDL	10,788	217	0.6
Industrial Waste (Primarily Forest Products)	162,300	3,259	8.9
TOTAL SOLID WASTE	258,848	5,198	14.2

NOTES:
[A] Information reported by Cowlitz County, Weyerhaeuser, and Waste Control.

2.3.6 Moderate-Risk Waste

The State of Washington's Eighteenth Annual Status Report on Solid Waste provides a summary of the statewide solid waste activities, including MRW activities (Ecology, 2011). The report states that the County recovered 780,263 pounds of MRW in 2008, which includes HHW, SQG hazardous waste, and used oil. MRW is disposed of in a variety of ways, but most is disposed of off-site with the assistance of other companies and agencies. Pesticides and oil-based paints and fuels are shipped to licensed incinerators. Car batteries and NiCad batteries are scrapped for their metals. Most latex paint is shipped to PSC in Portland, Oregon, for solidification and disposal.

2.3.7 Waste Generation, Solid Waste Disposal and Recycling at Tennant Way Landfill

Analysis of information in Table 2-5 provides a breakdown of Tennant Way Landfill waste into rural and urban source categories. Table 2-5 illustrates that 40 percent of solid waste entering the Tennant Way Landfill came from urban sources and 60 percent came from rural sources in 2009. Solid waste collected in Longview, Kelso, and the city of Woodland is considered urban, and everything else except self-haul is considered rural (includes urbanized areas outside city limits). Self-haul quantities were factored into urban and rural percentages, using information developed in Chapter 1.11.4. Table 2-5 also documents that the portion of Wahkiakum County waste that is disposed of in Cowlitz County equals approximately 1.6 percent of Cowlitz County's overall solid waste stream in 2009.

Recycling percentages generally increased annually from 1991 to 2004 as quantities of landfilled material at the Tennant Way Landfill and the Weyerhaeuser Landfill have generally decreased or held steady. A slight increase in landfilled materials at the Tennant Way Landfill is seen in 2005 and 2006. The increased landfill volume is a result of the agreement with Waste Control. As shown in Table 2-5, rates of recycling have decreased from 2007 to 2010. The rate of recycling at the County landfill significantly decreased or stopped in 2010 as a result of shifting public waste drop-off from the landfill to the Waste Control transfer station.

Based on the estimated 2009 Cowlitz County population of 99,600 and the 2009 disposal information for Cowlitz County, an average of 5.3 pounds of waste per Cowlitz County resident was disposed of in the Tennant Way Landfill or sorted as garbage at the Waste Control MRF on a daily basis.

Table 2-6 shows the MSW-based residential recycling percentage for Cowlitz County to be 53.2 percent based on 2009 data. The recycling percentage, or recycling rate, is the percent of material that is recycled divided by the total

amount generated (disposed of plus recycled plus diverted). The residential recycling is based on collected amounts reported to Ecology for those materials from the MSW stream that have been collected as recyclable (aluminum, glass, cardboard, ferrous metals, auto hulks, plastic, paper, fluorescent lights, tin, tires, used oil, vehicle batteries, white goods, woodwaste, and yard waste). The 2009 figures reflect a significant increase in the rate of recycling within Cowlitz County from the 2007 SWMP plan update. According to confidential Ecology data, the overall increase in recycling rate is likely attributed to increases in the rendering category.

The residential recycling estimate does not include materials that Ecology classifies as diverted, which include antifreeze, carpet pad, oil filters, paint, and used oil that is used for energy recovery purposes. The county residential recycling number can be directly compared to the Statewide Recycling Goal of 50 percent. The State of Washington's Eighteenth Annual Status Report on Solid Waste reports that, in 2008, each resident of the state generated 7.52 pounds of solid waste per day (Ecology, 2009). Of the 7.52 pounds, 4.14 pounds were disposed of and 3.38 pounds were recycled, giving a state-wide recycling rate of 45 percent. The statewide diversion rate for 2008 was 47 percent. The diversion rate is the percent of material that is diverted from the landfill divided by the amount disposed of (recycling plus diversion divided by recycling plus diversion plus disposed of).

Table 2-5
Tonnages by Source
Cowlitz County Tennant Way Landfill

Source	Service	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998
Longview	Residential	12,523	11,657	10,948	11,302	11,775	11,962	14,424	14,454	15,117	15,321	15,049	15,355	15,353
	Commercial	10,160	9,785	9,784	12,380	12,896	12,110	9,946	9,202	7,858	7,929	8,272	7,715	7,773
	Drop Box	4,038	3,941	6,501	5,273	5,051	4,620	5,417	4,596	4,726	4,811	5,254	4,765	3,674
Kelso	Residential	6,476	6,386	6,282	6,869	6,533	6,875	6,830	6,592	6,435	6,913	7,215	7,297	7,242
	Drop Box	1,388	1,358	2,003	1,696	1,829	1,825	1,840	1,951	2,230	2,028	2,069	2,009	1,400
Woodland (Waste Control as of 06/01)	City	5,720	5,366	4,960	5,564	5,475	5,472	5,466	4,472	4,466	4,475	--	--	--
	Unincorporated	2,010	2,172	2,394	2,193	2,174	2,286	1,773	1,700	1,700	1,775	--	--	--
Waste Control	Stan's	14,417	14,128	13,168	14,470	14,285	13,887	14,380	13,763	12,957	11,903	11,677	11,156	10,339
	Recycling	4,692	7,213	7,533	8,624	9,344	7,479	729	711	611	555	627	1,050	816
	Drop Box	10,269	8,998	11,639	11,335	9,853	9,108	5,279	6,415	5,021	4,782	6,041	5,040	3,795
Longview Fibre	Ash	27,044	27,167	41,174	44,384	40,342	32,061	6,057	--	--	--	--	--	--
Wahkiakum	Drop Box	259	248	270	345	521	532	540	558	527	563	562	574	592
	Stanley's	1,241	1,295	1,371	1,483	1,393	1,293	1,256	1,118	1,126	1,121	1,017	1,050	1,022
Ted's (ended 06/01)	Woodland	--	--	--	--	--	--	--	--	--	--	5,761	5,652	8,091
Toutle Drop-Box	Toutle Valley	1,151	1,077	1,006	1,151	1,198	1,159	1,141	1,094	1,067	1,039	1,061	1,124	1,195
Community Waste	Ryderwood	445	372	379	414	430	421	398	365	316	305	313	292	266
Self-Haul	Landfill	23,728	26,365	31,451	31,714	30,771	29,811	28,286	25,337	24,215	21,377	22,167	23,684	24,546
Recycling / Diversion	Landfill	0	(4,196)	(5,822)	(5,680)	(6,643)	(6,532)	(5,554)	(6,550)	(5,566)	(6,488)	(5,415)	(4,991)	(4,577)
Total		**98,519**	**96,165**	**103,865**	**109,135**	**106,885**	**102,307**	**98,208**	**85,778**	**82,805**	**78,406**	**81,669**	**81,771**	**81,527**
Wahkiakum County Total		1,500	1,543	1,641	1,828	1,914	1,824	1,796	1,676	1,654	1,683	1,579	1,623	1,614
Percent of Landfill Total		1.5%	1.6%	1.6%	1.7%	1.8%	1.8%	1.8%	2.0%	2.0%	2.1%	1.9%	2.0%	2.0%

Note: Longview Fibre ash utilized for daily cover and not reported in MSW figures landfilled.
2010 Recycling/Diversion represents tons charged by Gov't Accounts at the landfill

Table 2-6
Cowlitz County Residential Recycling Rate (2009)

County MSW Disposed Of[A]	87,260 tons
Recycled County MSW[B]	99,336 tons
TOTAL COUNTY MSW Generated	186,596 tons
RECYCLING RATE[C]	**53.2 percent**

NOTES:

[A]Does not include out of county waste, demolition waste, industrial waste, or asbestos.

[B]MSW recycling number derived from Ecology Recycling Survey, 2009. Includes aluminum, glass, cardboard, ferrous metals including auto hulks, plastic, paper, fluorescent lights, tin, tires, used oil, vehicle batteries, white goods, woodwaste, and yard waste. Does not include antifreeze, carpet pad, oil filters, paint, and used oil for energy recovery.

[C]This number is directly comparable to the Statewide Recycling Goal of 50 percent to be achieved by 2007. It is based on MSW numbers and does not include industrial waste, inert debris, asbestos, biosolids, contaminated soil, or CDL waste.

Table 2-7 shows the overall diversion rate for the entire county of 35.7 percent, which includes residential recycling, residential diversion, as well as industrial recycled waste and recycled CDL waste. This figure is based on information voluntarily reported to Ecology as part of the annual Recycling Survey. As a result, the figure can vary significantly from one reporting period to another. Residential diversion is made up of those materials that are not considered to be part of the U.S. Environmental Protection Agency (USEPA)-defined waste stream but that have been handled through means other than disposal in a landfill (antifreeze, carpet pad, oil filters, paint, and used oil that is used for energy recovery purposes). Industrial waste and CDL waste recycling include activities at the Weyerhaeuser Landfill, such as reuse of materials for hog fuel, as well as industrial and CDL waste recycling at the Tennant Way Landfill and other facilities not included in the Ecology Recycling Survey for 2009. The Swanson Bark facility did not have data available from 2009.

Table 2-7
Total Tonnage of Waste Generation and Diversion in Cowlitz County (2009)

County MSW Disposed Of	87,260
Recycled County MSW & Industrial[A]	99,336
Diverted County MSW[B]	47,273
Industrial and CDL Waste Disposed Of	176,005
TOTAL COUNTY DIVERSION	146,609
TOTAL COUNTY WASTE GENERATION	409,874
OVERALL COUNTY DIVERSION RATE[B]	**35.7 percent**

NOTES:
[A]Includes Total Recycled Tons reported by Ecology 2009 Recycling and Diversion Survey for Cowlitz County.
[B] Includes Total Diverted Tons reported by Ecology 2009 Recycling and Diversion Survey for Cowlitz County

2.4 Solid Waste Composition

This section presents waste composition estimates for Cowlitz County. Since no accurate solid waste composition studies have been conducted for the county, the composition estimates are based on Ecology composition surveys.

In 1987 and 1988, Ecology conducted a comprehensive statewide residential and commercial waste stream characterization analysis as part of its work in preparing the "Best Management Practices Analysis for Solid Waste," (Ecology, 1988) as directed by the Washington State Legislature. For this analysis the state was divided into eight waste-generation areas (WGAs). Cowlitz County is included in the southwest WGA, which also encompasses Clark, Lewis, Skamania, and Wahkiakum counties.

The objective of the Ecology study was to determine waste composition by generator type. Generator types included residential, commercial, manufacturing (industrial), and self-hauled sources. All waste that would potentially enter the municipal waste stream was considered in this analysis, including waste that is picked up by a public or private collector or self-hauled to landfills, transfer stations, or drop boxes. Ecology estimates of waste stream composition, by material, are shown in Table 2-8. These figures are adequate for planning purposes, but additional study should be conducted if a facility is being proposed that is highly dependent on waste composition.

2.5 Solid Waste Projections

Important factors in preparing solid waste projections include:

- Population
- Waste generation
- Waste diversion and recycling

2.5.1 Population Projections

Historically, based on census data from the OFM Web site, the county experienced an average annual percent increase in population for the years 1960 to 2006 of 1.12 percent. For the 20 years from 1980 through 2000, the average annual percent increase was 0.79 percent, and for the decade from 1990 through 2000, the average annual percent increase was 1.25 percent. The average annual growth rate from 2000 to 2009 was 0.80 percent (OFM, 2010).

Table 2-8
Estimated Disposed-of Municipal Solid Waste Stream Composition
Southwest Washington

Materials	Residential 33 percent		Commercial 49 percent		C&D 7 percent		Other 11 percent		Total 100 percent	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Glass										
Clear Glass Containers	1,754	1.2	1,948	0.9	8	0	15	0	3,725	0.9
Green Glass Containers	636	0.4	610	0.3	12	0	0	0	1,258	0.3
Brown Glass Containers	857	0.6	956	0.5	14	0	151	0.3	1,979	0.5
Plate Glass	0	0	0	0	1,880	6.7	373	0.8	2,252	0.5
Stoneware/Kitchen Ceramics/Glassware	473	0.3	36	0	0	0	476	1.0	985	0.2
R/C Glass	558	0.4	543	0.3	835	3.0	1,315	2.8	3,251	0.8
Subtotal	4,278	3.0	4,094	2.0	2,749	9.8	2,329	4.9	13,450	3.1
Metals										
Aluminum	993	0.7	459	0.2	11	0	18	0	1,482	0.3
Other Nonferrous	62	0	394	0.2	160	0.6	3	0	618	0.1
Food Cans	1,575	1.1	1,082	0.5	5	0	80	0.1	2,740	0.7
White Goods	0	0	0	0	0	0	655	1.4	655	0.2
Other Ferrous Metal	1,074	0.7	4,641	2.2	837	3.0	1,717	3.6	8,269	1.9
R/C Metals	766	0.5	3,358	1.6	371	1.3	1,898	4.0	6,393	1.5
Subtotal	4,469	3.1	9,933	4.8	1,384	4.9	4,371	9.2	20,157	4.7
Paper Packaging										
Newspaper Packaging	904	0.6	749	0.4	92	0.3	5	0	1,750	0.4
Cardboard/Kraft Paper Packaging	3,797	2.6	6,918	3.3	354	1.3	731	1.5	11,801	2.8
Other Groundwood Paper Packaging	94	0.1	566	0.3	0	0	23	0	682	0.2
Mixed/Low Grade Paper Packaging	3,981	2.8	3,005	1.4	112	0.4	102	0.2	7,200	1.7
Compostable Paper Packaging	1,817	1.3	5,380	2.6	2	0	74	0.2	7,273	1.7
R/C Paper Packaging	1,724	1.2	15,031	7.2	11	0	282	0.6	17,048	4.0
Subtotal	12,317	8.6	31,648	15.2	571	2.0	1,218	2.6	45,753	10.7
Paper Products										
Newspaper	955	0.7	750	0.4	3	0	37	0.1	1,745	0.4
Cardboard/Kraft Paper Products	52	0	175	0.1	0	0	103	0.2	330	0.1
Magazines	1,028	0.7	1,280	0.6	9	0	319	0.7	2,636	0.6
High-Grade Paper Products	1,797	1.3	1,980	0.9	12	0	33	0.1	3,822	0.9

Table 2-8
Estimated Disposed-of Municipal Solid Waste Stream Composition
Southwest Washington

Materials	Residential 33 percent		Commercial 49 percent		C&D 7 percent		Other 11 percent		Total 100 percent	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Other Groundwood Paper Products	161	0.1	97	0	0	0	187	0.4	446	0.1
Mixed Low Grade Paper Products	3,048	2.1	3,341	1.6	3	0	192	0.4	6,583	1.5
Compostable Paper Products	7,478	5.2	7,634	3.7	1	0	160	0.3	15,273	3.6
Paper Processing Sludge	0	00	0	0	00	0	0	0	0	0
R/C Paper Products	130	0.1	1,437	0.7	46	0.2	44	0.1	1,657	0.4
Subtotal	14,650	10.2	16,693	8.0	73	0.3	1,075	2.3	32,492	7.6
Plastic Packaging										
#1 PETE Plastic Bottles	1.354	0.9	1,051	0.5	8	0	58	0.1	2,471	0.6
#1 PETE Plastic Non-bottles	563	0.4	250	0.1	5	0	20	0	837	0.2
#2 HDPE Plastic Natural Bottles	781	0.5	313	0.2	3	0	15	0	1,112	0.3
#2 HDPE Plastic Colored Bottles	641	0.4	186	0.1	9	0	22	0	858	0.2
#2 HDPE Plastic Jars & Tubs	101	0.1	750	0.4	0	0	21	0	872	0.2
#3 PVC Plastic Packaging	26	0	20	0	0	0	0	0	45	0
#4 LDPE Plastic Packaging	37	0	0	0	0	0	0	0	37	0
#5 PP Plastic Packaging	778	0.5	271	0.1	3	0	29	0.1	1,080	0.3
#6 PS Plastic Packaging	769	0.5	495	0.2	0	0	126	0.3	1,390	0.3
#7 Other Plastic Packaging	1,264	0.9	924	0.4	6	0	152	0.3	2,347	0.5
PLA Packaging	0	0	13	0	0	0	0	0	13	0
Plastic Merchandise Bags	1,416	1.0	251	0.1	2	0	27	0.1	1,697	0.4
Non-industrial Packaging Film Plastic	3,623	2.5	8,949	4.3	2	0	304	0.6	12,878	3.0
Industrial Packaging Film Plastic	206	0.1	1,277	0.6	86	0.3	47	0.1	1,616	0.4
R/C Plastic Packaging	268	0.2	277	0.1	1	0	24	0	569	0.1
Subtotal	11,827	8.3	15,027	7.2	124	0.4	844	1.8	37,823	6.5

Table 2-8
Estimated Disposed-of Municipal Solid Waste Stream Composition
Southwest Washington

Materials	Residential 33 percent		Commercial 49 percent		C&D 7 percent		Other 11 percent		Total 100 percent	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Plastic Products										
#1 PETE Plastic Products	0	0	0	0	0	0	0	0	0	0
#2 HDPE Plastic Products	0	0	66	0	0	0	0	0	66	0
#3 PVC Plastic Products	0	0	37	0	0	0	1	0	38	0
#4 LDPE Plastic Products	0	0	0	0	0	0	0	0	0	0
#5 PP Plastic Products	174	0.1	147	0.1	1	0	2	0	323	0.1
#6 PS Plastic Products	284	0.2	543	0.3	24	0.1	22	0	873	0.2
#7 Other Plastic Products	2,501	1.7	1,437	0.7	99	0.4	1,201	2.5	5,238	1.2
PLA Products	41	0	0	0	0	0	0	0	41	0
Plastic Garbage Bags	1,898	1.3	3,211	1.5	4	0	31	0.1	5,145	1.2
Plastic Film Products	948	0.7	405	0.2	11	0	3	0	1,368	0.3
R/C Plastic Products	643	0.4	2,707	1.3	418	1.5	486	1.0	4,253	1.0
Subtotal	6,489	4.5	8,553	4.1	557	2.0	1,745	3.7	17,345	4.1
Consumer Products										
Televisions	1,143	0.8	884	0.4	0	0	2,512	5.3	4,539	1.1
VCRs, DVDs, DVRs	0	0	0	0	0	0	339	0.7	339	0.1
Computer Monitors	0	0	0	0	0	0	519	1.1	519	0.1
Computers	6	0	0	0	0	0	490	1.0	495	0.1
Computer Peripherals	51	0	0	0	0	0	86	0.2	137	0
Audio Equipment	414	0.3	0	0	0	0	0	0	414	0.1
Gaming Equipment	137	0.1	0	0	0	0	34	0.1	171	0
Other Consumer Electronics	1,281	0.9	0	0	0	0	253	0.5	1,541	0.4
Textiles	5,438	3.8	6,145	2.9	442	1.5	2,358	4.9	14,382	3.32.5
Shoes, Purses, Belts	519	0.4	241	0.1	285	0.1	310	0.6	1,355	0.8
Tires & Rubber	62	0.4	322	0.2	11	1.0	268	0.6	1,203	0.3
Furniture	0	0	3,714	1.8	0	0	4,943	10.4	8,657	0.3
Mattresses	0	0	1,207	0.6	0	0	975	2.0	2,182	2.0
R/C Consumer Products	476	0.3	1,021	0.5	0	0	1,967	4.1	3,464	0.5
Subtotal	10,068	7.0	13,539	6.5	738	2.6	15,052	31.6	39,399	0.8

Table 2-8
Estimated Disposed-of Municipal Solid Waste Stream Composition
Southwest Washington

Materials	Residential 33 percent		Commercial 49 percent		C&D 7 percent		Other 11 percent		Total 100 percent	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Organics										
Food	42,268	29.6	33,100	15.9	13	0	1,002	2.1	76,383	17.9
Yard and garden waste	7151	5.0	2,353	1.1	175	0.6	2,879	6.0	12,558	3.0
Animal Manure	7,054	4.9	1,375	0.7	93	0.3	498	1.0	9,021	2.1
Animal Carcasses	0	0	0	0	0	0	0	0	0	0
Agricultural	0	0	0	0	0	0	0	0	0	0
R/C Organics	1,604	1.1	787	0.4	75	0.3	14	0	2,479	0.6
Subtotal	58,076	40.5	37,615	18.0	357	1.3	4,393	9.2	100,440	23.5
Wood Debris										
Treated Wood	451	0.3	11,938	5.7	900	3.2	39	0.1	13,329	3.1
Painted Wood	1,124	0.8	5,300	2.5	1,648	5.9	374	0.8	8,446	2.0
Dimensional Lumber	156	0.1	1,993	1.0	1,351	4.8	1,469	3.1	4,969	1.2
Engineered Wood	111	0.1	2,626,	1.3	6	0	697	1.5	3,440	0.8
Pallets & Crates	0	0	8,601	4.1	0	0	2,719	5.7	11,320	2.6
Other Untreated Wood	28	0	111	0.1	848	3.0	24	0	1,011	0.2
Wood By-Products	609	0.4	861	0.4	1,096	3.9	554	1.2	3,120	0.7
R/C Wood Wastes	576	0.4	2,363	1.1	2,659	9.4	1,347	2.8	6,945	1.6
Subtotal	3,055	2.1	33,794	16.2	8,508	30.2	7,222	15.1	52,579	12.3
Construction Materials										
Natural Wood	0	0	0	0	0	0	0	0	0	0
Insulation	443	0.3	296	0.1	463	1.6	54	0.1	1,256	0.3
Asphalt Paving	62	0	3,621	1.7	0	0	0	0	3,684	0.9
Concrete	125	0.1	0	0	707	2.5	0	0	832	0.2
Drywall	572	0.4	28	0	7,022	24.9	1,529	3.2	9,152	2.1
Carpet	1,680	1.2	234	0.1	76	0.3	4,365	9.2	6,355	1.5
Carpet Padding	330	0.2	660	0.3	0	0	1,494	3.1	2,483	0.6
Soil, Rocks, Sand	208	0.1	8,839	4.2	12	0	12	0	9,072	2.1
Asphalt Roofing	91	0.1	6,438	3.1	1,861	6.6	101	101	8,492	2.0
Plastic Flooring	58	0	709	0.3	0	0	0	0	767	0.2
Ceramics & Brick	137	0.1	2,576	1.2	334	1.2	0	0	3,047	0.7
R/C Construction Materials	979	0.7	2,351	1.1	2,573	9.1	933	2.0	6,836	1.6
Subtotal	4,686	3.3	25,752	12.3	13,048	46.3	8,489	17.8	51,976	12.1

Table 2-8
Estimated Disposed-of Municipal Solid Waste Stream Composition
Southwest Washington

Materials	Residential 33 percent		Commercial 49 percent		C&D 7 percent		Other 11 percent		Total 100 percent	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Hazardous/Special Wastes										
Pesticides/Herbicides	0	0	0	0	0	0	44	0.1	44	0
Mercury Vapor Lights	0	0	0	0	0	0	0	0	0	0
Compact Fluorescent Lights	6	0	0	0	0	0	0	0	6	0
Fluorescent Tubes	12	0	40	0	0	0	0	0	51	0
Asbestos	0	0	0	0	0	0	0	0	0	0
Latex Paint	7	0	56	0	30	0.1	316	0.7	410	0.1
Solvent-based Glues	40	0	0	0	0	0	1	0	41	0
Latex-based Glues	9	0	0	0	0	0	4	0	13	0
Oil-based Paint & Solvent	32	0	30	0	0	0	2	0	64	0
Caustic Cleaners	0	0	0	0	0	0	0	0	0	0
Dry-cell Batteries	210	0.1	38	0	0	0	16	0	264	0.1
Wet-cell Batteries	0	0	0	0	0	0	0	0	0	0
Gasoline/Kerosene	0	0	0	0	0	0	0	0	0	0
Motor Oil	0	0	270	0.1	0	0	0	0	270	0.1
Antifreeze	0	0	0	0	0	0	0	0	0	0
Oil Filters	143	0.1	0		0	0	0	0	143	0
Explosives	0	0	0	0	0	0	0	0	0	0
Medical Wastes	259	0.2	4,317	2.1	0	0	3	0	4,579	1.1
Pharmaceuticals/Vitamins	28	0	0	0	0	0	3	0	31	0
Disposable Diapers	11,351	7.9	5,213	2.5	1	0	228	0.5	16,793	3.9
Other Cleaners & Soaps	486	0.3	0	0	7	0	299	0.6	792	0.2
Other Hazardous	80	0.1	375	0.2	0	0	48	0.1	503	0.1
Other Non-hazardous	121	0.1	0	0	0	0	1	0	123	0
Subtotal	12,784	8.9	10,339	4.9	38	0.1	964	2.0	24,125	5.6

Table 2-8
Estimated Disposed-of Municipal Solid Waste Stream Composition
Southwest Washington

Materials	Residential 33 percent		Commercial 49 percent		C&D 7 percent		Other 11 percent		Total 100 percent	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Residues										
Ash	0	0	1,732	0.8	0	0	0	0	1,732	0.4
Dust	249	0.2	0	0	0	0	0	0	249	0.1
Fines	408	0.3	148	0.1	9	0	0	0	565	0.1
Subtotal	657	0.5	1,880	0.9	9	0	0	0	2,545	0.6
Totals	143,358	100	208,867	100	28,156	100	47,704	100	428,085	100

NOTES:

Source: 2009 Washington Statewide Waste Characterization Study (Ecology, 2010).

Materials percent by weight based on measurements from sites in the southwest WGA (Lewis and Clark Counties).

Some subtotals may appear to be slightly inaccurate because of rounding.

HDPE = high-density polyethylene.

LDPE = low-density polyethylene.

PET = polyethylene terephthalate.

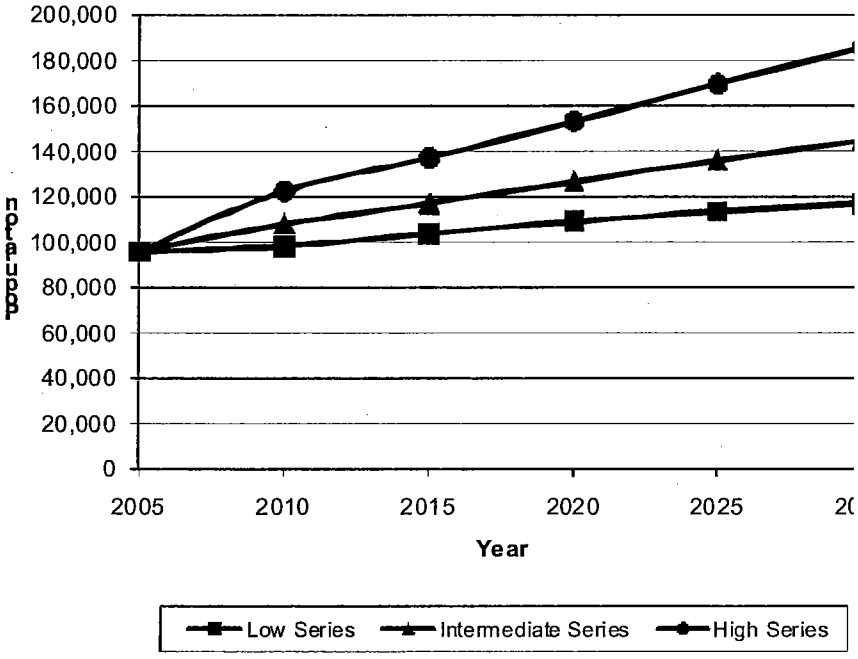
The OFM has prepared high, intermediate, and low series population projections for Washington counties through 2030 (see Table 2-9 and Figure 2-1). According to a 1995 amendment to RCW 43.62.035, counties may, for purposes of growth management planning, use values between the high and low projections. The intermediate series population projection predicts a county population of 107,974 in 2010, 117,053 in 2015, 126,676 in 2020, 135,987 in 2025, and 144,531 in 2030. These populations would be attained with an average annual growth rate of approximately 1.6 percent over this planning period. The OFM high and low series projections have average annual growth rates of approximately 2.6 percent and 0.8 percent, respectively.

Table 2-9
Washington State OFM Population Projections

Year	Low Series	Intermediate Series	High Series
2010	98,257	107,974	122,497
2015	103,592	117,053	137,157
2020	108,941	126,676	153,152
2025	113,549	135,987	169,474
2030	117,070	144,531	185,505
Average Annual Percent Growth	0.8 Percent	1.6 Percent	2.6 Percent

Note: All projections based on 2000 base year population of 92,948.

Figure 2-1
OFM Population Projections
Cowlitz County



Most of the population growth is expected to be in areas immediately adjacent to Longview and Kelso. Continued increases in population and households will result in increased solid waste generation, which will increase the need for continued emphasis on waste reduction and recycling.

Future per capita waste generation is expected to remain approximately the same due to a combination of factors such as increased tipping fees, slower population and economic growth, and the implementation of waste reduction and recycling programs.

2.5.2 Waste Generation Projections

Population and waste generation growth are usually parallel but change at different rates due to the impact of waste reduction and recycling efforts.

Between 1991 and 2010, the Tennant Way Landfill experienced a growth rate of just less than 1 percent for solid waste disposal. The waste generation and Tennant Way Landfill capacity projection highlighted in Table 2-10 was prepared using existing Cowlitz County Landfill data from 1999 through 2010 and a range of growth rates of 0.5 percent, 1 percent, and 2 percent. The low-generation forecast, based on 0.5 percent growth, estimates waste disposal quantities under conditions of lower than expected population and economic activity, and very effective waste reduction and recycling program

results. The high-generation forecast rate of 2 percent estimates quantities growing faster than expected due to stronger than expected economic activity. For planning purposes, the County chose 1 percent as the baseline growth rate, a conservative figure that takes into account a very effective waste reduction and recycling program and normal growth and economic conditions. As shown in Table 2-10, the Tennant Way Landfill will reach capacity of 1,887,333 cubic yards in 2013 under all scenarios, just at different points depending on the waste generation rate.

Waste diversion and recycling are expected to increase moderately in the next ten to twenty years, due mostly to increased awareness of environmental issues. At this time, no increases in recycling services are planned. Markets for diverted materials have stabilized, so no major shifts are expected. Residential waste streams are likely to get lighter, with an increased emphasis on plastic/paper mixes, and will likely contain less glass. Table 2-11 shows projected waste generation within the county at six years and 20 years into the future. This projection uses the same growth rates and waste figures as Table 2-10. As shown under the baseline growth rate, annual volume of waste is projected to be below 2005 levels in 2017 before climbing by 2031 to reflect increased county population.

TABLE 2-10
Waste Generation and Tennant Way Landfill Capacity Projection
February 2011

Landfill Development Phase	Year	LOW GENERATION [1]			BASELINE GENERATION [2]			HIGH GENERATION [3]		
		Annual Tonnage	Annual Volume (cu yd)	Cumulative Volume (cu yd)	Annual Tonnage	Annual Volume (cu yd)	Cumulative Volume (cu yd)	Annual Tonnage	Annual Volume (cu yd)	Cumulative Volume (cu yd)
	1999 [4]	6,250	10,417	10,417	6,250	10,417	10,417	6,250	10,417	10,417
	2000	81,669	136,115	146,532	81,669	136,115	146,532	81,669	136,115	146,532
Cell 3A [5]	2001	78,406	130,677	277,208	78,406	130,677	277,208	78,406	130,677	277,208
	2002	82,806	109,099	386,307	82,806	109,099	386,307	82,806	109,099	386,307
	2003	85,778	114,375	500,682	85,778	114,375	500,682	85,778	114,375	500,682
	2004	92,151	140,546	641,228	92,151	140,546	641,228	92,151	140,546	641,228
	2005	102,306	157,144	798,372	102,306	157,144	798,372	102,306	157,144	798,372
	2006	106,855	187,847	986,219	106,855	187,847	986,219	106,855	187,847	986,219
	2007	109,250	144,058	1,130,277	109,250	144,058	1,130,277	109,250	144,058	1,130,277
Cell 3A	2008	103,865	147,460	1,277,737	103,865	147,460	1,277,737	103,865	147,460	1,277,737
&	2009	96,165	120,447	1,398,184	96,065	120,447	1,398,184	96,165	120,447	1,398,184
3B [6]	2010	98,519	117,149	1,515,333	98,519	117,149	1,515,333	98,519	117,149	1,515,333
	2011	99,012	145,605	1,660,939	99,504	146,330	1,661,663	100,489	147,779	1,663,112
	2012	99,507	146,333	1,807,272	100,499	147,793	1,809,456	102,499	150,734	1,813,846
	2013 [10]	54,441	80,060	1,887,332	52,956	77,876	1,887,332	49,971	73,487	1,887,333

OVER CAPACITY @ 1,887,333 CUBIC YARDS

Notes:
[1]0.5% growth rate.
[2]1.0% growth rate.
[3]2.0% growth rate.
[4]Based on 1991-2010 actual tonnage—growth rate just under 1.0%.
[5]Cell 3A Access Limitation @ 550,000 cu yd.
[6]Constructed Cell 3B in 2003.
[7]Received 81,699 tons of waste in 1999 of which 6,250 placed in cell 3A in December 1999, the rest in Cell 2.
[8]Based on survey of completed Cell 1 east face, Cell 3A and 3B have design capacity of 1,887,333 cu yd.
[9]Based on Dec 2010 survey 372,000 cu yd of airspace remains.
Way Landfill will reach capacity in 2013 under all scenarios, just at different points depending on the waste generation rate.

TABLE 2-11
Waste Generation and Landfill Capacity Projection
February 2011

Year	LOW GENERATION [1]			BASELINE GENERATION [2]			HIGH GENERATION [3]		
	Annual Tonnage	Annual Volume (cu yd)	Cumulative Volume (cu yd)	Annual Tonnage	Annual Volume (cu yd)	Cumulative Volume (cu yd)	Annual Tonnage	Annual Volume (cu yd)	Cumulative Volume (cu yd)
1999[4]	6,250	10,417	10,417	6,250	10,417	10,417	6,250	10,417	10,417
2000	81,669	136,115	146,532	81,669	136,115	146,532	81,669	136,115	146,532
2005	102,306	157,144	798,372	102,306	157,144	798,372	102,306	157,144	798,372
2010	98,519	117,149	1,515,333	98,519	117,149	1,515,333	98,519	117,149	1,515,333
2011	99,012	145,605	1,660,939	99,504	146,330	1,661,663	100,489	147,779	1,663,112
2012	99,507	146,333	1,807,272	100,499	147,793	1,809,456	102,499	150,734	1,813,846
2013	100,004	147,065	1,954,337	101,504	149,271	1,958,727	104,549	153,749	1,967,595
2014	100,504	356,504	356,504	102,519	358,519	358,519	106,640	362,640	362,640
2017	102,019	358,019	1,429,042	105,626	361,626	1,440,269	113,167	369,167	1,463,529
2031	109,397	365,397	6,496,051	121,414	377,414	6,618,890	149,322	405,322	6,891,412
2041	114,992	370,992	10,180,566	134,117	390,117	10,461,851	182,023	438,023	11,119,146
2051	120,873	376,873	13,922,588	148,148	404,148	14,439,040	221,885	477,885	15,712,105
2061	127,054	383,054	17,725,060	163,648	419,648	18,564,497	270,476	526,476	20,750,270
2071	133,552	389,552	21,591,071	180,769	436,769	22,853,736	329,709	585,709	26,331,140
2081	140,382	396,382	25,523,873	199,681	455,681	27,323,891	401,913	657,913	32,573,563
2091	147,561	403,561	29,526,879	220,572	476,572	31,993,891	489,930	745,930	39,622,416
2097	152,043	408,043	31,963,868	234,142	490,142	34,900,426	551,741	807,741	44,310,764
2101	155,107	411,107	33,603,681	243,649	499,649	36,884,644			
2111	163,039	419,039	37,758,053	269,140	525,140	42,019,245			
2115	166,325	422,325	39,442,403	280,068	536,068	44,146,990			

TABLE 2-11
Waste Generation and Landfill Capacity Projection
February 2011

	LOW GENERATION [1]			BASELINE GENERATION [2]			HIGH GENERATION [3]		
2121	171,377	427,377	41,993,960						
2125	174,830	430,830	43,712,081						

Notes:

1. 0.5% Growth Rate
2. 1.0% Growth Rate
3. 2.0% Growth Rate

Tennant Way Landfill full at cumulative capacity of 1,887,332 cu yd. According to Table 2-5, the Landfill will reach capacity in mid-2013

Headquarters Landfill is projected to have 44,000,000 cu yd of capacity remaining at the end of 2012

Industrial tonnage is projected to remain constant at 256,000 tons per year and combined with municipal waste at Headquarters Landfill beginning mid-2013.

Combined municipal and industrial waste streams have a density of 1 ton per cu yd.

2.6 Chapter Highlights

Cowlitz County's recycling rate for MSW in 2005 was 51.2 percent. The number is directly comparable to the Statewide Recycling Goal of 50 percent.

The overall diversion rate for Cowlitz County, including industrial and CDL waste, was approximately 35.7 percent.

- From 1990 to 2009, the county experienced an average annual population change of 0.80 percent.
- From 1990 to 2006, disposal quantities for the Cowlitz County Landfill were fairly stable, with increased population offset by increased recycling efforts. Between 2007 and 2009 disposal quantities decreased slightly as a result of the economic recession.

2.7 Recommendations

1. The County should continue to refine waste characterization information as information becomes available from Ecology or elsewhere and continue to increase detail of information on a jurisdictional basis, including categorizing waste streams on a rural and urban basis for waste reduction and recycling planning purposes.
2. The County and Waste Control should cooperatively attempt to track quantities of all recycled MSW in order to easily develop and track numbers for county-wide recycling.
3. The County should work to incorporate data collected at the Weyerhaeuser Landfill into its overall calculations and projections in order to factor those quantities into numbers for county-wide recycling and waste reduction.
4. The County should attempt to maintain a fairly constant disposal rate through effective recycling, despite increases in population.

3 WASTE REDUCTION

3.1 Introduction

The State of Washington identifies source reduction of waste as a fundamental strategy and top priority for solid waste management in RCW 70.95. As a result, waste reduction must be a critical element of all local comprehensive SWMPs. Waste reduction is defined in RCW 70.95.030 as "reducing the amount or toxicity of waste generated or reusing materials." Recycling is defined in RCW 70.95.030 as "transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration." There are two reasons for promoting waste reduction. One is to reduce the risks associated with all solid waste management methods by reducing toxicity. Reducing the toxicity of solid waste makes all solid waste management methods safer and helps develop public confidence in waste management methods. The other reason is to reduce the quantity of discarded materials. This extends the useful life of existing and future facilities and conserves natural resources.

While waste reduction is to be emphasized, it is less understood and consequently less used than any other waste management strategy. The major problem associated with waste reduction is that it requires a change in personal habits and attitudes. Given these obstacles, it is uncertain just how much waste reduction can be achieved and to what extent a community can rely on waste reduction as an effective and measurable technique. Nonetheless, the objective of this chapter is to identify waste reduction actions that are reasonable for implementation in the county. Included are an inventory of existing conditions, an assessment of needs and opportunities, a discussion and evaluation of waste reduction options, an identification of recommended activities, and an implementation plan.

3.2 Existing Conditions

3.2.1 Private Sector Activities

Repair and reuse of durable products represent the most traditional forms of waste reduction and are well established in the county. Many charitable organizations, such as Goodwill Industries, the Salvation Army, churches, schools, and nonprofit organizations, accept donations of used furniture, clothes, appliances, toys, books, and housewares. Weyerhaeuser, Longview Fibre, and Steelscape have all implemented a variety of industrial waste reduction measures to save money and reduce environmental liability. For

example, as a large-quantity generator of hazardous waste, Steelscape is obligated to have a pollution prevention plan in place and to produce annual progress reports. Several businesses in the county repair durable products, such as appliances, television sets, and furniture, for resale. Car dealers and wrecking yards sell used automobiles and parts. Rummage sales are year-round events staged throughout the county, providing an opportunity for citizens to resell items no longer needed. Online material exchanges such as Craigslist (www.craigslist.org) and Industrial Waste Exchange (http://www.lhwmp.org/home/BHW/index.aspx) are additional resources available for material exchange and resale.

3.2.2 Public Sector and Institutional Activities

Many local jurisdictions and institutions in the county have established waste-reduction policies as part of their daily activities. Examples include the use of double-sided copies and the enactment of policies to discourage the printing of emails. Most memoranda and notices are sent electronically within the County offices.

The City of Longview recycling coordinator maintains education efforts by holding discussions on waste-reduction activities for local civic organizations, businesses, and schools. City of Longview, City of Kelso, and the County have sponsored a Too Good to Toss Web site that promotes reuse of durable goods. The site can be found at www.2good2toss.com. The Web site was developed by Ecology to provide a forum in which jurisdictions within the state can sponsor and set up a materials exchange for reusable building materials and household items. Categories are available for items available (maximum price of $100), items wanted, free items, and events.

3.3 Needs and Opportunities

The State has identified a goal of complete citizen participation in waste reduction, with an eventual decrease in the annual per capita waste-generation rate. As identified in Chapter 2, the Cowlitz County per capita waste-generation rate is expected to increase annually at approximately 1 percent. Given the significant volumes of material that require disposal and the projections for continued growth in the per capita disposal rate, a need exists to develop a more formalized waste-reduction program in the county.

Waste reduction is the State's first waste management priority. The Solid Waste Management Planning Guidelines recommend that local jurisdictions such as the County set specific waste-reduction goals and design programs to reduce waste. As a result, the County must develop waste-reduction programs and measure the results.

3.4 Waste Reduction Program Options

3.4.1 Public Awareness Education

Voluntary waste reduction can be achieved through public education and media campaigns that promote the necessity and purpose of waste reduction. Without an understanding of these basic elements, waste reduction efforts are not likely to succeed.

Public education and awareness efforts may include placement of news articles and public service announcements with local media, distribution of annual waste reduction awards, use of displays at county-wide events, and distribution of brochures and similar materials to businesses and households.

Waste-reduction opportunities for consumers are often emphasized at shopping centers by recommending the purchase of durable, long-lasting goods and buying in bulk. Some stores allow customers to bring their own containers to refill from bulk bins. Other stores pay customers for bringing their grocery bags back to the store for reuse. Another selective shopping technique includes learning to choose products that use recycled or minimal packaging. Product packaging is a significant portion of the residential waste stream.

3.4.2 School Curricula

Many jurisdictions around the country have developed materials and tools to educate students about responsible solid waste management, including waste reduction and recycling. Ecology has developed extensive K-12 school curricula. Some counties in Washington have effectively used special school presentations in classrooms or assemblies, including plays or skits, magic shows, and hands-on science exhibitions.

Field trips to local industries and agencies that practice waste reduction also help students learn responsible solid waste management techniques for home, school, and play. Field trips to local landfills and recycling facilities can emphasize the importance of and need to practice waste reduction and recycling.

3.4.3 Nonresidential Educational and Technical Assistance

The Washington SWMP recognizes the importance of involving nonresidential waste generators in waste-reduction activities. Specifically, nonresidential waste generators could prepare internal waste-reduction/recycling plans and conduct a waste audit. Programs that the

County, cities, and other interested parties may implement to assist nonresidential waste generators include:

Material/Waste Exchange—There are several national and regional material/waste exchange programs that are available for industrial or commercial businesses. Similar to the local exchange program discussed in Section 3.2.2, these nonresidential exchanges have been developed to help businesses find a market for surplus materials, by-products, and wastes. These exchanges generally allow users to list available materials as well as wanted materials along with contact information. In general, waste exchanges tend to handle hazardous materials and industrial process waste while materials exchanges handle non-hazardous items. The County and cities could promote these waste exchange opportunities by informing local businesses of these services and encouraging them to participate. Because manufacture of new materials as well as disposal is avoided with the exchange of waste, it is a very effective form of waste reduction. The King County Hazardous Waste Management Program has set up a regional waste exchange for the Pacific Northwest called the Industrial Waste Exchange (http://www.lhwmp.org/home/IMEX/index.aspx). Recycler's World (www.recycle.net) is a global trading site for information related to secondary or recyclable commodities, by-products, and used and surplus items or materials. The site includes links to many national and international specialty wastes and materials exchanges.

