Chelan County
Solid Waste Management Plan

Prepared by Chelan County Public Works

Draft
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CONTENTS

Table of Contents, Continued

Table of Contents, Continued

APPENDICES

LIST OF TABLES

LIST OF TABLES, continued

LIST OF FIGURES

Page

EXECUTIVE SUMMARY

INTRODUCTION

This Solid Waste Management Plan (or "Plan") was prepared to provide a guide for solid waste activities in Chelan County. This Plan addresses recent changes while also looking forward to the future needs of Chelan County. The Plan was developed through a team effort by Chelan County, the Solid Waste Council and the cities, through their Public Works Departments and the Solid Waste Advisory Committee (SWAC). SWAC members represent the interests of their agencies and businesses, and as residents and members of the community. The Council is made up of elected officials who develop policies and represent the public's interest.

This document was developed in response to the Solid Waste Management Act, Chapter 70.95 of the Revised Code of Washington (RCW), which states:

"Each county within the state, in cooperation with the various cities located within such county, shall prepare a coordinated, comprehensive solid waste management plan" (Section 70.95.080 RCW).

The minimum contents of this Plan are specified by state law (RCW 70.95.00) and further described in Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions, issued by the Washington Department of Ecology (Ecology 2010). The Solid Waste Management Act specifies that this Plan must "be maintained in a current and applicable condition" through periodic review and revisions (RCW 70.85.110).

GOALS AND OBJECTIVES

- Manage solid wastes in a manner that promotes, in order of priority: waste reduction; recycling; energy recovery, incineration or landfilling of separated; and finally energy recovery, incineration or landfilling of mixed wastes.
- Encourage public involvement and ensure the representation of the public in the planning process.
- Increase public awareness of the importance of waste reduction and recycling. Develop programs that promote recycling and help the state achieve its goal of a 50% recycling rate.
- Emphasize local responsibility for solving problems associated with solid waste, rather than relying on the state or federal government to provide solutions.
- Develop an economically responsible and environmentally sound solid waste management system by analyzing the waste management priorities.
- Minimize adverse impacts on the environment and preserve public health through sound solid waste management operating procedures.
- Develop a regional solid waste management system that complies with state regulations for solid waste handling.

- Develop an educational system to inform the public about the solid waste system and opportunities for proper hazardous waste disposal, waste reduction and recycling.
- Provide infrastructure through creative economic programs to support the necessary programs for proper hazardous waste disposal, waste reduction and recycling.
- Provide an economical system that is viable for residents and supports the solid waste system.
- Ensure that adequate disposal capacity exists for the present and future residents of Chelan County.

PLAN ORGANIZATION

Chapter 1 of the *Chelan County Solid Waste Management Plan* describes the purpose and goals of this Plan, its relationship to other plans and the process and schedule for updating the Plan. Chapter 2 provides information about demographics, waste quantities, and other basic information about Chelan County.

Chapters 3 through 10 discuss the various elements of the solid waste management system in Chelan County and provide the information and analysis for the recommendations. Chapter 11 provides a summary of the recommendations shown in Chapters 3 through 10, and also provides additional information about the implementation schedule and other details for those recommendations.

BACKGROUND

The current (2016) amount of solid waste generated in Chelan County is approximately 135,360 tons per year. Of this, an estimated 34% is diverted through recycling and other programs, while the remaining 66% (88,440 tons in 2016) is shipped to the Greater Wenatchee Regional Landfill.

The amount of waste generated in Chelan County is expected to increase to 169,200 tons per year by 2037. At the current recycling and composting rate, 57,528 tons per year of that future amount will be diverted by recycling and other methods, while 111,672 tons per year will need to be shipped to a landfill or other disposal facility. If the recycling and diversion rate can be increased to 40% by 2027, the amount of waste disposed will remain about the same as in 2016 while the amount recycled and diverted will approximately double (increasing from 57,528 tons in 2016 to 86,292 tons in 2027). In 2037, there would be an additional 7,000 tons of waste per year that would be recycled and diverted instead of being disposed of (leaving only 104,672 tons per year that would be landfilled) at a 40% recycling and diversion rate.