Technical Assistance Program—Educational and technical assistance can be provided to businesses and public agencies on an informal or formal basis. Informal education might include informational flyers, distribution of program "success" reports on the benefits of reducing waste, or telephone conversations on how to get started. Formal waste-reduction technical assistance often includes conducting an audit to determine sources of waste and coaching on possible uses for waste materials and ways to reduce the amount and toxicity of waste. Appropriate waste-reduction options are then selected based on technical and economic feasibility. Incentives for implementing a formal waste-reduction program include the potential for reduced disposal costs, development of a better public image, and the preservation of natural resources. A formal waste-reduction program should include measures to estimate or monitor quantities of waste reduced.

3.4.4 On-Site Composting

Home Composting—Residents can significantly reduce their waste through home composting. Two methods commonly employed include placing yard waste in back yard piles or bins and food waste in worm bins. Back yard composting is a low-technology, low-cost option that provides the advantages of citizen participation and waste reduction at its source. In a

continuing program, 5,000 composting bins have been distributed throughout Cowlitz County by the cities and the County. The composting bin program likely results in waste reduction of over 700 tons per year based on survey data that indicate a 77 percent participation rate for compost bin owners. The County has collaborated with the Washington State University Extension to provide a Master Composter program every two years to assist with the distribution of information and hands-on education about composting. The program has been dormant for a few years but the Extension plans to offer it in the Fall of 2011. The County Solid Waste fund has budgeted a small amount of funds from the state Coordinated Grant to assist the program. The Extension does provide workshops on composting at least twice year and also supports a Demonstration Garden with composting examples and information for the public.

A common food waste composting technique is the use of a worm bin. Special worms are placed in a closed, chest-type box along with shredded newsprint. The worms are fed non-fatty household food scraps. Worms digest the food and produce worm castings, which are a rich soil amendment. Design sheets and brochures can be distributed to residents to provide instructions for building a compost pile or worm bin. Some jurisdictions are able to provide bins to their residents at a special rate as an incentive to reduce waste by composting.

Nonresidential Composting—Businesses that generate compostable waste may be able to practice on-site composting. Compostable waste materials generated by businesses include food wastes from restaurants and groceries, woodwaste from the timber industry, and agricultural waste from farmers and food processors. Most materials can be composted on site, depending on space availability and specific permitting requirements.

3.4.5 In-House Government Programs

Before jurisdictions can effectively emphasize private sector and general public participation in waste-reduction programs, they should start with internal implementation of similar programs. For example, government departments can use double-sided copies instead of single-sided, institute policies that prohibit the unnecessary printing of email communication and other electronic media, and perform preventative maintenance of fleet vehicles.

The County and cities could set examples and promote local waste reduction efforts by publicizing their own efforts to reduce the amount of waste produced in all departments. The County and some cities have already established in-house recycling programs in some departments. These programs could be expanded to emphasize waste-reduction practices, include

more departments, and include a wider range of materials. Quantities of reduced waste could be periodically estimated or monitored so results can be used for promotional purposes, economic analysis, and the County's quantification of waste-reduction efforts on an annual basis.

3.4.6 Incentive/Disincentive-Based Programs

Variable Rates—Waste reduction program incentives include financial and/or other types of rewards for achieving behavior that reduces waste generation or disposal. Variable rates can be implemented on a per-pound basis or through the use of variable-size containers. Kalama, Woodland, and UTC-regulated areas all have variable can rates in place. Variable rates encourage waste reduction because they reward customers who generate less waste. Incorporated municipalities that regulate solid waste collection have the ability to implement variable rates.

Product Bans—Disincentive programs at the local level typically include bans on certain products. Local governments may consider the banning of materials, packaging, and products that significantly hinder efforts to meet waste-reduction goals. It is generally recognized, however, that product/container deposits and/or product/packaging prohibitions are not effective unless established on a state or national level.

Product Stewardship—Disincentive programs at the state level can include product stewardship requirement on certain manufacturers. These policies are intended to help consumers identify the true cost of the materials they purchase by making the manufacturer bear the cost of the end-of-life management of the product. Historically these end-of-life costs are the responsibility of the consumer or municipality, and can be expensive. The product stewardship programs are thought to also provide an incentive to the manufacturers to deliver products with less packaging, less toxic materials, and/or higher recyclability which will reduce the overall cost to the consumer. These programs are only effective if established on a state or national level, however local government can support the establishment of certain product stewardship programs by supporting legislative efforts to establish these programs and assist program implementation by establishing drop off options at existing disposal and recycling facilities.

3.4.7 Government and Business Procurement

Local government can be a leader in waste reduction by purchasing products with recycled content. Procurement standards can be developed that require a certain percentage of recycled content in widely used products and packages. For example, the County currently procures office paper with 30-percent recycled content. The County could investigate the opportunity to

purchase additional products that are made with recycled materials and that are durable, recyclable, and nontoxic. The Clean Washington Center's Department of Trade and Economic Development is an excellent source of information on available recycled products.

Businesses can also institute procurement procedures that encourage the use of recycled and recyclable materials. Using the information developed by agencies in implementing procurement standards, businesses can assist waste-reduction efforts without having to invest significant resources in experimenting with new products.

3.4.8 Methods of Tracking Waste-Reduction Activities

The concept of tracking waste reduction can and should be incorporated into future waste-reduction activities, including educational programs and technical assistance and demonstration projects. It is important to note that waste-reduction data are often developed through the use of estimates, because exact data are difficult to develop. For individual organizations, waste-reduction numbers can sometimes be calculated by looking at invoices or ledgers. Most organizations will find it beneficial to track waste-reduction activities in order to document cost savings.

Trends in county-wide waste-reduction efforts can be estimated over the long term by comparing disposal rates with population changes or through the use of surveys.

3.5 Evaluation of Options

The following criteria and conclusions were established by the SWAC for the 1993 SWMP and confirmed for the 2007 SWMP for each waste-reduction option:

- Waste-reduction options should be effective at a local level and given high priority. Options that qualify under this criterion include: public awareness education, school curricula, nonresidential education and technical assistance, on-site composting, in-house municipal waste reduction, and government and business procurement.
- Waste-reduction options that combine county and non-county resources should be given high priority. Options that qualify under this criterion include: public awareness education, school curricula, and nonresidential education and technical assistance.

- Waste-reduction options should be incentive-based rather than disincentive-based and cost recovery for end of life disposal of environmentally unfriendly products should be placed upon the manufacturers of the product. The County and cities have concluded that educational and incentive-based programs such as modifications in fee structures should be implemented before disincentive-based programs such as product or packaging bans, product or container deposits, and product use/reuse standards. The County supports Product Stewardship efforts which build end-of-life disposal or recycling costs into the purchase price of products and the development of statewide or national environmentally sound end-of-life disposal programs which shift disposal costs to the producer.

3.6 Chapter Highlights

- Waste-reduction measures such as packaging modifications, product bans or product stewardship programs are most effectively implemented on a large scale, preferably state-wide or on a national level.
- Waste reduction is difficult to track.
- On a local level, waste reduction is most effectively achieved through education and public awareness. Waste reduction is most effectively regulated on a state or national level.

3.7 Recommendations

After evaluating the waste-reduction management options, the following recommendations were developed for Cowlitz County in order of priority:

1. The County and the cities should coordinate their efforts whenever possible and work to develop public education and awareness programs aimed at informing and motivating the community to practice waste-reduction and recycling techniques.
2. The County and cities should continue to coordinate efforts and work with nonprofit and volunteer groups to implement home composting programs, and should continue to provide funding assistance to the local demonstration site and WSU Master Composter training programs.
3. The County and cities should continue and expand group presentations and work to implement school curricula.

4. The County and the cities of Longview and Kelso should continue to support the state developed reuse website, 2-Good-2-Toss (www.2good2toss.com) and direct interested users to other reuse websites such as Craigslist (www.craigslist.org). State grant funds distributed for local use should be considered for use in supporting the program.
5. All public agencies in Cowlitz County should continue to provide an example to the community in waste-reduction methods by implementing in-house waste-reduction programs, and should continue to work with local governments to implement waste-minimization programs that include purchasing and waste-reduction practices. Agencies should continue to encourage local industries to do the same.
6. Businesses in Cowlitz County should continue to be encouraged, through technical assistance provided by the County, to evaluate their processes and policies that affect waste generation.
7. The County and cities should continue to track waste reduction, recycling, and disposal.

4 RECYCLING

4.1 Introduction

Recycling is defined in Chapter 70.95 RCW as "transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill or incineration." Recycling is a vitally important component of a solid waste management strategy, because it reduces costs and environmental impacts associated with solid waste disposal. Recycling also helps conserve energy and natural resources.

The Washington State Legislature established the goal of reaching a 50-percent recycling rate by 1995. The target date for achieving the statewide recycling goal of 50 percent was revised to 2007 by the State Legislature in 2002. This goal has not been met. The statewide recycling rate reached an all-time high of 45% in 2008 and has maintained that level through 2009. In order to meet the established goal, increased recycling activity by local governments, private companies, and households will be required.

As discussed in Section 2.3.7, during 2009 Cowlitz County achieved a residential recycling rate of 53 percent (see Table 2-6) and an overall diversion rate of 35.7 percent (see Table 2-7). These can be compared to the state recycling rate of 45 percent and diversion rate of 55 percent.

Chapter 70.95 RCW identifies source separation as a fundamental strategy of solid waste management. Source separation is defined as the separation of different kinds of solid waste at the place where the waste originates (Chapter 70.95.030 RCW). However, the State also determined that recycling should be made at least as convenient and affordable as disposal. Commingled curbside recycling with post-collection centralized separation has been effectively employed in some areas of Cowlitz County since 1992.

The purpose of this chapter is to describe existing recycling activities in the county, identify recycling options, and evaluate options for implementation. The overall goals are for Cowlitz County's residential recycling rate to maintain levels that are at or above the state recycling goal of 50 percent and to make recycling and composting opportunities readily available to all residential and nonresidential waste generators in Cowlitz County.

4.2 Existing Conditions

The following section is an inventory of existing recycling conditions in Cowlitz County. Table 4-1 contains a listing of Cowlitz County recycling centers.

Table 4-1
Current Cowlitz County Recycling Centers

MUNICIPALITY	LOCATION	RECYCLABLES
CASTLE ROCK	Castle Rock Recycling Center Wastewater Treatment Plant 215 Michner St.	Newspaper, PET, HDPE, Aluminum, Tin, Cardboard
	Wilcox & Flegel 110 Allen Avenue	Oil, Antifreeze
TOUTLE	Toutle Recycling Center Toutle Drop Box Facility 200 S. Toutle Road	Newspaper, Mixed Paper, Aluminum, Tin, Glass HDPE, PET, Oil, and Antifreeze;
KALAMA	Kalama Recycling Center City Shop 6315 Old Pacific Hwy S. 673-3706	Newspaper, PET, HDPE, Aluminum, Tin, Oil, Antifreeze
KELSO	Kelso Drop Center Super 8 Motel 250 Kelso Drive	Newspaper, PET, HDPE, Aluminum, Tin, Glass, Oil, Antifreeze, Cardboard, Mixed Paper
	Sears Automotive Center Three Rivers Mall—Kelso 577-4000 Mon–Fri: 8 am–9 pm; Sat: 9–6; Sun: 11–6	Auto Batteries, Oil, Tires
	Kelso Drop Center Huntington Junior High Red Path Street	Mixed Paper, PET, HDPE, Aluminum, Tin, Newspaper, Cardboard
	Kelso Drop Center Quick Stop- behind store 807 S. Pacific Avenue	Glass, Mixed Paper, PET, HDPE, Aluminum, Tin, Newspaper, Oil, Antifreeze, Cardboard
LONGVIEW	Waste Control Recycling, Inc. 1150 3rd Ave—Longview 425-4302 Mon–Sat: 8 am–5 pm	Newspaper, Cardboard, High-Grade Paper, Mixed Paper, Poly-Coated Paper, HDPE, PET, Glass, Aluminum, Ferrous (iron), Nonferrous, Tin, Wood, Magazines, Auto Hulks

MUNICIPALITY	LOCATION	RECYCLABLES
LONGVIEW	Waste Control Transfer Station 1150 Third Ave—Longview 425-4302 7 days/week 7:30 am–5:30 pm	Newspaper, PET, Cardboard, HDPE, Glass, Aluminum, Ferrous (iron), Nonferrous, Tin, Antifreeze, Auto Batteries, Oil, Mixed Paper, Grass
	Swanson Bark 240 Tennant Way 414-9663	Grass, Wood, Dirt
	Goodwill Industries Donation Center 710 14th Ave—Longview 425-6929 Mon–Fri: 8 am–4:30 pm; Sat: 9 am–5 pm; Sun: 12–4:30 pm	Reusable Items
	Fred Meyer 3184 Ocean Beach Highway 636-1010	Newspaper
	Safeway 2930 Ocean Beach Highway 575-6240	Newspaper
	Safeway 1227 15th Avenue 360-575-6600	Newspaper
LEXINGTON	Fire District 2 Fire Station West Side Highway	Cardboard, Tin, Aluminum, HDPE, PET, Mixed Paper, Newspaper
UNINCORPORATED COWLITZ COUNTY	Columbia Heights Baptist Church 6136 Columbia Heights Road	Newspaper, PET, HDPE, Mixed Paper, Aluminum, Tin
	Rose Valley Fire Station Rose Valley Road	Newspaper
LIONS CLUB	Multiple locations	Newspaper
Boy Scouts of America	Multiple locations	Newspaper
County-Wide	Thrift Stores Multiple Locations	Reusable Items

NOTES:
HDPE = high-density polyethylene
PET = polyethylene terephthalate
Additional sites are currently under consideration for inclusion in the outlying areas of the County.

4.2.1 Cowlitz County

Cowlitz County Recycling Drop-Off Center—The County provides, through its vendor Waste Control, a recycling drop-off center at the transfer station for public use. Materials accepted include: newspaper, cardboard, glass, tin cans, aluminum cans and foil, plastic (PET and HDPE), mixed paper, metals, motor oil, antifreeze, household and automotive batteries, and computer CPU's, laptops, monitors and cathode ray tube TV's. Most of the materials are processed before being shipped to market.

Individuals may use the transfer station recycling facility free of charge. To promote recycling, the transfer station will credit a $2.00 discount against the disposal fee if two or more types of properly prepared recyclables with a combined weight of 15 pounds or more are placed in the drop-off recycling bins. This practice has been in place since the early 1990s.

Appliances, scrap metal, brush, grass, leaves, and dimensional lumber are recycled for a fee.

In 2010, a combined total of approximately 49,305 tons of recyclables was recovered at the transfer station drop-off center, the MRF, and the Waste Control Buy Back Center.

Cowlitz County Drop-Off Centers in Outlying Areas—Waste Control has set up drop-off centers in Toutle, Kalama, Lexington, Rose Valley, Coal Creek, and Columbia Heights. These are areas that are not served by curbside recycling or recycling drop-off centers operated by the various cities. Through waste disposal agreements with cities, Waste Control maintains three drop-off recycling centers in Kelso and one in Castle Rock.

Commercial and Institutional Recycling—Waste Control collects and processes office paper and cardboard from the Longview, Kelso, Kalama, and Woodland school districts. Waste Control also provides scheduled cardboard and office paper recycling to local businesses and government agencies within the city limits.

The County and city purchasing offices work to encourage the use of recycled products. The County currently purchases office paper with 30-percent recycled content. To the extent possible, opportunities should be provided for cities and other public agencies to make joint purchases of recycled products with the County in order to obtain lower prices.

Public Education/Publicity—The County continues to receive monies for public education via the Coordinated Prevention Grant (CPG) funded on a two-year basis by Ecology. The CPG is funded by the 0.7-percent tax on all hazardous substances generated in the state, which is filtered down to a county level. Funds from the grant were provided to the County and the cities of Longview and Kelso for the development of public educational materials related to HHW, waste reduction, and recycling. Materials are distributed at public speaking engagements, local schools, newspapers, and community events, and upon request. There are ongoing efforts to update county residents on new and existing recycling opportunities.

Christmas Tree Recycling Program—Kelso, Longview, and the County sponsor a Christmas tree recycling program that was first implemented in 1990. Tree collection sites are located at the Waste Control Transfer Station and in the cities of Longview, Castle Rock, Kalama, and Woodland. In recent

years, the trees have been chipped for energy recovery value. The County also offers free leaf disposal at the landfill during fall and winter months for local municipalities. This program diverted 1,152 tons of leaves for composting in 2010.

4.2.2 City of Castle Rock

Waste Control maintains a recycling drop-off center for the City of Castle Rock in front of the city waste water treatment plant located 215 Michner Street. There are several containers for newspaper, cardboard, tin cans, aluminum, and PET and HDPE plastics. Glass and mixed paper are not accepted. Castle Rock also has receiving tanks for antifreeze and motor oil that are maintained by the County's vendor Waste Control (locations are listed in the MRWP in Appendix D). Castle Rock also participates in the County's Christmas tree recycling program.

4.2.3 City of Kalama

Waste Control maintains a recycling drop-off center for the City of Kalama at the city shop located at 6315 Old Pacific Highway. The drop box contains separate bins for PET, HDPE, tin, aluminum, and newspaper. The Kalama site also has receiving tanks for antifreeze and motor oil that are maintained by the County's vendor Waste Control (the location is listed in the MRWP in Appendix D).

4.2.4 City of Kelso

The City of Kelso has three unmanned recycling drop-off centers that are maintained under contract by Waste Control. Currently each residence is charged 50 cents per month for operation of the three drop-off centers; businesses are not charged. The City organizes an annual curbside collection of Christmas trees, which are recycled by Waste Control. Kelso also has two locations with receiving tanks for antifreeze and motor oil that are maintained by the County's vendor Waste Control.

In 2010, the use of drop-off centers recovered 477 tons of recyclables, 6 percent of the residential and commercial waste stream (see Table 4-2). However, there are an unknown number of non-Kelso residents who use the drop-off center, which may impact the recovered tonnage attributable to Kelso residents.

The recycling rates presented in Table 4-2 for Kelso, Longview, and Woodland should not be compared directly to the overall county residential recycling rate of 53 percent that is discussed in Section 2.3.7. The overall county rate includes many other recyclable items (see note B of Table 2-6) that are not included in the city recycling rates.

Table 4-2
City Disposal and Recycling Programs Summary
Tonnage by Source
Cowlitz County

Source	Service	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
Longview	Residential	12,523	11,657	10,948	11,302	11,775	11,962	14,424	14,454	15,117	15,321
	Commercial	10,160	9,785	9,784	12,380	12,896	12,110	9,946	9,202	7,858	7,929
	Drop Box	4,038	3,941	6,501	5,273	5,051	4,620	5,417	4,596	4,726	4,811
	Curbside Recycling	2,489	2,340	2,316	2,416	2,335	2,476	4,095	3,259	3,528	3,512
	Recycling Percentage Residential	16.6	16.7	17.5	17.6	16.5	17.1	22.1	18.4	18.9	18.6
	Recycling Percentage Residential/Commercial	9.9	9.8	10.0	9.2	9.5	10.2	14.3	12.1	13.3	13.1
Kelso	Residential/Commercial	6,476	6,386	6,282	6,869	6,533	6,875	6,830	6,592	6,435	6,913
	Drop Box	1,388	1,358	2,003	1,696	1,829	1,825	1,840	1,951	2,230	2,028
	Drop-Off Recycling	475	483	488	618	622	553	579	581	590	611
	Recycling Percentage Residential/Commercial	7.3	7.6	7.7	9.0	8.7	7.4	7.8	8.1	8.4	8.1
Woodland	Residential/Commercial	5,720	5,366	4,960	5,564	5,475	5,472	5,466	4,472	4,466	4,475
	Curbside Recycling	560	570	728	624	634	439	473	458	382	429
	Recycling Percentage Residential/Commercial	9.9	10.6	14.7	11.2	10.4	7.4	8.0	9.3	7.9	8 7

NOTES:
NA = not available.
Drop Box collection is not included in the calculation of recycling rates.
Recycling percentage for cities is not directly comparable to the county recycling rate of 37 percent.

$$recycling\ percent = \frac{recycling}{residential\ disposal + recycling}$$

4.2.5 City of Longview

The City of Longview started commingled curbside recycling in 1992. Single-family, 90-gallon residential recycling bins are picked up once a week. Apartment buildings are equipped with 300-gallon containers. The mandatory curbside program is funded directly by fees, similar to garbage pickup. The City of Longview organizes an annual curbside collection of Christmas trees, which are recycled by Waste Control. Recycling center locations are identified in Table 4-1. Longview also has three locations with receiving tanks for antifreeze and motor oil that are provided by the County, identified in the Appendix D MRWP.

In 2010, the use of curbside recycling recovered 2,489 tons of recyclables, 16.6 percent of the residential waste stream (see Table 4-2).

The City of Longview recycles solids collected by the street sweeper; approximately 800 tons is collected and recycled annually. The solids are used as inert fill material at various City projects. Past projects have included a BMX and skateboard park and filling continues at the City industrial park.

In July 2011, the City of Longview launched a Solid Waste & Recycling Web site (www.longviewrecycles.com). Visitors to the site can find out what is and is not recyclable, the proper disposal methods for e-waste and hazardous waste, what recycling contamination is and why it is important, and learn more about the recycling inspection process and why it was implemented.

4.2.6 City of Woodland

The City of Woodland started commingled curbside recycling in 1999. Single-family, 60-gallon residential recycling bins were initially picked up every two weeks but are currently serviced weekly. Multifamily residences are serviced with larger bins, also for commingled recyclables, in this program, which is funded directly by fees. Woodland also has receiving tanks for antifreeze and motor oil that are maintained by the County's vendor Waste Control.

In 2010, the use of curbside recycling recovered 560 tons of recyclables, 9.9 percent of the commercial and residential waste stream (see Table 4-2).

4.2.7 Institutional Recycling Programs

St. John Hospital, Lower Columbia College, and the Longview, Kelso, Kalama, and Woodland school districts all have significant institutional recycling programs.

4.2.8 Private Sector Recycling Activities

In 1974, Waste Control established a buy-back recycling center and a small-scale MRF. In 1984, new equipment was installed to enable the facility to handle more material, and the facility was doubled in size in 1992. Since opening its doors in 1974, the facility has played an increasing role in reducing the amount of solid waste disposed of in the landfill. In 2009, Waste Control added a recycling drop-off center at the new transfer station and in 2011 is bringing on line a new auto hulk processing facility. In 2010, Waste Control recycled approximately 49,305 tons of material from Cowlitz, Clark, and Clatsop counties. Of this, approximately 95 percent of the recyclables were generated in Cowlitz County.

Waste Control operates from two buildings on Third Avenue in Longview. One 44,600-square-foot building houses the equipment for the MRF. The MRF processes commingled recyclables, using a variety of equipment, including a high-density export baler, conveyor belts, a wood shredder, sorting conveyors, a pre-crush compactor, magnetic sorters, a high-velocity air-conveying system, a Lubo Star screen sorter, live-floor storage units, a dust collection system, and various computers to operate the equipment efficiently. The facility also has loaders, forklifts, excavators, and other small equipment, to handle the sorting and processing of recyclables. The other building is used to house the buy-back center. The firm has approximately 70 employees who work at the MRF and on collection routes.

Waste Control has commercial collection routes in the cities of Longview and Kelso for cardboard and office paper. In 2010, 356 tons of office paper and 2,020 tons of cardboard were collected. The company also maintains drop-off sites for recyclable materials throughout the county. Waste Control conducts an extensive recycling program for local industry, including Longview Fibre, Weyerhaeuser, and Norpac.

Other Private Recyclers—Table 4-1 identifies the recycling centers in Cowlitz County and the materials they accept.

Weyerhaeuser, Steelscape, and Longview Fibre all have major recycling operations in place.

4.3 Designation of Recyclable Materials

Ecology's *Guidelines for the Development of Local Solid Waste Management Plans* requires all local SWMPs to develop a list that defines materials as recyclable. For purposes of this section, materials are defined as recyclable if they are marketable and result in waste-stream diversion. A marketable recycled material is defined as a material with established end-users who purchase recyclable materials, use them as raw materials, and transform them into new products. Waste-stream diversion potential is represented as the percent of a specific material in the county waste stream. The following discussion applies both criteria to specific materials to compile a list of recyclable materials for Cowlitz County.

4.3.1 Principal Markets for Recyclables

Western Washington generally has favorable market conditions for a wide variety of recyclable materials due to a large number of nearby manufacturers who buy and utilize the materials, and opportunities for export through Columbia River and Puget Sound ports. As a result, Cowlitz County is able to take advantage of relatively stable and responsive markets. Table 4-3 identifies the location of the principal markets for recyclables in southwest Washington and northwest Oregon.

Table 4-3
Southwestern Washington Markets for Recyclable Materials (2002)

MATERIAL	SELECTED MARKETS	LOCATION
Newsprint	Norpac Inland Empire S. P. Newsprint Export	Longview, WA Spokane, WA Newberg, OR Washington and Oregon
Corrugated Containers	Longview Fibre Simpson Tacoma Kraft International Paper International Paper Export	Longview, WA Tacoma, WA Springfield, OR Albany, OR Washington and Oregon
High Grade Paper	Georgia Pacific Export	Halsey, OR Washington and Oregon
Mixed Waste Paper	Norpac S. P. Newsprint Export	Longview, WA Newberg, OR Washington and Oregon
Container Glass	Owens-Brockway	Portland, OR
Container Glass—mixed colors	Not currently marketable	California, Washington and Oregon
Refillable Glass	Not currently marketable	Washington and Oregon
Aluminum Cans	Various	Washington and Oregon
Tin Cans	Schnitzer Metro Metals	Portland, OR Portland, OR
Ferrous Metals	Schnitzer Metro Metals	Portland, OR Portland, OR
White Goods	Schnitzer Metro Metals	Portland, OR Portland, OR
Nonferrous Metals	Various	Washington and Oregon
PET Bottles	Export	Washington and Oregon
HDPE Bottles	Export	Washington and Oregon
LDPE Packaging	Export	Washington and Oregon
Milk & Juice Cartons	Not currently marketable	Washington and Oregon
Tires	Waste Recovery	Portland, OR
Wood	Swanson Bark and Wood Various	Longview, WA Washington and Oregon
Oil	Various	Washington and Oregon
Car Batteries	United Battery Systems Inc.	Longview, WA
Construction debris (other than wood)	Lakeside Industries Storedahl & Sons Waste Control	Longview, WA Longview, WA Longview, WA

NOTES:
HDPE = high-density polyethylene.
LDPE = low-density polyethylene.
PET = polyethylene terephthalate.

4.3.2 Prioritized Recyclable Materials

Table 4-4 presents the current list of prioritized recyclable materials for Cowlitz County. Prioritization is based on the marketability of the product and its potential for waste-stream diversion, as discussed above. The results of the ranking will be used as a guide to identify materials to be recovered and recycled and may be periodically modified by the SWAC according to market conditions (without update of this SWMP).

All high-priority materials have been incorporated into local curbside recycling programs. High-priority materials that are not collected at recycling drop boxes should be incorporated into these programs in the near future. Medium-priority materials should be considered on a case-by-case basis for inclusion in existing or future programs. Low-priority materials should probably not be included in County recycling programs unless significant change occurs.

4.3.3 Glass

Post-consumer glass consists of three types: container glass, refillable container glass, and noncontainer glass. Refillable container glass is not currently collected in Cowlitz County. Glass discards were estimated to be 4.1 percent of the disposed-of MSW stream in Cowlitz County in 1990 (see Table 4-4). In 2009 416 tons of glass, 0.22% of the MSW waste stream was recovered for recycling in Cowlitz County.

As with all commodities, market prices of glass have fluctuated continuously in the past few years. Currently, glass prices are at a point where collection is becoming uneconomical, which accounts for its reduced share of the recycled waste stream (Willis, J. 2011). Competition from plastics and aluminum has increased. Glass maintains its competitiveness with other container materials because of the high-quality image it imparts to a product, its microwaveability, and its recyclability. Prices for glass cullet are kept low to remain competitive with the low price of silica sand.

Most glass recycled in the United States is manufactured into new glass containers. Present end-users are able to consume all available domestic quantities of clear (flint) and brown (amber) glass. Problems have occurred with the oversupply of green glass resulting from its import from overseas. Mixed cullet, which is a mixture of clear, brown, and green glass, is not currently marketable. Experiments have been conducted in using mixed cullet in the manufacture of "eco-glass," fiberglass, and various construction uses, including

"glassphalt" and sandblasting. It is expected that in the long term, markets will develop for both green glass and mixed cullet.

The City of Bainbridge Island approved the use of crushed glass for road bases and pipe bedding. Kitsap County Department of Public Works has also begun to experiment using crushed recycled glass for road projects. Projects such as this enhance the marketability of recycled glass enormously.

Glass is considered marketable in Cowlitz County, and does provide for moderate waste-stream diversion. Therefore, glass is considered a medium-priority recyclable material.

Table 4-4
Prioritized Recyclable Materials
Cowlitz County

MATERIALS	PERCENT OF MUNICIPAL SOLID WASTE STREAM (2009[a])	TONS RECYCLED (2009[b])	PERCENT OF MUNICIPAL SOLID WASTE STREAM RECYCLED (2009 [c])	LBS PER CAPITA PER YEAR RECYCLED (2009[d])
HIGH PRIORITY				
Ferrous Metal	3.1%	11,760	6.30%	236.14
Tin Cans	0.6%	n/a	n/a	n/a
Aluminum Cans	0.2%	234	0.13%	4.70
Newspaper	0.8%	2,272	1.22%	45.62
Cardboard	2.8%	11,517	6.17%	231.27
High-Grade Paper	0.9%	699	0.37%	14.04
Mixed Paper	2.2%	6,973	3.74%	140.02
PET	0.8%	93	0.05%	1.87
HDPE	0.7%	85	0.05%	1.71
MEDIUM PRIORITY				
Glass	3.1%	416	0.22%	.8.35
White Goods	0.2%	48	0.03%	0.96
Nonferrous Metal	0.1%	1,194	0.64%	23.98
Yard Waste	3.0%	6,435	3.45%	129.22
Woodwaste	12.3%	9,670	5.18%	194.18
Used Motor Oil	0.1%	3,738	2.00%	75.06
LOW PRIORITY				
Tires	0.3%	268	0.14%	5.38
Asphalt and Concrete	1.1%	37,119	n/a—industrial waste	745.36
Antifreeze	<0.1%	52	0.03%	1.04
#3, #4, #5, #6, #7, and LDPE Plastics	3.6%	253	0.14%	5.08
Car Batteries	<0.1%	341	0.18%	6.85
Computers/Electronics	1.9%	221	0.12%	4.44
Fluorescent Light Bulbs	<0.1%	7	0.00%	0.14
Latex Paint	0.1%	0	0.00%	0.00
Oil Filters	<0.1%	22	0.01%	0.44
Textiles	3.3%	0	0.00%	0.00
Food Waste	17.9%	263	0.14%	5.28
Construction and Demolition Debris	7%	20	n/a—industrial waste	–
Household Batteries	0.1%	1	0.00%	0.02
Rendering	n/a%	52,899	n/a—industrial waste	1,062.23

NOTES:
n/a = not applicable.
HDPE = high-density polyethylene.
LDPE = low-density polyethylene.
PET = polyethylene terephthalate.
[a]Source: "Southwest WGA Overall Disposal Waste Sector Detailed Composition". 2009 Washington Statewide Waste Characterization Study (Ecology, 2010).
[b]Source: Recycling Survey, Ecology, 2009.
[c]Percent based on material divided by total MSW Generated (Table 2-6).
[d]Based on 2009 population figure of 99,600.

4.3.4 Metals

Ferrous Metals—Ferrous metals, or steel, are iron-based and therefore magnetic. Most ferrous metal in MSW consists of steel packaging in the form of food and beverage cans. Other major sources are automobile hulks, large appliances, automobile parts, office equipment, and worn-out fixtures. Ferrous metals were estimated to be approximately 3.1 percent of the disposed-of MSW stream in Southwest Washington in 2009 (see Table 4-4). In 2009, approximately 11,760 tons of ferrous metal was diverted for recycling, accounting for 6.3 percent of the Cowlitz County MSW stream.

The market for scrap ferrous metal is strong and will remain healthy in the foreseeable future. In the Pacific Northwest there are several "minimills" utilizing electric arc furnace technology. Minimills use virtually 100 percent scrap to make steel at a cost significantly less than integrated steel producers using iron ore. Ferrous metal represents significant waste-stream diversion and is marketable in Cowlitz County; therefore, ferrous metal is considered a high-priority recyclable.

Tin Cans—The major source of post-consumer scrap steel is tin cans. Tin cans are made of steel and have a light tin coating to prevent rusting. Tin is considered an undesirable contaminant in steelmaking, so these cans must be detinned. In the detinning process, the tin is removed and recovered, leaving behind a clean, high-value steel scrap. Market prices for tin cans have remained fairly constant over the last several years. This is partially tied to the value of steel and tin on world markets. An estimated 0.6 percent of the disposed-of MSW stream in Southwest Washington is composed of tin cans (see Table 4-4). In 2009, tin cans were reported with ferrous metal and hence no tonnage is available in 2009. Approximately 10 tons of tin cans were diverted for recycling in Cowlitz County in 2005. Tin cans are considered a high-priority recyclable.

White Goods—Markets for white goods are at times marginal due to high transportation and processing costs created by the need to remove hazardous components (e.g., polychlorinated biphenyls [PCBs] contained in the electrical components of older appliances and Freon® from refrigerators). Although white goods do not represent significant waste-stream diversion at 0.2 percent of the disposed-of MSW stream in Southwest Washington, the potential for illegal disposal and the hazards they represent make white goods a medium-priority recyclable. In 2009, approximately 48 tons of white goods were diverted for recycling in the county.

Nonferrous Metals—Recoverable nonferrous metals include copper, brass, lead, zinc, nonbeverage can aluminum, and other metals. Nonferrous metal generally has a higher value than ferrous metal. Markets for nonferrous metal continue to be strong, although they are prone to dramatic price fluctuations

in reaction to general economic conditions and prices for virgin feedstock. Brokers and processors can handle much higher volumes of recycled nonferrous metals than they currently do. Nonferrous metals represented approximately 0.1 percent of the disposed-of MSW stream in 2009 (see Table 4-4). In 2009, approximately 1,194 tons of nonferrous metals were diverted for recycling, representing 0.64 percent of the total waste stream. The processing of nonferrous metal is typically labor-intensive due to its bulky nature and multiple components. Nonferrous metals are therefore a medium-priority recyclable.

Aluminum Cans—Aluminum cans are the most prevalent nonferrous metal at 0.2 percent of the disposed-of Southwest Washington MSW stream in 2009 (see Table 4-4). In 2009, approximately 234 tons of aluminum cans was diverted in Cowlitz County for recycling, 0.13 percent of the total MSW stream. Although aluminum comprises a small portion of the waste stream, its relatively high economic value makes it an important component of a recycling program. Therefore, aluminum is considered a high-priority recyclable.

4.3.5 Paper

Paper products had historically accounted for largest fraction of the Cowlitz County waste stream, but have declined relative to other categories. In 1990, paper represented approximately 29.4 percent of the total waste stream. The percentage decreased in 2009 to 18.3% of the total waste stream (see Table 2-8). This most likely reflects the overall decrease in recycling rates that have been observed as a result of the current economic recession and the upsurge in recycling of organics. Since every paper product exhibits different market characteristics, the major grades are discussed separately below.

Old Newspapers—Old newspaper represented approximately 0.8 percent of the disposed-of MSW stream in 2009. In 2009, approximately 2,272 tons of newspaper was diverted for recycling in Cowlitz County. Newspaper is easily identified, prepared, and handled, making it a common material collected by recycling programs such as the Lions Club and the Boy Scouts. Newspaper collected by nonprofit organizations such as these is not accounted for in this plan. Due to its high volume and market stability, newspaper is considered a high-priority recyclable.

Cardboard and Kraft Paper—The recycling industry designates cardboard and kraft paper as old corrugated containers. Unbleached kraft paperboard is used to manufacture a wide variety of corrugated containers that are the most widely used shipping container. Because box makers continue to prefer virgin products for guaranteed strength and durability, cardboard is a valued paper product as an input to other recycling processes. Demand for cardboard has remained strong and is expected to continue.

Kraft paper is a relatively coarse paper with high-strength characteristics. Unbleached grades are used primarily for packaging and wrapping. Kraft paper is in demand for use in the production of corrugated boxes; however, demand has weakened in the manufacture of kraft paper grocery bags, with larger shares of the market being lost to plastic.

Cardboard and kraft paper represented approximately 2.8 percent of the disposed-of MSW stream in 2009 (see Table 4-4). In 2009, approximately 11,517 tons was diverted in Cowlitz County. The relatively high volume and value of cardboard and kraft paper make them high-priority recyclables.

High-Grade Office Paper (white ledger, colored ledger, and computer printout)—Office paper is composed of high-quality printing and writing paper. Office paper is generally marketed into three categories: white ledger, colored ledger, and computer printout. Most office paper is made from virgin fiber, giving it a high value among recyclers. Because of consumer demand, increasing amounts of office paper are being manufactured using postconsumer paper. Office paper is easily identified and prepared for recycling by offices and schools. The high quality of the commodity and its strong demand in export markets results in a relatively high price. Domestic markets are limited by technological constraints in the de-inking process.

Office paper and computer paper represented approximately 0.9 percent of the disposed-of MSW stream in 2009 (Table 4-4). In 2009, approximately 699 tons of high grade paper was diverted in Cowlitz County. As the paper commodity of highest value and with strong source separation potential, office paper is considered a high-priority recyclable. It appears much of the high grade paper was reported as mixed paper in 2009.

Mixed Paper—Mixed waste paper (MP) is a broad category of paper products typically of lower quality and value. MP is easy to identify, but handling may be difficult because it tends to be bulky and come in a variety of shapes and sizes. MP is generally consumed by the export market to countries where cheap labor is utilized to remove contaminants. In the past decade the export market has stabilized, increasing demand and prices.

MP was the largest paper category other than cardboard in 2009, representing 2.2 percent of the disposed-of MSW stream (Table 4-4). In 2009, approximately 6,973 tons was diverted from the MSW stream. Due to its high volume and market stability, mixed paper is considered a high-priority recyclable.

4.3.6 Plastics

Plastics comprised an estimated 10.6 percent by weight of the disposed-of MSW stream in 2009 (Table 2-6). The use of plastics for packaging materials

has increased since then and is expected to increase further, replacing more traditional materials such as paper, glass, and steel. Consequently, plastics show potential for significant waste-stream diversion.

In 2009, approximately 431 tons of recyclable plastic was diverted in Cowlitz County, accounting for 0.1 percent by weight of the total waste stream.

Markets for PET and HDPE plastic are currently strong, and a good recycling infrastructure is in place; therefore, they are considered high-priority recyclable materials. The remaining types of plastics, Types 3, 4, 5, 6, 7, and LDPE, are considered low priority because of low volumes and lack of market value.

4.3.7 Yard Waste

An estimated 3 percent of the disposed-of MSW stream in Southwest Washington in 2009 was yard waste. A number of different collection systems have been developed for yard waste, many of which utilize existing waste collection equipment. Keeping yard waste separate from mixed waste is usually not difficult, at either residential dwellings or commercial offices. In 2009, approximately 6,435 tons of yard waste was diverted. In the spring of 2002, a burn ban was instituted for the urban areas of Longview and Kelso. The burn ban may increase the amount of yard waste disposed of in the Cowlitz County solid waste system, as would any future expansions of the burn-ban area. The 2009 figure of 6,435 tons of yard waste tracked as diverted from the landfills represents a threefold increase since implementing the burn ban restrictions.

The market potential for yard-waste compost is difficult to identify. In general, yard-waste compost is of consistently high quality as compared to compost from food wastes or mixed MSW. As a result, yard-waste compost is able to compete effectively with more traditional forms of compost (i.e., peat products, sawdust, and fish processing wastes) in food production and horticultural uses. Yard waste can also compete with lower quality compost for reclamation, revegetation, and closure cover applications. The County has sufficient capacity to process yard waste at the landfill and has developed uses for it, such as the production of topsoil used for landfill closures. Yard waste is considered to be a medium-priority recyclable.

4.3.8 Used Motor Oil

Used motor oil represented approximately 0.1 percent of the disposed-of MSW stream in Southwest Washington in 2009. Waste motor oil does not represent a significant waste-stream diversion but does represent a serious negative environmental impact if disposed of improperly. Most waste oil recovered in the United States is burned as fuel. An alternative to burning oil

is to re-refine it for use as a lubricant. Due to the serious negative impacts associated with improper disposal and the stable outlets for collected material, used motor oil should be considered a medium-priority recyclable. In 2009, approximately 3,738 tons of used oil was diverted from the municipal waste stream, representing 2.0 percent of the total waste stream (see Table 4-4).

4.3.9 Woodwaste / Biomass

In 2009, woodwaste represented approximately 12.3 percent of the disposed-of MSW stream (see Table 4-4). Hog fuel offers the largest potential market for wood from demolition, construction, and land-clearing activities. Hog fuel is wood reduced to 3 inches or smaller and burned in boilers to produce steam and electricity. There is an established local demand for hog fuel from pulp and paper mills. Woodwaste is easily stockpiled, ground, and used for hog fuel by local industries. In 2009, approximately 9,670 tons of woodwaste was diverted from the municipal waste stream. Due to the local demand and relative availability of woodwaste, it is considered a medium-priority recyclable.

Hog Fuel—Woodwastes and woody material from land clearing can be ground or shredded to produce a hog fuel. Hog fuel is defined as wood reduced to 3 inches or smaller and is burned in boilers to produce steam and electricity. There is an established demand for hog fuel by Northwest industries, particularly pulp and paper mills. Currently, the market for hog fuel is a strong captive market; that is, the users are almost all in the wood industry and thus have the advantage of owning the material. Additionally, there is only sporadic demand for hog fuel derived from slashings and other waste wood.

4.3.10 Asphalt

Recycled asphalt is used primarily for repairing roads, driveways, and paved lots. It is also used to surface road shoulders. In recent years there has been increasing use of "cold" systems that chew up, remix, and lay asphalt as they move slowly up the road. The asphalt market of concern is for asphalt removed from its original site of placement, recycled, and applied to new sites. The recycling process involves heating and the addition of small quantities of new asphalt and emulsifiers. City, county, and state road departments provide the primary market for this material. It is estimated that recycled asphalt costs about one-third as much as new material. Due to the specialized nature of asphalt recovery, the material is considered to be a low-priority recyclable.

4.3.11 Concrete, Rubble, and Inert Material

In 2009 37,119 tons of asphalt and concrete was reported as diverted from landfills. Most material is stockpiled and crushed for reuse as rock fill or processed on-site at demolition projects and reused in the on-site construction project. Waste Control and Storedahl and Sons are the two main recyclers of concrete in Cowlitz County. The relative cost advantage of $10 per ton to recycle compared with $37 per ton for disposal is likely driving this waste stream to be reprocessed for reuse. It is difficult to determine the amount of inert material disposed of throughout Cowlitz County. Most inert material is disposed of at the nearest and cheapest disposal site available. Rarely is material moved more than 5 or 10 miles. In order to be used as inert fill, material must be free of organics, oil, and other contaminants, and must meet applicable regulatory requirements. Generally, it must be broken into 2-foot-diameter pieces or smaller. Due to the specialized nature of inert waste recovery, the material is considered to be of low priority.

4.3.12 Tires

In 2009, it was estimated that tires accounted for approximately 0.3 percent of the disposed-of MSW stream. The market for tires is fragmented, since it is still in its growth stage. The markets for granulated rubber, buffings, stampings, retread casings, and tire chips (for tire-derived fuel [TDF] and other applications) are all growing but are still small compared to available supplies. Problems are still associated with the cost of transporting tires to processing facilities; as a result, tires are considered to be a low priority. In 2009, approximately 269 tons of tires were diverted from within Cowlitz County, or 0.14% of the total MSW stream.

4.4 Designation of Urban and Rural Areas

The designation of urban and rural determines the minimum levels of service for recycling in Cowlitz County, as required by State law. Urban areas in the county are defined as CDPs with a population exceeding 2,500. As discussed in Section 1.12.4, the urban and rural designations for Cowlitz County have remained the same since the 2007 SWMP, with the exception of the Cities of Woodland and Kalama, which are now considered urban. Projections prepared by the Council of Governments predict that the population of Castle Rock will grow so that it fits into the urban category by 2015.

4.5 Residential Recycling

This discussion of current residential recycling practices and their potential future builds on the base of information developed for the 2007 SWMP. What follows is a brief discussion of general issues associated with curbside collection, drop-off centers, and multifamily-dwelling collection.

4.5.1 Residential Curbside Collection

Curbside collection is defined as the collection of recyclable materials at the curb, often from special containers. Curbside collection is commonly considered to be the most convenient method of residential recycling and, therefore, the most effective way to collect recyclables from single-family households. It is best suited for urban areas. Waste Control performs curbside pickup in Longview and Woodland using two specially designed recycling trucks able to quickly empty curbside recycling bins of commingled recyclables. With a strong promotional campaign, containers, and collection on the same day as trash collection, most curbside programs can expect participation rates to exceed 50 percent. Many cities in the Pacific Northwest have reported participation rates near 75 to 80 percent. In 2010, curbside and multifamily-dwelling recycling in the city of Longview cost approximately $224 per ton of material recycled

4.5.2 Recycling Drop-Off Centers

The drop-off center is the simplest form of recycling operation, to which area residents bring separated materials and deposit them in appropriate containers. Drop-off centers are typically viewed as the first phase of a comprehensive community recycling program. They enable local haulers and processors to become familiar with material-handling techniques and market arrangements on a small scale before embarking on more complex curbside collection programs. Drop-off centers are also effective in less densely populated areas unable to support full-scale curbside programs.

A successful drop-off center must be located at a site with high visibility and easy public access. Studies have shown that residents will frequent a center within 3 to 5 miles of their homes, combining the recycling trip with other errands. Larger communities may encourage the operation of several neighborhood drop-off centers, with a larger central site to process aggregated materials. Public participation rates are strongly dependent on the convenience of the location, site cleanliness and security, and the effort devoted to promotion and education. Typical drop-off programs may achieve participation rates up to 20 percent and divert 1 to 7 percent of the total waste stream.

In 2010, the cost of recycling using drop-off centers for collection in Kelso was approximately $46 per ton.

4.5.3 Multifamily-Dwelling Recycling

Multifamily recycling is the collection of recyclables from multifamily dwellings where residents place recyclables in bins or dumpsters in a common area rather than in separate containers issued to each unit. Multifamily households are defined as residential structures designed to accommodate two or more families in separate dwelling units.

A successful program must have the support of the owner or management agency. If it does not, the program will become reliant on the rising and falling level of commitment of resident managers. Since many apartments experience a high turnover of resident managers, the program could suffer from lack of consistency.

The hauler should have the appropriate equipment for servicing apartments and must be willing to provide ongoing promotion and education as new residents move in who are unfamiliar with the program.

Participation rates vary widely across the country and are typically less successful than single-family curbside programs. Nonetheless, programs implemented in the Puget Sound region have experienced participation levels equal to 25 to 30 pounds per unit per month. Multifamily recycling systems have proven to be successful when conveniently located, user-friendly, and supported by an involved manager. Successful case studies have resulted in 80-percent participation with a 30-percent reduction in the waste stream.

In 2010 curbside and multifamily-dwelling recycling in the city of Longview cost approximately $224 per ton of material recycled.

4.5.4 Residential Recycling Recommendations

1. Residential curbside recycling for single-family households is the minimum recycling service level recommended for implementation in the designated urban areas of Cowlitz County. Alternative programs/methods that are as effective as curbside collection may be implemented if acceptable to Ecology and consistent with the criteria identified in RCW 70.95.090 (7)(b)(i). Designated urban areas include the cities of Longview, Kelso, Woodland, Kalama and the adjacent unincorporated urban areas of Longview Heights, West Side Highway, and West Longview.
2. Residential curbside recycling for single-family households for unincorporated urban areas is recommended as a long-term goal in Cowlitz County. This goal received support from the County commissioners on March 19, 2002, when a policy was adopted to "evaluate an economically sound source separation program in the urban non-incorporated areas of the County."
3. Recycling drop-off centers should be provided for the rural areas of Cowlitz County. Remote areas of the county should be investigated for possible sites and local support for recycling drop-off centers. Areas include the southwestern part of the county near the community of Stella, Willow Grove and Coal Creek, the extreme northwestern corner of the county near the retirement community of Ryderwood and the unincorporated Lewis River area of Woodland. A county-wide option should be looked at which would serve populated rural drainage basins. All recycling drop-off centers should collect all high-priority recyclables, except where safety might be an issue. For example, glass is not collected at Huntington Middle School in Kelso. The County should prioritize development of each site based on the potential population base served and seek state grant funds to develop the potential sites. Also, an increase in rural/self-haul disposal rate structure to support the rural drop off recycling program should be considered.
4. Multifamily units outside the urban service boundary should be encouraged to use recycling drop-off centers.

4.6 Nonresidential Recycling

The combined solid waste stream disposed of in 2009 was comprised of residential waste (21 percent); commercial waste (12 percent); industrial waste (63 percent); and CDL waste (4 percent). Combined non-residential waste represents a total of 79 percent, or 204,586 tons, disposed of in 2009.

State law does not require a jurisdiction to establish nonresidential recycling programs. However, it does require monitoring of the nonresidential waste stream, with a focus on wastes handled or disposed of by the County solid waste system. Ecology planning guidelines recommend that nonresidential waste recycling be encouraged. This is all the more important for Cowlitz County, given that over 50 percent of its waste stream is generated by the nonresidential sector. Nonresidential recycling becomes feasible when the economics of separating and marketing specific materials is favorable. Businesses that generate a waste stream containing a large amount of homogenous recyclable material, such as corrugated containers, ledger paper, computer paper, glass, plastic, and wood, are typically good candidates for recycling.

Five nonresidential recycling programs are discussed below. To the extent possible, programs are discussed within the context of local conditions in Cowlitz County. For both urban and rural areas, the following programs will be evaluated:

- Targeted commercial recycling
- Technical assistance
- Waste exchange
- Nonresidential waste stream monitoring
- In-house government recycling

4.6.1 Targeted Commercial Recycling

Description—Certain types of commercial businesses generate large amounts of recyclable material on a regular basis. Recyclable materials include corrugated containers, office paper, newspaper, and glass and aluminum containers. By targeting high-volume generators, the County can contribute significantly to the overall recycling rate. Recyclable materials and commonly associated business generators include:

Corrugated Containers—supermarkets, department and discount stores, wholesalers, clothing and furniture retailers, light manufacturing industries.

High-Grade Office Paper—business offices, government buildings, high schools, colleges, hospital/clinics, print shops.

Newspaper—newspaper publishers, restaurants, hotels, transit terminals.

Glass, Tin, and Aluminum Containers—bars/taverns, restaurants, cafeterias (hospitals, schools, factories).

Plastics—business offices, restaurants, schools.

A variety of methods are available to collect recyclables from nonresidential waste generators. The easiest method is to establish a separate container or bin for a recyclable material at the source. For example, large users of corrugated containers, such as grocery stores, arrange with a waste hauler to have a dedicated collection container put in place.

Haulers can set up a route designed to pick up only one type of recyclable material and, as a result, will obtain clean, high-grade loads. Grouping businesses that generate similar materials can result in substantial savings to the hauler, because the hauler can continue to charge for the collection service and avoid the tipping fee by recycling the material. However, materials collected will often still contain a small amount of contamination (also referred to as accidental or incidental waste), requiring the load to be minimally processed. For small businesses, 90-gallon toters work well, since they can be easily moved within the office and are fully compatible with an existing automated refuse-collection system.

Office paper collection requires a more intensive system with a greater commitment and involvement on the part of the company. Typical office paper collection programs provide a small collection container at every desk to collect white ledger, colored ledger, and computer paper. The individual boxes are emptied into a larger bin kept in a central location. The centralized bin(s) are emptied and delivered to an MRF for upgrading and baling or are shipped loose to the paper buyer in drop boxes or gaylords. Specific program attributes are as follows:

Business Management—A recycling program should have the full support of business managers if it is to achieve the desired results. In almost every case, management must be convinced that engaging in recycling activities will result in some form of savings or will generate revenue.

Containers—Various types of containers are required for a successful nonresidential recycling program. These will range from desktop containers for office-paper recycling to the larger central containers for corrugated cardboard or other recyclables. Most nonresidential recycling containers are either furnished by the service provider or purchased by the waste generator.

Contract with Hauler—The best hauler for this program is one who can provide collection for a number of businesses. The hauler must have the appropriate equipment and provide ongoing feedback.

Effectiveness—A greater quantity of high-quality material can be extracted from the waste stream at a lower cost than at any other point in the waste stream by targeting commercial and retail business areas. The lack of progress in this area is the result of a lack of information about available

systems, techniques, and markets. As the information void is filled, participation will increase.

4.6.2 Technical Assistance to Nonresidential Waste Generators

Description—Technical assistance, which could include waste audits, is a specific form of assistance to nonresidential generators of waste. Activities that could be provided include the following:

Information Clearinghouse—An information database providing access to literature sources, contacts, and case studies on waste-reduction techniques for specific industries or waste streams. Information could be made available through customized computer literature searches.

Specific Information Packages—SWMP stakeholders on the county, city, or hauler level could prepare specific waste-reduction and recycling reports for a company's waste stream. This information would identify cost-effective waste-recycling options.

On-Site Waste Audits—County, city, or hauler staff could provide comprehensive waste audits through on-site visits. During such visits, detailed process and waste-stream information is collected. The information is analyzed, and waste-reduction and recycling options are identified. A report is prepared that details these options and includes literature, contacts, case studies, and vendor information.

Outreach—County, city, or hauler staff could give presentations on waste prevention to industries, trade associations, professional organizations, and citizen groups. Depending on the audience, these programs could range from an overview of state regulations to in-depth discussions of technologies for specific programs.

4.6.3 Waste Exchange

Description—A waste or material exchange operates as a clearinghouse to facilitate the reuse and recycling of industrial materials that otherwise would be landfilled. The materials may be either the by-products of a manufacturing process or surplus materials, and they may even involve hazardous materials. Common materials generated in Cowlitz County that may be traded within a waste exchange include woodwaste, ash, industrial sludge, and foundry sand.

As part of a waste-exchange program, a catalog is typically published every two to three months that lists materials available and materials wanted. Catalogs are standardized by organizing materials into 11 categories: acids, alkalis, other inorganic chemicals, solvents, other organic chemicals, oils and

waxes, plastics and rubber, textiles and leather, wood and paper, metals and metal sludge, and miscellaneous. Some waste-exchange catalogs include regulatory updates and pertinent environmental information. Depending on the exchange, catalogs may be free or may have a subscription fee. Such a catalogue could be located on-line to save on production and material costs, and regular update.

The major waste exchanges operating in the United States serve multistate regions rather than a single state or county. Regional exchanges tend to function better than state exchanges because of the larger, more diverse pool of companies available to advertise in the catalog. Currently, there are several waste-exchange operations in the Pacific Northwest, e.g., IMEX in Seattle, Reusable Building Materials Exchange in Seattle, and Pacific Materials Exchange in Spokane. The King County Hazardous Waste Management Program has set up a regional waste exchange for the Pacific Northwest called the Industrial Waste Exchange (http://www.lhwmp.org/home/IMEX/index.aspx).

4.6.4 In-House Government Recycling

To demonstrate the effectiveness of these programs, jurisdictions should have in-house recycling policies and programs to complement the programs that they recommend for nonresidential entities. Many departments have components of the following: paper-recycling receptacles at each desk and in common areas, and container-recycling receptacles in common areas. These programs represent a minimal effort to implement and show the jurisdictions' commitment to the programs that they recommend.

The County and cities could set examples and promote local waste-recycling efforts by publicizing their own efforts to reduce the amount of waste produced in all departments. In combination with waste-reduction efforts, existing recycling programs should be expanded to include all departments as well as a wider range of materials. Quantities of recycled waste could be periodically monitored so that results can be used for promotional purposes, economic analysis, and the jurisdiction's quantification of waste-recycling efforts on an annual basis.

4.6.5 Nonresidential Waste-Stream Monitoring

Description—Haulers of nonresidential waste need to become better informed about who the generators are, available recovery systems, and collection and recovery techniques. As part of a nonresidential waste-recycling program, the County, city, or hauler could establish a database that identifies nonresidential generators, the waste generated, and the amount of recyclables available. Such a program would be instrumental in conducting waste audits, program promotion, and implementation.

4.6.6 Nonresidential Recycling Recommendations

1. The existing commercial recycling collection route in Cowlitz County should continue to be made available to all commercial business in the designated urban service area. The route may be expanded at the discretion of the local hauler/recycler. Commercial generators in outlying areas of the county should be encouraged to utilize multi-material drop-off centers when possible. Drop-off centers should be designed to accept materials from nonresidential generators.
2. The County, cities, and haulers should provide technical assistance to businesses and institutions in the county to encourage the development of in-house recycling programs. Technical assistance, which may include waste audits, would provide recycling/broker lists, market information, waste-exchange catalogs, and model procurement policies. The County should work closely with Ecology in making the best use of existing expertise and relevant publications. Initially, the SWMP stakeholders should focus only on those businesses that demonstrate a strong interest and have high potential for waste-stream diversion.
3. The County, in conjunction with waste haulers, recyclers, and business, should work to monitor nonresidential recycling activities and build a comprehensive list of generators in the county. The purpose is to facilitate evaluation of program success and plan for program modifications and expansion. In addition, commercial recycling statistics will be useful to apply toward the State's recycling goal.
4. Public agencies should continue to lead by example in the implementation of department-wide recycling programs. Jurisdictions should establish, maintain, or expand recycling programs and monitor results for promotional purposes.

4.7 Yard-Waste Collection Systems

This section examines the alternative methods for collecting source-separated yard waste and identifies potential end users of composted material. For each alternative, the operational elements, waste stream diversion, and program economics are discussed. Backyard composting eliminates the need for collection systems and is discussed in Section 4.8.5. The following collection methods were evaluated:

- Mobile drop-off sites
- Fixed drop-off sites

- Household (curbside) collection, urban areas

It is estimated that yard waste and woodwaste accounted for approximately 23 percent of the waste stream in Cowlitz County in 1990, which represents the largest component of the County's MSW stream. In 2009, approximately 16,106 tons of yard debris and woodwaste was diverted in the county, representing 8.63% of the total waste stream. Yard waste is defined as leaves, brush, tree trimmings, grass clippings, weeds, shrubs, waste from vegetable gardens, and other compostable organic materials resulting from the landscape maintenance activities at residences or from businesses such as lawn and garden nurseries or landscaping services. Woodwaste includes uncontaminated, clean, woody material from residential, commercial, or industrial sources (excluding forest-products-industry waste).

4.7.1 Mobile Drop-Off Sites

Description—This approach involves the operation of temporary drop-off sites. Sites can be arranged at advertised locations on a regular basis throughout the year or for special events such as spring and fall cleanups. It is best if the sites are staffed to help minimize contamination by bags, large woodwastes, noncompostable wastes, etc. A form of the mobile drop-off concept has already been implemented in the county with the Christmas tree recycling project.

An example of an inexpensive mobile drop-off program for yard waste is the use of a garbage-collection truck parked in a centralized location. The site must be a well-known location, preferably a site used as a multi-material drop-off or at a solid waste facility. The site would be open two weekends each month between March 1 and November 30 for a total of 18 collection days. User fees and hauler contracts would finance the system.

Effectiveness—The effectiveness of this approach is limited by the degree of convenience that can be provided. To achieve significant participation, drop-off sites should be operated frequently in different locations to avoid excessive travel distances or lengthy waits between collections.

This approach does not serve large generators of yard waste and land-clearing debris very well. Demolition companies, land developers, lumber mills, and other large generators need to be able to deliver their wastes directly to a processing site rather than at a site that transfers the waste to another container.

The results of similar programs implemented in western Washington have shown that mobile drop-off for yard waste will be utilized by three percent of all households per event, and each participating household will drop off approximately 100 pounds of material. Applying the estimated performance

of a mobile drop-off for yard waste to Cowlitz County would require the placement of mobile drop-off sites in each incorporated area in Cowlitz County. Assuming a capacity of 18 cubic yards per rear loader, or 3.5 tons of compacted yard waste per site, each collection vehicle could serve approximately 70 participants.

A mobile drop-off program designed around existing drop-off sites would result in seven yard-waste sites: two for the City of Longview, one for Kelso, one for Woodland, one for Kalama, one for Castle Rock, and one for Toutle. Assuming 18 collection events per year, the program would annually divert 5 percent of the total amount of yard waste disposed of.

Cost—The estimated cost for a mobile drop-off yard waste collection system is $280/ton.

4.7.2 Fixed Drop-Off Sites

Description—Fixed drop-off sites are used to collect yard waste and small quantities of woodwaste and land-clearing debris. Fixed drop-off sites can be located at a variety of places, but the best locations are generally at existing disposal sites such as landfills and transfer stations, sites that already are devoted to the handling of similar materials (primarily private facilities), and recycling drop-off sites.

At the fixed site, a separate container would be provided for the deposit of yard waste. Typically, 40-cubic-yard roll-off containers are used. When the container is full, it is hauled directly to the processing facility.

Effectiveness—This method can be very effective for yard waste. Because the site is fixed and open on a reliable schedule, it is far more likely to receive material from a larger share of households than a mobile drop-off facility. The site can serve larger generators than a mobile site and can collect larger-sized material, including heavy brush, sticks, and small stumps. Similar programs implemented in the Pacific Northwest have shown a collection rate of 10 to 15 percent of the total amount of yard waste disposed of. For Cowlitz County this would be 980 to 1,200 tons of material per year.

Cost—The estimated cost for a fixed yard waste drop-off system located at an existing solid waste facility is about $50 to $60/ton.

4.7.3 Curbside Collection, Urban Areas

Description—Curbside collection in urban areas can pick up a substantial amount of the yard waste generated by the residential sector in urban areas. Curbside collection is generally not a suitable collection method for commercially generated yard waste. Brush can be included in curbside

programs, generally with restrictions on size (under 3 or 4 feet in length and 2 to 4 inches in diameter) with a requirement that it be bundled.

In designing a curbside collection program, a number of options must be considered, including collection frequency, containers used, collection method, and incentives provided. The frequency of most existing programs is every other week. Participation rates increase when these collections are conducted on the same day as garbage collection. Since yard waste is generated in definite seasonal patterns, consideration is often given to the operation of curbside programs for only part of the year, typically March 1 until November 30. However, yard waste is still generated in significant amounts during the winter months due to storm-related deadfall and winter prunings, and variable collection schedules may be confusing to the public. In an effort to provide year-round service, many haulers offer yard-waste collection with weekly or bi-weekly collections from March through November and monthly collection during the three winter months.

Containers used by participants will be determined in part by the collection and processing method. Most programs use carts or cans rather than plastic bags. Plastic bags are difficult to remove and pieces will remain in the finished product, diminishing its marketability. Containers typically provided for yard waste collection are 90-gallon toters that allow for automated collection, are easily moved by homeowners, and hold adequate volumes of bulky material. If automated equipment were unavailable, it would be necessary to use smaller containers that could be easily lifted when full. In all cases, providing containers will increase participation. Collection of yard waste is generally accomplished with existing garbage-collection vehicles. This approach avoids the need to purchase new or specialized equipment.

Effectiveness—The results of a curbside yard-waste collection program will depend on the convenience of the program, the extent of public education, and the incentives provided. A considerable amount of public education should be provided at the start of a new program.

In urban areas of the Pacific Northwest, initial results of a new curbside collection program for yard waste indicate that 30 to 40 percent of the eligible households can be expected to participate. For Cowlitz County, it is expected that approximately 2,000 tons per year would be collected.

Cost—The yard-waste collection program in the city of Olympia is estimated to cost approximately $170 per ton (Jones, 2002). A significant factor in determining the cost of a program is whether containers are provided to all eligible households or whether they are provided by request only.

4.7.4 Yard-Waste Collection Recommendations

Transfer Station and local wood waste recycler should continue to provide convenient drop off facilities to handle yard-waste and encourage source separation by the customer by providing lower rate for yard waste disposal when compared to refuse disposal rates.

City and county collection companies should evaluate pay-as-you-throw waste programs, which have been known to reduce waste streams entering landfills by almost 20 percent (Skumatz, 2002).

Public agencies should evaluate their contracting policies, which could be revised to encourage or require contractors to segregate land-clearing waste.

4.8 Yard-Waste Processing Systems

This section examines the alternative methods for processing source-separated yard and woodwaste. For each alternative, the operational elements, effectiveness, and cost are discussed.

4.8.1 Processing Using Passive Piles

Description—This processing option requires the least investment in new equipment but demands the greatest amount of space per ton of material handled. Yard waste is simply piled and allowed to compost until a usable product is formed. The piles should be turned occasionally to provide mixing and aeration. The actual length of time required for composting will depend on the raw materials included and the requirements of the available markets for the end product. In the Pacific Northwest, this type of composting typically requires one to three years. A longer period is necessary if wood chips or other woody material is included or if the market demands a highly finished and stabilized product. Screening may be required before the end product can be marketed. The equipment necessary consists primarily of a front-end loader and screening equipment. A number of facilities in and around the Puget Sound region are currently using this type of system. All have discovered that managing the piles more intensively through frequent turning and mixing results in a better-quality end product.

Effectiveness—With sufficient equipment and facilities, this option can handle all yard waste currently being landfilled in Cowlitz County.

Cost—The cost of using passive piles would most likely be approximately $30 to $35 per ton, more expensive than land application and slightly less expensive than processing requiring specialized equipment.

4.8.2 Processing Using Specialized Equipment

Description—Processing yard waste using specialized equipment, or intermediate-level technology composting, is characterized by the use of equipment for chipping, turning windrows, and screening of the final product. The process requires significantly more labor and capital equipment but requires much less land than the other options. Large mechanical reduction equipment is used to reduce the size of the material to greatly accelerate the decomposition process. The shredded material is put into small windrows, which are long piles of composting material typically 6 feet high, 12 feet wide, and of variable length. The windrows are turned about once per month. The use of smaller windrows with more frequent turning allows the center of each pile to remain aerobic, which significantly accelerates the composting process. The entire composting process takes from 12 to 18 months to complete.

Effectiveness—This method can be very effective in handling yard waste. This processing option can also provide an effective method for handling other types of organic wastes, such as sludge, food wastes, woodwaste, and land-clearing debris, due to the greater control of composting conditions and enhanced processing abilities provided by the specialized equipment. It is expected that this method would be able to handle all 6,435 tons of yard waste disposed of in Cowlitz County.

Cost—Initial capital costs are substantially higher than the processing options discussed previously, and they result in an increase in total costs. The current cost to process yard waste at the Cowlitz County Landfill is approximately $35 per ton.

4.8.3 High-Tech Composting

Description—This approach, which employs the highest degree of technology, combines two separate composting processes. The first resembles the specialized-equipment approach described above, but the decomposition process is accelerated with a controlled aeration system using blowers and daily turning of windrows. The addition of water and/or nitrogen-containing substances such as sewage sludge or fertilizer is sometimes necessary. The second process uses a reactor vessel of some type that is designed to improve the rate of mechanical size reduction, thus accelerating the composting process. Both methods use sophisticated process-control systems that continuously monitor the composting process.

This approach generates high-quality compost in a short period of time, between two weeks and two months. Typically, the material is cured for a period of a few months before the final product is marketed.

Effectiveness—This approach is very effective in generating a high-quality compost product in a relatively short period of time. However, it is assumed that the higher capital costs and levels of operational sophistication required by the aerated static pile and mechanical reactor methods will preclude its use in Cowlitz County. Additionally, unlike the intermediate-level technology, it is not recommended that different waste streams be processed by this method, since it is virtually impossible to keep them separate through the entire process.

Cost—The cost of this approach is very high due to the large amount of capital outlay and maintenance required for the processing plant. At this time, the cost per ton would be prohibitive.

4.8.4 Back-Yard Composting

Description—Composting at home can take place in composting bins, open compost piles, by mixing in with soil, or by worm composting. Composting at home by individual homeowners saves transportation and disposal costs and provides an environmentally sound way to manage wastes. Potential benefits to households include lower waste-disposal costs, a convenient way to handle wastes, and a free soil amendment that will increase the health, productivity, and beauty of the landscape. Back-yard composting is an important part of every solid waste solution. The process takes from 12 to 18 months to complete. Since 1995, the County and the City of Longview have made nearly 4,700 composting units available at a subsidized price to area residents.

Effectiveness—Portland Metro studies indicate that 230 pounds per person of yard debris and 100 pounds per person of organic food waste can annually be diverted through use of back-yard composting. Given the large size of urban lots in Cowlitz County, this method has proven to be very feasible. A recent survey showed County-distributed composting bins to be effective in that 93 percent of the respondents were using the bins a year after acquisition and 77 percent were composting food scraps. Thirty percent of the respondents had not been composting before acquisition of the composting bins.

Cost—The cost of backyard composting in Cowlitz County is approximately $22 per ton; however, if subsidies from the State's CPG program are factored in, the cost falls to approximately $10 per ton (Olson, 2010).

4.8.5 Yard-Waste Processing Recommendation

It is recommended that the County continue to utilize the 3-acre, state-of-the-art composting pad, developed at the landfill in 1995, for yard waste brought into the landfill. Currently it is projected that 40 percent of the pad

will be used annually to hold processed street sweeping fines prior to providing them back to the individual municipal generators for reuse. The composting of 5,000 tons of biosolids annually generated by the regional sewage-treatment plant was discontinued in mid-2008. The other 60 percent provides adequate room to conduct intermediate-level windrow composting of grass, leaves, and chipped-brush waste. The yard waste derived composted material will be stockpiled until 21,000 yards is accumulated for mixing with soils used as vegetative soil for future landfill closure projects.

The County, in conjunction with the cities and using CPG money, should continue to make subsidized compost bins available to area residents.

The County should encourage the development of private composting facilities in-county which may provide the ability to compost food and other organic wastes not currently accepted at the County compost facility.

4.9 Yard-Waste Compost Markets

A number of materials produced from yard and forest waste can be used by a variety of groups. End products must be designed to meet the specifications of available markets and their capacities. For the type of products typical of these waste streams, the most viable markets generally are located within 50 miles of the composting facility for bulk deliveries. For a composting facility located in the Longview-Kelso urban region, a 50-mile radius would extend as far as Chehalis to the north and Vancouver/Portland to the south. This range can be extended for bagged material or specialty products.

4.9.1 Yard-Waste Compost Products

The following products can potentially be derived from the compostable wastes examined in this study:

Mulch—Woody material may be marketed as a mulch material in bulk quantities and/or bagged for retail sales. Wood chips can be produced from chipping branches or stumps, replacing the bark products traditionally used for landscaping and soil stabilization. Uses include application to park trails, temporary roads, and farmyards. If demand for mulch is strong, or if mulch with high organic content is desired, yard waste and brush can be shredded and sold without composting. This type of product may be useful where both erosion control and in-place amendment of the topsoil is necessary.

Compost—Composted yard waste of high, medium, or low quality can be sold in bulk or bagged as a soil amendment. Low-quality compost could be used for agricultural purposes, erosion control, and other applications where aesthetics and disease are not a major concern. Landscapers and homeowners would use medium- or high-quality composts. Screening

and/or intensive composting processes can produce medium- and high-quality composts.

Topsoil—Topsoil (bulk) or potting soil (bagged) can be produced using compost as part of the blend. For markets that use topsoil mixtures or compost for growing plants, the compost must be highly stabilized before use, or a nitrogen-containing fertilizer must be added in sufficient quantities to ensure that some free nitrogen is available for plant growth. Blending soil with compost must be done carefully to avoid an explosion of bacteria. Mixtures should be monitored for one to two weeks after blending to check for the generation of heat as an indication of bacterial activity.

Specialty Products—These products include animal bedding, coarse mulch for erosion control, landfill cover, organic material for remedial action at contamination sites, and soil amendment for land reclamation sites. These are considered to be specialty products because they satisfy a specific need. As such, they may require significant market development efforts if they are to absorb substantial quantities of yard-waste material.

4.9.2 Yard-Waste Compost End Users

A variety of different businesses, institutions, and individuals may provide markets for yard-waste compost and other products. Depending on the group, their needs may be met by a wide range of products, or they may be interested only in a specific type of material. The following groups may act as end users of yard-waste products:

Public Agencies and Government Contractors—Procurement policies and practices for public agencies and their contractors could be revised to encourage the use of compost and related products.

Nurseries and Orchards—Nurseries and orchards could use compost as a soil amendment and wood chips as a road surface. The compost could be applied to prepare an area prior to planting, as a top dressing to conserve moisture and reduce weeds, and as part of a mix to be used for potting small trees for sale.

Soil Dealers and Distributors—Garden centers and related outlets, such as grocery and hardware stores, sell bulk and bagged wood chips, compost, and topsoil mixtures. These outlets typically serve the general public and therefore demand high-quality products. Soil and bark dealers and distributors handle a variety of products. As dealers of bulk materials, they may be able to handle low-grade products.

Farmers—Farmers can provide a market for compost, and they may be willing to use low-grade materials such as coarsely shredded or partially

finished composts. They typically are not interested in using composts that contain plastic and other nondegradable contaminants.

Foresters—Commercial and recreational forestlands can provide markets for compost. Commercial forest applications for compost include soil preparation and top dressing; recreational settings can use wood chips as mulch or as a substitute for bark on trails.

County Residents—County residents can use compost in gardens and lawns. Wood chips can be used for a mulch material around shrubs and trees. For these purposes, the cost of the compost or wood chips must be competitive with similar products and must be conveniently available.

Landscapers—Landscapers use products similarly to residential users but may be able and willing to use a wider range in quality of wood chips and composts, because they may be more aware of the possible applications for different grades of products.

Industry—Industrial markets include the use of wood chips as hog fuel and some of the specialty applications mentioned above, in addition to being a consumer of compost and mulch materials.

4.9.3 Yard-Waste Compost Markets Recommendations

1. To the extent possible, the County should develop long-ter m agreements with end users to serv e as a reliab le market for processed material.
2. The County should continue to w ork toward accumulating 21,000 cubic yards of com post for blending with soil for site closure cover of Cells 3A and B, and reapplication over closed Site A., as needed.

4.10 Education/Promotion Programs

Local education and information are critical for the success of any waste-reduction and/or recycling program. This section of the plan presents education programs for Cowlitz County to supplement existing and planned programs. The importance of citizen education, targeting both adults and children, cannot be understated. Education is generally considered to be reasonably cost-effective, with excellent long-term environmental benefits.

The objective of educating the public is to increase awareness of the environmental consequences of solid waste disposal and so increase understanding of the need for waste reduction and recycling management

alternatives. As public comprehension of environmental problems broadens, public education, public participation and public acceptance of MSW management alternatives has increased.

4.10.1 Education/Promotion Options

A variety of options exist for public education and promotion. The cost and effectiveness of the programs vary widely. Many of the techniques have little cost for services or materials. However, all require a level of commitment from the County or cities to coordinate activities, target appropriate audiences, and evaluate effectiveness. The following is a list of potential techniques that could be used for a county-wide program:

Recycling Theme—A theme, which is the overall appearance and tone of a public education campaign, should be chosen prior to developing materials for an extensive public education program. Choosing and following a theme increases the effectiveness of recycling-education programs by increasing the public's ability to identify program elements.

Facility Pamphlets—Facility pamphlets can be used to instruct residents of the full range of recycling services provided in the county. Information may include the types of recyclables accepted, how to prepare recyclables for drop off/collection, locations for the recycling of nonpriority recyclables, and locations for the drop-off of HHW. All solid waste facilities should distribute information about methods and locations for waste reduction and recycling.

Direct Mailings—Direct mailings are a flexible form of public information, encompassing everything from newsletters to single-page flyers. While mass mailings may be expensive and limited in effectiveness, mailings to specific target groups may increase the effectiveness and reduce costs. Information inserts in utility or garbage-collection bills provide a more direct form of public information than mass mailings.

Information presented in mailings could cover a series of topics more broadly than facility pamphlets and could include purchasing habits to support waste reduction, backyard composting, public "feedback," and recycling-program progress.

Active Advertisements—In newspapers or on radio, information can be distributed to a large area. Typically these types of programs are very expensive and are not audience-specific. Since Cowlitz County has a relatively small population and does not have extensive opportunities for mass communication, paid advertisements are more problematic than other types of advertising.

Passive Advertisements—Advertisements promoting recycling activity can be placed on grocery bags, phone book covers, posters, billboards, banners, and point-of-purchase displays.

Displays—A portable display can be used in public settings to promote awareness and to distribute written information. A portable display could be used at fairs or other community gatherings. A permanent exhibit could be set up at public buildings in the form of a demonstration project. A permanent exhibit could also carry a tally of quantities collected for recycling and be displayed in a sign or billboard at multi-material drop-off sites.

Speakers—Speakers are very useful in communicating a variety of issues and topics to various groups such as the Chamber of Commerce, Rotary Club, church groups, PTA, and neighborhood organizations.

School Programs—A variety of curricula and presentations have been produced by Ecology and others for use in schools. The "A-Way with Waste" program can be obtained free from Ecology. However, the program will require effort to initiate, coordinate, and maintain.

Slide Show and Videotapes—Audio-visual materials can be developed for use at public events, schools, and fairs in conjunction with an information booth. It is important that the quality of the audio-visual materials be highly professional.

Telephone Hotlines—Telephone hotlines have proven to be an excellent way to disburse information as needed to a wide variety of people. A local hotline can provide detailed information about specific programs to homeowners and businesses alike and maintain a detailed database regarding recycling businesses and services offered in the county.

Web Sites—Web sites are a good way to cost-effectively publish information and make it readily available to people who are looking for it. The County and other local jurisdictions maintain solid waste Web sites that present information related to the use of the County landfill, hazardous-waste disposal, and links to the State's recycling Web page (www.co.cowlitz.wa.us/publicworks/sw/).

4.10.2 Education/Promotion Recommendations

Public information and education efforts should be continued in Cowlitz County. Given the large degree of overlap between jurisdictions and the activities of the County, it is recommended that the County take a lead in conducting recycling education and promotion. This would ensure a consistent message county-wide. Using resources provided by Ecology and

those generated locally, the following activities should be conducted periodically by the County and Cities:

- Develop and distribute a brochure or packet of materials dedicated to recycling opportunities in the county. The information should be distributed to residents in the county and made available in public areas such as libraries and government offices. Information inserts should be coordinated for distribution in city and refuse hauler customer billings.
- Develop a waste-reduction and recycling theme and a portable display for use at County events. Materials should be developed for both adults and children.
- Work cooperatively with cities, educators, haulers, and private, nonprofit organizations that are participating in recycling education and promotion activities through schools and civic activities.
- Evaluate the education programs as a routine part of the public information and education program. Evaluation should consist of public feedback and measurement of program performance.
- Continue maintenance of web sites that provide information to the general public related to recycling and disposal of hazardous household waste.

4.11 Chapter Highlights

- The overall goals are to maintain recycling levels at or above the state residential recycling goal of 50 percent and to make recycling and composting opportunities readily available to all residential and nonresidential waste generators in Cowlitz County.
- During 2009, Cowlitz County achieved a recycling rate of 53 percent, which is higher than the state rate of 45 percent. The county's diversion rate was 36 percent, which is lower than the state rate of 48 percent.
- Curbside recycling has been successfully implemented in Longview and Woodland. Additionally, more than ten recycling drop-off centers are also in place around the county.
- Food waste represents the largest component of the MSW stream in Southwest Washington.
- Currently, there is a very limited market for mixed glass collected in Cowlitz County.

5 SOLID WASTE PROCESSING TECHNOLOGIES

5.1 Introduction

The Washington State SWMP establishes the goal of removing all reusable, recyclable, and compostable material before disposal. This chapter investigates the potential for further waste diversion through three methods of solid waste processing. Options considered are as follows:

- Solid waste sorting
- Solid waste composting
- Energy recovery/incineration

This chapter includes an inventory of existing conditions, an identification and evaluation of the three mixed-waste-processing options, and recommended alternatives for the County solid waste management system.

5.2 Solid Waste Sorting

Solid waste sorting often precedes both incineration and composting, but follows source-separation activities. Solid waste sorting facilities receive either mixed solid waste or commingled recyclables and, through various mechanical and manual processes, remove recyclable materials for market or composting; leaving remaining solid waste that may be incinerated or landfilled. Waste-sorting activities range from a minimal sort to a comprehensive sort. With a minimal sort, hazardous and/or bulky materials are removed to prevent explosive hazards (in the case of incineration) or the contamination of water, air, or end products, whether the end product is ash or compost. With a comprehensive sort all marketable recyclables, compostable materials, and combustibles are removed from the waste stream.

5.2.1 Overview of Mixed Solid Waste Sorting Facilities

Sorting of mixed waste is accomplished either by a "dump and pick" operation where waste is dumped on a tipping floor and targeted materials are pulled out; by manual picking from a "sorting conveyor"; or by various other mechanized or controlled dumping methods. The dump and pick method is the simplest and least expensive. More sophisticated sorting operations include both manual and mechanized sorting to achieve the best

separation. A typical mixed-waste-processing facility that employs all of these sorting methods is described below.

Sorting recyclables from mixed waste is a much more complicated and expensive undertaking because of the large amount of material in the waste stream that is not recoverable but that must still be run through the system. The waste volumes are greater, thus wear and tear on equipment is greater, and the equipment requires more extensive and more frequent cleaning, maintenance, and replacement. The presence of non-recyclable materials in the waste stream also hinders the separation process so that a lower percentage of the recyclables ultimately are recovered.

The Waste Control Transfer Station operates a cost-effective and controlled waste stream sorting program. Incoming loads are screened for hazardous waste, bulky items, and recyclables. Over 4,565 tons or 13 percent of the transfer station landfill disposal tonnage was recovered for recycling in 2010 by directing facility patrons to place waste in designated recovery areas.

5.2.2 Overview of Material Recovery Facilities

An MRF is defined as a facility where some portion of the incoming, commingled solid waste stream is separated and processed into recyclable commodities (WAC 173-350-100). Typically, a MRF operator also actively markets prepared recyclables to brokers or end users. In contrast to buy-back and drop-off centers, a MRF is a processing facility, often serving an entire region, to which commingled solid waste is brought for separation. At one extreme, MRFs can have complex machinery that assists in separating various elements of the waste stream, or they can rely on human labor to sort incoming materials. Typical functions of MRFs include the following:

- Consolidation or processing of recyclable material collected in curbside or drop-off programs
- Separation and intermediate processing of white goods, woodwaste, yard waste, tires, construction/demolition debris, or other easily segregated components of the waste stream

The most commonly processed materials in MRFs include the following: tin cans, container glass, aluminum cans, newspapers, corrugated cardboard, high-grade paper, MP, and plastic bottles (HDPE and PET). On average, about 10 percent of an MRF's daily tonnage ends up as nonrecyclable residue requiring disposal.

5.2.3 Existing Conditions

Waste Control operates a MRF that processes commingled recyclables collected in Cowlitz, Clark, and Clatsop counties. Approximately 95 percent

of the recyclables originate in Cowlitz County from residential curbside recycling and drop boxes as well as industrial and commercial accounts. The facility also processes recyclables collected at the buy-back center located on site. It also is used to process some solid waste collected from commercial/industrial sources for recyclables before shipment to the County landfill.

Weyerhaeuser operates a MRF at its Longview facility. The MRF is used as a staging area for waste to be transported to the Headquarters Landfill by the rail line that connects the two facilities and by truck. Approximately 85 percent of the waste processed at the MRF is generated at the Longview facility. Very little active sorting occurs at the MRF because waste created at the Longview facility is typically sorted immediately following generation.

The Weyerhaeuser MRF is used primarily for temporary storage and as a transfer point for materials to be disposed of or recycled. Hog fuel is created from woodwaste at the Weyerhaeuser MRF. The MRF is also used as a loading-out point for recycled metal and as a holding area for excess CDL waste. A pad at the MRF is used as an area to dewater boiler ash. As part of the dewatering process, stockpiled de-ink rejects are mixed into the boiler ash at the MRF.

The Longview Fibre recycling yard occasionally operates as a MRF, but its primary function is as a transfer station for recyclables that are source-separated throughout the plant.

5.2.4 Needs and Opportunities

The County has identified source separation as the preferred method to separate recyclables from the waste stream. Therefore, at this time, there is only limited need for mixed-waste-processing capability.

Waste Control's MRF and Transfer Station have the required capacity to meet present recycling needs in Cowlitz County. Future capacity needs will be assessed if significant modifications are proposed for current recycling programs.

5.2.5 Solid Waste Sorting Options

Status Quo—Waste-processing services are conducted primarily by Waste Control. It is envisioned that Waste Control will continue to provide MRF capability for processing commingled recyclables and high-grade commercial loads. If necessary, other haulers operating in the county could develop MRF capability to meet local demand in other areas of the county, or containerize and ship recyclables to the Waste Control MRF for further processing.

Develop a Central County MRF—This alternative would provide for the development of a MRF, centrally sited in the county, implemented by the County. Implementation of this system would call for a County procurement process to select and contract with a vendor for MRF services. Actual operation of the facilities would continue to be provided by the private sector via contracts between vendors and the County.

5.2.6 Solid Waste Sorting Recommendations

The Status Quo alternative is recommended as the desired strategy for ensuring MRF capability in Cowlitz County. This alternative is most likely to result in the continuation of necessary, adequate MRF services with minimal additional investment. In selecting this option, the County identifies private haulers operating in the county as responsible for supplying needed MRF capability to process recyclables. It would be mutually beneficial to the County and Waste Control to continue to develop enhanced capabilities to handle additional components of the waste stream, such as electronic waste and sheet rock.

5.3 Solid Waste Composting

5.3.1 Introduction

Composting is the controlled decomposition of complex organic materials by microorganisms, such as fungi and bacteria, to produce a soil amendment. Although decomposition occurs naturally, composting facilities are designed to accelerate this process by managing moisture content, oxygen, temperature, and the ratio of carbon to nitrogen. The decomposition rate depends on many factors, including the types of waste that are deposited in the compost pile. Typical organic waste streams that are targeted for composting include woodwaste, yard waste, food waste, paper waste, land-clearing debris, sewage sludge, and septage. The average decomposition completion time for most composting facilities is one to six months.

Nationwide, the rising costs of landfilling and incineration, coupled with increasing community opposition to new facility siting, have led to public support for MSW composting. Composting generally receives strong support from environmental and citizen associations. One potential drawback of composting is odor problems. Several composting facilities in the U.S. have closed due to technical problems associated with permitting difficulties as a result of odor (USEPA, 1999).

For MSW composting, the compostable portion of the waste stream consists of paper, food scraps, woodwaste, and yard waste. The number of MSW composting facilities in the U.S. has decreased, after some initial experimentation in the 1990s. Many of the facilities closed because of odor

problems; others closed because of problems associated with sorting out non-compostable portions of the waste stream or difficulties in producing non-hazardous compost. At this time, MSW composting is not considered a viable option for Cowlitz County. Similarly, the use of anaerobic digestion to produce methane gas from composting processes is still in the experimental phase and is not considered an option for Cowlitz County at this point.

5.3.2 Centralized Yard-Waste Composting

The most widespread and best established composting strategy is yard-waste composting. Yard waste consists of leaves, brush, tree trimmings, grass, garden waste, shrubs, and materials generated by nurseries, landscapers, utility- and public-facility maintenance operations, and individual citizens.

The most costly portion of yard-waste-composting programs is the collection of the waste, which can range from extensive curbside collection programs to simple drop-off programs. Of the two general methods of curbside collection, bulk and bag, bulk-collection programs require more equipment and thus more personnel to collect the waste. Bagged yard waste takes somewhat more time to compost if no grinding equipment is used to preprocess the waste. Drop-off systems are the least labor-intensive collection programs, but have lower participation rates due to the fact that they are not as convenient.

Yard-waste-composting facilities range from low-technology operations, where materials (such as leaves, branches, and other yard trimmings) are turned periodically with a front-end loader, to high-technology operations, where extensive preprocessing, screening equipment, and windrow turners are utilized. Preprocessing consists of reducing the size of the yard waste by grinding and shredding, which accelerates the decomposition of the yard waste.