PROCESS AND SCHEDULE FOR ADOPTON OF THE PLAN

This copy of the *Chelan County Solid Waste Management Plan* is a “final draft” that incorporates comments received on a “preliminary draft” that was distributed to the Solid Waste Advisory Committee (include is the Chelan Douglas Health District) in February 2017. Once reviewed by the Department of Ecology, Department of Agriculture and Washington Utilities and Transportation, as well as Public Review, comments will be considered and edits made, the

plan will be adopted by the County and on behalf of the five cities, and then final approval by the Department of Ecology.

RECOMMENDATIONS

The recommendations proposed by this Plan are shown below. The recommendations are numbered using an abbreviation for the topic (for example, Recommendation WR2 is the second recommendation for Waste Reduction). Additional details on the recommendations can be found in the appropriate chapter of the Plan and are also summarized in Chapter 11.

Chapter 3: Waste Reduction

Waste reduction is defined as those methods that prevent a waste from being created, or that reduce the toxicity of the wastes that are generated. Chapter 3 of the Plan discusses waste reduction techniques and provides the following recommendations:

WR1) Expand waste reduction programs in governmental offices

WR2) Encourage waste reduction programs for commercial and industrial businesses

WR3) Support private reuse programs and businesses

Chapter 4: Recycling

Chapter 4 of the Plan discusses existing recycling programs and provides several recommendations for additional efforts:

R1) Adopt UGAs from *Chelan County Comprehensive Plan* as urban areas for purposes of recycling services.

R2) The list of designated materials, and process for amending this list, is adopted.

R3) Minimum service levels and service areas are adopted.

R4) Coordinate funding for education efforts with waste reduction programs.

R5) Provide information annually to local businesses and residents with both garbage and recycling rates.

R6) Continue curbside programs in Cashmere, Leavenworth and Wenatchee and voluntarily in unincorporated areas.

R7) Re-evaluate drop-box system in urban and rural designated areas.

R8) Encourage multi-family dwelling owners to contract with private recycler.

R9) Encourage municipal permitting agencies to recommend that builders incorporate recycling collection areas into their building plans for multi-family and commercial buildings.

R10) Continue and expand recycling programs in governmental offices.

R11) Develop a monitoring/reporting system.

R12) Continually investigate and encourage local, cost-effective markets.

R13) Support government procurement policies.

R14) Encourage private companies to adopt procurement policies that promote the use of recycled materials.

R15) Any proposals for recycling through mixed waste processing should be evaluated.

Chapter 5: Organics Management

Chapter 5 of the Plan discusses the goals and regulatory framework for composting and other organics management methods, describes existing composting programs in Chelan County, reviews the needs and opportunities for expanding upon existing practices, describes and evaluates alternatives, and provides the following recommendations:

O1) Encourage Compost businesses continue and expand collection and operations.

O2) Continue brush disposal in the Chelan/Manson area, Dryden and Entiat.

O3) Monitor septage disposal systems and consider development of future programs if necessary.

O4) Explore options and partnerships for land application of all types of organic materials.

O5) Continue to support agriculture efforts and disease monitoring conducted by the Chelan-Douglas Pest Board.

Chapter 6: Solid Waste Collection

Chapter 6 of the Plan examines the current system for collecting solid waste in Chelan County. In general, the existing solid waste collection system is functioning well; however, recommendations include utilizing County facilities and collection fees that support programs in this Plan. The following recommendations are made:

WC1) All areas of Chelan County should use collection systems and rates that encourage resource conservation.

WC2) Provide recycling programs throughout the unincorporated areas of Chelan County by curbside collection.

WC3) Those cities without tiered rates should consider to change to a system of rates that promotes resource conservation and cost effective recycling.

WC3) Regional Waste Haulers shall use local facilities.

WC4) Implement a fee upon solid waste collection services of solid waste companies within the unincorporated areas to be paid to Chelan County to fund the administration and planning expenses of moderate risk waste collection that may be incurred in complying with the requirements in RCW 36.58.

Chapter 7: Transfer and Disposal System

Chapter 7 of the Plan examines the system of transfer stations currently used in Chelan County, and includes major renovations and improvements needed to keep up with growing demands:

T1) Construction improvements to the existing Transfer stations should be prioritized and implemented. Dryden transfer station needs facility improvements with a second tipping floor to separate commercial and residential. Chelan transfer station needs facility improvements with a scale house and scales, as well as other associated infrastructure such as fencing, road and shop.

T2) Also continue to evaluate the need and implementation plan for a transfer station in Entiat, Manson, and Plain.

Chapter 7 also addresses the significant amounts of solid waste being brought into Chelan County from other areas, or "waste import". Waste imports are primarily waste from Douglas County that's being brought to the South Wenatchee and Chelan transfer stations. All of Chelan County's waste is sent to a landfill in Douglas County ("waste export"), and depending solely on that one facility causes some concerns for stability and competition. These factors led to two recommendations:

WI1) Consider higher rates for out-of-county wastes.

WE1) Explore options for waste export.

Lastly, Chapter 7 also discusses landfill disposal and makes the following recommendations.

L1) Identify potential sites for landfills/Incinerator.

L2) Continually review and evaluate other landfill disposal options, including long haul or railway transportation.

L3) Inventory old dumpsites in Chelan County and pursue final closure.

Chapter 8: Moderate Risk Wastes

Chapter 8 examines existing and potential practices for disposal of hazardous wastes from homes and businesses in Chelan County. Collection events are over burdened with both the amounts of participating households and the quantities of hazardous waste. Utilizing state grants, a moderal risk waste facility was determined to be essential and construction of a facility began in 2014. Reduced grants have stipend the progress; construction remains in progress.

MRW1) Develop a permanent MRW facility (In Progress).

MRW2) Continue to work with WSDA to collect agricultural wastes.

MRW3) Explore methods to reduce MRW waste and associated costs of proper disposal.

Chapter 9: Special Wastes

Chapter 9 reviews the generation, handling and disposal methods for several specific wastes in Chelan County. It makes the following recommendations:

S1) Continue asbestos disposal using approved and permitted methods.

S2) Increase education for proper disposal methods

S3) A construction demolition central processing facility and/or salvage operation should be developed.

S4) Other collection and chipping sites established at the transfer stations and nearby brush chipping operations for clean, not treated or painted lumber.

S5) Information should be distributed about the potentially dangerous materials that can be found during demolition activities.

S6) Contaminated soils shall continue current practices and evaluate options on a case-by-case basis.

S7) Encourage proper disposal of tires.

S8) Investigate engineering and other alternative applications for tires.

S9) Support the further research for disposal of used tires.

Chapter 10: Administration and Regulation

The solid waste management activities discussed in Chapter 10 of the Plan are organized into two sections: 1) Administration and Regulation and 2) Public Education. The following recommendations are made:

A1) Provide adequate staffing for solid waste programs.

A2) Continue to improve interagency coordination and oversight.

A3) Designate County transfer stations, Dryden and Chelan, for only repositories for waste in the areas designated.

A4) Evaluate whether facilities and programs will be managed publicly or privately, when necessary.

A5) Develop ordinances, as needed, to enhance the solid waste management system.

A6) Impose Collection Service Fee (RCW 36.58.045).

A7) Continue to apply for grant money for the funding of solid waste programs.

PE1) Continue and expand educational efforts to promote waste diversion methods.

PE2) Encourage waste haulers and municipalities involved in collection to conduct annual (at a minimum) publicity for waste collection and recycling.