Following preprocessing, the waste is composted in windrows, static aerated piles, dynamic bins, or in-vessel reactors, or by the use of vermicomposting. Windrows, long piles of compost, are the most commonly used of the four composting methods. The compost is usually piled over aeration trenches that force air into the piles, while large windrow machines or front-end loaders keep the windrows porous by periodically turning the composting material. Static aerated piles operate much like windrows but without the mechanical component. In dynamic bin systems, the compost is placed in containers and turned mechanically. In-vessel reactors are also enclosed systems, but no agitation occurs, although some vessels do rotate. Moisture and temperature levels must be closely monitored with in-vessel reactors; therefore, they are very complex and costly to construct, operate, and maintain. An alternative method for composting is the use of worms to achieve controlled decomposition of organic wastes, or vermicomposting.

Some commercial-scale facilities in other states have started to use vermicomposting.

Once the yard waste is thoroughly decomposed, the material is "cured" for 30 to 90 days to stabilize the product. Further refining of the product through screening or grinding is often employed to reach the quality specified by the intended end use of the product.

5.3.3 Existing Conditions

The yard-waste-composting program currently in place at the Cowlitz County Landfill uses intermediate-level windrow-processing technology. Due to County and city efforts, there is a significant quantity of residential back-yard composting in Cowlitz County. Back-yard composting is the preferred method because of the elimination of collection, transportation, and handling needs. Please see Chapter 4 for more details.

5.3.3.1 Performance Risk

There is minimal technical risk associated with centralized yard-waste composting. There is always risk associated with waste collection. The County has minimized risk by avoiding distribution of compost to areas outside the landfill. The herbicide clopyralid has been permanently banned by the Washington State Department of Agriculture (WSDA) for residential and commercial lawns and turf, so it is not expected to have a negative effect on composting in Cowlitz County in the future (WSDA, 2002).

5.3.3.2 Reliability of Markets

Markets for compost are fairly limited in Cowlitz County at the present time. The compost product that is currently being generated at the Cowlitz County site is being used as material for landfill-closure-related projects. The County has simplified marketing and distribution efforts and avoided some environmental issues by using all the produced compost exclusively for landfill projects.

5.3.3.3 Environmental Impacts

Odor can be a problem at yard-waste-composting facilities. Factors that contribute to the generation of odor include the types of materials collected, siting, management issues, and climatic conditions. Grass clippings are a large contributor to odor problems, being quick to emit odors due to their high moisture and nitrogen content. Leaves and mixed waste also contribute to the odor problem.

Stormwater management as well as windborne debris issues are also of concern and must be planned for accordingly (USEPA, 1999).

5.3.3.4 Cost

Composting facilities vary in cost due to the degree of complexity of the collection and processing programs. Yard-waste-composting costs are approximately $66.00 per ton diverted, which breaks down into $44.37 per ton for collection and $21.65 per ton for composting (USEPA, 1999). Composting at the Cowlitz County Landfill costs approximately $48 per ton. The County has observed fluctuation in the rate due to variability in the quantity of compost produced, the cost of leachate treatment, and the necessity of purchasing wood chips to maintain balance of organic material.

5.3.4 Yard-Waste-Composting Recommendations

The County should continue to utilize their current yard-waste-composting system. In order to increase participation in the yard-waste-composting program, creating a curbside collection program might prove to be beneficial and would extend the life of the landfill and potentially minimize long-haul disposal waste. The County, through the use of an incentive program such as a fee reduction, should promote efforts to encourage separation of yard waste from solid waste coming into the disposal facility. The County should provide subsidized bins to encourage back-yard composting. The County should encourage the development of private compost facilities with the capacity to process other organic wastes, such as food waste and soiled paper.

5.4 Energy Recovery/Incineration

Efforts by the County to recover energy from MSW date back to planning for the development of the current sanitary landfill operation in 1973. In June 1974, a preliminary technical and economic feasibility analysis of four alternative energy-recovery technologies recommended that the County process MSW for sale to private industry as a supplemental fuel in hog-fuel boilers. In 1977, Longview Fibre formally expressed an interest in using RDF in two existing hog-fuel boilers. A second study was conducted to evaluate the feasibility of an RDF energy-recovery system incorporating the existing County solid waste processing facility and the Longview Fibre boilers. However, several problems were identified in the test burn, and Longview Fibre decided not to purchase RDF from the County.

The County continued its marketing efforts during 1982 through contact with Weyerhaeuser Corporation, which also operates pulp, paper, and lumber mills in the Longview area. An effort was made to sell RDF, or unprocessed MSW, to Weyerhaeuser for a proposed fluidized bed boiler system that was under consideration. Weyerhaeuser analysis determined that both the economics and the small amount of waste material available, in comparison

with the company's total demand for fuel, would not justify entering into an agreement with the County.

In 1988, Combustion Engineering proposed locating a $100 million incinerator in Longview that would burn 1,200 tons of garbage a day, 90 percent of which would come from the Portland area. The project was shelved in 1988 when it became apparent that Industrial Development Bonds would not be available for the project. Also, at the time, there was considerable public opposition to siting an incinerator in Cowlitz County (Combustion Engineering, 1988).

On July 30, 2002, the County Commissioners approved a resolution that established that the County would not pursue siting an incinerator in the county.

The County has investigated the construction of a pipeline that would supply landfill gas to nearby industries, so that the energy content of this landfill byproduct could be recovered. From 2001 through 2005, the County negotiated with Northwest Hardwood (a subsidiary of Weyerhaeuser) to provide landfill gas for use in their boilers. The final contract was never entered into because of reluctance on the part of Weyerhaeuser. The County also partnered with a local public utility district in 2009 and 2010 to evaluate the production of electricity from landfill gas. The project was canceled in mid-2010 because of insufficient gas production remaining at the Cowlitz County Landfill to support the proposed 1-megawatt-generating facility over a 20-year period, and because the cost associated with removing siloxanes proved insurmountable. The County will continue to look for opportunities to partner with businesses interested in this product.

5.5 Chapter Highlights

- The Waste Control MRF currently meets the needs of Cowlitz County.
- The County operates an effective yard-waste-composting system.
- The County Commissioners approved a resolution in 2002 that established that the County would not pursue an incinerator in the county.
- The County has been studying and will continue to pursue the possibility of supplying landfill gas to local industries.

6 SOLID-WASTE COLLECTION

6.1 Introduction

Solid waste collection refers to the activities of certified and contract haulers who collect mixed solid waste and recyclables from residences, businesses, and institutions. This chapter describes the current solid waste collection system in Cowlitz County, including legal authority, collection practices, and the interrelationship between solid waste collection and waste-reduction/recycling activities.

6.2 Existing Conditions

6.2.1 Legal Authority

Legal authority for solid waste collection in Cowlitz County is shared among a number of public agencies. These agencies are Ecology, the UTC, the County, and the cities.

Ecology—Ecology evaluates SWMPs for compliance with State guidelines. SWMPs are required to address the issues of solid waste collection and, specifically, the relationship of solid waste collection to recyclables collection.

UTC—Under RCW 81.77 the UTC regulates the collection and transportation of solid waste and residential recycling in unincorporated areas of the state, and within cities and towns that do not contract for or provide solid waste collection services themselves. The UTC regulates entry, rates, safety and consumer protection.

County Authority—Counties may operate solid waste collection systems as authorized by Chapter 36.58A RCW. Chapter 36.58A authorizes counties, under certain conditions, to establish solid waste collection districts in unincorporated areas for the mandatory collection of solid waste. Solid waste collection districts may include incorporated areas, as long as the affected municipalities give consent. A county must demonstrate that mandatory collection is necessary for the preservation of public health. The UTC is required to investigate and make a finding as to the ability and willingness of the existing solid waste collection companies servicing the area to provide the required service. If the UTC finds that the companies are unable or unwilling to provide the required service, the UTC will issue a certificate of public convenience and necessity to any qualified person or corporation in accordance with RCW 81.77. Should no qualified individual or corporation step forward, the County may provide the collection service, but only after the UTC completes its investigation.

Following the adoption of a comprehensive SWMP pursuant to Chapter 70.95 RCW, a county may adopt regulations and ordinances governing the storage, collection, transportation, treatment, utilization, and processing of solid waste.

Cities and Towns—Under State law RCW 35.21.120, cities and towns have the following options for managing solid waste collection:

- A city or town that provides solid waste collection itself or contracts for solid waste service is exempt from UTC regulations (RCW 81.77.020). However, if a city gives notice to an existing solid waste collection company of its intent to provide service itself, the city must provide the hauler not less than seven years notice. During that time, the UTC regulates the solid waste collection company.
- Cities have the option of issuing licenses to a solid waste collection company. Licensing does not allow cities or towns regulatory control over collection services or fees. Rather, licensing serves as the process through which cities may impose local utility taxes on a solid waste collection company operating under UTC regulation.
- Municipalities may operate their own solid waste collection system for residential, commercial, and recyclables collection. In this case, the city has sole responsibility over all aspects of solid waste collection. A city or town can also require mandatory collection. Under mandatory collection, a city or town may require that all residents and businesses subscribe to designated refuse-collection services.

6.2.2 Solid Waste Collection Companies

This section describes the various collection systems currently operating in Cowlitz County. Solid waste collection services are provided throughout the county by private certificated haulers and private franchised operators. Collection certificate areas are shown in Figure 6-1. The certificated collection companies in Cowlitz County are identified below, in Table 6-1.

Table 6-1
Cowlitz County Certified Solid Waste Collection Companies

NAME	ADDRESS	UTC CERTIFICATE NO.
Waste Control Recycling, Inc.	PO Box 148 Kelso, WA 98626 (360) 425-4302	G-101
Waste Connections of Washington, Inc.	9411 NE 9th Avenue Vancouver, WA 98662 (360) 892-5370	G-253
Jeffery K. Cummings d/b/a/ Community Waste & Recycling	182-53 Hillcrest Drive Chehalis, WA 98532 (360) 748-7387	G-219

6.2.2.1 UTC-Certified Collection Companies

The UTC regulates solid waste collection companies by issuing a certificate of public convenience. The following companies provide service within Cowlitz County (rates listed below are as of March 2011):

Waste Control— Waste Control currently provides collection services for the area covered by UTC Certificate G-101. Most of the permit area is in Cowlitz County, with the remaining portion in Clark County and Skamania County. The area in Cowlitz County covers approximately 880 square miles, or over 75 percent of the total area of the county. Approximately 44,781 people live in this collection area, which has a population density of about 38 persons per square mile. Included in this collection area are the cities of Longview, Kelso, Castle Rock and Kalama, and the unincorporated communities of Toutle; Ostrander; Woodbrook; Beacon Hill; Lexington; Rose Valley; the "Woodland Bottoms," a 14-mile-long corridor up the Lewis River Highway adjacent to Woodland; and Coldwater Ridge in Skamania County.

Waste Control provides weekly collection to residential customers in the G-101 collection area. Customers are charged $14.75 per month for the weekly pickup of a 32-gallon container, $17.80 per month for the weekly pickup of a 60-gallon container, and $20.80 per month for a 90-gallon container. Larger containers and biweekly pickups are also available. According to Waste Control's records, there were approximately 8,021 residential customers and 373 commercial customers in the G-101 area in 2010 (Willis, 2011).

The G-101 collection area includes the area serviced by the UTC Certificate G-049 as referenced in the 1993 SWMP. Waste Control purchased this certified area in June 2001 from Ted's Sanitary Service, and it was incorporated into the G-101 certificate in 2002.

In 2010, Waste Control provided service to approximately two-thirds of potential customers in the G-101 collection area (Willis, 2011). The remaining residences either dispose of waste on their own property or haul directly to a disposal facility.

Approximately half of the waste collected and not recycled by Waste Control in the entire G-101 certificate area is comprised of commercial and industrial waste from Cowlitz County. Most of this waste is transported to the Cowlitz County Landfill for disposal. The other half of the waste from the area is residential waste from Cowlitz and Clark counties. Most of the residential waste collected in the G-101 area is taken to the Cowlitz County Landfill. After the Cowlitz County landfill becomes full in 2013, waste will continue to go to a County-approved disposal site, which could be Headquarters Landfill or Roosevelt Regional Landfill.

Waste Control and the County executed a contract, dated November 16, 2006, under which the County agreed to utilize a transfer station to be built by Waste Control. In return, Waste Control must use the Tennant Way Landfill for the disposal of MSW collected by Waste Control and for material-recovery-facility residuals. The contract requires the waste flow to be directed to the transfer station from the landfill in a phased process, and establishes a fee schedule for services. Upon the closure of the landfill, Waste Control will long-haul waste generated in the county to the Rabanco Regional Landfill, in Roosevelt, Washington, or transport waste to the Headquarters Landfill under a proposed amendment to the contract. Transportation of waste to the Headquarters Landfill is anticipated should the County be successful in purchasing that facility and re-permitting it to take MSW waste. This contract includes all of the waste collected under Waste Control's G-101 collection area. Waste Control does not currently offer curbside recycling to areas outside of Longview and Woodland.

Equipment owned by Waste Control includes four 28-cubic-yard, automated, side load packer trucks; one 40-cubic yard commercial front loader; and three drop-box trucks. They also own at least 120 drop boxes with varying capacities. The firm employs a total of 70 persons, 17 of them involved in the collection of the G-101 area (Willis, 2011).

Jeffery K. Cummings d/b/a Community Waste & Recycling—The remote retirement community of Ryderwood in northern Cowlitz County is served by Jeffery K. Cummings d/b/a Community Waste & Recycling, a UTC-certified hauler. Jeffrey K. Cummins of Chehalis, Washington, owns and operates the firm that collects waste from the 328-person community. The estimated population density is 196 people per square mile. Residential customers are charged $5.60 a month for weekly collection of a 20-gallon container, $6.70 a month for weekly pickup of a 32-gallon container, $9.70 for monthly pickup of two 32-gallon containers, and $4.00 a month for monthly pickup of a 32-gallon container. Waste collected is hauled to the

Cowlitz County Landfill, using one rear-loader compactor truck. Community Waste & Recycling serves approximately 283 residential customers and ten commercial customers and collected 445 tons of waste in 2010.

Waste Connections of Washington, Inc.—This firm, based in Vancouver, Washington, serves the extreme southeast corner of Cowlitz County. Included in the certificated collection area are the upper end of Yale Lake on the Lewis River and the small, tourist-oriented rural community of Cougar. Because of its proximity to Mt. St. Helens, Cougar experiences heavy tourist activity primarily during the summer months. A single collection vehicle provides weekly service. Residential customers are charged $10.24 a month for weekly pickup of a 20-gallon container, $13.01 for a 32-gallon container, $18.94 for two 32 gallon containers, $28.07 for three 32 gallon containers, $34.88 a month for four 32 gallon containers, and $43.54 for five 32 gallon containers. Larger containers and every-other-week pickups are also available. All rates are subject to a 3.6% State of Washington tax. There are approximately 198 customers in the service area.

The estimated 2007 population of the approximately 36-square-mile area was 616, most of whom were located in the Cougar area. The district's estimated population density was 17 persons per square mile. The majority of the accounts are within 1 mile of the Lewis River. Approximately 373 tons of Cowlitz County waste is collected annually by Waste Connections and is combined with Clark County waste for transport to the Finley Buttes Landfill in Boardman, Oregon.

6.2.2.2 City Contract Collection

City contract collection operations involve private companies contracted by a municipality to collect and haul MSW. The municipality collects service charges for services provided by the hauler. Usually the contracts are awarded on a competitive basis to the lowest bidder. Haulers typically must furnish suitable performance bonds. Currently, Longview, Kelso, Woodland, and Kalama have issued city contracts to private haulers for collection services. Collection practices by jurisdiction are described below. All rates and account information contained in this section are for 2011 and are subject to change. Population information is derived from the 2009 Office of Financial Management projections. It should be noted that in the spring of 2007 the County and all cities within entered into an Interlocal Agreement for Management of Municipal Solid Waste which designates the County System for disposal of certain solid waste generated within the corporate limits of each city for the calendar years of 2006 through 2045. A copy of the agreement is located in Appendix A.

City of Longview—Longview is the largest city in Cowlitz County and has a population of 36,010. There were approximately 15,053 residential accounts in 2010. With a total area of 14.17 square miles, the population density is estimated to be 2,541 people per square mile. A City of Longview ordinance restricts residents from hauling their own waste. In April 1989, Waste Control took over the collection of solid waste for the city of Longview. The contract is renewable every five years for five-year periods and allows the City to specify where the waste is disposed of. Currently the City specifies that all waste go to the Cowlitz County Landfill.

Waste Control contracts with the City to handle all residential and commercial customers, using fully automated collection equipment. An estimated 86 percent of commercial customers use the 300-gallon, plastic, solid waste tubs that are picked up with a fully automated collection vehicle; an estimated 11 percent use 90-gallon containers; and the remaining commercial customers (2 percent) use frontload containers. Approximately half of the residential customers are serviced weekly with 300-gallon, plastic tubs located in alleyways shared by two to four residential customers for garbage only. Each time a single 300-gallon tub is picked up, an average of three customers have been serviced, resulting in a highly efficient collection system. Residential customers not on alley service have a 90-gallon roll-cart that is picked up weekly at the curb. The City has provided 90-gallon containers to all residents for recycling collection. Single-family residences pay $12.76 per month for garbage pickup and $3.08 a month for recycling. Multifamily units pay $9.27 per month per unit for garbage pickup and $2.24 per month per unit for recycling.

The solid waste collection equipment used for all of the residential and commercial accounts in the city of Longview includes six automated packer trucks, one 40-cubic-yard front load packer truck, two drop-box trucks, a pickup, and approximately 100 drop-boxes with capacities ranging between 20 and 40 cubic yards. Purchased equipment includes approximately 5,000 roll-carts (90-gallon), and 3,100 of the tubs (300-gallon). Six employees collect waste for Longview.

The City of Longview waste collection contract grants Waste Control the option of providing curbside recycling to city residents. If Waste Control were to elect not to provide the service, the City would seek recycling services through the open bidding process. Waste Control has provided a residential curbside program in Longview since August 1, 1992.

City of Kelso—The county's second largest city, Kelso has a population of 11,840. There were approximately 3,976 residential accounts in 2010. With a total area of 8.5 square miles, the population density of the city is estimated to be 1,393 people per square mile. Collection is mandatory. The City Public Works Department operated its own garbage collection system until the City made the decision to award a city contract to a private hauler. In March 1989,

Superior Refuse Removal, Inc. of Centralia was awarded the waste-collection contract; it began providing service in July 1989. On May 27, 1991, Superior Refuse Removal, Inc. sold its contract to Waste Control of Longview. The contract between the City of Kelso and Waste Control gives the City the right to specify where waste is disposed of; currently all waste is hauled to the Cowlitz County Landfill.

Waste Control currently uses the same automated collection system as described above for Longview to collect the garbage generated in Kelso. Most commercial/industrial accounts are located in and around the downtown business district, near the I-5/Allen Street interchange, in West Kelso, and in the South Kelso industrial area. Residential customers are located throughout Kelso.

In servicing Kelso, Waste Control uses two automated packer trucks and a drop-box truck. The City of Kelso uses 90-gallon roll-out carts for residential accounts, and 300-gallon, plastic tubs for commercial/industrial accounts. A small percentage of commercial customers use the 90-gallon carts. Residences are charged $10.77 per month for weekly garbage pickup and $0.50 per month for recycling facilities, and services are billed bimonthly.

City of Kalama—The city of Kalama has a population of approximately 2,505, with a land area of 2.22 square miles; the population density is estimated to be 1,128 people per square mile. Kalama has granted Waste Control a city contract to collect all solid waste in the city. The city contract does not specify where the waste must be disposed of (Willis, 2011). Although the collection contract gives Waste Control the license to collect garbage within Kalama, the garbage collection rates are regulated by the UTC. Kalama bills Waste Control's customers in exchange for 15 percent of gross fees collected. There are currently 868 residential and commercial customers participating in the mandatory curbside garbage pickup program. Presently, residential customers pay $14.75 a month for a 32-gallon container, $17.80 a month for a 60-gallon container, and $20.80 a month for a 90-gallon container on a bimonthly billing schedule.

City of Castle Rock—The city of Castle Rock has a population of approximately 2,145. With a land area of 1.56 square miles, Castle Rock has a population density of 1,375 people per square mile. Castle Rock is the only city in Cowlitz County that does not have mandatory collection. Castle Rock Ordinance No. 86-5 grants Waste Control the authority to provide weekly garbage collection service to the residents of Castle Rock. Because of the benefits of population density toward collection efforts, Castle Rock residences are charged less per month than residences in unincorporated areas of the county, resulting in a monthly fee of $14.50 for a 32-gallon container, $17.55 for a 60-gallon container, and $20.55 for a 90-gallon container. There is no contract between Castle Rock and Waste Control.

City of Woodland—The portion of the City of Woodland that falls within Cowlitz County has a population of 5,110 and a total land area of 3.28 square miles, resulting in a population density of 1,558 persons per square mile. In June 2001, Waste Control purchased the Woodland contract for weekly garbage pickup and curbside recycling from Ted's Sanitary Service. The initial contract is for seven years, with five-year renewal periods. The contract does not specify where Waste Control must dispose of collected waste, although currently it goes to the Cowlitz County Landfill. Woodland bills customers in exchange for 15 percent of the gross fees collected. There are currently approximately 1,600 customers. Residential and small commercial customers of mandatory weekly garbage collection pay a monthly fee of $10.72 for a 60-gallon container. Mandatory curbside recycling is $4.18 per month. Larger commercial customers pay $70.31 monthly for 300-gallon containers. Customers are billed on a bimonthly basis.

It should be noted that a portion of Woodland falls within Clark County. The waste generated in this area is also collected by Waste Control and disposed of at the Cowlitz County Landfill. The incorporated Clark County area of Woodland had a population of approximately 52 in 2009, according to OFM projections. Service is also provided to residents of the unincorporated area surrounding Woodland in Clark County. In 2010, Waste Control recorded an additional 497 residential and commercial customers living in the unincorporated Clark County area around Woodland. Customers in the unincorporated areas are charged the UTC rates discussed in Section 6.2.2.1.

6.3 Needs and Opportunities

This section discusses the adequacy and availability of solid waste collection services in Cowlitz County and identifies areas where the level of service provided may not match the current or projected need.

City of Kelso—Kelso has no additional solid waste collection needs for mixed municipal waste. However, Kelso residents are not provided with any financial incentive to practice waste-reduction/recycling activities. The City currently has no curbside recyclables collection program.

City of Longview—The City of Longview has implemented an automated waste-collection system using both 90-gallon carts and 300-gallon tubs. The automated system is fast and efficient. The City of Longview implemented curbside collection of recyclables beginning in August 1992.

City of Castle Rock—Castle Rock should consider implementing mandatory collection of garbage to increase subscriptions and potentially reduce the cost of collection.

City of Kalama—No special needs have been identified for the city of Kalama in regard to the collection of solid waste. Mandatory garbage collection is in place.

City of Woodland—No special needs have been identified for the city of Woodland in regard to the collection of solid waste. Mandatory curbside garbage and recycling programs are currently in place.

Unincorporated Cowlitz County—Most of the self-haulers in the county reside in unincorporated areas. Certificated haulers should continue to solicit additional subscriptions for collection service in the unincorporated areas of the county. The demand for solid waste collection in the rural unincorporated areas of Cowlitz County will depend on population growth. Implementation of mandatory garbage collection to the maximum extent permissible by law would increase subscriptions and potentially reduce the unit cost of collection in those areas. Mandatory collection could also result in less illegal dumping.

As illustrated in Figure 6-1 there is an unincorporated area of east Cowlitz County on Lewis River Road (Highway 503) between Merwin Lake and Yale Lake that is not currently served by any UTC certificate. It is recommended that the County inquire with the UTC for the expansion of the Waste Control (G-101) or Waste Connections (G-253) certificate to provide service for residents in this area.

Summary—The current waste-collection system in Cowlitz County appears to be adequate to handle current and future needs for collection of solid waste. Problems identified are limited to illegal disposal in rural areas, lack of financial incentives to encourage waste reduction and recycling, and inconsistent opportunities to recycle county-wide.

6.4 Collection Alternatives

The following section presents alternatives for addressing the collection needs and opportunities identified above. The collection alternatives presented are intended to establish a collection system that will improve upon the waste-reduction and recycling activities of the county and ensure that waste is disposed of in an environmentally safe manner.

6.4.1 Mandatory Collection

Description—Currently the cities of Longview, Kelso, Kalama, and Woodland provide mandatory refuse collection. Castle Rock and unincorporated areas have voluntary collection, with approximately one-third of residents self-hauling their refuse to the Waste Control Transfer Station (Willis, 2011).

Roadside dumping, open burning, and other forms of illegal disposal are unacceptable practices. These problems could be corrected through a variety of programs, including mandatory collection in all jurisdictions, a solid waste collection district that requires mandatory collection throughout the urban areas of the county, strict enforcement of anti-litter laws, and/or strict enforcement of a regulation requiring loads to be properly secured with a tarp to prevent blowing litter.

Effectiveness—The requirement for all cities to implement mandatory collection is allowed by State law. Mandatory collection would help to eliminate problems associated with illegal disposal, and would likely reduce the number of people who self-haul their waste in private vehicles, thus reducing the incidence of roadside litter caused by poorly secured loads. Mandatory collection programs throughout the rest of Cowlitz County would provide some benefits, but not without some costs. Benefits include a reduction in illegal disposal, a reduced need for enforcement activities associated with illegal disposal and their associated cleanup costs, greater ability to provide recycling programs (assuming some combination of recycling services will be provided along with garbage collection), and increased revenues to support solid waste programs.

Mandatory collection may act as a disincentive for those who are avidly trying to reduce wastes unless volume-based rates are used. However, costs may be a problem even with volume-based rates. In areas with very low population densities, such as in the rural unincorporated areas of Cowlitz County, garbage collection services can be expensive to provide. The establishment of mandatory collection in unincorporated areas could be implemented through a solid waste collection district. State law (RCW 36.58A) enables a county to establish such a district. This idea is discussed more fully in Chapter 11, Administration and Enforcement.

6.4.2 Variable Can Service

Description—Variable-can service or volume-based rates require residents to select a garbage-container size or a number of containers that will on average hold all waste material needing disposal each week. Residents are then charged according to the size and number of containers set out for collection; higher volumes result in higher bills. Variable-can service has been implemented in Castle Rock, Kalama, Woodland, and the outlying unincorporated areas of the county.

Effectiveness—Variable-can service has proven to be an extremely effective waste-reduction and recycling incentive. In the city of Seattle, the introduction of variable-can rates almost immediately reduced the average number of cans per subscription from three and one-half to one. Variable-can service also provides an equitable fee structure so each household pays only for what is generated. A weight-based version of the system is even

more effective. The effectiveness of a variable-can program is enhanced with the implementation of parallel recycling programs.

6.4.3 Residential Recycling Collection

Residential recycling programs have been discussed in detail in Chapter 4 of this plan. The cities of Longview and Woodland have curbside collection of recyclables. Kelso and the unincorporated urban areas of the county have access to multi-material drop-box facilities. These programs, in combination with the programs mentioned previously, provide both an opportunity and an economic incentive for county residents to recycle and to reduce solid waste generation.

6.5 Recommendations

1. The SWAC recommends that mandatory curbside garbage collection be implemented throughout the county but recognizes that this may not be economically feasible in all areas. The establishment of mandatory collection in unincorporated areas of Cowlitz County would require the establishment of a solid waste collection district.
2. Curbside recycling should be provided for all incorporated and urbanized areas of the county not currently receiving service but recognizes that this may not be economically feasible in all areas.
3. Haulers collecting waste in Cowlitz County should include in their operations a process to facilitate and encourage source separation of demolition and inert waste for recycling or disposal at permitted demolition/inert-waste landfills. Also, yard waste and special wastes should be source separated and collected independently from MSW.
4. The County and the cities should take stronger action to eliminate illegal dumping through increased enforcement.
5. An unincorporated area of east Cowlitz County on Lewis River Road (Highway 503) between Merwin Lake and Yale Lake is not currently served by any UTC certificate. It is recommended that the County inquire with the UTC for the expansion of the Waste Control (G-101) or Waste Connections (G-253) certificate to provide service for residents in this area.

6.6 Chapter Highlights

- Three collection companies currently provide all municipal-waste-collection service for Cowlitz County.
- Mandatory solid waste collection can reduce the cost of collection per customer by increasing the number of subscriptions. All areas in Cowlitz County, except Castle Rock and unincorporated Cowlitz County, have established mandatory solid waste collection.
- Variable-can service has been implemented in Castle Rock, Kalama, and the outlying unincorporated areas of the county. Variable-can service is an extremely effective waste-reduction technique that also encourages recycling.

7 SOLID WASTE TRANSFER SYSTEM

7.1 Introduction

Transfer systems consist of fixed facilities with drop boxes and/or transfer stations that receive waste from public and commercial sources. The purpose of a transfer system is to provide a centralized location for consolidation of numerous small waste loads, loading the waste into larger transfer containers, and shipping it to a disposal site. Consolidation improves the economics of waste hauling and reduces traffic impacts at land disposal sites. In addition to the consolidation of waste materials, transfer stations can serve as a location for the processing of recyclable materials. Material-processing activities include the separation, preparation, and consolidation of recyclable material collected through curbside programs or removed from incoming loads.

This chapter will discuss the existing transfer system in the county, identify needs and opportunities, and identify system strategies for implementation, and will conclude with transfer system recommendations.

7.1.1 Transfer Facility Types

Drop-Box Station—A drop-box station receives both compacted and uncompacted waste where material is deposited directly into a drop box. When the drop box is full, it is loaded onto a roll-off truck and hauled to a disposal site or MRF. Drop-box facilities are common in rural areas, requiring lower capital expenditures for land, structures, and equipment. Drop-box facilities can also provide opportunities for recycling and for the separate collection of yard debris, woodwaste, and/or CDL waste.

Transfer Station—A transfer station is a facility that receives compact and loose waste from both commercial sources and the general public. Transfer stations may use a dumping pit or tipping floor to consolidate waste material before transferring it into a trailer or compactor. In transfer stations with a dumping pit, a tractor is used to crush and compact the waste before loading it into the trailer or compactor. Trailer loading usually requires the use of a knuckle-boom crane to evenly distribute and compact the waste in the trailer. A transfer station with a tipping floor typically uses a stationary compactor. Waste is pushed into a receiving pit, where it is compacted, and then pushed forward into a trailer container.

Material-recovery functions can be performed at transfer stations in order to reduce the amount of material requiring disposal. Material-recovery functions include the following:

- Consolidation or processing of source-separated or commingled recyclable material
- Separation and intermediate processing of white goods, woodwaste, yard waste, tires, CDL waste, and other easily segregated components of the solid waste stream
- Separation and intermediate processing of household or conditionally-exempt-generator hazardous waste
- Enhanced materials-recovery of solid waste using mechanical separation or picking lines

7.1.2 Background Information

Closed Transfer Stations

Following the 1971 Cowlitz County Regional Solid Waste Plan, the County closed the open dumps located at Cougar, Toutle, Castle Rock, and Ryderwood and constructed two transfer stations, one near Castle Rock and the other in the Toutle area. The two transfer stations were closed in 1980 because of decreasing volume and increasing revenue deficits. A drop-box facility was reestablished in the Toutle area in 1986.

7.2 Existing Conditions

Cowlitz County Landfill—The Tennant Way Landfill, located in Longview, provides disposal services for the entire county. Prior to the construction of the Waste Control transfer station (discussed below), the general public was allowed access to the county landfill for the disposal of waste. As of July 1 2009, the public is restricted from directly accessing the landfill. All commercial and residential self-haul waste currently goes to transfer station for consolidation prior to being disposed of at the county landfill.

Waste Control MRF—The Waste Control MRF is described in detail in Chapter 4. The primary function of the MRF is the sorting of commingled recyclables obtained from curbside recycling programs and the consolidation and transfer of recyclable materials from industrial and commercial sources. Tailing-off waste, residual waste remaining after recovery of the recyclables at the facility, is transferred from the MRF to the Tennant Way Landfill.

Waste Control Transfer Station—The Waste Control transfer station is constructed on a 5.7-acre parcel of land adjacent to the existing Waste

Control MRF. The facility consists of a 31,200-square-foot transfer station building, a knuckle-boom crane for compacting waste in rail-compatible containers, and a rail spur. Waste Control has received a permit for the transfer station from the EHU.

A Letter of Understanding between Waste Control and the County Board of Commissioners signed on November 23, 2004 sets the parameters and issues that have been incorporated into the contract for solid waste disposal in the county for the next 25 to 35 years. The waste agreement was executed on November 14, 2006. The final agreement calls for the filling of the County landfill to capacity, followed by the utilization of the Waste Control Transfer Station for export of all waste to the Roosevelt Landfill. Interlocal agreements executed between the County and the cities assure their participation with this transfer station plan.

Given the November 14, 2006 solid waste contract between Waste Control and the County, the transfer station permit was extended to accept all MSW for Cowlitz County. Contract conditions phase in the use of the transfer station. Beginning in July 2009 all public waste is routed to the transfer facility, which will be hauled to the Tennant Way Landfill until it has reached capacity, estimated to occur in April of 2013. Terms of the contract provide for a private-public partnership through December 31, 2035 with the option for two five-year extensions. The waste agreement calls for rail transport of waste to the Roosevelt Regional Landfill. The County is currently in the process of negotiating the purchase of the Headquarters Landfill from Weyerhaeuser and re-permitting it to receive MSW in order to accommodate waste when the Tennant Way Landfill is closed. This change in landfill status will require amending the contract with Waste Control to reflect the short-haul option to another County-owned landfill.

Toutle MSW Drop Box Facility—After the 1980 eruption of Mount St. Helens, local tourism increased throughout the Toutle area, which contributed to the garbage-disposal burden on the community. To assist local businesses in handling the increased volume of waste requiring disposal, the County Commissioners made a decision to open an MSW drop-box facility in the Toutle area. The facility opened in 1986. A recycling drop-off center was added to the Toutle site in the early 1990s.

The drop-box facility is located at 200 South Toutle Road in the unincorporated community of Toutle, which is located in the north-central part of the county. Toutle is 26 miles from the Tennant Way Landfill. The site is currently open two days a week and is staffed by one part-time attendant. The facility has a maximum 5-cubic-yard drop-off restriction, which eliminates its use by most commercial haulers. Two 40-yard drop boxes are located at the Toutle site. Each day's operation fills an average of 1.3 drop boxes. Recorded annual solid waste tonnage hauled to the landfill

was approximately 1,006 tons in 2008, 1,077 tons in 2009, and 1,151 tons in 2010. Hauling costs have been reduced approximately 30 percent since 2000, when compaction of drop boxes was first implemented—in 1999, transportation was $34 per ton; in 2010, it was $28 per ton. Revenue for 2010 was approximately $49 per ton. The total operating cost of the facility is approximately $62 per ton, which included the full disposal fee of $37.30 per ton at the landfill. In 2010, the County subsidized a total of $14,318 for the operation of this facility. Starting in January 2010, Waste Control has assumed responsibility for operations and hauling of the drop box.

Weyerhaeuser MRF—The Weyerhaeuser MRF at the Longview facility is used primarily as a staging area for waste to be transported to the Headquarters landfill by train. Approximately 73 percent of the waste processed there is generated at the Longview facility, with most of the remaining 27 percent produced at other Weyerhaeuser facilities or from third-party customers. At the time that the sale of the Headquarters Landfill is completed, the MRF will no longer accept third-party waste.

Longview Fibre Recycling Yard—The Longview Fibre Recycling yard operates primarily as an internal transfer station. Recycled materials from throughout the facility are consolidated in the recycling yard and then transported by Waste Control to appropriate facilities. Waste consolidated in the recycling yard is currently transported to either the Headquarters Landfill or the Tennant Way Landfill.

Swanson Bark—Through its normal operations, Swanson Bark handles and transfers bark for commercial use. Swanson Bark accepts clean demolition wood and brush from the community, this is combined and shredded with other wood residuals received from around the northwest and processed into hog fuel and bark mulch, and added to soil for sale as topsoil. These products are marketed in 47 states. Some of the wood residuals that are processed at the facility are classified by the State of Washington as solid waste.

Pacific Fiber—Pacific Fiber processes wood residuals from the lumber industry around the Pacific Northwest, but does not accept woodwaste from the general public. The residuals are made into wood chips for the paper industry, shredded into bark mulch, shredded and added to soil for sale as topsoil, and shredded into hog fuel. The bark mulch, soil, and hog fuel are wholesaled throughout Washington, Oregon, and California. Tonnage of material processed by the facility in 2010 has not been estimated.

Recycling Drop-Off Centers—There are numerous recycling drop-off centers scattered throughout Cowlitz County. Specific features of the drop-off centers are outlined in Chapter 4.

7.3 Needs and Opportunities

This section discusses the adequacy of the existing transfer system to provide uniform service in Cowlitz County.

North Cowlitz County—The Toutle Drop-Box Facility adequately serves the needs of residents in north Cowlitz County. With the potential purchase and proposed conversion of the Headquarters Landfill to accept MSW the option of direct hauling Toutle drop boxes to the landfill for disposal should be evaluated.

Central Cowlitz County—The central areas of Cowlitz County, which include the urban areas of Longview-Kelso and the communities of Castle Rock and Kalama, are currently served by the Waste Control transfer facility.

Based on the contract with Waste Control, the Tennant Way Landfill is projected to be full by mid-2013. At that time Waste Control will begin transfer of collected waste to either another County-owned landfill or to the Roosevelt Regional Landfill. The waste disposal agreement between Waste Control and the County allows for County control of the transfer station to take place should Waste Control default on the contract.

The County should prepare a Contingency Plan in the event that there is an interruption of service (such as rail transport slowdown or natural disaster) or that the partnership with Waste Control dissolves. The contingency plan should identify alternate methods of transport. Alternative storage or disposal locations should be identified as well as a list of pre-qualified trucking companies. In addition, the County can pursue agreements with neighboring counties for disposal and transfer services

South Cowlitz County—There is currently no need in the southern part of Cowlitz County for transfer-system services. The area is adequately served by Waste Control and Waste Connections. Waste Control transports waste from south Cowlitz County directly to the Tennant Way Landfill; the waste collected by Waste Connections is transported to the Finley Buttes Landfill in Boardman, Oregon, by way of transfer stations in Clark County. With consideration of the Waste Control transfer facility in the central county area, the economics of a south county transfer station may at some point prove to be better for these ratepayers.

Currently, collection vehicles from the south county travel a minimum of 40 miles round-trip to use facilities in the central county area. A south county transfer station would serve principally the Woodland/Cougar corridor, and would be open to all haulers, including self-haulers. If transfer services for the southern part of Cowlitz County become economically advantageous to the general public, then a south county transfer station could be considered.

7.4 Transfer-System Strategies

The implementation of a transfer system within Cowlitz County has begun with the construction and operation of the Waste Control transfer station. The strategies listed below would address the potential for additional transfer facilities to the existing system.

7.4.1 Transfer System through County-Controlled Procurement

This alternative would provide for the development of a uniform transfer system implemented by the County. It is assumed that this would include the continued operation of the Waste Control transfer station and the Toutle Drop Box Facility, and possible development of transfer capability in the southern part of the county, near Woodland.

Implementation of this system calls for a County procurement process to select and contract with a vendor for transfer system services. Actual operation of the facilities would be determined by negotiated contracts between private vendors and the County. Existing private operations would continue to operate as they do now. Any other transfer stations proposed outside this process would be inconsistent with the SWMP and thus would be denied an operating permit by the Cowlitz County Health Department (CCHD). Financial viability of the transfer system would be ensured by maintaining a revenue stream generated through disposal fees and designation of sites as authorized disposal facilities.

7.4.2 Transfer System through Private Development and County Oversight

This alternative allows the private sector to independently provide for transfer facilities with the County's role restricted to identification of needs and timing, service area, and service standards. Since transfer facilities are developed principally to provide enhanced collection economics, haulers are best suited to develop facilities if they are deemed necessary. The advantage of this alternative is that it requires minimal involvement by the County, and the private sector retains responsibility to provide transfer facilities. However, there is a degree of risk in relying completely on the private sector to site, build, and operate the needed facilities. Problems with siting, public opposition, and financial uncertainty may discourage the private sector from initiating projects. Additionally, the County may experience problems in adhering to specific time frames and service areas and in requiring that recycling opportunities be provided.

7.4.3 Status Quo

Under this alternative, the County's transfer system would remain unchanged, with the Waste Control transfer station and the Toutle Drop Box Facility as the only transfer facilities in the county. Waste transfer in other rural areas of the county would continue to rely on waste collection by private haulers who haul directly to the Waste Control transfer station. At the point that the Tennant Way Landfill closes, the existing contract with Waste Control provides for waste to be delivered to Roosevelt landfill. The contract will be renegotiated for disposal at the Headquarters landfill if it is re-permitted to accept MSW and purchased by the County.

7.5 Recommendations

The alternative proposed in Section 7.4.3, Status Quo, is recommended. This deviates from the 2007 SWMP, which promoted the concept of a transfer station being developed through County-Controlled-Procurement. Waste Control would still like to be able to consider the option to privately develop a south county transfer station as discussed through the process described in Section 7.4.2.

In selecting these options, the County identifies the following for implementation:

North Cowlitz County—Continue with existing levels of service at the Toutle Drop Box Facility. The operational changes that were made in late 2000, which substantially cut hauling costs, have allowed the facility to remain nearly self-supporting.

Central Cowlitz County—All commercial and self-haulers should continue to direct-haul all residential and commercial, non-recyclable waste generated in Cowlitz County to the Waste Control transfer station. Once the Tennant Way Landfill is full, all city and UTC-regulated hauler waste will be diverted to the Waste Control Transfer Station and transported to County designated disposal site or sites.

South Cowlitz County—As stated in Section 7.3, there is currently no need for transfer-system services, but if the economics of transferring waste show that it would be advantageous to rate payers, a south county transfer station could be considered. The strategy for determining the need for such a transfer station would probably involve a privately developed transfer station as outlined in Section 7.4.2. This transfer station would principally serve the Woodland/Cougar corridor, and would be open to all haulers, including self-haulers. The transfer station would need to be a self-supporting, privately owned and operated facility. Any such facilities would have final disposal

constraints as the Interlocal Agreement for Management of Municipal Solid Waste (located in Appendix A) between the County and all cities within it designates the County system for disposal of solid waste generated within the corporate limits of the City. The agreement also authorizes the County to designate a disposal site or sites for the disposal of said solid waste.

7.6 Chapter Highlights

- A drop box facility in Toutle currently provides a transfer point for the residents in the northern part of the County.
- The Waste Control transfer station has been phased in and is fully operational at this time in Cowlitz County providing a transfer point for residents of the county. The transfer station provides for future long-haul and/or short-haul options after the closure of the Tennant Way Landfill.
- Development of a south county transfer station to supplement the operation of a central county transfer station could be considered if the economics show an advantage to ratepayers, but should be privately developed and operated.

8 DISPOSAL

8.1 Introduction

Landfilling is defined as the practice of disposing of solid waste on land in a series of compacted layers and covering it with soils or other protective layers. Landfilling has traditionally been the primary method of MSW management. Although this plan emphasizes both reduction and recycling of solid waste, a need exists to provide environmentally safe landfill capacity for materials that are nonrecyclable, noncompostable, or noncombustible. This chapter examines:

- Existing conditions, including landfill development, operations, closure, and waste capacity
- Disposal needs and opportunities

State law identifies priorities for the collection, handling, and management of solid waste. Under the State system of prioritizing, landfilling is the least preferred management method for solid waste compared to waste reduction; recycling; physical, chemical and biological treatment; incineration; and solidification/stabilization (RCW 70.105.150). However, landfilling is generally the most common method of solid waste management. It is also more economical than some methods that are ranked a higher priority by the State.

8.2 Existing Conditions

Landfilling is the primary means of waste disposal in Cowlitz County. The Tennant Way Landfill is the only MSW landfill currently operating in Cowlitz County. The Headquarters landfill is used primarily for Weyerhaeuser industrial waste generated in Cowlitz County but it also accepts some industrial waste and CDL waste from other sources. The County is currently in the process of negotiating the purchase of the Headquarters landfill. Once an agreement has been signed, the process of re-permitting the landfill to allow it to accept MSW will be initiated. To the extent that re-permitting is successful, this chapter acknowledges the potential for future disposal of MSW at this facility (see Section 8.4.2). The Headquarters landfill and its current non-municipal wastes are discussed in Chapter 10—Special and Industrial Waste.

8.2.1 History of Municipal Solid Waste Landfilling in Cowlitz County

Before the development of the Tennant Way Landfill, a number of scattered municipal landfills were operated by the County and the cities of Longview and Kelso. During the 1960s and early 1970s, Public Works operated the Coal Creek Sanitary Landfill west of Longview, and smaller municipal dumps near Castle Rock, Toutle, Kalama, Ryderwood, and Cougar. During the same period, the cities of Longview and Kelso operated dumps on the east and west banks of the Cowlitz River near the confluence with the Coweeman River.

In 1969, the County recognized that the number of active dumps must be reduced. The County entered into an agreement with the City of Longview to allow the City to use the County's Coal Creek dump site in exchange for closing its Gerhart Gardens dump adjacent to the Cowlitz River. Plans at that time called for the old dump to be used as a park and a marina. However, to date only the park and a boat launch have been constructed. During the same year, the County's dump at the Kalama grain elevator was closed and covered.

Two years later, in 1971, the County's Castle Rock dump near the Cowlitz River on Chapman Road was closed and a transfer station with a capacity of 100 cubic yards per day was built on the site. Transfer of waste from the station to the Coal Creek Landfill was accomplished using a 50-cubic-yard drop box. The transfer station initially operated six days per week during fixed hours.

The Toutle-area dump, located off the Spirit Lake Highway (SR 504) on land owned by the Weyerhaeuser Corporation, was closed in August 1971, and the site was returned to Weyerhaeuser for use as a tree farm. The County then constructed a small transfer station in the unincorporated community of Toutle. The station, which had the same capacity as the Castle Rock facility, initially had no attendant and was open 24 hours a day. Waste was transferred to Coal Creek Landfill an average of three times per week, using the same method as at the Castle Rock facility.

The Ryderwood dump, located adjacent to the unincorporated community of Ryderwood, was also closed in 1971. After its closure, the area was served by a private hauler who hauled solid waste to the Castle Rock Transfer Station. For ten years following the closure of the Castle Rock Transfer Station in 1980, waste from Ryderwood was hauled to the Vader Transfer Station in Lewis County. Since 1990, the Ryderwood waste has been hauled to the Tennant Way Landfill.

In 1972, the County closed the small, 7-acre open dump located approximately 1 mile east of Cougar near Dog Creek, and returned

ownership to the Weyerhaeuser Corporation. A private collector, who operated out of Clark County, provided waste disposal. The 1971 Cowlitz County SWMP noted that the Cougar dump served only 60 families on a year-round basis, but that because of tourist activities during the summer months, the Cougar area averaged 27,000 visitors per week.

The 38-acre Kelso dump site on the east bank of the Cowlitz River was closed in 1974. Scheduled initially for shutdown in 1975 when a new County facility was due to come on line, the Kelso dump was closed about six months early when a Kelso-owned dozer became permanently inoperable, making continued operation of the landfill uneconomical. Kelso solid waste was then sent to the Coal Creek Landfill until the Coal Creek facility was closed in May 1975.

The Coal Creek Landfill, located near the Columbia River sloughs at the mouth of Coal Creek, was the last of Cowlitz County's dump-type landfills. During the early 1970s, Ecology expressed concern that the landfill might become a source of water pollution. In response, the County carried out a major upgrade of the Coal Creek Landfill in 1971. Improvements included construction of dikes around the landfill to prevent leachate and waste from polluting surface water, and an upgrade of operational procedures to include improved covering of waste and reduced hours for public access. A small public tipping area was also constructed at the edge of the landfill to provide the public with a dump site away from the working face of the landfill, especially important during wet weather.

Before 1969, the Coal Creek Landfill handled relatively small volumes of MSW. However, with the closure of the Longview and Kelso city dump sites, the annual volume of waste disposed of at Coal Creek increased significantly. Concern about surface water and leachate contamination continued. As a result, the Cowlitz Regional Planning Commission adopted a regional SWMP in 1971, which recommended development of a new, centrally located, regional sanitary landfill to be sited in the Longview-Kelso urban area. Following the opening of this new landfill in the Longview industrial area in May 1975, the Coal Creek Landfill was closed, covered, and regraded for eventual use as a park. After the Coal Creek Landfill was closed, the refuse from the Castle Rock and Toutle transfer stations was transferred to the new Tennant Way Landfill until the transfer stations were closed in 1980.

8.2.2 Development of the Tennant Way Landfill

The Tennant Way Landfill is owned and operated by the County and is located in an industrial/heavy-manufacturing zone at 85 Tennant Way, Longview, Washington, near the confluence of the Cowlitz and Columbia rivers (see Figure 8-1). The landfill site occupies approximately 100 acres. An area of approximately 55 acres in the west and south parts of the site has

been developed for landfilling and ancillary facilities. The surrounding area is used primarily for heavy industry.

Operations at the present landfill site began in 1975, and the site originally operated as a shredfill. A shredder reduced incoming waste to a uniform size, thereby reducing the volume of voids in the waste when placed in the landfill in an effort to increase landfill volume capacity. Shredding the waste was also intended to be the first step in conversion of waste to RDF for a proposed waste-to-energy facility.

The shredder was used at the Tennant Way Landfill from 1975 until December 1982. By 1982, the County had conducted a test burn of RDF in cooperation with Longview Fibre's hog-fuel boilers. The County also noted an increasing number of unsuccessful efforts by solid waste disposal facilities in the United States to produce and market RDF from municipal refuse.

In 1982, the cost effectiveness of the shredding operation was questioned, and the County decided to shut down the shredder for one year to compare the cost of landfilling unshredded refuse to that of landfilling shredded refuse. Results showed shredding of waste to be significantly more expensive than direct landfilling. The 1985 SWMP recommended that the shredding operations be discontinued. Delivery of waste to the active area of the landfill by both public and commercial haulers continued until the public tipping facility near the entrance to the landfill was constructed in 1991.

In the summer of 1988, the southeast sector of the landfill site, which was reserved for future expansion, was prepared for stockpiling of dredge spoils. After dikes, inlet structures, and outlet piping were constructed, approximately 750,000 cubic yards of dredge material from the Columbia River was deposited. In 1989, an additional 300,000 cubic yards of dredge material was deposited. In 1991, 250,000 cubic yards was added; in 1993 another 450,000 cubic yards was added; in 1995, 234,000 cubic yards was deposited; and in 1997, 120,000 cubic yards was deposited.

In 1989, the County initiated engineering studies to expand landfill operations to the southern part of the site in accordance with the requirements of the Washington State Minimum Functional Standards for Solid Waste Handling (WAC 173-350). The County also prepared a plan for the closure of those parts of the landfill not meeting the requirements of the MFS. The original landfill, Site A, was closed in November 1991. Cell 1 and Cell 2 were built in the early 1990s. Cells 1 and 2 were closed in 2000. Cell 3A was built in 1996 and is close to reaching its stand-alone capacity. Cell 3B was constructed in 2003 to facilitate filling the entire Cell 3 area. Cell 3B began accepting waste in August 2004. The landfill is now subject to the requirements of the Washington State CMSWL (WAC 173-351). A transition permit was issued under WAC 173-351 in July 1995.

8.2.3 Current MSW Disposal

Waste is currently delivered to the Waste Control transfer station directly by the public and commercial haulers other than Waste Control, who hauls directly to the Tennant Way Landfill. The waste is sorted and processed at the transfer station before being hauled directly to the Tennant Way Landfill.

8.2.4 Tennant Way Landfill Site Features

The main features of the Tennant Way Landfill are support facilities, including an administrative office; scales and a scale house; maintenance, composting, street-sweepings separation, and sludge-processing facilities; environmental control systems; and environmental monitoring systems. Site features are depicted in Figure 8-2. Environmental controls were designed to meet or exceed MFS and CMSWL, and are briefly described as follows:

Leachate-Management System—The leachate-collection system consists of drainage layer, a composite-liner system comprised of 2 feet of low-permeability soil below a flexible membrane liner, and a series of pipes that collect liquids accumulating within the drainage layer above the disposal cell liner. The system pumps leachate directly to the Three River Wastewater Treatment Plant, which is located west of the landfill site. An aeration lagoon exists in the northwest corner of the site and serves as a lined collection basin for the runoff from the 3-acre compost pad. Before 2003, the lagoon was also used for pretreatment of leachate, but this was discontinued following a study that determined that pretreatment was unnecessary. Leachate discharge to the regional sewage treatment plant is regulated by a State waste discharge permit (permit number ST6074).

Landfill Gas Control System—The landfill gas control system is designed to prevent off-site migration of methane gas generated by the decomposition of waste, to provide protection of on-site structures, and to provide control of emissions in accordance with CMSWL requirements. The landfill gas control system consists of a horizontal and vertical gas-collection system placed within the waste fill, a gas-extraction and flaring system, and a condensate-collection system. The condensate system discharges to the leachate-collection system. The landfill gas control system is installed in all the closed cells and will be installed in Cells 3A and 3B as new cells are filled. Order of Approval SWAPCA 92-1462R2, issued by the Southwest Air Pollution Control Authority, regulates the existing gas control system. The landfill gas control system can also be easily modified to deliver pressurized landfill gas for direct energy recovery to a neighboring industrial facility.

Surface-Water Management System—The system consists of a surface-water conveyance and discharge system as well as erosion- and sedimentation-control systems. One point of surface discharge is maintained

for the entire 98-acre site. Surface water runoff is regulated by a facility Industrial Stormwater General Permit Number SO3-000754D.

Cover System—The system consists of a multicomponent barrier layer over the entire surface area of filled sections of the landfill. The geomembrane caps are underlain with either low-permeability soil or a geosynthetic clay liner for added control of infiltration, and overlain with a drainage layer and vegetative topsoil layer to control erosion.

Vector- and Bird-Control Programs—The programs are designed to minimize the danger that birds pose to local airports, as well as to reduce the populations of rodents and other disease-carrying organisms. The County has maintained U.S. Department of Agriculture Animal Damage Control personnel on site to implement and document the effectiveness of the bird-control program.

The environmental monitoring program includes systems and procedures for quarterly monitoring of surface water, groundwater, landfill gas emissions, and leachate quality. The environmental monitoring programs, including monitoring procedures, laboratory analyses performed, and release-response provisions, are defined in the Operations Plan used for the landfill.

8.2.5 Compliance with Criteria for Municipal Solid Waste Landfills

Subsections of the CMSWL that are applicable to the Tennant Way Landfill include Locational Restrictions, General Facility Requirements, Surface-Impoundment Standards, Landfilling Standards, Groundwater-Monitoring Requirements, and Closure/Post Closure Requirements. Compliance with these requirements is described below.

8.2.5.1 Locational Restrictions

Several locational restrictions are included in the CMSWL to prevent degradation of resources. Those that have the most significance to the Tennant Way Landfill are:

Proximity to seasonal high level of groundwater—Groundwater elevations at the landfill fluctuate seasonally. Studies also indicate a relationship between water elevations of the Columbia and Cowlitz rivers and the groundwater elevation at the landfill site. In compliance with CMSWL, the bottom of the lowest liner was constructed to be no lower than 10 feet above the seasonal high groundwater elevation established by Ecology.

Proximity to airport runway—The airport-setback standards established by CMSWL pertain to birds attracted to the landfill that pose hazards to aircraft. Because the landfill is located within 5,000 feet of an airport, inside the limit specified by the CMSWL and MFS, the landfill was granted a waiver from the Federal Aviation Administration. As part of the waiver agreement, the County has taken steps to minimize bird attraction at the landfill by implementing a variety of bird-control measures throughout the years: habitat control, daily cover, cracker shells, overhead wires, scare-away propane guns, and ultrasonic noisemakers. The bird-control measures have been effective in minimizing the bird-to-aircraft hazard associated with the landfill's proximity to the airport.

Geologic stability—The landfill is located in an area of alluvial deposits determined to be compressible. This problem was overcome with the use of preload fill to induce settlement before construction of Cells 1, 2, and 3A. Extensive geotechnical-fault and hydrogeological-characterization reports were undertaken as part of the 1994 Cell 3 permitting process.

8.2.5.2 Plan of Operation

The Plan of Operation of the CMSWL relates to plans of operation, recordkeeping, reporting, and inspections. The Operations Plan currently in use for the Tennant Way Landfill conforms to all requirements of the CMSWL. The landfill currently operates under a plan of operation reviewed and approved by the CCHD in December 2010 through its designated agent, Building and Planning. The plan is updated with addendums and appendices as needed.

8.2.5.3 Landfilling Standards

The Landfilling Standards of the CMSWL include performance standards, design standards, and operation and maintenance standards. All cells except Site A of the Tennant Way Landfill were designed to meet the design and performance requirements of the MFS and the CMSWL.

Site A was constructed before the establishment of the MFS; however, it closed under the requirements of the MFS in 1991.

8.2.5.4 Surface-Impoundment Standards

Leachate-treatment lagoons were reconstructed in 1990 to conform to the requirements of the MFS. The lagoons were enlarged and a geomembrane liner system was installed to provide approximately 750,000 gallons of storage. The modifications provided increased hydraulic and solids loading capacity to the pretreatment system. During the summer of 2003, the lagoon system was modified following a study showing that the treatment aspect of the lagoon was unnecessary for leachate and was not required by the

National Pollutant Discharge Elimination System permit. Following the changes, leachate now bypasses the pond and goes directly to the regional treatment plant. The lagoon continues to store compost-pad runoff before it is pumped to the regional treatment plant.

8.2.5.5 Groundwater-Monitoring Requirements

The Tennant Way Landfill groundwater-monitoring program conforms to all relevant aspects of the groundwater-monitoring requirements of the MFS and CMSWL. The groundwater-monitoring program is fully defined in the Landfill Operations Plan.

8.2.5.6 Operational Requirements

The following operating procedures are required in operating the Tennant Way Landfill in accordance with Resource Conservation and Recovery Act (RCRA) Subtitle D and the CMSWL:

- Establishing an operating and recordkeeping procedure
- Providing for daily cover material over disposed-of solid waste
- Providing disease-vector control
- Maintaining a run-on/runoff control system for stormwater, and preventing a discharge of pollutants into surface water
- Implementation of procedures for detecting and preventing disposal of regulated hazardous wastes
- Prohibiting the disposal of noncontainerized liquids or sludges containing free liquids
- Implementation of a program of routine methane monitoring and control
- Ensuring that the landfill does not violate established air criteria
- Monitoring daily climatic conditions
- Weighing all incoming waste

8.2.5.7 Closure/Post-Closure Requirements

A closure/post-closure plan for the Tennant Way Landfill was prepared in November 1990 to address the requirements of the MFS, and is included in the Solid Waste Handling Permit Application. An updated closure plan was included as part of Chapter 9 of the 2010 Operations and Maintenance Manual Update. Included in the plan are descriptions of closure activities, post-closure maintenance activities, environmental monitoring requirements, and end-use considerations. The establishment of a financial assurance fund

is also included as an element of the plan. Cowlitz County Resolution No. 84-257 established a solid waste fund in December 1984. The fund is available for capital purchase of solid waste equipment, land, and facility needs. Deposits to the reserve fund generated by tipping fees are considered adequate to meet the projected closure and post-closure costs. Separate closure and post-closure funds have been established for the old, unlined landfill and for the new, lined landfill. Total post-closure costs for the old, unlined landfill (Site A) and the new, lined landfill cells (Site B) have been estimated at $1.29 million and $7.09 million, respectively, in the annual update of the Financial Assurance Analysis (Public Works, 2011). Remaining Site B closure cost is estimated at $5.54 million in 2011. No deficiencies in meeting the CMSWL requirements for reserve accounts to fund the closure and post-closure maintenance of the Tennant Way Landfill have been identified. The closure plan was updated as part of Chapter 9 of the 2010 Operations and Maintenance Manual Update prepared in December 2010.

8.3 Needs and Opportunities

Disposal needs and opportunities for the county fall into two categories. The first addresses the need for identification or development of future disposal facilities. The second addresses any improvements needed at the Tennant Way Landfill.

8.3.1 Future Disposal Requirements

Landfills have a specific volumetric capacity for disposal of waste. Because of the high cost of facility development and the limited availability of land, this capacity must be treated as a valuable resource to be used efficiently. Conservation methods should be used to extend the landfill capacity, including, but not limited to, separation of wastes that might not require lined facilities, such as CDL debris; and improved compaction techniques for placing new waste in the landfill. Reduction and recycling of wastes are discussed in Chapters 3 and 4. Implementation of any or all of these methods may significantly reduce the amount of waste requiring disposal.

Table 2-10 presents the low, medium, baseline, and high growth rate projections for MSW to be disposed of at the Tennant Way Landfill before closure. The baseline projection is the anticipated growth rate in the quantity of waste disposed of. If baseline projection remains constant, Cells 3A and 3B will reach capacity by mid-2013. Other scenarios are presented for purposes of comparison only.

8.3.2 Tennant Way Landfill Improvements

The Tennant Way Landfill will provide the county with needed disposal capacity through mid-2013. In order to provide reliable disposal services, the

facility must meet or exceed the design and operational requirements of the CMSWL and RCRA Subtitle D. Therefore, the following activities have been or will be conducted to ensure the continued operation of the Tennant Way Landfill:

1. Construction of Cell 3B was completed in 2003 at a cost of $2,133,847.

2. Continued operation of the landfill, including operation and maintenance of support activities and environmental control facilities.

3. Continued environmental monitoring and post-closure maintenance for Site A under MFS requirements until 2014, and for Cells 1, 2, 3A and 3B until 2043. The leachate systems, surface-water-control systems, cover systems, and landfill-gas-control systems must be operated and maintained. The cost of post-closure maintenance and monitoring is approximately $38,000 per year for Site A. Monitoring of Cells 1 and 2 will continue under landfill operations until the site is formally closed in 2013.

4. Continued environmental monitoring of the lined portions of the landfill for a minimum of 30 years following closure. Groundwater- and leachate-monitoring costs are estimated to be $90,540 per year. Leachate treatment, gas collection, and stormwater-related costs as well as site maintenance are estimated to be $207,660 per year.

Another project that could be carried out at the landfill is the construction of a gas pipeline to facilitate recovery of landfill gas for use by nearby industries. Construction costs for the gas pipeline could cost between $1,000,000 and $2,000,000, depending on the distance to the end-user. The pipeline would generate revenue for the landfill from the sale of landfill gas.

8.4 Disposal Alternatives

The following alternatives are identified for disposal of MSW over the 20-year planning period.

8.4.1 Continued Disposal at Tennant Way Landfill

The Tennant Way Landfill will provide the County with reliable disposal capacity through mid-2013. The current disposal fee is $37.30 per ton.

8.4.2 Acquire Headquarters Landfill

The County is currently in the process of evaluating the purchase of the Weyerhaeuser Headquarters Landfill (Figure 8-3). The due diligence process is expected to be completed by November 2011. The final closure of the purchase is subject to a satisfactory outcome of the due diligence process and successful issuance of all necessary permits to operate the landfill as an MSW Landfill under CMSWL WAC 173-351.

The original siting, construction and operation of Headquarters Landfill was for the purpose of providing superior environmental protection for disposal of Weyerhaeuser's forest products manufacturing and other compatible solid wastes. While Weyerhaeuser permitted the facility as a limited purpose landfill under WAC 173-304 (and now WAC 173-350), as a measure of additional environmental protection it elected from the outset to construct and operate the facility in all substantial respects to the higher standards applicable to MSW (WAC 173-351). The landfill is clearly permitted only as a Limited Purpose Landfill, but the extra measure of environmental protection provided to Weyerhaeuser and other stakeholders makes the County confident the facility would provide the best possible environmental solution to its municipal and industrial waste disposal needs.

The facility is located in eastern Cowlitz County approximately seven miles east of Interstate-5 and 2.5 miles southeast of Silver Lake. The permitted landfill footprint is 308 acres, of which 49 acres have been developed since 1993 by Weyerhaeuser. The facility was designed for an approximate maximum 250 foot fill-depth above existing topography, and has an overall permitted capacity of 49 million cubic yards of air space, with approximately six million cubic yards consumed to date.

As Weyerhaeuser's business model has evolved in recent years it has decided to focus its investments in core assets and operations, and consequently has offered the landfill for sale. In light of this event and the excellent standards to which Weyerhaeuser has adhered in construction and operation of the facility, the County is interested in acquiring the landfill to serve as its long-term disposal facility. The Tennant Way Landfill is nearing its capacity and is scheduled to close in 2013. If the County completes this acquisition of the Headquarters Landfill, it would continue to provide Weyerhaeuser the same long-term secure disposal capacity as Weyerhaeuser has provided itself.

Under County ownership and operation, three aspects of the facility operation would change significantly. First, MSW would be added to the waste mix being disposed on a daily basis, once the County's Tennant Way Landfill closes in 2013. A second area of significant change is management of landfill gas. An extensive gas collection system will be designed and constructed. It will include both horizontal and vertical collection, as well as an enclosed flare to assure destruction and removal efficiency requirements

are met. The potential for an energy recovery facility should also be considered. The final significant change under County operation will be that most of the inbound waste will be delivered by truck rather than by rail. The County will apply for permit modifications making truck transportation its primary transport mode.

8.4.3 Multi-County Facility

In the early 1990s, Cowlitz, Wahkiakum, and Pacific counties participated in Phase 1 of the Southwest Washington Inter-County Solid Waste Advisory Board spearheaded by Lewis, Grays Harbor, Mason, Jefferson, and Thurston counties. At that time, it was concluded that a multicounty disposal facility including Cowlitz and Wahkiakum counties would not be a worthwhile venture; however, future opportunities for joint, multicounty disposal alternatives should be considered if local and regional conditions change.

8.4.4 In-County Private Disposal Facility

The Weyerhaeuser Headquarters Landfill is the only privately operated landfill in Cowlitz County. Although the Weyerhaeuser Landfill has the capacity to receive Cowlitz County MSW, because it is privately owned it has not previously been considered a potential receiving facility for county MSW. As described in Section 8.4.2, the County is currently in the process of evaluating the purchase of the Headquarters Landfill and revising its permit to allow acceptance of MSW under CMSWL standards.

8.4.5 Export MSW Out of County

Transporting waste to out-of-county land disposal facilities is referred to as longhauling or waste exporting. The export of waste has been a nationwide trend since the 1980s as local landfills reached capacity and more stringent regulations governing their operation were put in place. In the Pacific Northwest, the trend toward waste export is influenced by climatic conditions. Leachate generation in landfills in western Washington is significantly higher than in landfills in eastern Washington, due to higher rates of precipitation. Several out-of-county disposal alternatives currently exist, including:

- Oregon Waste Systems' Columbia Ridge Landfill near Arlington in Gilliam County, Oregon
- Tidewater Barge Lines' Finley Buttes Landfill near Boardman in Morrow County, Oregon
- Rabanco's Roosevelt Landfill near Goldendale in Klickitat County, Washington

Costs for waste export, at minimum, are comprised of two components: landfill disposal cost, or tipping fee, and transportation cost. Other costs associated with these disposal options include services such as transfer-station development and operation, intermodal facility construction and operation, waste-reduction/recycling programs, and small-quantity hazardous-waste-removal programs.

8.5 Recommendations

1. The Tennant Way Landfill should remain open until it reaches capacity, estimated to occur in mid-2013.

2. Preparation for additional disposal capacity should continue to ensure necessary disposal capacity for the 20-year planning period. The contract with Waste Control for waste export through Waste Control's transfer station addresses the County's disposal capacity needs through the 20 year planning period. The contract with Waste Control should be amended to direct waste material coming from the transfer station to Headquarters Landfill before considering out-of-County landfills.

3. All disposal facilities in Cowlitz County must continue to be permitted and meet the SWHS and CMSWL for operation, closure, and post-closure. It is the responsibility of Building and Planning to enforce compliance with the SWHS and CMSWL, operating permits, and SWMP elements. All landfills operating in Cowlitz County must continue to have reserve accounts to fund closure construction and post-closure maintenance and monitoring.

4. The County and private waste-management enterprises should continue existing programs to ensure that toxic and dangerous materials do not enter disposal facilities. These programs should be implemented in accordance with the Cowlitz County Moderate Risk Hazardous Waste Management Plan, which is addressed in Chapter 10 and included as Appendix D.

5. The County should continue to monitor local industries for opportunities to partner in a landfill electrical generation project for energy recovery of landfill gas generated by the Tennant Way Landfill.

8.6 Chapter Highlights

- All cells except Site A of the Tennant Way Landfill were designed to meet the design and performance requirements of the MFS and the CMSWL.

- Preparation for additional disposal capacity should continue. The contract with Waste Control for waste disposal in-County or out-of-County addresses the County's disposal capacity needs through the term of the contract.
- The County is in the process of evaluating the purchase of the Weyerhaeuser Headquarters Landfill and re-permitting it to receive county MSW.
- Long-term landfill-capacity issues will be addressed through the shorthaul/longhaul transfer contract with Waste Control.

9 SOLID WASTE IMPORT AND EXPORT

9.1 Introduction

9.1.1 Purpose

The purpose of this chapter is to describe how the County should respond to solid waste import and export activities. The chapter includes:

- A discussion of the regionalization of solid waste facilities and the corollary activity of solid waste import and export; the legal framework associated with the movement of solid waste; and the major regional solid waste disposal facilities operating in the Pacific Northwest.
- A description of current solid waste import and export activities in Cowlitz County.
- Identification of proposed Cowlitz County solid waste import and export activities.
- Identification of a process for responding to solid waste import activities.
- Identification of possible impacts associated with solid waste import and export activities, and mitigating measures.

9.1.2 Regionalization of Solid Waste Facilities

In the past, communities provided solid waste disposal primarily within small, local, publicly owned landfills. Most of these landfills practiced uncontrolled "open dumping" with few, if any, pollution controls. Such practices resulted in unsanitary conditions, methane explosions, and releases of hazardous substances to groundwater and the atmosphere. Consequently, municipal landfills make up about ten percent of the almost 12,000 sites currently on the Superfund National Priorities List.

Both national and state environmental regulations were enacted to control the disposal of non-hazardous waste. Subtitle D of RCRA encourages solid waste management practices that promote environmentally sound disposal methods. Specifically, RCRA Subtitle D establishes technical standards for the environmentally safe operation of solid waste disposal facilities.

The adoption in 1985 of state rule Chapter 173-304 of WAC, the Minimum Functional Standards for Solid Waste Handling (revised in 1988), brought about a comprehensive set of regulations for all solid waste handling facilities in the state. The MFS include standards for location and environmental protection, recordkeeping requirements, daily operations, closure standards, and requirements for a reserve account for financing closure and post-closure costs. The MFS were updated and clarified through new legislation in 1998 in a new rule, Chapter 173-350 WAC, SWHS. The new rule was written to address the change in waste management priorities and to address technological advancements in environmental protection at solid waste disposal facilities. In addition to the changes to the state regulations, new federal regulations were brought about through the *Solid Waste Disposal Facility Criteria*, 40 CFR 258. To address the new federal requirements, Ecology adopted a new set of rules governing landfills called the *Municipal Solid Waste Landfill Criteria*, Chapter 173-351 WAC in 1993.

A direct result of regulations requiring environmentally sound design, construction, operation, and closure of solid waste landfills was the tremendous increase in the cost of disposal. Many counties had no more than a few years' disposal capacity, and in almost all cases it was very difficult to find a site for a new landfill. Additionally, the costs of constructing and operating facilities to meet the MFS made it difficult to replace locally owned and operated landfills. As a result, private companies have responded by developing large landfills capable of handling wastes from several counties.

The development of large solid waste landfills has enabled local jurisdictions to consider the use of regional disposal options designed to serve the needs of multiple jurisdictions and private companies. Regionalization potentially offers significant benefits if facilities are sited, designed, and operated for maximum environmental protection. Possible positive impacts associated with export include: MSW disposal as a variable cost, making it easier to see savings with reduction and recycling; cost savings associated with reduced regulatory burden; reduced long-term liability; extended life of existing local facilities; and lower costs as a result of economies of scale. Possible positive impacts associated with import include: lower cost of disposal; expanded tax base; expanded employment opportunities; and attraction of secondary development.

While regionalization may provide economic and environmental benefits, individual jurisdictions and communities may experience various costs or negative impacts. Possible negative impacts that a jurisdiction might experience hosting a regional facility include: lowered property values; additional traffic; additional regulatory burden; scenic impacts; local quality of life impacts (noise and litter); and negative public perception hurting business development and tourism. Possible negative impacts associated with exporting to a regional facility include: monopolization of solid waste

services; vulnerabilities associated with high import fees; transportation disruptions; a natural calamity at the site; and lack of control over regional facility operations.

9.1.3 Flow Control

Flow control is a practice historically used by communities that, through local ordinances, regulations, or other official directives, compels MSW haulers to process or dispose of waste at designated facilities. Currently, the movement of solid waste is protected under the commerce clause of the U.S. Constitution. Solid waste is considered to be a commercial product; therefore, jurisdictions have very limited authority to manage the interstate movements of waste.

In *C & A Carbone Inc. v. Town of Clarkstown NY,* 114 S. Ct. 1677 (1994), the U.S. Supreme Court issued a ruling on waste movement. The case involved a community's flow control ordinance that required waste haulers to bring all MSW to a town-selected transfer station and pay a tipping fee for this material. It was discovered that C&A Carbone, which collected and sorted recyclables, was sending residual waste from the sorting process to out-of-state disposal facilities, in violation of the town's ordinance. The Supreme Court ruled in favor of the recycler, stating that the flow control ordinance violated the commerce clause of the U.S. Constitution, which prohibits the interference with interstate commerce. The flow control ordinance was found to favor a single MSW processor and to exclude out-of-state and other in-state processors from the market.

In *United Haulers Association v. Oneida-Herkimer Solid Waste Management Authority* 550 U.S. 330 (2007), the U.S. Supreme Court issued a decision on local government flow control, ruling that local ordinances that direct locally generated wastes to publicly owned waste facilities do not discriminate against interstate commerce. The Solid Waste Management Authority had created an ordinance directing waste to local publicly owned facilities and the United Haulers Association had filed suit in federal district court, arguing that by prohibiting the export of waste and preventing waste haulers from using less expensive out-of-state facilities, the ordinance conflicted with the dormant Commerce Clause. The Court found that the burden to commerce was incidental and was outweighed by financial, health, and environmental benefits.

Flow control through means other than government regulation has passed court challenges in cases where municipalities direct flow through contracts for collection services and where the local government is viewed as a "market participant" purchasing disposal services. Through market participation, local governments have been able to contract for or franchise collection and

disposal services where the service provider is required to take waste to specific facilities for processing or disposal. In other cases, municipalities have displaced local private haulers and have assumed responsibility for collection and disposal entirely; they are then allowed to direct the flow of all waste that is collected.

9.1.4 Major Regional Landfills

The need for environmentally sound, cost-effective solid waste disposal has resulted in the development of a system of large landfills owned and operated by private corporations. These regional facilities are rapidly replacing smaller, publicly owned and operated landfills that may not be able to afford to meet new environmental standards. In developing and siting major regional landfills, private companies have sought out sites that are isolated from urban development and located in areas that provide more inherent environmental protection through conditions such as drier climates and/or less sensitive wildlife species. In some cases, private waste management companies provide siting incentives to the host community. The major regional landfills developed to serve the Pacific Northwest primarily are as follows:

Columbia Ridge Landfill and Recycling Center—Located in Gilliam County, Oregon, the landfill is owned and operated by Waste Management, Inc. The facility is located on 2,000 acres of former rangeland and receives an average of 9 inches of precipitation each year. The landfill has an estimated capacity of 190 million tons, with additional acreage over which to expand. Currently the landfill receives solid waste from Portland, Seattle, and communities in eastern Oregon. The facility is approximately 180 miles from Cowlitz County and is accessible by rail, barge, and truck.

Finley Buttes Landfill—Located 13 miles southeast of Boardman in Morrow County, Oregon, the landfill is owned and operated by Waste Connections, Inc. The facility is located on 1,200 acres of rangeland and receives about 9 inches of rainfall a year. The landfill has an estimated capacity of over 100 million tons. Currently, the landfill receives waste from Clark County and areas in southeast Washington and northeast Oregon. The facility is approximately 205 miles from Cowlitz County and is accessible by rail, barge and truck.

Roosevelt Regional Landfill—Located in Klickitat County, about 5 miles northeast of Roosevelt, Washington, the landfill is owned and operated by Rabanco, a Republic Waste Services, Inc. company. The facility is on 2,005 acres, of which 380 acres will be developed into an active solid waste landfill; another 240 acres are proposed for a separate CDL waste/woodwaste landfill. The facility is located in an arid region receiving about 10 inches of rain a year and is accessible by rail, barge, and truck. The facility has an

estimated capacity of 180 million tons and has a service area that includes Washington and the southern areas of Alaska and British Columbia. The distance between Cowlitz County and the Roosevelt Regional Landfill is approximately 180 miles.

Proposed Adams County, Washington, Landfill—Waste Management, Inc. has permitted a landfill in Adams County, Washington. No design information is available, but the site could have a capacity of 60 million tons. The facility has not yet been developed by Waste Management, Inc., since there is not sufficient demand for another regional facility. The proposed facility would be approximately 325 miles from Cowlitz County.

9.1.5 Long-Distance Solid Waste Transport

In order to utilize a regional solid waste facility, it is often necessary to transport solid waste long distances. The long-distance transport of solid waste can be accomplished using the following three modes of transport:

Truck Transport—The transport of solid waste by truck typically involves the use of tractor trailers hauling compacted solid waste in sealed containers. Truck transport is most cost-effective under 100 miles. Few if any supporting facilities are required to implement a truck transport system. Potential impacts associated with truck transport include wear and tear on roadways and bridges, increased truck traffic on haul routes, congestion, odor, accidents, and possible release of contents.

Rail Transport—Beyond a distance of 100 miles, rail transport begins to provide significant economies of scale. Rail transport requires significant up-front handling of the waste, such as loading waste containers onto rail cars at the intermodal yard and offloading rail cars at the landfill. Rail transport may or may not require truck transport at either end of the trip. Potential impacts associated with the transport of solid waste by rail include derailment and release of contents, noise, odor, and congestion created by road crossings.

Barge Transport—A single barge may hold as many as 42 sealed containers, resulting in a total shipment of 1,200 tons of solid waste. Barge transport requires the use of a loading and unloading dock, as well as truck transport at either end of the trip. Transportation backup systems must be developed during periodic maintenance of river locks. Potential impacts associated with barge transport include odor, noise, and release of containers into surface water bodies.

9.2 Existing Conditions

The following sections address Ecology planning guidelines relative to identification of current waste import and export activities.

9.2.1 Import of Waste to the Cowlitz County Landfill

The Tennant Way Landfill serves as the principal disposal facility for MSW generated in Cowlitz County. The facility receives approximately 1,500 tons per year of imported MSW from Wahkiakum County, and 481 tons of imported MSW from Clark County (adjacent to the City of Woodland), for a total of 2,010 tons or approximately 3.5 percent of the total disposed of at the Tennant Way Landfill in 2010. Currently, no interlocal agreements exist between Cowlitz, Wahkiakum, and Clark counties that acknowledge this import activity.

9.2.2 Import of Waste to the Weyerhaeuser Headquarters Regional Landfill

The Weyerhaeuser Headquarters Regional Landfill opened in November 1993 to provide capacity for the disposal of forest-product industrial waste generated by Weyerhaeuser, and is currently the only privately operated landfill in Cowlitz County. The facility is permitted to receive industrial waste and CDL waste. The facility received approximately 59,100 tons of industrial waste from sources outside the county in 2010, of which 7,690 tons originated outside of the state. The imported waste accounts for approximately 27 percent of the waste received at the landfill.

Although the Weyerhaeuser Landfill has the capacity to receive Cowlitz County MSW, because it is privately owned it has not previously been considered a potential receiving facility for county MSW. The County is currently in the process of evaluating the purchase of the Headquarters Landfill and revising its permit to allow acceptance of MSW under CMSWL standards. The County intends to maintain the permit condition that allows the Headquarters Landfill to receive up to one million cubic yards of material annually, of which up to 35 percent (350,000 cubic yards) may be imported waste.

9.2.3 Export of Cowlitz County Waste to Clark County

An estimated 373 tons of MSW was collected in 2010 by Waste Connections of Vancouver from both residential and commercial accounts in the Cougar area of the extreme southeastern corner of Cowlitz County along the Lewis River. Waste Connections transfers the waste to the Finley Buttes Landfill in Morrow County, Oregon. Currently, no interlocal agreements exist between Cowlitz and Clark counties that acknowledge this export activity.

9.2.4 Export of Cowlitz County Special Waste

The following special wastes are exported from Cowlitz County:

Biomedical Waste—Unknown quantities of biomedical waste are being collected and hauled to other counties for treatment and disposal. In addition, Stericycle collects biomedical waste generated by the St. John Medical Center in Longview, and transports the material to Morton, Washington, in Lewis County, for treatment.

Industrial Sludge—Between 140 and 160 tons per month of industrial sludge generated by Noveon Kalama (formerly Kalama Chemical) is currently being land-applied by Fire Mountain Farms in Lewis County.

Waste Tires—Many local tire dealers and the Waste Control transfer station export waste tires to processors in Portland, Oregon, such as Tire Disposal & Recycling, Inc. It is not known how many tires are exported.

Petroleum-Contaminated Soil—Unknown quantities of petroleum-contaminated soil from underground storage tanks are being exported to the Hillsboro Landfill in Washington County, Oregon. The Weyerhaeuser Headquarters Landfill also receives this material.

Dangerous Waste—Although not addressed by this SWMP, significant volumes of hazardous waste are exported to hazardous waste facilities outside Cowlitz County.

9.2.5 Recommendations Regarding Current Waste Import/Export Activities

- Current Cowlitz County solid waste import and export activities should be permitted to continue.
- The County should develop interlocal agreements with Wahkiakum and Clark counties recognizing current solid waste import and export activities.
- The County should continue to evaluate the purchase of the Headquarters Landfill and the possibility of re-permitting it to receive county MSW. The County should commit to maintain the condition in the permit that allows the Headquarters Landfill to receive up to 35% (350,000 cu yd) of imported waste.

9.3 Recommended Waste Export Activities

As discussed in Chapter 7, the export of waste by Waste Control may be implemented based on the provisions of contracts with the County following the closure of the Tennant Way Landfill. This export activity represents the County's recommended back-up alternative to the preferred option of in-County transfer to the Headquarters Landfill after the Tennant Way Landfill has reached capacity and closed. If the County is successful in purchasing and re-permitting the Headquarters Landfill to accept MSW, the primary alternative will be to short-haul waste from the Waste Control transfer station. The County will maintain the long-haul option as a backup in case the Headquarters Landfill becomes unavailable or the re-permitting is unsuccessful.

The waste export alternative will utilize Waste Control's new transfer station as a point of consolidation of all MSW generated in the county. After consolidation of the waste, it will be transported to the Headquarters Landfill (if successfully re-permitted for MSW) by truck or will be loaded into leak-resistant containers and shipped to the Roosevelt Regional Landfill, in Roosevelt, Washington, via railroad, with other transportation as backup.

9.3.1 Proposed Export of County MSW

The County has contracted with Waste Control to provide a disposal solution for MSW after the closure of the County landfill. This contract will utilize Waste Control's planned transfer station as a point of consolidation of all MSW generated in the county. The contract will require in-county disposal first, however if in-County options are unavailable, then out-of county export of material will be allowed. After consolidation of the waste to be exported, it will be loaded into leak-resistant containers and shipped to the Roosevelt Regional Landfill, in Roosevelt, Washington, via railroad, with other transportation as backup.

As a contingency measure, the County will negotiate emergency plans with both Lewis and Clark Counties for export of waste through their solid waste systems should the need arise in Cowlitz County.

9.4 Policy Issues Raised in the Importation of Waste

- Encourage a free market for access to disposal capacity.
- Evaluate solid waste import impacts and adopt mitigating measures.

- Restrict and discourage the importation of waste from all sources.

9.4.1 Encourage a Free Market for Access to Disposal Capacity

The County could encourage a competitive free market for disposal capacity or other solid waste handling activities by not restricting the importation of waste. Such a strategy, if adopted by all counties in the state, may provide the lowest-cost service and the greatest flexibility for jurisdictions in choosing management options. In addition, it ensures that disposal options are available for those counties that cannot provide environmentally sound services because of high cost or a lack of suitable sites. At a minimum, facilities that accept imported waste must meet or exceed all applicable SWHS.

A risk associated with this approach is the possible consumption of in-county disposal capacity sooner than anticipated, and the burden of direct impacts, which may or may not be directly mitigated, on the importing jurisdiction.

9.4.2 Evaluate Solid Waste Import Impacts and Adopt Mitigating Measures

The County could regulate imported waste received by private and public solid waste facilities in Cowlitz County. Solid waste import impacts created by a new or expanded solid waste facility would be identified through local land-use and regulatory requirements as part of the solid waste facility permitting process. The primary purpose of requiring agency review of solid waste import activities is to identify impacts and adopt appropriate mitigating measures. Conclusions developed during the land-use review or the permit process would be implemented by the solid waste facility owner/operator.

Legal risks are associated with this option. The commerce clause can be violated by a regulation that places an undue burden on out-of-state waste importation. In *City of Philadelphia v. New Jersey*, 437 U.S. 617 (1978), the Supreme Court said that even though a state regulation has a legitimate purpose, "it may not be accomplished by discriminating against articles of commerce coming from outside the State unless there is some reason, apart from their origin, to treat them differently." Therefore, it is important that a waste import regulation be based on objective considerations of public health and safety and of the environment. If the regulations are merely protectionist measures in disguise, they may be declared invalid (Public Works and SCS Engineers, 1993).

9.4.3 Discourage Importation of Waste from All Sources

Solid waste disposal is a necessary public service, similar to sewer and water services. In addition, solid waste facilities are becoming increasingly difficult to site and are a finite resource in a jurisdiction. Disposal capacity, whether private or public, could be preserved as a resource for those in the jurisdiction. In-county disposal capacity could be protected through an outright ban on waste import.

There are several risks associated with this approach. First, banning the importation of waste may result in existing private landfills going out of business, unable to meet fixed costs on a limited amount of waste; or it may become uneconomical to upgrade an existing facility to meet more stringent environmental standards. Second, the termination of waste import may result in high political tensions making it impossible for jurisdictions to cooperate. And lastly, a prohibition on waste import may be challenged as a violation of the commerce clause and therefore unconstitutional. However, as discussed above, a ban against both out-of-county and out-of-state waste may be upheld if it was demonstrated that a waste import ban was designed to accomplish important local objectives.

9.4.4 Waste Import Policy Recommendations

1. The County recognizes that current economic conditions and environmental regulations favor the regionalization of solid waste facilities. This trend is generally positive as long as regional solid waste facilities are sited, constructed, and operated to stringent environmental standards. Therefore, the County will allow the import of solid waste into the county so long as the significant adverse impacts associated with the waste import activity according to the SEPA have been appropriately mitigated as determined by the lead agency. Compliance with all applicable regulations should also be required. The SWMP does not approve of solid waste import to any particular site or location, but rather requires solid waste import activities to be evaluated as part of the solid waste facility permitting process.
2. Existing permitted solid waste facilities with no specified import parameters would be required to address solid waste import activities as part of their operating permit should they receive 10 percent or more of their annual solid waste from outside Cowlitz County. The facility operator would be required to apply for an expanded operating permit to ensure that the waste import activity does not adversely impact public health and safety.

3. New or expanded solid waste facilities would be required to address the impacts associated with solid waste import activity during the land-use review or other applicable permit application process.
4. Tracking of the source, type, and quantity of solid waste will become part of the annual operating permit process undertaken by the EHU.
5. The movement of recyclable materials (solid wastes that are separated for recycling or reuse, such as papers, metals, and glass) into Cowlitz County is exempted from waste import policies.
6. Contingency plans should be developed with Clark County and Lewis County that mutually allow the use of waste transfer and export systems in the event of an emergency.