CHAPTER 1: INTRODUCTION

1.1 ROLE AND PURPOSE

This *Solid Waste Management Plan* (Plan) was prepared to provide long-term guidance to Chelan County, including its residents, businesses and municipalities. The programs addressed in this Plan include garbage collection and disposal, recycling, composting and hazardous waste disposal.

This Plan has been developed in accordance with the Solid Waste Management Act, Chapter 70.95 of the Revised Code of Washington (RCW), which states:

> "Each county within the state, in cooperation with the various cities located within such county, shall prepare a coordinated, comprehensive solid waste management plan" (Section 70.95.080).

The Solid Waste Management Act also specifies that these plans must "be maintained in a current condition" through periodic review and revisions (RCW 70.95.110), hence the need for this Plan. This document is an update of the *2007 Chelan County Comprehensive Solid Waste Management Plan* and is intended to provide citizens and decision-makers in the region with a guide to implement, monitor, and evaluate future solid waste activities for a 20-year period. Recommendations developed for the Plan provide guidance for policy and financial decisions, including guidance for expending local funds and state grants for local solid waste projects.

This introductory chapter of the Plan provides information on the Plan's legislative mandate and goals; the Solid Waste Advisory Committee (SWAC) and Solid Waste Council (SWC); the planning process; and historical information.

1.2 PARTICIPATING JURISDICTIONS

As indicated above, RCW 70.95 delegates the authority and responsibility for the development of solid waste management plans to the counties, and the Chelan County Public Works Department has taken the lead role in developing this Plan. Solid waste planning is conducted by the Public Works Department under the guidance of the Solid Waste Council, which is comprised of elected officials from each municipality in Chelan County. The Council provides policy direction and approves solid waste and waste reduction programs and projects.

Assistance is provided by another group, the Solid Waste Advisory Committee (SWAC), in developing and recommending programs. Recommendations made by the SWAC may be taken to the Solid Waste Council or other municipal councils for review and adoption. These municipal councils may include the Board of County Commissioners, the County Planning Commission and the governments of the five incorporated cities in the county. The five incorporated cities are Cashmere, Chelan, Entiat, Leavenworth and Wenatchee.

By state law, cities may fulfill their solid waste management planning responsibilities in one of three ways: 1) by participating with the county in preparing a joint plan, or 2) by preparing their own plan for integration into the county's plan, or 3) by authorizing the county to prepare a plan that includes the city. The five cities in Chelan County are actively participating in the countywide solid waste system through an Interlocal Agreement (ILA). The Solid Waste Council reviewed the

current ILA and concluded that it would remain in effect through the planning process and also through the planning period, and that the Cities would participate with the county in preparing a joint plan. A copy of the ILA is shown in Appendix A.

Other governing bodies (Tribes and federal agencies) can participate in the planning process or conduct their own plans. There are two Tribes with interests in Chelan County: the Wenatchi Tribe and the Colville Tribe, although the Wenatchi Tribe may also currently be considered a band of the Confederated Tribes of the Colville Reservation. The Tribes are not actively involved in solid waste management programs in Chelan County at this time. Federal agencies with significant activities in Chelan County include the U.S. Forest Service and the Department of the Interior (the National Park Service). The primary federal agency in Chelan County is the U.S. Forest Service, which currently does not have a representative on the SWAC. The Tribes and federal agencies generally use the county's waste disposal facilities, and because this Plan may impact their current and future solid waste management options, these organizations are encouraged to review this plan and provide input as appropriate to their needs.