9.5 Waste Import Impacts and Mitigating Measures

In the event of solid waste import into Cowlitz County to either private or public solid waste facilities, the following potential impacts should be evaluated and mitigating measures specified as part of a solid waste permit for on-site impacts and/or a special use permit for off-site impacts, as well as other city/County ordinances. Permit or special use requirements would be enforced by the agency with jurisdiction.

9.5.1 Solid Waste Utility Impacts

With the development of regional solid waste facilities, a host community often desires to restrict the flow of waste from exporting jurisdictions or regions. A primary concern expressed by host jurisdictions is the impact to the local solid waste system. A waste import activity may have the effect of disrupting the daily operation of solid waste facilities, thereby creating a threat to the environment and public health and safety.

Mitigating Measures—As noted above, the U.S. Constitution provides the legal framework for regulating the movement of solid waste, reserving that right to Congress. A body of law has developed as states attempt to find out how far they can impinge on federal authority. The Court has addressed the question of whether a governmental action imposes greater economic burdens on those outside the state than on those within. In so doing, the Court has established a balancing test to determine whether the burden of interstate commerce is excessive in relation to the local benefit derived from restricting waste flows (*Pike v. Bruce Church, Inc.,* 1970). Therefore, before accepting out-of-county waste (both interstate and intercounty), waste import proposers must evaluate impacts to the County solid waste system. The

import of waste that would result in the rapid closure of critical facilities or pose system disruptions should be prohibited. New import activities to the Tennant Way Landfill should be carefully reviewed, as this could significantly impact the anticipated closure date of the landfill (Public Works and SCS Engineers, 1993). The Headquarters Landfill is currently permitted to receive up to 350,000 cu yd of imported waste as part of an annual limit of one million cu yd of waste disposed of. As mentioned in Chapter 7, approximately 27% of the waste coming to the facility is generated outside of Cowlitz County. The County will continue to operate under these conditions if the Headquarters facility is re-permitted as a MSW facility.

9.5.2 Nuisance Impacts

Nuisance impacts commonly associated with solid waste import activities include noise, litter, dust, and light and glare. Noise is generated off site primarily from traffic to and from the facility. Litter comes from waste blowing onto roads and adjacent properties during transportation to a disposal facility. Dust is generated from windblown, open soil areas along the transportation route. Light and glare from motor vehicles transporting material to a site can be an obtrusive impact onto properties adjacent to transportation routes. Light and glare can also create safety hazards or interfere with views.

Mitigating Measures

- Noise: Measures to mitigate noise impacts include placing noise limits on operational activities and individual pieces of equipment. If noise receivers are in close proximity to the proposed regional facility, the effectiveness of noise barriers should be investigated. Off-site noise impacts could be mitigated through strict enforcement of State motor vehicle noise emission regulations and reductions in the average vehicle travel speed.
- Litter: Measures to mitigate the impact from litter may include requiring litter crews to retrieve material collected along transportation routes adjacent to the waste importing facility. All transported waste may be required to be fully contained in a leak-proof container.
- Dust: Measures to mitigate the impact from dust may include requiring the watering of dirt roads when necessary and limiting driving speeds. Roads and other areas that might be exposed for prolonged periods could be paved, planted with a vegetative ground cover, or covered with gravel.

- Light and glare: Measures to minimize the impacts of light and glare created by transporting solid waste may include constructing fencing around roadways to deflect lights from headlights, or restricting operations to daylight hours only.

9.5.3 Environmental Impacts

Potential environmental impacts associated with waste import activities may include impacts to air and water quality, and the generation of odor. Air quality can be impacted by transportation activities that increase the concentration of air pollutants from exhaust emissions. Exhaust emissions typically include sulfur dioxide, carbon monoxide, oxides of nitrogen, and hydrocarbons. Carbon dioxide has recently become a concern due to increasing awareness of its role in global climate change. Impacts to water quality can occur from accidents along the transportation corridor that result in the spilling of waste in or near a body of water. Odor impacts can be generated by imported waste along transportation routes from leaking containers or temporary storage.

Mitigating Measures

- Air Quality: Air pollution emissions associated with the transportation of solid waste are typically considered insignificant. However, waste import projects should identify the expected emissions from the transportation activities and take realistic measures to satisfy air quality concerns.
- Water Quality: Solid waste should be imported to a disposal site in leak-resistant, sealed containers consistent with Ecology requirements. Routine maintenance, including pressure washes, and inspections of empty containers would also help to ensure against leaks.
- Odor: Odors can be mitigated by eliminating leaking, treating organic vapors, and minimizing storage time.
  - The containers should be sealed to prevent leaking during storage and transport. Seals should be required for the rear doors of the containers.
  - If production of problem odors is anticipated, the container can be fitted with an odor-removing filtration system using a carbon canister filter.
  - Storage time for imported waste can be minimized at any one location, on a first in/first out rotation

- All facilities importing waste should be required to develop, and show diligence in exercising, a waste screening program to ensure that incoming loads of waste do not contain dangerous or hazardous waste or other types of waste determined by the County and/or other permitting agencies to be unacceptable at the facility.

9.5.4 Transportation Impacts

Additional traffic generated by a regional solid waste facility could cause congestion on local roads and thereby increase travel time for local residents.

Mitigating Measures

- All facilities importing waste should consider existing traffic levels on haul routes, and the capacity of these roadways to handle additional truck traffic. In some cases it may be necessary to improve roadways or adjust haul routes or schedules to mitigate potential impacts.
- Waste import projects should review all principal transportation modes, specifically rail, barge, and truck.

9.6 Waste Export Impacts and Mitigating Measures

In light of the Waste Control contract for a new transfer station/longhaul disposal alternative, the impacts due to the export of all of Cowlitz County's MSW were evaluated, and mitigation measures should be considered. Such considerations will also be applied to the current evaluation of the purchase and re-permitting of the Headquarters Landfill for the purposes of shorthauling county MSW. Waste exporting has many of the same nuisance, environmental, and transportation impacts to the public that are discussed above for waste importing. Additional impacts to recycling; vulnerability to system interruption; Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) liability; and system funding as a result of exporting activities are discussed below.

9.6.1 Export Impact on Recycling

Communities with their own municipally owned landfills or incinerators may be negatively impacted by recycling success, in that they may no longer be receiving enough tipping fee revenues to cover fixed costs. In contrast, a community that pays "by the ton" for disposal at private regional landfills has

an incentive to encourage recycling because every dollar not spent at the landfill is a dollar that might be saved or used to support recycling.

Mitigating Measure—Under the future export scenario, the County must ensure that the disposal-services contract with the landfill operator contains incentives to maximize recycling activities by setting no minimum volume of waste that must be shipped to the facility.

The proximity of the Waste Control transfer station to the Waste Control MRF has helped to promote more efficient recycling of materials recovered at the transfer station. Since both facilities are operated by the same company, there has been an increased awareness and effort in the separation of potentially recyclable materials that are dropped off at the transfer station. Transfer station operators can then easily direct these materials to the adjacent MRF for sorting.

9.6.2 Physical Vulnerability

With the closure of local landfills and the continued reliance on a few large regional landfills, communities may be faced with the prospect of service disruptions should any element become inoperable. A service disruption for the disposal of solid waste can become a catastrophic event in a short period of time and can result in a public health emergency.

Mitigating Measure—If the County implements either the shorthaul option to Headquarters Landfill or the long-haul option for export of solid waste, the contract for disposal services must identify alternative disposal plans, including other routes and modes of transportation.

The County should ensure that the Waste Control contract provides for the continued disposal of MSW in the event of an interruption of the disposal of waste at either the Headquarters Landfill or the Roosevelt Regional Landfill.

9.6.3 Future CERCLA Liability

Under CERCLA, any landfill operator faces potential liability for future environmental damage from waste disposed of at the facility. The County currently has this liability with the existing landfill, even though there have been no issues to date.

A jurisdiction using a large regional facility could still be held liable for future environmental damage under CERCLA. Since there are other jurisdictions and companies that use the facility, the liability could be shared. Few mechanisms exist to provide control over regional facility operations.

Mitigating Measure—In order to reduce the potential for future liability under CERCLA, the County should continue the existing dangerous waste screening program for materials being received at the County landfill and Headquarters Landfill should the County acquisition be successful. The screening program will reduce the likelihood that hazardous materials are disposed of in the landfill by making employees and the public aware of banned wastes.

Any regional solid waste facility used by the County must meet or exceed all SWHS requirements. Provisions may be made in the contract for services for periodic, independent environmental audits. Regional solid waste facilities can provide significant environmental benefits if they are designed and operated for maximum environmental protection.

9.6.4 Financial Impacts on Existing System

The export of waste from Cowlitz County or its cities to a regional facility may have the effect of significantly reducing revenues needed to support County solid waste facilities. It might also reduce bonding capacity, or the ability to fund a closure reserve.

Mitigating Measure—Analysis of the economic impacts of the future waste export scenario shows that total operating costs will remain consistent with current levels, including provisions for closure of existing solid waste landfills.

Under the contract with Waste Control, disposal of MSW at the County's landfills will continue until such time as the landfills have reached permitted capacity or are otherwise unable to accept waste. This contract ensures that there are adequate funds for the closure and post-closure costs of the Tennant Way Landfill and for the Headquarters Landfill, if acquired by the County.

9.7 Chapter Highlights

- There are adequate systems in place in Cowlitz County to deal with the import and export of solid waste.
- Additional mitigation measures should be considered as the County evaluates the purchase and operation of the Headquarters landfill. This is particularly important if the landfill is re-permitted to allow disposal of MSW and therefore increases the level of waste disposal above the current permit specifications. This would include consideration of impacts to recycling, vulnerability to system interruption, CERCLA liability, and system funding. The impact of waste longhaul has been

mitigated as part of the issuance of the Waste Control transfer station permit.

- The County should develop contingency plans with neighboring counties to allow for emergency export or import, depending on the situation and use of transfer/long-haul systems, should short term system issues develop.

10 SPECIAL AND INDUSTRIAL WASTE

10.1 Introduction

Special wastes are materials that require special or separate handling due to their unique characteristics, such as bulk, water content, or dangerous constituents. Special wastes discussed in this chapter are:

- CDL waste
- Agricultural waste
- Auto hulks
- Asbestos wastes
- Petroleum-contaminated soil
- White goods
- Tires
- Biomedical wastes
- Biosolids
- HHW

Industrial solid waste is defined as waste by-products from manufacturing operations such as scraps, trimmings, packaging, and other discarded materials not otherwise designated as a dangerous waste under WAC Chapter 173-303. The primary industrial waste in Cowlitz County is forest-products industry waste. This chapter discusses the management needs and opportunities associated with special waste and industrial waste and recommends management strategies to encourage recovery and reduce environmental impacts.

10.2 Construction, Demolition, and Land Clearing Waste

10.2.1 Existing Conditions

There are several facilities in Cowlitz County that process CDL waste, including the following:

10.2.1.1 Construction, Demolition, and Land Clearing Waste Recycling Facilities

Lakeside Industries

Lakeside Industries is located in Longview at 500 Tennant Way. Lakeside accepts approximately 5,000 to 15,000 tons of asphalt per year, depending on the amount of activity in the community each year. The fee is $5.00 per ton for reprocessing of asphalt from sources throughout the county.

Storedahl & Sons

Storedahl & Sons accepts approximately 1,000 tons of clean concrete rubble per year, at a charge of $5.00 per ton. The material is crushed for use as road-base material, using a standard rock crusher at the Coal Creek Pit.

Waste Control Recycling, Inc.

The Waste Control MRF is located at 1150 Third Avenue in Longview, Washington. Part of the facility is dedicated to the processing of mixed and source-separated CDL waste. In 2010 Waste Control processed 2,018 tons of CDL waste. It charges $10.00 per ton for unpainted concrete, asphalt, and brick, which is crushed and used for road-base material; $25.00 to $30.00 a ton for "clean" wood; and $37.30 a ton for mixed loads.

Swanson Bark

Swanson Bark accepts clean demolition wood and brush at a charge of $8.00 per pickup load or $20.00 per ton. This material is combined and shredded with other wood residuals received from around the northwest and processed into hog fuel and bark mulch, and added to soil for sale as topsoil. These products are marketed in 47 states.

Pacific Fiber Products

Pacific Fiber processes wood residuals from the lumber industry around the Pacific Northwest. The residuals are made into wood chips for the paper industry, shredded into bark mulch, shredded and added to soil for sale as topsoil, and shredded into hog fuel. The bark mulch, soil, and hog fuel are wholesaled throughout Washington, Oregon, and California. Some of the wood residuals that are processed at the facility are classified by the State of Washington as solid waste.

10.2.1.2 Construction, Demolition, and Land Clearing Waste Disposal Facilities

Tennant Way Landfill

In 2009, with the opening of the Waste Control transfer station, the Tennant Way Landfill was closed to the public's direct disposal. In 2009, 5,988 tons of CDL waste was collected between the Tennant Way Landfill and the transfer station. In 2010, the transfer station accepted approximately 5,820 tons of CDL waste. The tip fee for disposal of CDL waste is the same as for all other materials, $37.30 per ton.

Weyerhaeuser

Weyerhaeuser processes its own CDL waste and accepts, sorts, and processes CDL waste from preapproved third parties for use in its Headquarters landfill. Weyerhaeuser seeks CDL waste from outside sources because it acts as an industrial waste stabilizer, enhancing the landfill stability and drainage as well as providing a small source of revenue from the recovered recyclables. In 2010, Weyerhaeuser disposed of approximately 13,000 tons of CDL waste from outside parties at Headquarters Landfill.

10.2.2 Needs and Opportunities

There appear to be adequate facilities for the processing and disposal of CDL waste in Cowlitz County at a variety of price levels. Pricing for sorted CDL waste such as asphalt, concrete, and wood encourages recycling and reflects the fact that it can be reused. With the closure of the Tennant Way Landfill in 2013, there will be appropriate disposal options remaining for the economical disposal of CDL waste.

10.2.3 Alternatives

10.2.3.1 Status Quo

This no-action alternative assumes the continued handling of CDL waste by the private sector with minimal involvement on the part of the County.

10.2.3.2 Enhanced Reuse and Recycling Opportunities

There is a CDL waste recovery system in place in the county. Existing processors have developed the capability to recover both source-separated and mixed loads of CDL waste. Recovery of these materials could be enhanced through distribution of educational materials at local builders' associations, contractors, and haulers and promotion of reuse organizations

such as Habitat for Humanity's ReStore locations in Vancouver and Longview, the 2good2toss program, and Freecycle, among others.

CDL waste processors can continue to promote source separation through reduced tipping fees, which provides contractors and haulers with an economic incentive to balance the increased cost of handling materials. The County can further this effort by working actively with construction/demolition contractor associations and permitting agencies to promote the development of a recovery/disposal plan before large construction and demolition projects begin.

Several communities in the United States have begun incentive fees for the disposal of construction and demolition waste. In several variations of this program, contractors pay a higher fee for a building permit, which specifies a percent diversion. At the end of the project the contractor must present evidence that the diversion percentage is met or exceeded, and then a portion of the building permit fee is returned. The fees are typically determined on the value and type (new construction or remodeling) of the construction project.

10.2.4 Recommendations

The County should collaborate with private CDL waste processors to develop educational materials for distribution to local builders' associations, contractors, haulers, and residences. The County could also sponsor a pilot project designed to demonstrate the feasibility of source separation of materials on the construction site. The County and incorporated cities could jointly investigate the implementation of diversion incentives for CDL waste generated by construction projects.

10.3 Agricultural Wastes

Agricultural wastes result from the production of agricultural products, which include crop-processing waste and manure. Agricultural wastes are defined in WAC 173-350-100 as: wastes from farms resulting from the production of agricultural products including but not limited to manures and the carcasses of dead animals weighing each or collectively in excess of 15 pounds.

10.3.1 Existing Conditions

Most of the agricultural activity in the county occurs in the Woodland Bottoms area, adjacent to the community of Woodland. The principal agricultural activities in the Woodland Bottoms area are dairy farming, berry farming, flowers, and vegetable crops such as sweet corn, green peas, and carrots. Another area with significant agricultural activity is the Delameter Valley, which has a number of large chicken-raising facilities. In total there

are approximately 500 farms in the county, which generated approximately 33,855 tons of agricultural waste in 2007, the most recent available data (see Table 10-1). The amount of agricultural waste generated was estimated from the county's estimated crop acreage and livestock numbers applied to a waste-generation rate developed for each unit, as shown in Table 10-1.

Agricultural wastes are a significant source of organic material. Typically, very little of this material is disposed of at a solid waste disposal facility. The typical current practice is to return as much of the material as possible to the soil. On-site agricultural waste disposal can be problematic in areas that are close to bodies of water, particularly situations involving livestock.

The transfer station does accept individual animal carcasses at $7.00 per carcass, but encourages individuals to use rendering services that provide pickup services.

Table 10-1
Agricultural Wastes

CROP OR LIVESTOCK	ANNUAL WASTE GENERATION FACTORS[1]	NUMBER OF UNITS[2]	ANNUAL TONNAGES
Grains	1.5 tons/acre	500 acres	750
Hay and Pasture	0.5 tons/acre	5,000 acres	950
Berries	2.0 tons/acre	670 acres	900
Vegetables	2.0 tons/acre	1,700 acres	1,260
Sod[3]	0.5 tons/acre	50 acres	25
Beef Cattle	1.0 tons/head	3,600 head	2,800
Dairy Cattle	2.0 tons/head	800 head	1,600
Hogs[3]	0.3 tons/head	200 head	60
Sheep and Lambs[3]	0.2 tons/head	700 head	40
Goats[3]	0.2 tons/head	175 head	35
Horses	1.5 tons/head	1,010 head	750
Llamas[3]	0.2 tons/head	50 head	10
Chickens	47.0 tons/1,000 birds	525,000 birds	24,675
	TOTAL TONS PER YEAR		33,855

Notes
[1]California Solid Waste Management Board. 1974. Solid waste generation factors in California. Bulletin Number 2.
[2]Fredricks, G. 2011. E-mail correspondence (re WSDA statistics) with S. Ojala, Maul Foster & Alongi, Inc., Portland, Oregon. June 6.
[3]Waste generation rate estimated from values for similar crops or livestock.

10.3.2 Needs and Opportunities

Agricultural wastes do not present a significant problem for the County solid waste system, since most of the material is returned to the soil. However, opportunities may exist to assist farmers engaged in intensive livestock production with the management of manure from chickens and dairy cattle. The large volumes of high-quality compost feedstock could be used in combination with woodwaste and dredge spoils to create a marketable compost product for the general public as well as the agricultural community.

10.3.3 Alternatives

Because agricultural wastes are not a significant problem in Cowlitz County, the alternatives discussed in this section would take advantage of opportunities for recovery and use of agricultural waste.

10.3.3.1 Status Quo

This no-action alternative reflects the status quo by continuing to rely on the management of agricultural wastes by farmers and ranchers at the point of generation. Current practices do not produce large quantities of agricultural wastes that require disposal off the farm. However, this alternative ignores possible opportunities for intensive use of the large amount of organic waste generated by dairy and chicken operations.

10.3.3.2 Agricultural Compost Study

The County could research the possible development of a commercial compost facility that could take advantage of the large quantity of organic waste generated in the county by the local forest-products industry, river dredging projects, and agricultural activities. If combined and composted, the materials would produce a high-quality compost product for topsoil production, farms, tree plantations, and private gardens.

It should be noted that chicken feathers contain two percent sulfur by weight, and that when they are anaerobically decomposed will generate hydrogen sulfide. It is suspected that decomposing chicken feathers contributed to the hydrogen sulfide odor complaints documented in 2007 at the Headquarters Landfill.

10.3.3.3 Agricultural Biofuels

Direct combustion or generation of biofuels from agricultural wastes may become a feasible technology in the future. The State of Washington has undertaken a number of programs to promote use of biofuels. The Washington State Biofuels Advisory Committee was established to advise the

Director of Agriculture on the implementation of the state's minimum renewable fuel content requirements. The Energy Freedom Program was established in 2006 to, "promote public research and development in bioenergy, and to stimulate the construction of facilities in Washington to generate energy from farm sources or convert organic matter into fuels" (RCW 43.325).

Clark County is planning to construct a wood-burning heating and cooling plant in downtown Vancouver that may be a destination for wood waste generated in Cowlitz County.

10.3.4 Recommendations

1. Because agricultural wastes are being handled effectively, the County should encourage farmers and ranchers to continue their current waste-management practices.
2. In addition, if the agricultural community or commercial interests show an interest, it may be possible to use agricultural wastes in combination with other waste streams to produce a high-quality compost product. If such a venture were to be successful, it would require active involvement on the part of the agricultural community. The County could conduct a study investigating possible arrangements that would lead to enhanced composting of agricultural wastes.

10.4 Auto Hulks

Auto hulks are the entire body of a junked automobile. Junked automobiles are an important source of ferrous steel scrap. The United States Council for Automotive Research LLC's Vehicle Recycling Partnership reported in 2008 that 95 percent of all end-of-life vehicles go through an end-of-life recycling process which recycles 84 percent of each vehicle.

10.4.1 Existing Conditions

In Cowlitz County, automobile hulks are currently accepted by a number of licensed auto hulk companies for the reuse of parts and the recycling of scrap metal. Markets for auto hulks are located in Vancouver and Tacoma, Washington, and in Portland, Oregon. The Tennant Way Landfill does not accept auto hulks; however, pieces of automobiles occasionally appear in the waste stream. An unknown quantity of junked automobiles is illegally disposed of in the county every year. Abandoned vehicles in right-of-ways of local roads are handled by local police and public works departments. Vehicles abandoned on state highways and I-5 are handled by the State Patrol and the Washington

Department of Transportation. Hulks abandoned elsewhere are handled by local abatement officers in Kelso and Longview, or by Building and Planning.

In 2011, Waste Control expanded their MRF by adding an auto hulk recycling facility. The auto hulk facility allows Waste Control to process auto hulks for metal recycling in an enclosed facility.

10.4.2 Needs and Opportunities

Because illegally dumped auto hulks are processed quickly when abandoned on public right-of-way and scrap value in recent years has promoted increased recycling, they are not considered a significant solid waste problem in Cowlitz County. Because of this, no alternatives are proposed.

10.4.3 Recommendations

Because auto hulks are being handled effectively by the private sector, the County should continue to encourage existing practices.

10.5 Asbestos-Containing Wastes

Asbestos is a group of naturally occurring minerals that have a fibrous structure and heat-resistant properties. These unique properties allow asbestos to be made into useful products but also allow it to break down into microscopic fibers that can become airborne. When inhaled by humans, asbestos can cause lung cancer, mesothelioma (a cancer of the chest and abdominal linings), and asbestosis (irreversible lung scarring that can be fatal). Depending on its physical state, asbestos can be classified as friable or nonfriable. Friable asbestos can easily break apart and become airborne, and thus it presents a much greater risk to human health, while nonfriable asbestos has less of a tendency to break apart.

10.5.1 Existing Conditions

Prior to July 2009, relatively small quantities of asbestos-containing materials (ACMs) were disposed of in the Tennant Way Landfill, typically from building-demolition activities and pipeline-replacement projects. Since that time, ACMs have been accepted at the transfer station and transported to the Roosevelt Regional Landfill for disposal. Asbestos is considered nonhazardous when properly encapsulated. Asbestos handling is regulated by the Southwest Clean Air Agency (SWCAA); asbestos disposal is conducted by Waste Control at the transfer station and is part of the operations plan.

ACMs may be removed by residential owner/occupants or certified asbestos abatement contractors only. A Notice of Intent to Remove or Encapsulate Asbestos must be procured from the SWCAA. This permit requires 24-hour

advance notice and costs $25 for residential work performed by the owner-occupant. For work performed by a contractor, the advance notice is 10 days and the fee is higher except for very small projects.

The SWCAA provides guidance (SWCAA 476) for lawfully removing and packaging asbestos and maintains a list of certified asbestos-abatement contractors, if needed. ACMs must be collected for disposal in a sealed leak-tight container at least 6-mil thick. Containers must be individually marked with:

- Date the material was collected for disposal,
- Name of the waste generator,
- Name and affiliation of the certified asbestos supervisor, if applicable, and
- Location at which the waste was generated.

Plastic bags with preprinted asbestos warning labels are available at Waste Control for a reasonable cost.

ACMs are accepted by appointment only, arranged at least 24 hours in advance. The name and address of the property owner and contractor, if applicable, a description of the ACM, and the quantity of ACM must be provided at the time of scheduling

10.5.2 Needs and Opportunities

The management and disposal of asbestos waste is not currently considered a problem in Cowlitz County. The current contract with Waste Control includes provisions for the handling of special wastes through the transfer station; this includes asbestos handling when properly prepared.

10.5.3 Alternatives

The current handling of asbestos at the transfer station is adequate to meet the County's current needs, and future needs will be addressed by the contract between Waste Control and the County. Because of this, no alternatives are proposed.

10.5.4 Recommendations

Because asbestos is currently being handled effectively, the County should maintain existing asbestos-disposal practices. Management of asbestos has been shifted to the transfer station, in accordance with the contract with Waste Control in July 2009.

10.6 Petroleum-Contaminated Soil

The primary statute governing cleanup of petroleum-contaminated soil in Washington State is the Model Toxics Control Act (MTCA), Chapter 70.105D RCW. Chapter 173-340 WAC contains regulations to implement MTCA, including sections on corrective action requirements for leaking underground storage tanks and on cleanup standards.

It is possible that lead, benzene, polycyclic aromatic hydrocarbons, or PCBs could also be present in petroleum-contaminated soil, which could trigger a designation as dangerous waste. Treatment, transportation, and disposal of dangerous wastes are subject to the State dangerous waste regulations, Chapter 173-303 WAC. Dangerous wastes can be transported only to specifically permitted facilities for treatment, storage, or disposal.

10.6.1 Existing Conditions

Currently, petroleum-contaminated soil considered "dangerous waste" is treated on site, treated off site, or transported to out-of-county landfills that can legally accept "dangerous waste." Most material treated off site goes to the Woodworth & Co. thermal desorption facility in Lakewood, Washington, or to the Fife Sand and Gravel bioremediation facility in Fife, Washington. The nearest landfill that accepts petroleum-contaminated soil considered "dangerous waste" is the Chemical Waste Management facility in Arlington, Oregon, operated by Waste Management, Inc. "Dangerous waste" is also accepted at the US Ecology, Inc. landfill in Grand View, Idaho.

The Headquarters Landfill accepts petroleum-contaminated soil that complies with County-approved contaminated soils waste-acceptance process for disposal or daily cover.

10.6.2 Needs and Opportunities

Because there is an adequate system in place in Cowlitz County to manage petroleum-contaminated soil considered "dangerous waste" as well as petroleum-contaminated soil that does not exceed dangerous waste regulations contamination levels, there is no need to change the status quo.

10.6.3 Recommendations

1. The hierarchy established by Ecology should be used to select appropriate treatment methods for petroleum-contaminated soils generated in Cowlitz County.
2. The Tennant Way and Headquarters landfills should not accept petroleum-contaminated soil that exceeds County-approved waste

acceptance limits. Treated or untreated contaminated soil that does not exceed these limits can be used as cover material at the Tennant Way and Headquarters landfills.

3. Management of petroleum-contaminated soil currently directed to the landfill has been shifted to the transfer station, in accordance with the contract with Waste Control, so that future handling and disposal of this material are guaranteed.

10.7 White Goods

The term "white goods" refers to large appliances such as refrigerators, washers, and dryers. These items typically contain large amounts of steel and are a traditional source of ferrous scrap. Because these wastes are very bulky and extremely difficult to compact in a landfill, they consume significant landfill space.

There are two environmental problems associated with recycling white goods: the handling of PCBs and the recovery of chlorofluorocarbons (CFCs). PCBs are present in the electrical capacitors of some appliances produced or repaired prior to 1979. Because these capacitors leak PCB-contaminated oil when shredded at steel-shredding facilities, scrap dealers no longer accept appliances known to contain PCBs. Starting July 1, 1992, the Clean Air Act prohibited releasing refrigerants into the atmosphere; thus, refrigerants must be recovered before disposal of refrigeration and air conditioning equipment and other appliances.

10.7.1 Existing Conditions

The transfer station charges a $5.00 handling fee for each white-good item received. White goods are set aside in an area adjacent to the multi-material drop-off center or purchased at the buy-back center. From this staging area, the items are sorted—components of white goods containing PCBs are removed for proper disposal, units with CFCs are set aside, and all remaining items free of PCBs and CFCs are recycled. White goods containing CFCs are collected and hauled by St. Vincent de Paul to its Eugene, Oregon location, where the CFCs are properly collected for recycling and the steel is scrapped.

There are also a number of private companies in the county that accept and recycle white goods.

10.7.2 Needs and Opportunities

An adequate system exists for the recycling and disposal of white goods, including those containing CFCs and PCBs. The contract with Waste

Control provides for the management of white goods at the transfer station so that adequate services are guaranteed.

10.7.3 Recommendations

Because an adequate system is currently in place to address CFCs and PCBs, the transfer station should continue to accept white goods, including those containing PCBs and CFCs.

10.8 Tires

Waste tires present a variety of management problems, ranging from storage to disposal. The storage of tires may present a potential fire hazard, and tires provide protected spaces that encourage the breeding of rodents and mosquitoes. The disposal of tires into sanitary landfills can lead to problems. Because of their bulkiness and resilience, tires tend to rise to the surface, damaging the cover materials, which allows water to seep into the landfill. Because of this, the County hauls tires collected at the transfer station to tire-processing facilities.

10.8.1 Existing Conditions

Ecology estimates that each person in the state generates one waste tire annually. In Cowlitz County, this would result in the generation of over 101,000 waste tires requiring disposal each year (2010 figures). In 2009, 268 tons of tires (approximately 26,800 tires, assuming 100 tires per ton) were collected and recycled at the transfer station and Tennant Way Landfill. The charge for disposing of tires is $1.00 per passenger tire and $5.00 per truck tire for up to ten tires. For more than ten tires of either type, the charge is $105 per ton. Tires accepted at the transfer station are shipped to Tire Disposal and Recycling, Inc. in Portland, Oregon. Retail tire sales stores also receive significant quantities of used tires that are exchanged during the purchase of new tires. The quantity handled by these retail stores is not known.

The closest waste tire processing center is located in the Portland region—Tire Disposal and Recycling, Inc. in Portland, which charges $1.00 per automobile tire and $5.00 per truck tire.

WAC 173-350-350 provides storage requirements for tire piles. The U.S. Uniform Fire Code also regulates tire piles, since they present a fire hazard.

10.8.2 Needs and Opportunities

Assuming that 101,000 waste tires are generated annually in Cowlitz County and that approximately 26,800 tires are being handled at the transfer station,

and despite the fact that a large number of tires are disposed of by retail stores, it is possible that some tires are being disposed of illegally. Landfilling of tires is undesirable because it consumes valuable landfill space, especially since opportunities do exist to process the tires at a marginally higher cost.

Waste tires represent a good alternative fuel source, either whole or chipped. The heating value of tires is between 12,500 and 14,000 British thermal units per pound (Btu/lb), which compares to about 12,000 Btu/lb for coal. Tires are also moderate in both sulfur and ash content compared to coal, and do not adversely affect the quality of stack emissions. The most promising development in scrap tire incineration is the shredded tire chip, commonly called TDF. An increasing number of cement kilns and steam-generating boilers routinely burn TDF as a supplemental fuel. Most problems associated with the use of TDF stem from the inability of tire processors to deliver on a dependable schedule.

The disposal of tires has been included in the Waste Control contract with the County to ensure options for proper disposal of waste tires by county residents.

10.8.3 Alternatives

The County has several alternatives for the handling and proper disposal of waste tires:

- Status quo
- Additional tire drop-off site
- Education and promotion

10.8.3.1 Status Quo

Under the no-action alternative, waste tires would continue to be collected at the transfer station and hauled to the Portland area for processing, along with continued collection at retail tire stores.

This alternative does not address the issue of illegal disposal and stockpiling of tires, which present both a fire risk and a health hazard.

10.8.3.2 Additional Tire Drop-Off Site

The County could establish a tire collection drop box at the Toutle transfer station. A disposal cost could be charged to cover the cost of handling and transport to a waste tire processor.

10.8.3.3 Promotion and Education

The County could establish an education campaign to inform businesses and the public that most tire piles and all tire dumping is illegal. The campaign should identify appropriate disposal or recycling options in the region.

Enhanced regulation of tire piles by the County health authorities and Prosecuting Attorney would help to reduce stockpiling.

10.8.4 Recommendations

1. The County should inform businesses and the public that most tire piles and all tire dumping is illegal, and provide information about existing recycling/disposal opportunities when possible.
2. The County should maintain the current tire collection and management procedures.

10.9 Biomedical Waste

In the medical industry, a number of definitions exist for biomedical waste brought about by overlapping and inconsistent local, state, and federal regulations governing its management. This has a critical impact on the management of the material, since each generator's quantity of biomedical waste is greatly influenced by how inclusive the definition may be.

In response, the State of Washington has developed a state-wide definition of biomedical waste to simplify compliance with local regulations while preserving local control of biomedical waste management (70.95K RCW). The State definition of biomedical waste is to be the sole definition for biomedical waste in the state, and will preempt biomedical waste definitions established by a local health department or local government. Biomedical waste is defined and limited to the following types of waste:

Animal Waste is waste animal carcasses, body parts, and bedding of animals that are known to be infected with, or that have been inoculated with, pathogenic microorganisms infectious to humans.

Biosafety Level 4 Disease Waste is waste contaminated with blood, excretions, exudates, or secretions from humans or animals that are isolated to protect others from highly communicable infectious diseases that are identified as pathogenic organisms assigned to biosafety level 4 by the current edition of the Centers for Disease Control manual "Biosafety in Microbiological and Biomedical Laboratories."

Cultures and Stocks are wastes infectious to humans, and include specimen cultures, cultures and stocks of etiologic agents, wastes from production of

biologicals and serums, discarded live and attenuated vaccines, and laboratory waste that has come into contact with cultures and stocks of etiologic agents or blood specimens. Such waste includes but is not limited to culture dishes; blood specimen tubes; and devices used to transfer, inoculate, and mix cultures.

Human Blood and Blood Products are discarded waste human blood and blood components, and materials containing free-flowing blood and blood products.

Pathological Waste is waste human-source biopsy materials, tissues, and anatomical parts that are derived from surgery, obstetrical procedures, and autopsy. Pathological waste does not include teeth, human corpses, remains, and anatomical parts that are intended for interment or cremation.

Sharps Waste is all hypodermic needles, syringes with needles attached, IV tubing with needles attached, scalpel blades, and lancets that have been removed from the original sterile package.

In general, the major sources of biomedical waste include hospitals, medical laboratories, research laboratories, commercial diagnostic laboratories, outpatient medical clinics, dental clinics, nursing homes, and veterinary hospitals and schools.

10.9.1 Existing Conditions

The concerns associated with the management of biomedical waste arose after a number of high-visibility national incidents of improper disposal. In addition, the focus on the recovery of recyclable materials has resulted in increased handling and processing of solid waste and therefore increased risk to the health of solid waste personnel should they come in contact with biomedical waste.

Currently, the management of biomedical waste in Cowlitz County is regulated by a number of separate agencies, including the UTC, the Washington Industrial Safety and Health Administration (WISHA), Ecology, and the CCHD.

- UTC—The UTC has developed a number of rules relating to the safe transportation of biomedical waste for commercial transporters: WAC 480-70-456, -461, -466, -471, and -476.
- WISHA—WISHA has developed safe workplace practices to prevent occupational exposure to hepatitis B virus and human immunodeficiency virus.

- Ecology—173-300 WAC requires that the owner or operator of a solid waste incineration facility, including biomedical waste incinerators, employ a certified operator. In addition, it is required that biomedical waste incineration be conducted so that no part of the combustible material is visible in its uncombusted state.
- CCHD—Currently the CCHD does not have rules for the management of biomedical waste generated in Cowlitz County because the State regulates them. The CCHD has developed a pamphlet for distribution to clinics on the proper handling of biomedical waste. There have not been any documented cases of improper disposal of biomedical waste in Cowlitz County in recent years.

The St. John Medical Center in Longview is the only general hospital in Cowlitz County. Currently the hospital contracts with Stericycle to handle biomedical waste properly. Stericycle requires that biomedical waste be bagged, boxed, and labeled. The material is then sent to its processing facility in Morton, Washington, where it is shredded and then microwaved until sterile. The shredded material is then processed to remove recyclable steel and plastic. Paper recovered from the process is pelletized and sold as a fuel.

Sharps waste generated by residents is accepted at the transfer station HazWaste Building. The sharps must be contained within a durable container, such as a PET bottle or a coffee can, which is capable of maintaining its structural integrity. The container should be sealed and the lid secured with duct tape. The sharps material that is brought to the transfer station by residents is kept separate from other wastes and is disposed of in such a manner as to avoid possible injury to landfill personnel. Sharps should not be disposed of in residential trash, as there is no way that landfill personnel or transfer station personnel can know that there are needles in containers.

10.9.2 Needs and Opportunities

Since there are no recent documented cases of improper disposal of biomedical waste in Cowlitz County, it is assumed that generators are fulfilling their responsibility to manage biomedical waste properly. Despite that, it is possible that small quantities of biomedical waste are being delivered untreated to disposal facilities. As a result, solid waste facility staff in the county may accidentally come in contact with biomedical waste during the processing of solid waste prior to disposal.

The National Institute for Occupational Safety and Health (NIOSH) has developed recommended workplace behaviors that should be followed by solid waste handling personnel. The following is a brief outline of protective

clothing that should be adopted by both public and private solid waste facilities operating in Cowlitz County:

- Protective Eye Gear—Safety glasses with side shields should be used.
- Hardhat—Protective headgear is recommended to help prevent injury to head and face.
- Skin Protection—The skin should be covered during solid waste handling as much as possible. This includes full-body coveralls, waterproof gauntlet gloves, and safety glasses. Hand protection is especially important when handling solid waste. Gloves should protect against punctures and lacerations, chemical hazards, and biological hazards, and should be waterproof.
- Protective Footwear—Boots should be of sufficient thickness and strength to protect the wearer against injury from sharp objects.
- Masks—Solid waste handlers, landfill equipment operators, or transfer station workers should wear a NIOSH-approved dust mask when working indoors or whenever necessary to protect against dust.

10.9.3 Recommendations

1. Cowlitz County solid-waste facilities, both private and public, should require that personnel involved in the actual handling of solid waste take necessary precautions to prevent exposure to infectious agents, as outlined by NIOSH.
2. The Tennant Way Landfill should continue to accept properly prepared sharps waste from the transfer station.

10.10 Biosolids

Biosolids are generated by the Three Rivers Regional Wastewater Plant (TRRWP) which serves the Longview-Kelso urban area and by some of the other treatment facilities located in the smaller communities of Castle Rock, Kalama, Woodland, Toutle, Ryderwood, Woodbrook, and Camelot. Rural residents of the county are served by on-site disposal systems.

10.10.1 Existing Conditions

As part of the 1985 Cowlitz-Wahkiakum regional SWMP, a detailed municipal sewage sludge utilization and disposal plan was developed. The Longview-Kelso area is served by the TRRWP. All of the biosolids generated at the

Regional Sewage Treatment Plant are transported off-site for land application. The West Longview Lagoon System Treatment Center does not generate any biosolids. Biosolids generated at the facilities in Castle Rock, Kalama, and Woodland are land applied. Biosolids generated at the Toutle facility are placed in a lined drop box and transported to the Tennant Way Landfill as needed for disposal. The Ryderwood and Woodbrook facilities typically do not generate biosolids.

10.10.2 Needs and Opportunities

As a result of the sludge management plans implemented by each waste water treatment agency in Cowlitz County, no biosolids disposal problems currently exist. The future closure of the County landfill will require the Toutle Waste Water Treatment Plant to seek a new disposal option for disposal of biosolids. Since mid-2008 the TRRWP is utilizing a lime stabilization process that results in the biosolids being reused as fertilizer instead of composting and use as vegetative cover during landfill closure. The modified lime stabilization was developed by RDP Technologies and produces a Class A biosolid material that can be composted or applied as fertilizer. Prior to mid-2008 the TRRWP was permitted to compost biosolids and mix with sand and soil and be utilized as vegetative soil cover for lined landfill closures.

Another option that may be available is to dispose of Class A biosolids at Headquarters Landfill. The landfill currently has a letter authorizing it to receive limited types of biosolids, and review of the permit conditions is required before biosolids can be disposed of at this facility.

10.10.3 Recommendations

1. Sewage treatment plants in Cowlitz County should continue to support the existing biosolids management programs that provide an alternative to biosolids disposal at solid waste landfills.
2. Sewage treatment plants should begin to develop plans for biosolids disposal in order to prepare for the eventual closure of the County landfill.
3. The contents of biosolids currently disposed of at the County landfill should be reviewed, along with the criteria stated in the Headquarters Landfill permit, to determine if the facility can accept these materials.

10.11 Moderate Risk Waste

MRW is defined as any waste that exhibits any of the properties of hazardous waste but is exempt from regulation solely because the waste is generated in

quantities below the threshold for regulation. Being exempt from state regulations for hazardous waste, MRW is typically regulated by local jurisdictions. MRW is composed of HHW and SQG waste.

HHW include waste cleaners, paints, pesticides, and many automobile products such as motor oil, and other products used regularly in the home which have the characteristic of being corrosive, ignitable, toxic, and/or reactive. SQG waste is hazardous waste generated by businesses that do not produce quantities above the threshold for regulation.

10.11.1 Existing Conditions

The most recent update of the MRWP has been updated by Maul Foster & Alongi, Inc. and is included as Appendix D.

The primary goal of the MRWP is to reduce the generation of hazardous waste and to reduce illegal hazardous waste dumping, including the improper disposal of hazardous waste in public landfills, sewers, storm drains, and septic systems. The County MRW program follows the waste hierarchy established in RCW 70.105.150. The hierarchy, in descending order of priority, is: waste reduction; waste recycling; physical, chemical, and biological treatment; incineration; solidification/stabilization treatment; and landfilling.

As presented in Ecology's Annual Status Report (Ecology, 2010), approximately 3.8 percent of all housing units or households (43,193) in Cowlitz and (2,106) Wahkiakum counties participated in the HHW program in 2009; collecting a total of 677,089 pounds of HHW, SQG waste, and used oil.

MRW is collected at the transfer station, 12 oil and antifreeze satellite collection stations, and five mobile HHW collection events conducted throughout the county.

SQGs (as defined by WAC 173-303-040 (8)) also use the hazardous waste collection facility at the Waste Control Transfer Station. Individual or entities must preregister as a SQG and call ahead to make an appointment. Charges are based on types and quantities of hazardous waste. County staff does not provide on-site technical assistance to businesses at this time. Staff does make SQGs aware of the collection program for fee when inquiries are made and the county vendor provides general disposal education during waste screening activities at the transfer station. SQG registration forms can be obtained at the Waste Control Web site:

www.wastecontrolrecycling.com/smallquantitygenerators.php

E-Waste is currently accepted free of charge under the program E-Cycle Washington, at the Transfer Facility drop-off recycling center located on the north end of the facility. The center is open from 7:30 a.m. to 5:30 p.m. seven days a week but is closed on major holidays. E-Waste eligible under the program includes:

- Televisions
- Computers
- Computer monitors
- Portable or laptop computers

SQGs disposing of fluorescent tubes are referred to a private firm such as Ecolights, which provides pickup and disposal services. Propane tanks are accepted for a $5.00 fee and are recycled by Waste Control.

In 2009, the program served 76 businesses, which generated 9.6 tons of hazardous waste. The program collected $5,908 in waste disposal fees.

The County provides educational materials to residents of Cowlitz and Wahkiakum counties in the form of brochures and booklets dealing with recycling, waste reduction, and proper disposal of HHW. The brochures are stocked and maintained at all public libraries in Cowlitz County as well as at the transfer station. They are also distributed at county events such as the local Earth Day celebration as well as at the County Fair. The brochures are available by request at Public Works. The County also promotes its HHW, recycling, and SQG programs through newspaper ads.

The MRW programs include:

- Continuation of an HHW education program
- Continued yearly mobile collections
- Continued technical assistance and collection of SQG waste for a disposal fee

10.11.2 Needs and Opportunities

As a result of the Cowlitz Moderate Risk Hazardous Waste Management Plan, a detailed strategy has been developed and programs have been implemented to manage the material.