1.3 REQUIRED MINIMUM CONTENTS OF PLAN

The minimum contents of this Plan are specified by state law (RCW 70.95.090) and further described in Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions issued by the Washington Department of Ecology (Ecology 2010). To summarize, solid waste management plans must contain:

- An inventory of existing permitted solid waste handling facilities, including an assessment of any deficiencies in meeting current disposal needs.
- The estimated needs for solid waste handling facilities for a period of 20 years.
- A program for the development of solid waste handling facilities that is consistent with this Plan and meets all applicable regulations. The development program must also take into account land use plans, provide a six-year construction and capital acquisition program, and provide a financing plan for capital and operational costs.
- An inventory of solid waste collection needs and operations, including information on collection franchises, municipal operations, population densities and projected solid waste collection needs for a period of six years.
- A comprehensive waste reduction and recycling element that provides for reduction of waste quantities, provides incentives and mechanisms for source separation and provides opportunities for recycling source-separated materials.
- Waste reduction and recycling strategies, including residential collection programs in urban areas, drop-off or buy-back centers at every solid waste handling facility that serves rural areas, monitoring methods for programs that collect source-separated materials from nonresidential sources, yard debris collection programs and education programs.
- A Moderate Risk Waste plan for the planning and prevention of capturing toxic materials from homeowners and small businesses.
- An assessment of the impact that implementation of the Plan's recommendations will have on solid waste collection costs.
- A review of potential sites for solid waste disposal facilities.

- Other details for specific programs and activities.

1.4 PREVIOUS SOLID WASTE PLANS

Washington State enacted RCW 70.95.080 (requiring counties to develop solid waste plans) in 1969, and Chelan County adopted its first plan in 1972. A subsequent plan was adopted in 1982, which was a joint plan with Douglas County. The most recent plans adopted in 1994 and 2007 solely address Chelan County.

1.4.1 The 1994 & 2007 Chelan County Comprehensive Solid Waste Management Plans

The goal of the 1994 and 2007 plans were "to develop an economical and coordinated county solid waste management system that meets the needs of the present and future citizens of the area, while at the same time eliminating practices that may cause environmental degradation and foster unhealthy and hazardous situations."

A number of objectives were identified in order for this goal to be accomplished:

- Develop an acceptable solid waste management system of storage, collection, transportation, processing, disposal and recycling.
- Develop an organizational structure to coordinate all solid waste activities in the area.
- Develop a program to better inform the public on solid waste activities.

The 1994 plan adopted the regional landfill concept that continues in place today. Many, but not all, of the recommendations from the 1994 and 2007 plans have been implemented. A summary of the recommendations from the 1994 and 2007 plans and the status of those recommendations are shown in Appendix B.

1.4.2 Other Solid Waste Documents

Other relevant solid waste documents include the *Chelan-Douglas Moderate Risk Waste Management Plan* (Parametrix 1991), the state's Beyond Waste plan (Ecology 2004), the *Chelan County Yard Waste Co-Composting Feasibility Study* (E&A 1995), and the *Co-Compost Operations Study* (Emcon 1996). The *Moderate Risk Waste Management Plan* is discussed in greater detail in Chapter 8, the composting studies are discussed in Chapter 5, and the Beyond Waste plan is discussed in several places as appropriate to the topics in each chapter. As well as Ecology's Guidelines for Development of Local Comprehensive SolidWaste management Plans and Plan Revisions

Copies of the Beyond Waste plan can be downloaded from the Department of Ecology web site (http://www.ecy.wa.gov/), and copies of the others plans can be viewed at the offices of the Chelan County Public Works Department.

1.5 RELATIONSHIP TO OTHER PLANS

This Plan must function within a framework created by other plans and programs, including policy documents and studies that deal with related matters.

1.5.1 Comprehensive Land Use Plans

The planning guidelines require that the Plan reference all comprehensive land use plans for all participating jurisdictions. These plans include the comprehensive land use plans for the six planning areas in Chelan County (each city has its own land use plan and zoning ordinance). The reason for considering the local plans is to ensure that the Plan is consistent with policies set forth in the other documents, and it is not intended that this Plan will take precedence over the land use plans. The most important aspect for consistency purposes is the siting of new facilities and ensuring that siting meets local land use policies.