The Waste Control contract with the County provides for the continued implementation of MRW collection at an MRW facility at the transfer station, and the operation of several HHW collection events in other areas of the

county. The County will continue to administer the Ecology Coordination Prevention Grant and will make payment to Waste Control for processing of materials for disposal. The County will also direct Waste Control in the disposal of the hazardous materials. A portion of the grant also covers disposal costs incurred by the County for the actual disposal.

10.11.3 Recommendations

1. The County should continue to implement the Cowlitz Moderate Risk Hazardous Waste Management Plan, contained in Appendix D. The plan should be reviewed as needed.

2. The County should continue to utilize the CPG to fund MRW collection programs.

10.12 Industrial Solid Wastes

Industrial solid waste is defined as waste by-products from manufacturing operations such as scraps, trimmings, packaging, and other discarded materials not otherwise designated as a dangerous waste under Chapter 173-303 WAC. The primary source of industrial waste in Cowlitz County is the forest-products industry. Therefore, this section focuses exclusively on the forest-products industry.

10.12.1 Existing Conditions

The forest-products industry is the most significant waste generator in Cowlitz County. A number of forest-products facilities are concentrated in the Longview manufacturing complex, producing a variety of wood, pulp, and paper products. Three pulp and paper mills currently operate in Cowlitz County:

- Longview Fibre operates a pulp mill and a paper mill producing linerboard, corrugated and kraft boards, and specialty papers.
- North Pacific Paper Company is a pulp mill and newsprint producer, and is a joint venture between Weyerhaeuser and Nippon Paper Industries.
- Weyerhaeuser Paper Company operates a wood-handling and preparation facility, a kraft pulp mill, and a paper mill producing bleached specialty boards.

Both Weyerhaeuser and Longview Fibre use an integrated management approach to the handling of industrial waste. However, even with waste reduction and recycling activities, significant volumes of waste material are

landfilled. All Weyerhaeuser industrial waste is disposed of at the Headquarters Landfill. In 2010, approximately 167,000 tons of forest-products waste generated by Weyerhaeuser at its Cowlitz County facilities was disposed of at the Headquarters Landfill. Longview Fibre disposed of approximately 26,997 tons of boiler ash in the Tennant Way Landfill on an annual basis for cover through 2010. The remainder of its boiler ash was transported to the Roosevelt Regional Landfill or Headquarters Landfill. Since November 2004, all Longview Fibre boiler ash, excluding green liquor dregs, has been disposed of at the Tennant Way Landfill at a reduced fee. The green liquor dregs have recently been sent to Headquarters Landfill. The ash is utilized as daily cover and comes into the landfill during operating hours. Ash disposed of at the landfill may total 40,000 tons per year. Ash disposal was part of the recent contract with Waste Control, which stipulates that the Longview Fibre ash will remain outside of the municipal disposal system once the landfill reaches capacity. Longview Fibre could then contract with Waste Control and or the County for disposal of the ash. With the exception of the Longview Fibre boiler ash, limited quantities of non-forest-product industrial waste and very limited quantities of forest products are handled by the County solid waste system.

Waste recycling activities on the part of municipalities have increased industrial waste volumes generated in Cowlitz County, although the current economic recession has led to a decline in overall industrial waste generation. This apparent increase in industrial waste is a result of materials that were originally diverted from the MSW stream as recyclable, which, after processing at the paper recycling mills, cannot be fully recycled and must be disposed of. The processing of newsprint and fine paper recycling by pulp and paper mills in Cowlitz County results in approximately 15 to 20 percent of the total recyclable material received becoming reject fiber, which must be managed as industrial waste.

10.12.2 Needs and Opportunities

The forest-products industry in Cowlitz County generates a very significant volume of waste that requires disposal. Most of the waste is disposed of at the Headquarters Landfill and at the Tennant Way Landfill. With the exception of boiler ash used for cover, the County allows only very limited forest-products waste disposal in the Tennant Way Landfill. The following sections identify needs and opportunities connected with specific waste streams.

10.12.2.1 Logyard Waste

Logyard waste is a mixture of soil, rock, bark, and fine organic matter that is produced in large volumes by wood-processing plants. Logyard waste usually accumulates where logs are handled, such as at rail sidings, sort yards, and log

storage yards, and under live decks at mill sites. The high inorganic content prevents it from being incinerated in a boiler, and the high organic content makes it unsuitable as a fill material.

Currently, logyard waste is processed, primarily, with smaller amounts burned, land applied, landfilled, or stockpiled. Land disposal presents environmental problems due to spontaneous combustion and leaching of acidic wood extracts into groundwater or surface water. Logyard waste presents a major solid waste disposal problem for the forest-products industry as air and water quality regulations become stricter, landfill costs increase, and land availability decreases.

10.12.2.2 Pulp and Paper Residuals

The U.S. pulp and paper industry generates approximately 100 pounds of residuals per ton of pulp. These residuals are primarily wastewater treatment solids (lost fiber, biosolids, etc.) and lime residuals (mostly inert materials from the chemical recovery process). Residuals are commonly landfilled, but alternatives do exist.

For example, wastewater treatment solids may be land-applied or incinerated. Incineration can be challenging because of the solids' high water content. However, many mills have found that incineration can be an effective strategy to recover the solids' fuel value and reduce disposal costs. Land application of wastewater treatment solids is successfully practiced at many pulp and paper facilities. Each facility must weigh the economics of this practice, versus other alternatives, on a facility by facility basis. Factors impacting the economics include available acreage, transportation distance, beneficial need, and regulatory acceptance.

Alternative techniques for the re-use of lime residuals include land application, compost amendments, and incorporation into cement-like products or road bases. As with all industrial byproducts, reuse of these residuals is subject to extensive testing and strict adherence to regulatory guidelines. Beneficial aspects and economics must be evaluated for each facility when considering these options.

10.12.2.3 Boiler Ash

Boiler ash represents one of the largest waste streams generated by the pulp and paper industry in Cowlitz County. The material generated at the Weyerhaeuser facilities is disposed of at Headquarters Landfill. A percentage of boiler ash from Longview Fibre is used as daily cover at the Tennant Way Landfill. The Headquarters landfill would be another acceptable local disposal option. Significant volumes of combustible material are diverted from land disposal by using it as a fuel to generate steam and power. The use

of woodwaste and other combustible materials as fuel should be encouraged; however, burning generates significant volumes of ash requiring specialized handling and disposal. Ash may contain trace amounts of metals and organic compounds.

10.12.3 Alternatives

10.12.3.1 Waste Exchanges

A waste or material exchange operates as a clearinghouse to facilitate the reuse of industrial materials that otherwise might be disposed of as waste. The materials may be either the by-products of a manufacturing process or surplus materials. Typical materials exchanged include acids; alkalis; inorganic chemicals; solvents; organic chemicals; oils, fats and waxes; plastic and rubber; textiles and leather; wood and paper products; and metals and metal sludges.

Currently, Industrial Materials Exchange (IMEX) in Seattle is the only waste-exchange operation in the Pacific Northwest.

IMEX

IMEX, based in Seattle, was formed by the Seattle-King County Department of Public Health. IMEX publishes a catalog every two months for free distribution.

The County could promote and facilitate the use of existing waste-exchange operations by working closely with industrial-waste generators. A waste-exchange program could be aligned with other programs, such as waste audits, office paper recycling programs, and institutional purchasing of recycled products. One approach may be to promote a waste exchange in Cowlitz County by distributing exchange newsletters free of charge to waste generators.

10.12.3.2 Composting of Logyard Waste and Pulp and Paper Sludge

Recent advances have been made in the commercial feasibility of composting woody material derived from the forest-products industry, particularly with logyard wastes that cannot be diverted into fuel applications. During the composting process, woody material is screened, hogged to yield material up to eight inches in length, and then composted in a large pile with minimal control. Bacteria and fungi degrade the organic matter to carbon dioxide and humic material, with a volume reduction of approximately 50 percent. Pile temperatures of 120°F to 180°F ensure that weed seeds and pathogens are killed and do not contaminate the final compost. Piles are mixed and aerated

with a bulldozer as needed to control the rate of composting and odors. The composting process typically requires three months but can vary from one and one-half months to a year. After composting, the material is screened to yield the desired product. The screened compost may be sold as is, or it may be mixed with soil or bark to yield a variety of products. Because of the low nitrogen content of woodwaste, an inexpensive nitrogen source such as sewage sludge or manure may be added.

Composting of pulp and paper sludge is increasingly showing promise as a reliable disposal method. Composting can be used to reduce sludge mass and thus hauling costs, reduce odor, degrade compounds that are toxic or inhibit plant growth, biodegrade chlorinated organics, and produce a high-value material suitable for horticultural and agricultural applications. Composting of pulp and paper sludge can be achieved using technologies that range from simple windrows to highly controlled, in-vessel composting systems. The rate of decomposition, stabilization, and humification can be slowed considerably for highly lignified, cellulosic wastes as compared to log sort wastes. Finished products can be used for horticultural and agricultural crop production, land reclamation, vegetation establishment, and erosion control. In some instances material is composted for several months prior to use on site. The composting process reduces mass and volume, conserving landfill space, and reduces potential leachate problems. As mentioned earlier, agricultural waste would be a beneficial addition to the composting process.

Drawbacks associated with the composting of forest-products wastes are associated with its high cost as compared to landfilling, the lack of long-term and reliable markets for the compost product, odor generation, and liability from possible contaminants.

10.12.3.3 Logyard Waste Processing

Logyard waste processing consists of separating and upgrading the material into discrete fractions that can be used more effectively on the site or sold. Several mobile and fixed logyard waste processing systems have been developed to separate logyard waste into rock, hog fuel, and fines. The rock may be used as a fill material, the hog fuel as a boiler fuel, and fines as soil amendments.

10.12.3.4 Economic Development Strategies

The County could assist forest-products industry waste recycling and reuse technologies as a future economic development strategy. Implicit in this selection would be the recognition that certain environmental technologies and services have the potential to solve existing industrial waste problems. Cutting-edge technologies and services targeted to assist the forest products industry could be attracted and may include the following:

- The composting of forest products wastes and their conversion into products that can be used safely and beneficially in the environment.
- The conversion of biomass into methane gas. Technologies are now available to convert a variety of biomass materials into efficient fuels. Solids from the process can produce soil amendments and a nutrient-rich, single-cell protein that can be processed as an organic fertilizer or as feed for animals. In 1995 the Port of Tillamook Bay, in Oregon, began operating a large-scale anaerobic digestion facility for about 15 percent of the 200 dairy farms within a 35-mile radius of Tillamook. The anaerobic digestion facility produces biogas, which is sold to the Tillamook Public Utilities Department.

Clark County is planning to construct a wood-burning heating and cooling plant in downtown Vancouver that may be a destination for wood waste generated in Cowlitz County.

Local economic development officials in Cowlitz County could identify forest-products industry waste recycling and reuse technologies as a key industry for development in Cowlitz County. These officials would work to identify pioneering technologies that yield less waste and can make industries more efficient, cost-effective, and competitive in the international marketplace. Once promising firms have been identified, local economic officials could draw in State financial support. Organizations such as the Clean Washington Center have the ability to link pioneering firms with private investors. The Clean Washington Center can also provide marketing assistance for local firms to expand both in the Pacific Northwest and worldwide.

10.12.4 Recommendations

1. The forest-products industry in Cowlitz County should encourage composting as an alternative to landfilling. It is assumed that most clean wood residues will be consumed mainly as a fuel, and do not constitute a long-term disposal problem. In contrast, logyard waste will continue to be a disposal problem, because of the high inorganic content and moisture content. Composting of logyard waste or other forest products residues could be used as a reliable waste-reduction technique.
2. Facilities are available to effectively separate logyard waste into a more valuable material and to reduce the environmental problems associated with disposal. To the extent possible, the forest-products industry and private companies in Cowlitz County should continue to separate and enhance the value of logyard waste through existing or proposed woodwaste-recycling

facilities. In addition, specific activities such as paving logyards and using steel cribs should be encouraged to prevent logyard waste contamination.

3. Consideration of an electricity-generating facility for woodwaste and associated by-products of the paper industry should be encouraged.
4. The County should continue to discourage the use of the Tennant Way Landfill as a disposal facility for forest-products waste.
5. The forest products industry should be encouraged to pave log yards to help generate the cleanest residuals for recycling.

10.13 Chapter Highlights

- There currently are adequate systems in place in Cowlitz County to deal with special and industrial waste.
- In anticipation of the closure of the Tennant Way Landfill, the County should ensure that special waste needs that are currently addressed by use of the landfill can be relocated to the Headquarters Landfill, satisfied through other commercial entities in the county, or managed through the contract with Waste Control.
- Parts of the agricultural and forest-product industry waste streams in Cowlitz County could be used to create either a marketable compost product or methane gas for energy production.

11 ADMINISTRATION AND ENFORCEMENT

11.1 Introduction

Administration and enforcement of solid waste regulations in Cowlitz County is carried out by various public entities within the County with different degrees of responsibilities. Administration of solid waste regulations is the joint responsibility of Ecology, Public Works, and the incorporated cities within the County. Responsibilities for the enforcement of solid waste regulations are distributed between Ecology, the EHU, and the solid waste enforcement officials for the cities of Longview, Kelso and Woodland.

This chapter identifies the statutes and regulations that form the basis for solid waste administration and enforcement and the agencies responsible for implementing them, discusses their effectiveness, and offers recommendations for improvements.

11.2 Existing Conditions

11.2.1 Administration

There are three agencies involved in the administration of solid waste regulations in Cowlitz County: Ecology, Public Works, and the cities.

11.2.1.1 Washington State Department of Ecology

Through Chapter 70.95 RCW, Ecology regulates the handling of solid waste in Washington State. The law assigns primary responsibility for solid waste planning and management to local governments, but requires Ecology to review and approve all plans. In the late 1980s and early 1990s, Ecology developed the Washington State SWMP and the Best Management Practices Analysis for Solid Waste as a guide for carrying out a coordinated State solid waste management program. Through WAC Chapter 173-304, it set MFS for solid waste handling. WAC Chapter 173-350 and WAC 173-351 were implemented in 2003 and 1993 respectively, replacing the MFS and implementing the RCW statute.

11.2.1.2 Cowlitz County Department of Public Works

Since 2004, Public Works had one full-time employee responsible for solid waste administration. The Public Works Solid Waste Division has the authority and responsibility to prepare and revise a comprehensive SWMP,

own and operate solid waste facilities or contract for services, and set rates and hours of operation and conditions for access to public facilities (RCW 36.58). Public Works may also contract for the collection of recyclables generated in unincorporated areas of the county.

Solid Waste Division monitors the amount of waste that enters the landfill through tonnage data collected at the entrance scales. Solid Waste Division has a software package that tracks all of the materials entering the landfill over the scale system. The Waste Control transfer station has similar tracking software in place. In addition to the information produced by the tracking software, the Solid Waste Division conducts an annual survey of the landfill to assess remaining landfill capacity and to estimate waste placement density in the landfill.

11.2.1.3 Cities

Incorporated cities may develop, own, and operate solid waste handling facilities, and are responsible for providing collection services within their own jurisdictions (RCW 35.21). Cities may also elect to develop their own SWMPs. The five incorporated cities in the county (Longview, Kelso, Woodland, Castle Rock, and Kalama) have agreed to participate with the County in updating the SWMP.

11.2.1.4 Cowlitz County Solid Waste Advisory Committee

The Cowlitz County SWAC was formed in accordance with RCW 70.95.165. The SWAC consists of appointed members and alternates from incorporated cities, business, citizens, and the solid waste industry. The County SWAC performs several critical administrative functions:

- Advises County staff and County Commissioners on solid waste management issues.
- Assists in the development, updating, and implementation of the County SWMP.
- Assists in the formation of County solid waste policies and ordinances, or rules related to solid waste.
- Meets periodically with city councils and citizen groups to exchange ideas, ask for opinions, and disseminate information on solid waste issues.
- Meets annually to review the SWMP.

11.2.2 Enforcement

The agencies involved in the enforcement of solid waste regulations in Cowlitz County are: the EHU, Ecology, and the cities.

11.2.2.1 Environmental Health Unit

The EHU took over enforcement responsibilities from the CCHD in 1999. Prior to 1993, the County/Wahkiakum Health District was the enforcing agency. The EHU is responsible for the enforcement of State statutes and regulations and of local regulations at the county level. According to RCW 70.95.170, a solid waste facility cannot receive waste without the issuance of a solid waste permit. The EHU is responsible for issuing permits for solid waste facilities. The EHU may contract any portion of its permit/enforcement program to Ecology, subject to restrictions and compliance with RCW 70.95.165. Every application for a permit is reviewed to determine whether the facility meets all applicable laws and regulations, conforms to the approved comprehensive SWMP, and complies with all zoning requirements. The EHU is also responsible for enforcing laws restricting illegal disposal. Currently, the EHU has one person who devotes about half of his or her time to solid waste enforcement activities; this contrasts to the 2.5 full-time County/Wahkiakum Health District employees responsible for solid waste enforcement activities in 1991. Funding for solid waste enforcement duties comes from Ecology grants and solid waste permit fees; additional funding comes from the County General Fund if it is needed.

11.2.2.2 Washington State Department of Ecology

Generally, State statutes do not grant Ecology a clearly defined solid waste management enforcement role; its role is primarily one of oversight. Ecology is given responsibility to review and approve SWMPs, review solid waste facility permits and provide technical assistance, appeal permit issuance to the Pollution Control Hearings Board, approve permit variances, and enforce state littering laws.

11.2.2.3 Cities of Longview, Kelso, and Woodland

The cities of Longview, Kelso, and Woodland all have abatement officers who deal with a range of general nuisance issues, including illegal dumping.

11.3 Needs and Opportunities

11.3.1 Administration

This section identifies the needs and opportunities of Public Works in the effective administration of the County solid waste system.

11.3.1.1 Solid Waste Flow Control

Flow control through ordinance and interlocal agreement was not achieved as proposed in the 1993 SWMP. The cities have maintained control of their waste and its disposal through contract mechanisms between the city and the waste hauler. Waste Control is currently under contract to haul waste from several incorporated communities to their designated disposal site, which is currently the Tennant Way Landfill. HHW is the only material that has not gone to the Tennant Way Landfill. HHW is collected at the transfer station, where it is sorted, consolidated and shipped off-site for disposal at an appropriate facility.

Additionally, the terms of the Waste Control contract have resulted in the cities signing interlocal agreements with the County for the term of the Waste Control contract, guaranteeing the disposal of MSW through the County designated disposal system (see the Interlocal Agreements in Appendix A). The G Permits for unincorporated areas of the county should require disposal within the County disposal system, which would be defined as the transfer station for the duration of the Waste Control contract. The County has an agreement with Waste Control for the disposal of incorporated areas' waste and unincorporated areas' waste as a single stream to provide the best transportation and disposal rates for MSW from county residents after the closure of the landfill. Flow control is therefore achieved through interlocal agreements and the County's contract with Waste Control.

11.3.1.2 Monitor Solid Waste Flow

The basis for payment for the disposal of solid waste through the contract with Waste Control is tonnage, which is easily and accurately measured. To ensure that proper payment is made in a timely manner, the transfer station is required to have entrance scales and a tracking system to calculate and collect the required tip fee and to generate disposal totals for the basis of payment for Waste Control. The tracking system also records waste quantities by category to assist in planning efforts. The tracking system enables the County or the cities to perform periodic audits to ensure that all money and waste are accounted for.

11.3.1.3 Evaluate Future Disposal Needs

The contract with Waste Control will provide longhaul disposal of waste through the next 24 to 34 years. The County is currently in the process of evaluating the purchase of the Weyerhaeuser Headquarters Regional landfill as a local option for receiving county waste in the future. The successful purchase would require that the Headquarters landfill be re-permitted to allow receipt of MSW, and the contract with Waste Control would need to be renegotiated to direct waste from longhaul to shorthaul. Before the end of the contract, the County should reassess the continued hauling of waste or investigate an alternate disposal method that may become available to avoid service interruption to residents. It would be necessary for this process to include time to develop infrastructure needed to implement any resulting decisions, so a review of options ten years prior to the end of the Waste Control contract would be appropriate.

11.3.1.4 Administer Disposal Contract

Public Works is providing staff to administer the contract with Waste Control to ensure that the contract terms are being met and that proper payments are made. The role of contract administration has increased with the transition of non-Waste Control commercial haulers and the public to the transfer station. In addition to normal landfill operations, the Public Works solid waste manager is required to begin planning for the closure and post-closure care of the landfill. The County should assess the need for additional solid waste staff to assist the current manager with the administration of the disposal contract and landfill operation (including closure and post-closure planning).

11.3.2 Enforcement

This section identifies the needs and opportunities of the EHU in the enforcement of solid waste regulations in Cowlitz County.

11.3.2.1 Current Program Funding

The EHU has experienced staffing variability as a result of County budget difficulties. Budget shortfalls typically have been made up through the County general fund. The EHU is in need of funding to support minimum staff needed for solid waste enforcement duties. Providing the EHU with adequate financial resources for solid waste activities will enable training or hiring of a sufficient number of specialized staff to ensure SWHS enforcement, efficient permit processing, and enforcement activities related to illegal dumping.

11.3.2.2 Illegal Disposal

Although disposal rates have been stable or have moderately increased for years, illegal disposal continues to be a problem in rural county areas. In cities, it has been frequently reported that rural residents are dumping into the city-operated containers. Large landowners are particularly hard hit, since they are often the recipients of the material, and they must clean up the material or face the prospect of being held responsible for owning an illegal dump site. In addition, as restrictions are placed on the type of solid waste acceptable at solid waste facilities, illegal dump sites increasingly contain problem waste streams, such as construction debris and car bodies, or toxic chemicals. Given the size of the county, the possibility of multiple sites scattered throughout the county, and the difficulty of gathering sufficient evidence, enforcement activities related to illegal disposal are very time-consuming. At this time, the EHU staff only responds to complaints, and does not actively patrol the county looking for illegal disposal sites. On average, there have been 110 complaints per year since the EHU took over administration and enforcement of solid waste from the County/Wahkiakum Health District in 1999. Adequate funding is needed to provide for permanent resources to meet the present volume of complaints, patrol known illegal disposal sites, and coordinate appropriate site cleanup if necessary.

The EHU's complaint tracking consists of an initial site visit for pictures and verification of illegal dumping; research of ownership, property owner, etc.; enforcement letters; follow-up public contacts, correspondence, and inspections; and court preparation and appearances, if needed. It is EHU policy to encourage voluntary compliance and avoid the use of law enforcement agencies. If there is a lack of progress, the sheriff's department becomes involved, which may result in a civil action and subsequent court date.

In addition to the general problem of adequately responding to complaints of illegal disposal, bringing charges against violators is further complicated by the evidence requirements for prosecution based on State law. The current system can consume numerous man-hours to gather sufficient evidence, conduct repeated inspections/investigations, and possibly bring court action. Updates to County Code 15.30 were adopted in 2004, which improved the enforceability of illegal dumping regulations, but the allocation of solid waste staff within the EHU is not sufficient to adequately enforce these regulations.

11.3.2.3 County Solid Waste Management Ordinance Update

County Code 15.30 was updated through Ordinance 04-061, adopted in 2004. The ordinance also repealed County Code 15.32. This update incorporated changes brought about by WAC 173-350, which primarily addresses facilities. The County code addresses illegal dumping, handling, storage, and ownership responsibilities that have been problematic in the county in the past with regard to enforcement. The County code is sectioned for facilities and illegal disposal and includes the ability to issue a civil infraction (monetary fine) or, if it is a facility violation or repeat dumping or handling violation, the authority to ask the courts to issue a misdemeanor charge. The civil infraction process is very time-consuming and therefore is used only in the most extreme cases. It has been effective when used, but a lack of staffing drives the program more in the direction of voluntary cleanup.

11.3.2.4 Non-Regulated Solid Waste Facilities

Before 2003 and the adoption of WAC 173-350, various types of facilities were exempt from regulation by the MFS and therefore were not regulated. These included inert/demolition and woodwaste landfills that receive less than 2,000 cubic yards per site, and waste tire piles of 200 to 800 tires. These categories have come to be regulated under WAC 173-350, SWHS, providing the County with a means to regulate these facilities.

Five facilities are currently operating under solid waste permit exemptions in the county under WAC 173-350: J.L. Storedahl & Sons (concrete), Lakeside Industries (asphalt), Waste Control (concrete), American Asphalt (concrete and asphalt), and Swanson Bark (wood products). Two additional facilities may be eligible for permit exemptions of their material recovery operations: Waste Control and Weyerhaeuser. The County solid waste ordinance has been rewritten so that these facilities must annually reapply for the exemptions, and the County must make annual inspections of the facilities to ensure that they are meeting the qualifications for exemption as required by County Code 15.30.200.

11.3.3 Flow Control

The County has contracted with Waste Control to provide disposal services after the close of the Cowlitz County Landfill. As agreed in the contract finalized in 2007, Waste Control will provide disposal of MSW through the transfer station to the Roosevelt Regional Landfill. It is anticipated the contract will be amended to allow for the Headquarters Landfill to become the preferred option if it is successfully purchased by the County and re-

permitted to accept MSW. The negotiations for cost were based on the current waste flows that go to the County Landfill.

The contract that the County and Waste Control have signed guarantees a minimum amount of waste to be handled by Waste Control. In order for the County to negotiate the best disposal rate for its residents, it must rely on economies of scale. The final agreed disposal fee includes all transfer costs, of which there are a significant amount of fixed costs. Examples of these fixed costs include staffing and maintaining the transfer facility. These costs are the same for a small or large volume of MSW handled at the facility. This means that a higher disposal rate would be charged for a small annual volume of MSW, but a lower rate could be applied if a larger annual volume of MSW could be guaranteed to the facility. Since a city's decision to dispose of its MSW at a different disposal facility could prevent the County from providing the amount of MSW guaranteed by the contract, the participants must establish flow control for the duration of the contract. Interlocal agreements giving control of waste disposal to the County have been established for all public entities using the County's contract for disposal with Waste Control. The interlocal agreement between the County and cities for management of MSW was executed on May 15, 2007 and is included in Appendix A.

11.4 Recommendations

11.4.1 Administration

1. The County should follow the terms of the contract with Waste Control for the disposal of county-generated MSW at Headquarters Landfill or a regional landfill after the Tennant Way Landfill closes. The final contract provides for a smooth transition for residents so that there is little confusion regarding the proper disposal options for their waste.
2. The County should continue to maintain the current interlocal agreements with the cities for MSW generated in incorporated areas, and through hauler contracts for MSW generated in unincorporated areas, requiring the use of the County disposal system. All actions are to be consistent with the County SWMP and the Waste Control contract. The interlocal agreements should continue to be for a period of time that corresponds to the Waste Control contract to ensure that all MSW generated in the county is disposed of through the County disposal system.
3. The County should continue to use and maintain its existing waste tracking system and weight scales to properly account for all waste entering the Tennant Way Landfill and the money that is generated through tip fees. In addition, the County should ensure

that tracking of waste materials and revenue are provided as described in the contract with Waste Control.

4. The County should ensure that the solid waste administration is adequately staffed to address the requirements of the Waste Control contract as well as for the landfill operation, closure, and post-closure activities.

11.4.2 Enforcement

1. The County should ensure that the EHU solid waste activities are fully funded to adequately provide enforcement activities for at least two full-time employees.
2. The EHU should implement a public education program that communicates to the public the environmental and economic consequences of illegal disposal.
3. The EHU should regularly review and update local solid waste regulations to conform to recent changes to State statutes and regulations.
4. The cities of Longview, Kelso, and Woodland should maintain their abatement officer staffing to enforce illegal dumping restrictions.
5. Consider modifying the County Code to streamline the enforcement process through the use of a Hearings Examiner and possibly establish a citizens' watch group.

11.5 Chapter Highlights

- The County has contracted with Waste Control for the disposal of county-generated MSW at a regional landfill after the County landfill closes. The prospective County purchase of the Headquarters Landfill could provide an in-county alternative for future disposal of county waste—conditioned on the successful re-permitting and purchase of the landfill, as well as the renegotiation of the contract with Waste Control to allow disposal there. The final contract provides for a smooth transition for residents regardless of the final disposal site, so that there is little confusion regarding the proper disposal options for their waste.
- The County has formalized control of the flow of MSW through the development of interlocal agreements with cities for waste generated in incorporated areas, and through hauler contracts for waste generated in unincorporated areas, requiring the use of the

County disposal system. Flow control has been resolved after executing the contract with Waste Control and the interlocal agreements with the cities.

- Staffing needs for the operation and closure of the landfill as well as for the administration of the Waste Control contract may require adding personnel to Public Works.
- The EHU appears to be understaffed in the enforcement area. The EHU's solid waste program is less than a half-time person effort. The program is administered by one person, who is also responsible for other programs that are not related to solid waste.

12 FUNDING AND FINANCE

12.1 Introduction

This chapter addresses available methods for funding costs associated with solid waste management programs and activities in Cowlitz County.

12.2 Existing Conditions

For more than 20 years, the County's solid waste programs and facilities have been funded through a combination of grants and tipping fees. Tipping fees typically provide approximately 96 percent of the overall annual solid waste budget, with the remaining revenues coming from Ecology grants (3%) and other sources (1%).

The County's solid waste programs and facilities are "self-funded" in the sense that they do not require the input of revenue from other sources of County funding. Maintaining this financial independence while providing high-quality, low-cost service requires prudent financial planning by the Solid Waste Division.

The Solid Waste Division deposits tipping fees into the County Solid Waste Fund, an enterprise fund established in December 1984 by County Resolution No. 84-257. The Solid Waste Division currently operates five programs within this enterprise fund. These programs, and a synopsis of the programs based on Solid Waste Division budget information, are as follows:

- Operations
- Equipment, Land and Facilities (ELF)
- Post-closure—Unlined Landfill
- Post-closure—Lined Landfill
- Lined Landfill Closure

Operations—The goal of the operations program is to operate the County's landfill and the Toutle drop box facility as efficiently and effectively as possible and to provide safe and sanitary disposal of the county's solid waste in compliance with federal, state, and local codes and regulations. Revenue from this program is also used to fund the other activities of the Solid Waste Division, such as HHW management and public education. Revenue not used for Operations is transferred into the other four programs.

ELF—This program was established to accumulate reserve funds for the purchase of equipment, land, and facilities for the county's solid waste facilities. This fund is also used to fund capital projects and updates to the SWMP.

Post-Closure–Unlined Landfill, Post-Closure–Lined Landfill, and Lined Landfill Closure—These three funds were established with the purpose of meeting the regulatory requirements of financial assurance contained in WAC 173-351-600. These accumulated reserve funds are used to finance landfill closure and post-closure activities. Closure activities will include capping lined landfill areas. Post-closure activities include groundwater monitoring, leachate control, and gas collection.

12.3 Current Tipping Fee

The tipping fee at the landfill is currently $37.30 per ton. This fee was authorized by County Ordinance 95-100 and went into effect in January 2007 per Resolution 08-185. The tipping fees have been fairly stable over time, with no dramatic increases or decreases. The previous tipping fee of $39.30 was in effect from 1998 to 2006. Before that the previous tipping fee of $37.47 per ton was in effect from January 1996 to January 1998, while the $35.50 per ton tipping fee listed in the 1993 SWMP was in effect from February 1990 to January 1996.

The tipping fee is established at a level to satisfy current and future financial requirements. A component breakdown of current tipping fee allocations is shown in Table 12-1.

Table 12-1
Summary of Tipping Fee Revenue per Ton (2010)

Requirement for Maintenance of Landfill	$15.38
Transfer Station Operation—Waste Control Contract	$10.94
Equipment Land and Facilities Fund	$1.65
Landfill Closure Costs	$4.00
Post-closure Fund—Lined Landfill	$3.95
Post-closure Fund—Unlined Landfill	$1.38
TOTAL TIPPING FEE	**$37.30**

A comparison of 2010 tipping fees for landfill facilities in western Washington is shown in Table 12-2. As shown in the table, the County's 2010 tipping fee was far lower than that for any other county in western Washington. Note that the different county tipping fees are probably not all based on the same levels of service or identical contractual agreements, and a direct comparison between tipping fees should not be made. However, a review of the data does help provide some context for the County's tipping fee, and the underlying funding costs of County solid waste programs, relative to those of other western Washington counties. This is especially true given that most of Cowlitz County's solid waste programs are funded through the tipping fee and state grants, i.e., no additional charges, taxes, or fees are collected from Cowlitz County residents.

The County's 2010 tipping fee was $24.72 lower than that of Kitsap County—the next lowest cost county. The County's tipping fee was also approximately $65.90 per ton lower than the average for these 18 counties, and over $68.79 per ton lower than the average for the 14 counties that export their waste to regional facilities. The County has consistently been able to provide solid waste disposal to Cowlitz County citizens, as well as to fund other solid waste management services, for far less than other western Washington counties.

Tipping fees in the future are expected to remain at $37.30 until the landfill closes in 2013. The next disposal system option (shorthaul to Headquarters Landfill or longhaul to Roosevelt Regional Landfill) will cost approximately $47 per ton when either is implemented in 2013. The reserve account known as the Equipment Land and Facilities Fund (ELF) is sufficiently well funded that the County will be able to stabilize this rate for a period of time. Eventually the tipping fee imposed by the County at the Waste Control Transfer Station will have to support the system cost. It has been anticipated that a combination of rate adjustments and subsidizing from the ELF fund would allow a gradual annual transition in rates after the landfill closes so that residents do not experience significant spikes in the tipping fee. The purchase of the Headquarters Landfill, permitting, and subsequent upgrades will necessitate the solid waste system to incur debt to complete this transaction. It is anticipated a combination of revenue bonds, reserves, and rate adjustments will be required to fund the $28 million transaction.

Table 12-2
Solid Waste Tipping Fee Survey, October 2010
(Listed in Order of Population Size)

County	Disposal $/Ton	Disposal Method
King	102.05	In-County Landfill
Pierce	112.94	In-County Landfill
Snohomish	105.00	Export—Roosevelt, WA
Clark	79.35	Export—Boardman, OR
Kitsap	62.02	Export—Arlington, OR
Thurston	110.00	Export—Roosevelt, WA
Whatcom	100.00	Export—Roosevelt, WA
Cowlitz	**37.30**	**In-County Landfill**
Skagit	89.00	Export—Roosevelt, WA
Grays Harbor	85.25	Export—Roosevelt, WA
Lewis	82.00	Export—Roosevelt, WA
Clallam	120.10	In-County Landfill
Island	115.00	Export—Roosevelt, WA
Mason	80.40	Export—Arlington, OR
Jefferson	113.96	Export—Roosevelt, WA
Pacific	98.28	Export—Arlington, OR
San Juan	225.00	Export—Arlington, OR
Wahkiakum	140.00	Export—Longview, WA
Average disposal cost for 18 western Washington counties		$103.20
Average disposal cost for four counties with active landfill		$93.21
Average disposal cost for 14 counties that export		$106.09

Source: Public Works

12.4 Funding Alternatives

12.4.1 Potential Need

A disposal fee funded program relies primarily on tipping fees with grants assisting in specific areas. In the County this disposal fee consists of the tipping fee collected at the transfer station and landfill. The amount of waste disposed of at the landfill, and thus the amount of money collected from tipping fees, could decrease for a variety of reasons. For example, if waste reduction or recycling efforts lead to decreased disposal quantities, the amount of tipping fees collected will decrease. Similarly, the amount of tipping fees will decrease if the County elects to utilize the private sector for disposal of some, or all, of the county's waste stream. If the amount of

revenue collected from tipping fees decreases, the County's current rate structure may no longer be applicable.

Program expenses that are not controlled by the County are the expenses of the recycling and MRW programs. The recycling program requires the County to pay for the removal of some recycled material categories. These expenses vary, depending on the market, and may not be offset by the revenue derived from other recycling streams. Also, the moderate-risk waste collected by the County must be disposed of at hazardous waste facilities at a high cost. The expenses associated with these programs are tracked by the County and could influence tipping fees in the future.

Approximately thirty percent of the County's total solid waste expenses are for non-operational expenses. These non-operational expenses will not decrease even if the amount of waste handled by County-owned and operated facilities decreases. These non-operational expenses include items such as funding the post-closure reserve funds for the lined and unlined parts of the landfill facility. Also, the operational expenses include elements, such as vector control, for which the incurred expenses are relatively independent of the amount of waste handled at the facility. Some expenses, such as environmental monitoring and administering the SWMP, will still be the responsibility of the County even if the County contracts for solid waste disposal. If the County is not receiving sufficient revenue from the tipping fees to fund solid waste programs, it will be necessary for the County to cut non-mandatory programs or to adjust the tipping fees to maintain the programs.

Currently under the Waste Control contract, all MSW generated within the county is sent to the Tennant Way Landfill through interlocal agreements and hauler contracts. This has the effect of granting flow control to the County until the landfill is closed, guaranteeing the tipping fees to be collected thus guaranteeing that the closure and post-closure funds are sufficient. After landfill closure, any shortfalls in the post-closure operations of the landfill or in the other ongoing solid waste program responsibilities can be addressed by adjusting the tipping fee.

12.4.2 General Categories

There are four general categories of funding alternatives available for County solid waste management programs and facilities:

- Capital Improvement Financing
  - Internal financing
  - General obligation bonds

  - Revenue bonds
  - Industrial development bonds
  - County general and road funds
- State Grants
  - Community litter cleanup program (CLCP)
  - CPG
- Disposal Fee Financing
  - Tipping fees
  - Solid waste collection fees
- Taxes
  - Property, sales, and single-item taxes
  - Solid waste disposal district
  - Solid waste collection district

This listing of general categories, and the discussion of options in each category that follows, is not intended to be exhaustive. Rather, the listing and discussion are intended to provide information related to those options that are generally the most widely used for funding municipal activities. For example, since it is unlikely that private financing would be used to fund County solid waste management programs or facilities, private financing is not discussed.

Also, privately owned and operated facilities or programs, such as Waste Control's MRF, play a role in the management of solid waste in the County; however, private sector facilities or programs are privately financed, and the private sector usually recovers costs through fees charged directly to customers. This funding discussion is intended to address funding for public-sector activities or programs. Funding for privately-owned and operated facilities or programs is not specifically addressed in this document.

12.4.3 Capital Improvement Financing

Capital improvement financing alternatives are discussed below.

Internal Financing / Disposal Fee Financing—Internal financing by cash reserves, also called disposal fee financing, is the least expensive method of funding projects or programs. This method avoids the interest costs, bond issuance fees, legal fees, and administrative overhead required by other

financing methods. Unlike restrictions imposed by debt financing, there are generally fewer restrictions when internal reserves are used, especially with regard to the required time frame of expending proceeds. Internal reserves are initially collected in the form of disposal fees, and consist of contributions made to the ELF Fund. This is the primary method of financing currently being used by the County's Solid Waste Division.

General Obligation Bonds—General obligation bonds pledge the full faith and credit of the County that payment on the bonds will be made to the bondholders. There are two forms of general obligation bonds, non-voted and voted. The State of Washington establishes the maximum limit (debt ceiling) of general obligation debt that municipalities are allowed to have outstanding at any time. Funds generated by solid waste tipping fees would be used to pay the debt service. In case of default, County general funds would ultimately be responsible to the bondholders.

Debt ceiling is not the only concern when considering issuance of general obligation bonds. The County must also consider the programmatic impacts of using its full debt capacity on one particular fund or project. For example, funding the recommended programs of the SWMP with general obligation bonds could expend a substantial portion of the County's debt limit, thus leaving little debt allocation for other projects. Submitting a general obligation bond issuance to a vote by the citizens would be time-consuming, and the outcome would be uncertain. Such bond proposals have a poor history of gaining approval in most areas of Washington, being subject to defeat for a variety of reasons. These reasons are often unrelated to the merits of the programs, or the citizens' perceptions of system needs.

Revenue Bonds—Revenue bonds pledge the revenues of an enterprise activity against the debt service on the issued bonds. They do not require voter approval because they depend on the revenues from enterprise activity rather than the full faith and credit of the County. Due to factors such as higher interest rates, coverage requirements, and bond reserves, the cost of this type of bond is usually higher than non-voted general obligation bonds. State limitations on debt ceiling do not apply to revenue bonds.

The use of revenue bond financing would place a higher priority on a guaranteed waste stream and thus a guaranteed revenue base, because the collateral for these bonds would exist solely in the revenue of the Solid Waste Division's enterprise fund. Waste flow control measures are usually required for revenue bonds. This means that all participating municipalities would have to sign a formal agreement committing their waste streams to the County for a period that meets or exceeds the term of the bond issue. In addition, it would be necessary for the County and the municipalities to issue waste handling contracts that require disposal at facilities in the county and ensure that revenue is properly received through tipping fees.

Industrial Development Bonds—Industrial Development Bonds may be issued if the County is considering a joint venture arrangement with a private enterprise as a means for financing all or part of a capital improvement project. Although these bonds provide a viable financing alternative, they would have to compete with other projects in the state for a portion of the allocation under the statewide cap for such bonds. Resource recovery facilities are commonly financed by Industrial Development Bonds.

County General and Road Funds—The County could consider using money from established County funds such as the general fund or the road fund to pay for costs related to solid waste management. (The use of road fund money for County services provided in the unincorporated areas of the county is allowed by RCW 36.33.220.) However, this may not be politically acceptable, and there are often restrictions or limitations associated with the use of County funds for purposes other than that for which they were established.

In recent years, solid waste enterprise fund money has been temporarily loaned to other County and agency funds. Currently there is approximately $3,700,000 in loans outstanding to the solid waste fund. As the solid waste system utilizes more of its funds, less will be available for loans to other funds.

12.4.4 State Grants

Historically, the County has successfully obtained state grant money to fund a number of solid waste activities. For example, the County received over $245,000 in Referendum 26 and 39 grant money for construction of the compost facility at the landfill in 1997. Referendum 26 and 39 grant money was also used for most of the initial capital costs of the old, unlined County landfill. The County will continue to actively pursue grants to offset the costs associated with its solid waste management programs and facilities.

Ecology's Solid Waste and Financial Assistance Program currently administers two grant programs that are viable funding sources for the County's solid waste activities:

- CLCP—Provides money to local governments to clean up litter and illegal dumps and to educate the public.
- CPG program—Helps local governments develop and implement their hazardous waste plans and SWMPs.

CLCP Grants—This source of funding has been used in County by the Department of Corrections. The current CLCP grant (July 1, 2011, to June 30, 2013) is for $62,955 all of which is for litter and illegal dump cleanup

throughout the County. The County has used grants of similar amounts for similar purposes since 1998.

CPG Grants—Ecology began the CPG program in 1991 to provide funding for prevention and minimization of future contamination from solid and hazardous waste disposal. The funding is available on a biannual basis, and the County has successfully participated in the CPG program every biennium since the program's inception.

Ecology allocates funds for the CPG program, using a base amount for each county plus a per capita amount. However, these funds are not automatically given to the counties, and qualified projects must go through an application and approval process before receiving funding. Ecology usually does not authorize the total amount of funding requested in the County's grant applications. The projects can include local cities; however, the grant is submitted under the auspices of the County. Counties are also responsible for administering the grants. Ecology currently requires that matching funds equal to 25 percent of the project costs be provided by the grant recipient. Ecology has published grant guidelines that explain specific details of the CPG program.

The CPG program is funded by money in the Local Toxics Control Account, and RCW 70.105D.070 contains a hierarchy for spending from this account. In this hierarchy, hazardous waste plans and programs under 70.105 RCW have precedence over solid waste plans and programs under Chapters 70.95, 70.95C, 70.95I, and 70.105 RCW. An important ranking and approval element is that the activity must help implement an action identified in an Ecology-approved hazardous waste plan or SWMP. Solid waste disposal oriented activities or programs usually are not grant-eligible, though some solid waste capital expenses may be grant -eligible.

Public Works has previously prepared coordinated grant applications with the EHU and the cities of Kelso, Longview, and Woodland. The cities of Castle Rock and Kalama have not participated in the CPG program because of the matching fund requirements and the per capita distribution amounts to small grant sums available to small cities. A history of the grant money authorized by Ecology, broken down by grant recipient, is shown below in Table 12-3.