1.5.2 Zoning Codes

Zoning regulations classify land according to permissible uses within those land areas. The regulations usually address the size of structures allowed and include some site design requirements, including setbacks from property lines. In addition, the siting of any new solid waste management facilities will be guided by the criteria discussed in Appendix F.

The Chelan County Zoning Code (CC 2011) addresses solid waste handling and disposal facilities through conditional use permits, as "Public facility, High impact," including composting facilities, transfer stations, inert waste landfills and sanitary landfills.

1.5.3 Shoreline Plans

Shoreline plans establish policies and regulations for development along shorelines. Shorelines are defined as all waters of the state, including reservoirs, floodplains and their associated wetlands. Portions of rivers having a mean annual flow of less than 20 cubic feet per second and lakes less than 20 acres in size are excluded from the regulations.

The shoreline plan in this area is the *Shoreline Master Program for Chelan County*, (Chelan County Planning Department 1979). This plan generally establishes policies prohibiting solid waste disposal along the shorelines of major waterways, in accordance with Health District regulations, but previously established facilities that have been legally established will be allowed as a non-conforming use.

Chelan County Natural Resources Department is currently in the process of updating the *Shoreline Master Plan for Chelan County.*

1.6 SOLID WASTE COUNCIL AND SOLID WASTE ADVISORY COMMITTEE

1.6.1 Role of the Solid Waste Council

The Solid Waste Council (SWC) is comprised of elected officials and includes a representative of the county and each of the five cities. The responsibilities of the SWC are shown in the Inter Local Agreement (see Appendix A), and includes providing policy direction, establishing goals, developing annual solid waste programs and projects, approving annual budgets, and helping to resolve issues

and/or conflicts that may arise in program development. The SWC typically meets quarterly (four times per year).

On Feb. 2, 2015, the SWC reviewed the current Interlocal Agreement and concluded that it was working well and could remain in effect through the process of developing and implementing this Plan.

Table 1.1 Chelan County Solid Waste Advisory Committee	
Official Members	**Representing**
Brenda Blanchfield	**Chelan County**
Mark Botello	**City of Cashmere**
Dwane Van Epps	**City of Chelan**
Mike Herdt	**City of Entiat**
Herb Amick	**City of Leavenworth**
Matt Leonard	**City of Wenatchee**
Suzen Hyde	**Health District**
Bryan Macon	**Michelsen's Recycling**
Aaron Kelly & Tami Yager	**Waste Management**
Glen Austin	**Zippy Disposal**
	Department of Ecology

1.6.2 Role of the Solid Waste Advisory Committee

The Solid Waste Advisory Committee (SWAC) is the focal point of the public involvement effort for this Plan. The SWAC membership, as shown in Table 1.1, includes representatives from citizen groups, recycling and environmental interests, business, agriculture and local government.

The formation, membership makeup and role of the SWAC are specified by state law:

> *"Each county shall establish a local solid waste advisory committee to assist in the development of programs and policies concerning solid waste handling and disposal and to review and comment upon proposed rules, policies, or ordinances prior to their adoption. Such committees shall consist of a minimum of nine members and shall represent a balance of interests including, but not limited to, citizens, public interest groups, business, the waste management industry, and local elected public officials. The members shall be appointed by the county legislative authority." (RCW 70.95.165 (3)).*

Two of the primary responsibilities of the SWAC are to advise on the development of this Plan and to assist in the Plan adoption process. The SWAC is anticipated to participate in the development of this Plan by:

(1) Providing recommendations to the Solid Waste Council;
(2) Reviewing draft documents;
(3) Providing input and comment on all issues covered by the Plan;
(4) Acting as a liaison to their constituencies;
(5) Relaying information to city councils;
(6) Reviewing the complete draft and final plans;
(7) Participating in public workshops;
(8) Facilitating the public review process; and
(9) Recommending the SWMP for adoption by the participating jurisdictions.