Table 12-3
Coordinated Prevention Grant History
Cowlitz County Landfill

Cowlitz County Landfill

Year Funding %	Project	2010-2011 75%	2008-2009 75%	2006 - 2007 75%	2004-2005 75%	2002-2003 75%	2000-2001 60%	1998-1999 60%
Cowlitz	HHW - Disposal	149,250	176,000	150,000	180,604	154,500	150,000	173,432
	HHW - Educ	-		-	-	13,575	9,000	-
	SQG - Waste	-		-	-	7,380	9,000	9,000
	WRR - Education	-			-	13,950	9,000	6,600
	WRR - Capital	21,750	20,000	28,000	15,400	6,600	9,000	-
Longview	WRR - Education	90,536	61,312	50,265	45,840	42,525	47,597	23,537
	WRR Capital			-	5,000	-	-	-
Kelso	WRR - Education	29,777	20,329	30,000	20,237	21,500	27,871	39,288
Woodland	WRR - Capital	-	-	-	-	-	-	35,594
EHU/Health	Enforcement	113,917	106,846	103,744	132,000	153,846	153,846	153,846
Total		405,230	384,487	362,009	399,081	413,876	415,314	441,297
Local Match		72,828	69,410	77,048	85,674	79,998	172,880	154,523
State Match		332,402	315,077	334,889	389,023	393,839	413,166	385,630

Note: In some years Longview and Kelso have not spent the entire authorized amount shown.
WRR=waste reduction and recycling
SQG=small-quantity generator
HHW=household hazardous waste

Although the money received by Public Works has been used for a variety of activities, Public Works has used most of the grant money for implementation of the County's moderate-risk waste collection and disposal program. A partial listing of projects funded in whole or in part with this money includes:

- Operation of the moderate-risk waste facility at the County landfill.
- Installation of used oil and antifreeze drop-off facilities in Castle Rock, Cathlamet, Kelso (two locations), Longview (three locations), Kalama, Ryderwood, Toutle, and Woodland. These facilities are available to the public 24 hours a day, seven days a week.
- Holding mobile HHW (moderate-risk waste) events. Currently, annual events occur in Castle Rock, Cathlamet, Kalama, Ryderwood, and Woodland.
- Development and distribution of educational material related to HHW, waste reduction, and recycling.
- Participation in local events such as the County Fair and Earth Day activities.
- Implementation of the SQG program.
- Providing technical assistance and education materials to SQGs and acting as liaison between SQGs and applicable enforcement agencies.
- Purchasing and distributing residential home compost bins and residential used motor oil receptacles.

The cities typically use their grant money to implement recycling programs, while the EHU usually uses its money for enforcement and permitting activities.

12.4.5 Tipping Fee Financing

Tipping fee financing places the cost burden of the solid waste system on the individuals and collectors, both public and private, who use the system. Under this alternative, tipping fees are based on the amount of waste generated by the user or delivered to the disposal site. Waste quantities are generally measured on a volume or weight basis.

As previously mentioned, the County currently funds most of its solid waste facilities and programs via tipping fees collected at the landfill. These tipping fees are then directed into an enterprise fund. As with any funding

alternative, there are advantages and disadvantages to a tipping fee based system. The following advantages were significant factors in the County's decision to use and maintain such a system:

- Disposal system operating costs are borne by system users in direct proportion to their level of use.
- Funds are not diverted to the disposal system from other needed County funds or programs.
- A direct cost motivates the system user to implement waste reduction or recycling measures.
- A direct cost encourages system users to be more aware of issues impacting solid waste management, including the purpose of the fee and the use of funds generated by the fee.

Potential disadvantages of a tipping fee system include:

- Moving toward waste reduction and recycling goals leads to a decrease in collected tipping fees.
- High disposal fees increase the likelihood of illegal dumping.

Tipping Fees—Tipping fees provide the most direct means of charging users for solid waste services. These charges are assessed at the point of disposal and are generally based on either volume or weight. These fees are set to recover all costs for current operation and future closure of facilities, as well as to accumulate reserves for internal financing of capital expenses. A portion of the fee is used to for local government solid waste planning and administration expenses. The fees are applied to all loads, although different types of loads may be charged a different fee. The waste collection companies recover the cost of the tipping fee by charging their customers directly.

If the receiving facility is privately owned, the tipping fee is usually set through a contract with the appropriate jurisdictional authority. Additional services provided by the jurisdiction are paid for either by an amount included in the tipping fee or through alternative public sector funding mechanisms.

Solid Waste Collection Fees—Solid waste collection programs may utilize user charges to pay for services. Fees are billed directly to the generators either by the refuse hauler or by local government, usually on a volume basis, e.g., a 5-cubic-yard dumpster. The collection fee usually covers all costs of solid waste management, including collection, transfer, administration, and disposal.

If the fees associated with collection, transfer, and disposal are billed by the refuse hauler in unincorporated areas, the County can still recover the costs associated with administering County programs. RCW 36.58.045 states, in part, "any county may impose a fee upon the solid waste collection services of a solid waste collection company operating within the unincorporated areas of the county, to fund the administration and planning expenses that may be incurred by the county in complying with the requirements in RCW 70.95.090. The fee may be in addition to any other solid waste services fees and charges a county may legally impose." The County must notify the Washington Utility and Transportation Commission and the affected collection companies 90 days prior to implementing the fee.

If the fees associated with collection, transfer, and disposal are billed by the refuse hauler in incorporated areas, the County will also need to enter into interlocal agreements with the cities in order to recover County administration and planning expenses. The SWMP would then have to be updated to reflect the interlocal agreements.

12.4.6 Taxes

Property, Sales, and Single-Item Taxes—Although these taxes may generate substantial revenue, they are not widely used as a means of recovering the expenses of solid waste management services. This is because the taxes are typically of the single-item variety. The single-item tax is a sales tax levied on individual products such as batteries or tires that traditionally present disposal problems, or items such as disposable diapers that constitute a notably large portion of the solid waste stream.

The ease of implementing and administering the tax, the possibility of tax noncompliance, the potential for under-collection of revenues and the extent of public support for the tax must be considered when using solid waste taxes. In addition, there are often legal constraints affecting state and local options in levying solid waste taxes. Federal restrictions on taxes may include prohibition of taxes that could impede interstate commerce or that discriminate against certain products and materials. Certain taxes would require the passage of a code ordinance by the County Commissioners, a vote by county residents, or the establishment of enabling state legislation.

Solid Waste Disposal District—A solid waste disposal district is an authority with the power to levy and collect taxes. Specifically, RCW 36.58.140 states, in part, "A solid waste disposal district may levy and collect an excise tax on the privilege of living in or operating a business in a solid waste disposal taxing district sufficient to fund its solid waste disposal activities...." RCW 36.58.150 also gives solid waste disposal districts the authority to issue general obligation bonds or revenue bonds. This chapter of the RCW also provides detail regarding the levy and taxation authority of such a district.

RCW 36.58.100 gives the legislative authority of any county with a population of less than one million the permission to establish one or more of these districts. If a county reaches an agreement with cities or towns, a disposal district may include all or part of the incorporated areas in a county. The rules for establishing, modifying, or dissolving solid waste disposal districts are given in Chapters 36.58.110 and 36.58.120 of the RCW.

12.5 Transfer Station

Waste Control currently operates a transfer station on its property adjacent to their MRF in Longview, which is approximately 3 miles from the existing Tennant Way Landfill. Since July 1, 2009 public and commercial waste drop-off activities have been shifted from the Tennant Way Landfill to the transfer station, although waste continues to be transferred to the Tennant Way Landfill for disposal. Under the Waste Control/County contract, waste will be transferred to the Roosevelt Regional Landfill from the Waste Control transfer station following the close of the Tennant Way Landfill. If the proposed County purchase of the Headquarters Landfill is completed and the Headquarters Landfill is re-permitted to accept MSW, then the Waste Control/County contract will be revised to direct waste to be transported from the transfer station to the Headquarters Landfill following the close of the Tennant Way Landfill.

12.6 Headquarters Landfill

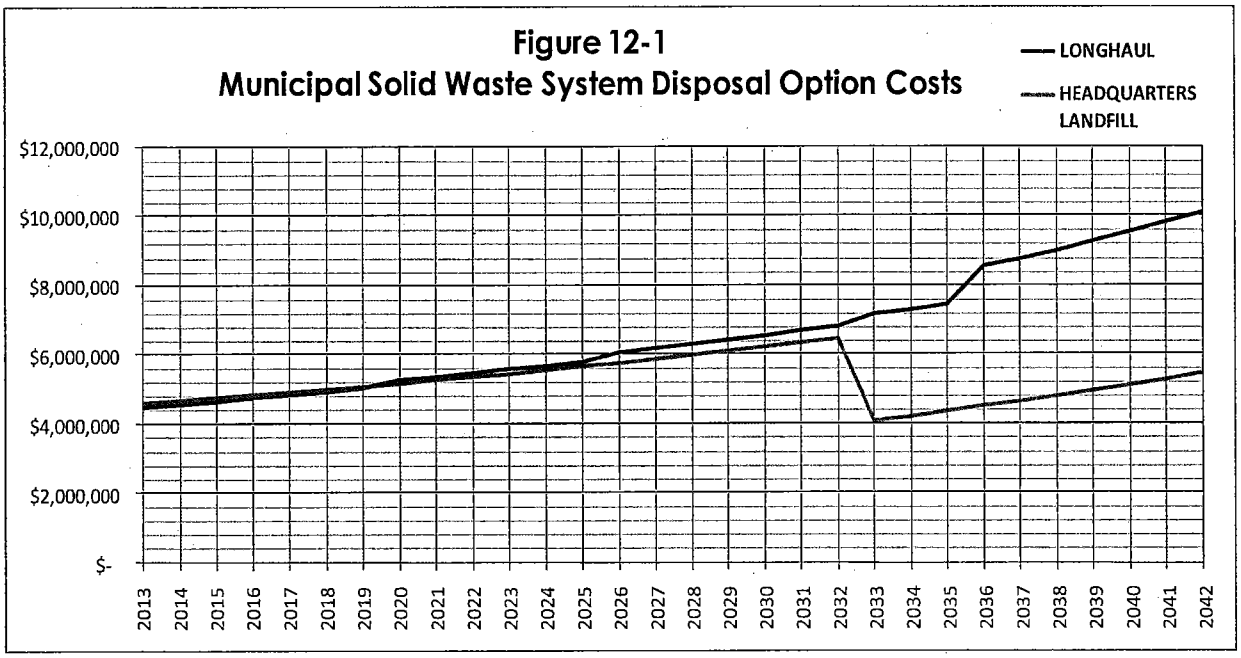
The County is currently negotiating the purchase of the Weyerhaeuser Headquarters Landfill. Should re-permitting of this limited purpose landfill to a municipal solid waste landfill be successful then the Headquarters Landfill will become the preferred option for long term disposal of the County waste stream.

The decision to pursue the purchase of the Headquarters Landfill is based on an evaluation of the comparative cost benefit realized from short-hauling the county's MSW to an in-county landfill versus long-hauling MSW to dispose in Klickitat County (approximately 180 miles away). Table 12-4 demonstrates the long-term MSW disposal system cost savings realized from the purchase of the Headquarters Landfill. Long-haul costs include transfer, long-haul transport, and disposal fees at the Rabanco Landfill. Headquarters Landfill costs include transfer, short-haul transport, in-County disposal fees at the Headquarters Landfill, and debt service on the bond used to partially fund the landfill purchase. The chart shows that costs of the two options remain roughly the same until the twenty-year bond on the Headquarters Landfill option is fully paid off in 2032. Once the bond is repaid, the annual cost of the MSW system with in-County disposal at Headquarters Landfill decreases by approximately $3 million compared to the long-haul option. Based on this long term savings the Headquaraters Landfill is the preferred disposal option

since the $3 million annual savings in 20 years would be realized annually for the remaining 90 years of the anticipated 110 year operational life of the landfill.

The $19 million purchase price of the Headquarters Landfill, along with the anticipated $8.5 million in permitting and capital improvement costs, will necessitate the County to issue revenue bonds. The existing Equipment, Land and Facilities Fund (ELF) reserves will assist with the monetary requirements along with potential increase(s) in the tipping fee to support the increased operational and debt service costs. All three sources will be evaluated to maintain a solvent waste disposal system. The preferred funding mechanism to achieve this goal is to sell revenue bonds.

Figure 12-1
Municipal Solid Waste System Disposal Option Costs



12.7 Estimated Costs for SWMP Recommendations

The estimated expenses for specific recommended SWMP implementation actions are discussed in Chapter 13. The estimated expenses are based on the assumption that the existing funding structure will be maintained.

It is understood that the overall cost of the MSW disposal system will increase over time – as shown for the disposal options in Table 12-4. The cost of the long-haul disposal system increases generally with the Consumer Price Index in accordance with the Waste Control agreement to cover the costs associated with long-hauling waste. In the event that the Headquarters Landfill is purchased, the cost of the MSW disposal system increases in order to satisfy debt service on the bond for the purchase and operation of the

transfer station and landfill. In both cases the system cost increase is subsidized through the reserves in the ELF fund. As discussed in Section 12.3 the tipping fee under either option will initially be approximately the same and increase annually around the rate of inflation over the next 20 year period.

12.8 Recommendations

1. Continue to finance the daily operation of the solid waste management system through disposal fees, grants and reserve funds. Long term planned capital acquisitions and initial development costs, specifically acquiring the Headquarters Landfill, shall primarily be funded through bonding. Expenditures for solid waste management should continue to be paid from the existing Solid Waste Fund. This is a policy decision of the Board of County Commissioners, and as conditions or circumstances change, modifications may be made without formal update or amendment to this SWMP. Those long-term capital acquisitions not originally established as part of the SWMP should be financed through solid waste tipping fees and internal reserve funds.
2. Monitor and pursue state and local grant funding opportunities to the maximum extent possible, specifically for waste reduction and recycling programs.
3. Continue to evaluate private sector financing, ownership, and operations of solid waste facilities to better serve the County, such as a south county transfer station or drop off locations for tires and appliances. Funding and ownership should be evaluated for each project. Such evaluation should be based on criteria that provide system users with the most efficient and cost-competitive solid waste system.
4. During the annual SWMP review, the SWAC should conduct a review of the County solid waste financial plan, capital needs acquisition, and the County disposal fee to ensure that solid waste programs are paid primarily through direct user fees. A written summary of this review should be provided to the Board of County Commissioners and to the cities.
5. The County should manage reserve funds and the tipping fee schedule so that county residents do not experience a significant spike in tipping fees.

12.9 Chapter Highlights

- County's solid waste programs are self-funded.
- County purchase and development of Headquarters Landfill will require significant bonding.
- County's tipping fee is significantly lower than that of all other counties in western Washington.
- County's tipping fee will continue to be cost-effective.

13 IMPLEMENTATION

13.1 Introduction

The purpose of this chapter is to outline the planning process followed in the development of the Plan, identify implementation responsibilities, identify implementation actions, and identify an overall implementation schedule.

13.2 Planning Process

The preparation of the 2012 Cowlitz County SWMP began in late 2010 and proceeded through December 2011. All draft chapters and subsequent revisions of the 2012SWMP have been reviewed by the SWAC. The County SWAC is made up of citizens, solid waste industry representatives, industry representatives, and local elected officials. All jurisdictions have designated the County as the lead agency for solid waste planning, and have, through their participation in the SWAC and signed resolutions of concurrence, indicated their intent and commitment to adopting the 2012 County SWMP.

A SEPA checklist was prepared along with the SWMP. During the review process for the SWMP, the SEPA checklist will be submitted to Building and Planning for review. The findings of Building and Planning will be added to the SEPA checklist appendix of the SWMP when the final draft of the SWMP is prepared.

If Building and Planning issues a Determination of Non-Significance, no further action is required other than to include the notice with the final draft of the SWMP. If Building and Planning issues a Determination of Significance, then the County will be required to prepare an Environmental Impact Statement.

The draft 2012 County SWMP will be reviewed by Ecology, the UTC, the EHU, the public, and all local jurisdictions represented on the SWAC (Castle Rock, Kalama, Kelso, Longview, and Woodland). A comment period will be provided for written comments on the draft SWMP. The draft will be made available at local government offices and public libraries for the entire comment period. During the comment period, Public Works will hold public hearings on the draft SWMP. The public will also be invited to comment at the SWAC during the SWAC meetings. Public Works will revise the preliminary draft SWMP as necessary to address comments received from all parties. The revised draft amendment will then be submitted to Ecology for final review.

Once Ecology indicates that the revised draft SWMP is ready for local adoption, all participating jurisdictions will be encouraged to adopt the SWMP. Resolutions of adoption will be obtained from all participating jurisdictions. After adoption by all jurisdictions intending to do so, the final draft SWMP will be submitted to Ecology for final approval. After Ecology approves the final draft Amendment, implementation of the 2012 County SWMP will begin.

13.3 Implementation Responsibility

Solid waste management is governed by the laws and regulations of federal, state, and local governments. These laws and regulations create the legal framework defining roles and responsibilities. The following section discusses the roles and responsibilities of local government in the management of solid waste in Cowlitz County.

13.3.1 Waste Reduction and Recycling

Waste reduction and recycling is a fundamental strategy and top priority for solid waste management in Cowlitz County, and is a critical element of the County SWMP. Local governments (cities and the County) are responsible for designing and implementing recycling programs that will collectively achieve a state-wide recycling rate of 50 percent. Each city should implement local waste reduction and recycling programs as directed by this plan.

13.3.2 Collection

The cities in Cowlitz County manage the solid waste collection systems, including the establishment of rates to pay for the service. Cities are responsible for ensuring that their solid waste collection system, whether public or privately owned, are in compliance with the County SWMP.

Although the County may contract for the collection of recyclable materials from residences in unincorporated areas, the County is explicitly prohibited from operating a solid waste collection system. Solid waste collection in the unincorporated areas of the county is regulated by the UTC.

13.3.3 Disposal

It is the responsibility of the County to ensure that a long-term disposal system is available for MSW. The County SWMP is required to describe existing solid waste disposal handling facilities and assess the need for solid waste handling facilities for 20 years into the future.

13.3.4 Education and Public Involvement

Comprehensive education is to be conducted throughout the county so that people are informed of the need to reduce, source separate, and recycle solid waste. Educational programs are required to be developed as part of the local comprehensive SWMP (Chapter 70.95 RCW).

The County is responsible for ensuring that the public has a chance to participate in the decision making process. This will be accomplished by holding public meetings on the SWMP and other solid waste issues, providing adequate public notice of SWAC meetings, establishing a comment period during which citizens may submit written comments on the proposed plan, distributing informational brochures, and soliciting ideas from citizens.

13.3.5 Solid Waste Permits

The EHU is responsible for issuing permits for solid waste handling facilities. The EHU reviews applications for a solid waste permit to establish, alter, expand, improve, or continue to use a solid waste handling or disposal facility. The EHU must investigate every application to determine whether an existing or proposed site and facilities meet all applicable laws and regulations, conform to the approved County SWMP, and conform to all zoning, shoreline, and other requirements. Applicants must secure all necessary permits before a solid waste permit can be issued. The EHU has sole jurisdiction for issuing and suspending permits in accordance with locally adopted rules and state regulations.

The Board of County Commissioners must adopt regulations or ordinances governing solid waste handling that are as stringent or may be more stringent than the MFS, SWHS, and/or the CMSWL. The EHU enforces the SWHS and CMSWL with oversight and technical assistance from Ecology (Chapter 70.95 RCW).

13.3.6 Solid Waste Management Planning

The County has responsibility for solid waste planning and management. The County, in cooperation with the cities, is required to prepare a coordinated, comprehensive SWMP. The County SWMP is to be prepared in accordance with Chapter 70.95 RCW, Ecology's Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions, and the Cost Assessment Guidelines published by UTC in accordance with RCW 70.95.090(8).

13.3.7 Implementation

It is the responsibility of the County and the cities to begin implementing programs following the adoption and approval of the 2012 County SWMP. The County and the cities are required to adopt regulations or ordinances governing solid waste handling to implement the 2012 County SWMP (Chapter 70.95 RCW).

13.3.8 Reporting

Municipalities that provide their own solid waste disposal are required to report annual tonnage information to Ecology.

13.3.9 Solid Waste Advisory Committee

The County is required to establish a local SWAC to assist in the development of programs and policies concerning solid waste management. The SWAC also reviews and comments on proposed rules, policies, and ordinances before their adoption. The SWAC is advisory only. The committee makes recommendations to the County Board of Commissioners, which makes final decisions after considering committee recommendations and other available information. The County SWAC elects its own chairperson, adopts its own bylaws, and conducts its own meetings in accordance with the Ecology Solid Waste Planning Guidelines.

The County SWAC is also responsible to annually review the SWMP and assess the implementation of the recommendations contained within the plan. The written summary of the assessments made during this review are provided to the Board of County Commissioners and to the cities.

13.4 Recommended Implementation Actions

The following is a list of implementation actions for the County, cities, the EHU, private haulers, and private businesses. The list is derived from the recommendations section of each chapter contained in this SWMP. For implementation actions that will result in an expenditure by the County, a reference number is provided in parentheses to locate the item in Table 13-1, which serves as a schedule and summarizes implementation costs.

CHAPTER 1—INTRODUCTION AND BACKGROUND

Cowlitz County

- The SWAC shall conduct an annual review of the County SWMP and assess progress towards achieving recommendations. A

written summary of the SWAC's findings shall be provided to the Board of County Commissioners and the Cities (Table 13-1, Item 1a).

- Prepare an update of the County SWMP every five years (Table 13-1, Item 1b).

CHAPTER 2—WASTE STREAM DESCRIPTION

Cowlitz County

- Refine waste characterization information as it becomes available from Ecology or elsewhere and continue to increase detail of information on a jurisdictional basis (Table 13-1, Item 2a).
- Track, cooperatively with Waste Control, quantities of all recycled MSW (Table 13-1, Item 2b).
- Track, cooperatively with Weyerhaeuser, quantities of waste diverted and recycled by Weyerhaeuser and factor into county-wide recycling and waste reduction quantities (Table 13-1, Item 2b).
- Maintain a fairly constant rate of material disposed of, despite increases in population, through effective recycling.

CHAPTER 3—WASTE REDUCTION

Cowlitz County

- Develop ongoing public education and awareness programs for waste reduction and recycling (Table 13-1, Item 3a).
- Continue to support home composting programs (Table 13-1, Item 3b).
- Continue to provide funding for the local home composting demonstration site at the Cowlitz County Fairgrounds and support compost training (Table 13-1, Item 3c).
- Continue to support the state developed reuse website, 2-Good-2-Toss (www.2good2toss.com). (Table 13-1, Item 3d)
- Continue and expand group and school presentations (Table 13-1, Item 3a).
- Provide technical assistance to nonresidential generators to encourage them to evaluate their processes and policies that affect waste generation (Table 13-1, Item 4c).

- Continue to follow in-house waste reduction programs and procurement policies (Table 13-1, Item 3e).
- Coordinate with the cities to continue to track waste reduction, recycling, and disposal (Table 13-1, Item 2b).

Cities

- Develop ongoing public education and awareness programs for waste reduction and recycling.
- Develop or continue to follow in-house waste reduction programs and procurement policies.
- Continue to support home composting programs.
- Continue to provide funding for the local home composting demonstration site.
- Longview and Kelso should continue to support, and other cities should consider supporting, the state-developed reuse website, 2-Good-2-Toss (www.2good2toss.com).
- Continue and expand group and school presentations.
- Coordinate with the County to continue to track waste reduction, recycling, and disposal.

CHAPTER 4—RECYCLING

Cowlitz County

- Evaluate residential curbside recycling in the designated unincorporated urban areas of Cowlitz County (Table 13-1, Item 4a).
- Design and implement a program to provide multimaterial drop-off centers for the designated areas of Cowlitz County (Table 13-1, Item 4b).
- Ensure implementation of the multifamily recycling program within the designated unincorporated urban areas of Cowlitz County (Table 13-1, Item 4a).
- Provide technical assistance to businesses and institutions county-wide to encourage the development of in-house waste reduction and recycling programs (Table 13-1, Item 4c).

- Develop a program to monitor nonresidential recycling activities, and build a comprehensive list of generators in the county (Table 13-1, Item 4d).
- Continue to provide a commercial recycling collection route available to all commercial businesses in the designated urban service area.
- Encourage commercial generators in outlying areas of the county to use multimaterial drop-off centers.
- Lead by example in the implementation of department-wide recycling programs.
- Evaluate contracting policies to encourage contractors to segregate yard waste.
- Continue use of 3-acre compost pad at landfill for yard waste disposal.
- Evaluate pay-as-you-throw waste programs to reduce waste stream volume (Table 13-1, Item 4e).
- The County should encourage the development of commercial composting facilities in-county to provide capacity for additional yard and food waste.
- Develop long-term agreements with compost end-users to serve as a reliable market for processed material.
- Accumulate 21,000 cubic yards of composted soil for landfill closure cover of Cells 3A and B, and reapplication over closed Site A, as needed.
- Develop and distribute educational materials dedicated to recycling opportunities in the county (Table 13-1, Item 3a).
- Develop a waste reduction and recycling theme and a portable display for use at county events (Table 13-1, Item 4f).
- Coordinate educational activities with cities; haulers; and private, nonprofit organizations.
- Evaluate educational programs routinely through public feedback and measurement of program performance (Table 13-1, Item 4g).
- Maintain websites that provide information to the general public related to recycling and disposal of hazardous household waste.

Cities

- Evaluate pay-as-you-throw waste programs to reduce waste stream volume.
- Coordinate educational activities with the County; haulers; and private, nonprofit organizations.
- Evaluate educational programs routinely through public feedback and measurement of program performance.
- Provide technical assistance to businesses and institutions to encourage the development of in-house waste reduction and recycling programs.
- Lead by example in the implementation of department-wide recycling programs.
- Evaluate contracting policies to encourage contractors to segregate yard waste.
- Continue residential curbside recycling for single-family households in the designated incorporated urban areas of Cowlitz County.
- Continue the multifamily recycling program within the designated incorporated urban areas.

CHAPTER 5—SOLID WASTE PROCESSING

Cowlitz County

- Continue recyclables processing services through the Waste Control MRF.
- Develop capabilities at the Waste Control MRF to handle additional components of the waste stream.
- Continue operation of the yard waste composting system.
- Evaluate curbside collection of yard waste (Table 13-1, Item 5a).
- Evaluate fee reduction for yard waste at the landfill to encourage separation (Table 13-1, Item 5a).
- Promote the use of backyard composting (Table 13-1, Item 3b).
- Subsidize home composting bins (Table 13-1, Item 3b).
- Continue to pursue possibility of supplying landfill gas to local industries.

CHAPTER 6—SOLID WASTE COLLECTION

Cowlitz County

- Continue to evaluate the establishment of a solid waste collection district to include the designated unincorporated urban areas not currently receiving service, in order to implement mandatory collection and curbside recycling (Table 13-1, Item 6a).
- Encourage collection of source-separated CDL and inert waste by haulers in unincorporated areas (Table 13-1, Item 6b).
- Encourage collection of yard waste and special wastes independently from MSW (Table 13-1, Item 6b).
- Work with the EHU to eliminate illegal dumping (Table 13-1, Item 6c).
- Work with UTC to expand service boundary to residential customers between the Waste Control (G-101) and Waste Connections (G-253) boundaries on Lewis River Road.

Cities

- Work with the EHU to eliminate illegal dumping.

CHAPTER 7—SOLID WASTE TRANSFER

Cowlitz County

- Continue the existing level of service at the Toutle drop box facility in the north county area.
- Continue to implement the terms of the contract with Waste Control to provide collection services for all residential and commercial non-recyclable waste at the transfer station for all commercial and self-haulers. (Table 13-1, Item 7a).

CHAPTER 8—SOLID WASTE DISPOSAL

Cowlitz County

- The Tennant Way Landfill should remain open until it reaches capacity.
- Implement the terms of the contract with Waste Control concerning waste-export opportunities associated with Waste Control's transfer station to ensure necessary disposal capacity for the 20- to 30-year planning period (Table 13-1, Item 7a).

- Amend the contract with Waste Control to direct waste material coming from the transfer station to Headquarters Landfill before considering out-of-County landfills.
- All public disposal facilities in Cowlitz County must continue to be permitted and meet the MFS and CMSWL for operation, closure, and post-closure.
- All public landfills operating in Cowlitz County must continue to have reserve accounts to fund closure construction and post-closure maintenance and monitoring.
- Continue existing programs to ensure that toxic and dangerous materials do not enter disposal facilities, in accordance with the Cowlitz County Moderate Risk Hazardous Waste Management Plan.
- The County should continue to monitor local industries for opportunities to partner in a landfill gas pipeline project for energy recovery of landfill gas generated by the Cowlitz County Landfill.

Environmental Health Unit

- Continue to enforce compliance with the MFS and CMSWL operating permits, and SWMP elements for all solid waste facilities in the county.
- Ensure that all landfills located in Cowlitz County are permitted and meet the SWHS or CMSWLF for operation, closure and post-closure.

Private Sector

- Provide recycling opportunities at private disposal facilities as well as procedures to identify and remove potentially hazardous materials.
- Continue existing programs to ensure that toxic and dangerous materials do not enter private disposal facilities, in accordance with the Cowlitz County Moderate Risk Hazardous Waste Management Plan.
- All private landfills operating in Cowlitz County must continue to have reserve accounts to fund closure construction and post-closure maintenance and monitoring.
- All private disposal facilities in Cowlitz County must continue to be permitted and meet the MFS and CMSWL for operation, closure, and post-closure.

CHAPTER 9—SOLID WASTE IMPORT AND EXPORT

Cowlitz County

- Current Cowlitz County solid waste import and export activities should be permitted to continue.
- Develop interlocal agreements with Wahkiakum and Clark counties recognizing current solid waste import and export activities (Table 13-1, Item 9a).
- Require new or expanded solid waste facilities to address the impacts associated with solid waste import activity during either SEPA review or the special use permit application process.
- The County should develop contingency plans with neighboring counties to allow for emergency export or import, depending on the situation and use of transfer/long-haul systems, should short term system issues develop.
- The County should continue to evaluate the purchase of the Headquarters Landfill and the possibility of re-permitting it to receive county MSW. The County should commit to maintain the condition in the permit that allows the Headquarters Landfill to receive up to 35% (350,000 cu yd) of imported waste.

Environmental Health Unit

- Develop procedures to track the source, type, and quantity of solid waste received by all solid waste facilities located in Cowlitz County.
- Review disposal facility import quantities. For facilities receiving more than 10 percent from sources out of county, an expanded operating permit would be required to ensure that the waste import activity does not adversely impact public health and safety.
- Track source, type, and quantity of solid waste as part of the annual operating permit process.

CHAPTER 10—SPECIAL AND INDUSTRIAL WASTES

Cowlitz County

- Develop waste reduction and recycling educational materials for distribution to CDL waste generators (Table 13-1, Item 10a).

- Conduct a construction site reuse and recycling pilot project, summarize results, and make information available to contractors (Table 13-1, Item 10b).
- Investigate diversion incentives for CDL waste generated by construction projects (Table 13-1, Item 10c).
- The County should continue to encourage existing activities on the part of farmers and ranchers to reduce agricultural waste.
- The County should continue to encourage existing auto hulk practices in the county.
- The County should maintain existing practices with regard to asbestos disposal.
- The hierarchy established by Ecology should be used to select appropriate treatment methods for petroleum-contaminated soils generated in Cowlitz County.
- The Cowlitz County Landfill and the Headquarters Landfill should accept only petroleum-contaminated soil that does not exceed the County-approved waste acceptance limits to be used as daily cover.
- Management of petroleum-contaminated soil should be shifted to the transfer station, in accordance with the contract with Waste Control.
- The County should maintain existing practices with regard to the management of white goods.
- The County should provide educational information about legal tire disposal to businesses and the public with information about existing recycling/disposal opportunities.
- County should continue with existing transfer station plan to isolate incoming tires and divert to a tire recycling firm.
- Cowlitz County solid-waste facilities, both private and public, should require that personnel involved in the actual handling of solid waste take necessary precautions to prevent exposure to infectious agents, as outlined by the National Institute of Occupational Safety and Health.
- The Cowlitz County Landfill should continue to accept properly prepared sharps waste from homeowners.
- Owners of sewage treatment plants in Cowlitz County should continue to support the existing biosolids management programs

that provide an alternative to biosolids disposal at solid waste landfills.

- Owners of sewage treatment plants should begin to develop plans for biosolids disposal in order to prepare for the eventual closure of the County landfill.
- The contents of biosolids currently disposed of at the County landfill should be reviewed along with the criteria stated in the Weyerhaeuser Regional Landfill permit, to determine if the facility can accept these materials (Table 13-1, Item 10d).
- The County should continue to implement the Cowlitz County Moderate Risk Hazardous Waste Management Plan.
- The County should encourage the separation of logyard waste for processing into more valuable material and to divert the material from landfills. Additionally, the County should encourage the paving of logyards and use of steel cribs at forest product facilities to prevent logyard waste contamination.
- The County should continue to discourage the use of the Cowlitz County Landfill as a disposal facility for forest-products waste.

Private Sector

- The hierarchy established by Ecology should be used to select appropriate treatment methods for petroleum-contaminated soils generated in Cowlitz County.
- The forest-products industry in Cowlitz County should encourage composting as an alternative to landfilling.
- To the extent possible, the forests-products industry and private companies in Cowlitz County should continue to separate and enhance the value of logyard waste through existing or proposed woodwaste recycling facilities.

CHAPTER 11—ADMINISTRATION AND ENFORCEMENT

Cowlitz County Public Works

- Implement the terms of the contract with Waste Control for the disposal of county-generated MSW at Headquarters Landfill or a regional landfill after the County landfill closes.
- Flow control through interlocal agreements with the cities should be maintained (Table 13-1, Item 11a).

- Continue to use and maintain the waste tracking system and weight scales to account for all waste entering the Tennant Way Landfill. Ensure that a similar tracking system is implemented under the Waste Control contract or with development of the Headquarters Landfill.
- Assess the need for additional solid waste administration staff to administer the Waste Control contract as well as for the landfill operation, closure, and post-closure activities.
- Consider modifying the County Code to streamline the enforcement process through the use of a Hearings Examiner and possibly establish a citizens' watch group.
- On an annual basis at or about the anniversary date of the County's adoption of this plan, the County should prepare a progress report on the implementation of these recommendations and submit this report to the SWAC for its review and any necessary revision.

Environmental Health Unit

- Pursue funding of solid waste activities for at least two full-time employees, to adequately provide permitting, inspection, education, and enforcement activities.
- Implement a public education program that communicates to the public the environmental and economic consequences of illegal disposal.
- Conduct regular reviews and updates of local solid waste regulations to conform to changes to state statutes and regulations.

Cities

- Flow control through interlocal agreements with the County should be maintained
- The cities of Longview, Kelso, and Woodland should continue to maintain their abatement officers to enforce illegal dumping restrictions.

CHAPTER 12—FUNDING AND FINANCE

Cowlitz County

- Continue to finance the daily operation of the solid waste management system and planned long-term capital acquisitions

through disposal fees and recognize that the purchase of the Headquarters Landfill and initial capital projects should be funded by revenue bonds.

- Monitor and pursue state and local grant funding opportunities to the maximum extent possible, specifically for waste reduction and recycling programs.
- Continue to evaluate private sector financing, ownership, and operations of solid waste facilities.
- The SWAC should review the County solid waste financial plan, capital needs acquisition, and the County disposal fee during the annual review of the SWMP. A written summary of this review should be provided to the Board of County Commissioners and to the cities.
- The County should manage reserve funds and the disposal fee schedule so that county residents do not experience a significant spike in disposal fees.

13.5 Budget Impacts

The ELF Fund that is maintained by the County has a balance that is sufficient to provide the funding for all of the recommendations proposed in this document over the next five-year period as summarized in Table 13-1 and as shown in the ELF Fund balance summary in Attachment B of the UTC Cost Assessment (Appendix C). Since the fund will continue to increase with revenues from landfill tip fees, these activities are not expected to significantly deplete this resource. Should the Headquarters Landfill be purchased and re-permitting be successful then the county should fund the initial purchase and capital development projects with revenue bonds.

Table 13-1
Implementation Action Costs—2011 through 2016
Cowlitz County
2011 Solid Waste Management Plan

Program Component	Estimated Cost						Responsibility
	2011	2012	2013	2014	2015	2016	
1. Introduction and Background							
a. Annual Plan Review/Report	5,000	5,100	5,202	5,306	5,412	5,520	County Staff
b. SWMP Update	100,000	0	0	0	0	0	Consultant/County Staff
Subtotal	105,000	5,100	5,202	5,306	5,412	5,520	
2. Waste Stream Description							
a. Update Waste Characterization	2,700	2,754	2,809	2,865	2,923	2,981	County Staff
b. Recycling Tracking	8,000	8,160	8,323	8,490	8,659	8,833	County Staff / Private Disp. Facility
Subtotal	10,700	10,914	11,132	11,355	11,582	11,814	
3. Waste Reduction							
a. WR & Recycling Education							
Update Brochure	8,000	0	0	0	0	8,832	County Staff
Distribute Brochure	18,200	18,564	18,935	19,314	19,700	18,769	County Staff
School Presentations	4,020	4,100	4,182	4,266	4,351	4,438	County Staff
b. Home Composting Program							
Update Brochure	2,679	0	0	0	0	2,958	County Staff
Distribute Brochure	18,222	18,586	18,958	19,337	19,724	20,119	County Staff
Subsidize Compost Bins	4,000	4,080	4,162	4,245	4,330	4,416	County Staff
c. Fund Home Compost Education	1,500	1,530	1,561	1,592	1,624	1,656	County
d. Sponsor 2Good2Toss Website	700	714	728	743	758	773	County
e. In-House WR and Procurement Policies	2,675	2,729	2,783	2,839	2,896	2,953	County Staff
Subtotal	59,996	50,303	51,309	52,336	53,382	64,914	

Table 13-1
Implementation Action Costs—2011 through 2016
Cowlitz County
2011 Solid Waste Management Plan

Program Component	Estimated Cost						Responsibility
	2011	2012	2013	2014	2015	2016	
4. Recycling							
a. Curbside Recycling Evaluation (Unincorporated Areas)	10,000	0	0	0	0	0	County Staff
b. Multi-Material Dropoff Centers (cost per site)							
Design	32,380	0	0	0	0	0	Consultant/County Staff
Implement	0	100,106	0	0	0	0	Consultant/County Staff
Operations	0	11,031	22,724	23,406	24,108	24,832	County Staff
c. Nonresidential Technical Assistance	5,140	5,243	5,348	5,455	5,564	5,675	County Staff
d. Nonresidential Waste Database	1,350	1,377	1,405	1,433	1,461	1,491	County Staff
e. Evaluate Pay-As-You-Throw	0	0	10,000	0	0	0	County Staff
f. WR & Recycling Theme & Display	8,140	2,256	2,301	2,347	2,394	2,442	County Staff
g. Evaluate WR & Recycling Ed. Programs	2,465	2,514	2,565	2,616	2,668	2,722	County Staff
Subtotal	59,475	122,527	44,342	35,256	36,196	37,161	
5. Solid Waste Processing							
a. Evaluate Yard Waste Program	0	2,451	0	0	0	0	County Staff
Subtotal	0	2,451	0	0	0	0	
6. Solid Waste Collection							
a. Establish Solid Waste Collection District	0	0	10,100	0	0	0	County Staff
b. Encourage Separated Collection Implementation	1,785	1,821	0	0	0	0	County Staff
c. Assist EHU with Illegal Disposal Issues	5,712	5,826	5,943	6,062	6,183	6,307	County Staff
Subtotal	7,497	7,647	16,043	6,062	6,183	6,307	
7. Solid Waste Transfer							
a. Transfer Station Development/Operations	1,103,220	1,134,688	1,463,574	1,613,379	1,662,955	1,714,054	County Staff/Waste Control
b. Haul MSW from Transfer Station to Landfill	0	0	485,968	667,868	688,390	709,543	Waste Control
Subtotal	1,103,220	1,134,688	1,949,542	2,281,247	2,351,345	2,423,597	

Table 13-1
Implementation Action Costs—2011 through 2016
Cowlitz County
2011 Solid Waste Management Plan

Program Component	Estimated Cost						Responsibility
	2011	2012	2013	2014	2015	2016	
8. Solid Waste Disposal							
a. Landfill Permitting	500,000	500,000	0	0	0	0	
b. Due Diligence	138000	0	0	0	0	0	
c Purchase Landfill	0	19,000,000	0	0	0	0	
d Landfill upgrades	0	0	8,500,000	0	4,730,000	0	
Subtotal	638,000	19,500,000	8,500,000	0	4,730,000	0	
9. Solid Waste Import and Export							
a. Interlocal Agreements	0	0	4,903	0	0	0	County Staff
Subtotal	0	0	4,903	0	0	0	
10. Special and Industrial Waste							
a. CDL Waste Educational Materials							
Update Brochure	804	820	836	853	870	888	County Staff
Distribute Brochure	1,179	1,203	1,227	1,251	1,276	1,302	County Staff
b. Construction Recycling Demonstration Site	0	24,611	0	0	0	0	County Staff
c. Research and Evaluate CDL Diversion Incentives	0	2,451	0	0	0	0	County Staff
d. Evaluate Biosolids for Disposal at Weyerhaeuser Regional Landfill	1,190	0	0	0	0	0	County Staff
e. Continue to operate MRW program	46,283	47,705	49,171	50,239	52,844	53,864	County Staff / Waste Control
Subtotal	49,456	76,790	51,234	52,343	54,990	56,053	
11. Administration and Enforcement							
a. Maintain Flow Control Agreements with Cities	1,102	1,124	0	0	0	0	County Staff
Subtotal	1,102	1,124	0	0	0	0	
Total	2,034,446	20,911,545	10,633,708	2,443,905	7,249,090	2,605,366	

REFERENCES

Combustion Engineering. 1988. Letter (re: potential incinerator) to D. Olson, Cowlitz County Public Works, from Combustion Engineering. November 30.

Ecology. 1988. Best management practices analysis for solid waste. Washington State Department of Ecology. January.

Ecology. 1999. Guidelines for the development of local solid waste management plans and plan revisions. Washington State Department of Ecology Solid Waste & Financial Assistance Program. Publication No. 99-502 (revised). December.

Ecology. 2009. Solid waste in Washington State —eighteenth annual status report. Washington State Department of Ecology Solid Waste & Financial Assistance Program. Publication No. 09-07-038. December.

Ecology. 2010. Solid waste in Washington, 19th annual status report. Table 5.5. Publication No. 10-07-031. December.

Harvey, S. 2011. Email correspondence with S. Otto, Maul Foster & Alongi, Inc., Portland, Oregon. March 18.

Jones, R. 2002. Personal communication with J. Maag, Maul Foster & Alongi, Inc., Vancouver, Washington. August 21.

OFM. 2002. State of Washington Office of Financial Management. http://www.ofm.wa.gov/localdata/cowl.asp (November 2007).

OFM. 2010. State of Washington Office of Financial Management. http://www.ofm.wa.gov/localdata/cowl.asp (December 2010).

OFM. 2011. State of Washington Office of Financial Management. http://www.ofm.wa.gov/localdata/cowl.asp (February 2011).

Olson, D. 2010. Email correspondence with S. Otto, Maul Foster & Alongi, Inc., Portland, Oregon. (March 2001).

Public Works. 2000. SR 4/SR 411 urban area congestion mitigation plan. Commissioned by the Cowlitz-Wahkiakum Council of Governments. Cowlitz County Department of Public Works. November.

Public Works. 2004. Financial assurance analysis annual update. Cowlitz County Department of Public Works. April.

Public Works. 2011. Financial Assurance Analysis. Cowlitz County Department of Public Works. September.

Public Works and SCS Engineers. 1993. Cowlitz County comprehensive solid waste management plan. Cowlitz County Department of Public Works and SCS Engineers. July.

Skumatz, L. A. 2002. Variable-rate or "pay-as-you-throw" waste management: answers to frequently asked questions. Reason Foundation. Policy Study 295.

USEPA. 1999. Organic materials management strategies. U.S. Environmental Protection Agency. Solid Waste and Emergency Response. July.

Willis, J. 2011. Personal conversation with S. Otto, Maul Foster & Alongi, Inc. Portland, Oregon, April.

WSDA. 2002. News release. Ban on using clopyralid on lawns to continue. Washington State Department of Agriculture. May 28.