1.7 GOALS AND OBJECTIVES OF THE PLAN

The vision for this Plan is based on the concepts legislated by the state and adopted through a state solid waste plan, but in addition it addresses issues of specific importance to the residents of Chelan County. The intent of this work was to create a framework by which a solid waste plan would be developed, adopted and implemented. This Chelan County Solid Waste Management Plan is an outgrowth of that effort.

The following mission statement is endorsed by the SWAC and is intended to be implemented through this Plan:

> *"The mission of the Solid Waste Program is to provide technical and financial assistance to all participating jurisdictions and to support the Washington State Solid Waste Management-Reduction and Recycling Act (RCW 70.95). The program strives to improve the quality of human life through waste reduction, recycling and reuse throughout Chelan County and the incorporated cities within."*

This Plan is also based on the following general goals (specific goals for each component of solid waste management are shown in the appropriate chapter):

- Manage solid wastes in a manner that promotes, in order of priority: waste reduction; recycling, with source-separation of recyclables as the preferred method; energy recovery; incineration or landfilling of separated waste; and energy recovery, incineration or landfilling of mixed wastes.
- Encourage public involvement and ensure the representation of the public in the planning process.
- Increase public awareness of the importance of waste reduction and recycling. Develop programs that promote recycling and help the state achieve its goal of a 50% recycling rate.
- Emphasize local responsibility for solving problems associated with solid waste, rather than relying on the state or federal government to provide solutions.
- Develop an economically responsible and environmentally sound solid waste management system by analyzing the waste management priorities.

- Minimize adverse impacts on the environment and preserve public health through sound solid waste management operating procedures.
- Develop a regional solid waste management system that complies with state regulations for solid waste handling.
- Develop an educational program to inform the public about the solid waste system and opportunities for waste reduction and recycling.
- Reduce the solid waste generated in the planning area through public education and administrative programs.
- Provide recycling opportunities and hazardous waste disposal to the waste generators in the planning area.
- Ensure that adequate disposal capacity exists for the present and future residents of Chelan County.

1.8 PROCESS FOR UPDATING THE PLAN

1.8.1 Plan Development Process

The Plan development process involves the major steps shown in Figure 1.1. The preparation of the Plan began with a review of the 2007 Plan and a compilation of information on the background of the planning area. The next step was to inventory solid waste handling systems and programs to determine existing conditions. These existing conditions were then analyzed for adequacy in meeting current needs, conformance with regulatory standards and consistency with Plan goals. Solid waste handling needs for all systems were projected for the planning period (2017-2035). Alternative systems for meeting future needs and improving existing conditions were defined and evaluated. Based on this evaluation, recommendations were made. These recommendations will provide the guidance for decision making by solid waste facility owners/operators, regulatory officials and planners. An implementation strategy was developed that contains a schedule as well as financial information.

During the course of the preparation of this draft, numerous meetings were held with the SWAC to obtain information and guidance. After reviewing each element of the Chelan County solid waste system, a complete draft of the Plan was prepared and reviewed by the SWAC and the Solid Waste Council. Following this review, the plan was revised and that draft (the "Preliminary Draft") was distributed in 2017 for public review and comment as well as Ecology and WUTC review. A public hearing will be held on the Preliminary Draft Plan as part of that review process.

Review of the Plan began in 2016, with phased chapters reviewed by the SWAC and SWC. The Preliminary Draft was distributed to SWC on Feb. 6, 2017. Comments received on the Preliminary Draft will be reviewed with the SWAC in April 2017, and then revisions made and Draft document available to the Public, beginning with a Public notice and meetings, including City Council meetings. Revisions will be made and the Final Draft adopted by the county and the five cities through SWAC(see Appendix F), Health District, WUTC, Department of Agriculture and Ecology. When granted final approval by Ecology, this will become the final plan. Only after Ecology has approved of the final draft does the Plan become effective.

1.8.2 Plan Amendment Process

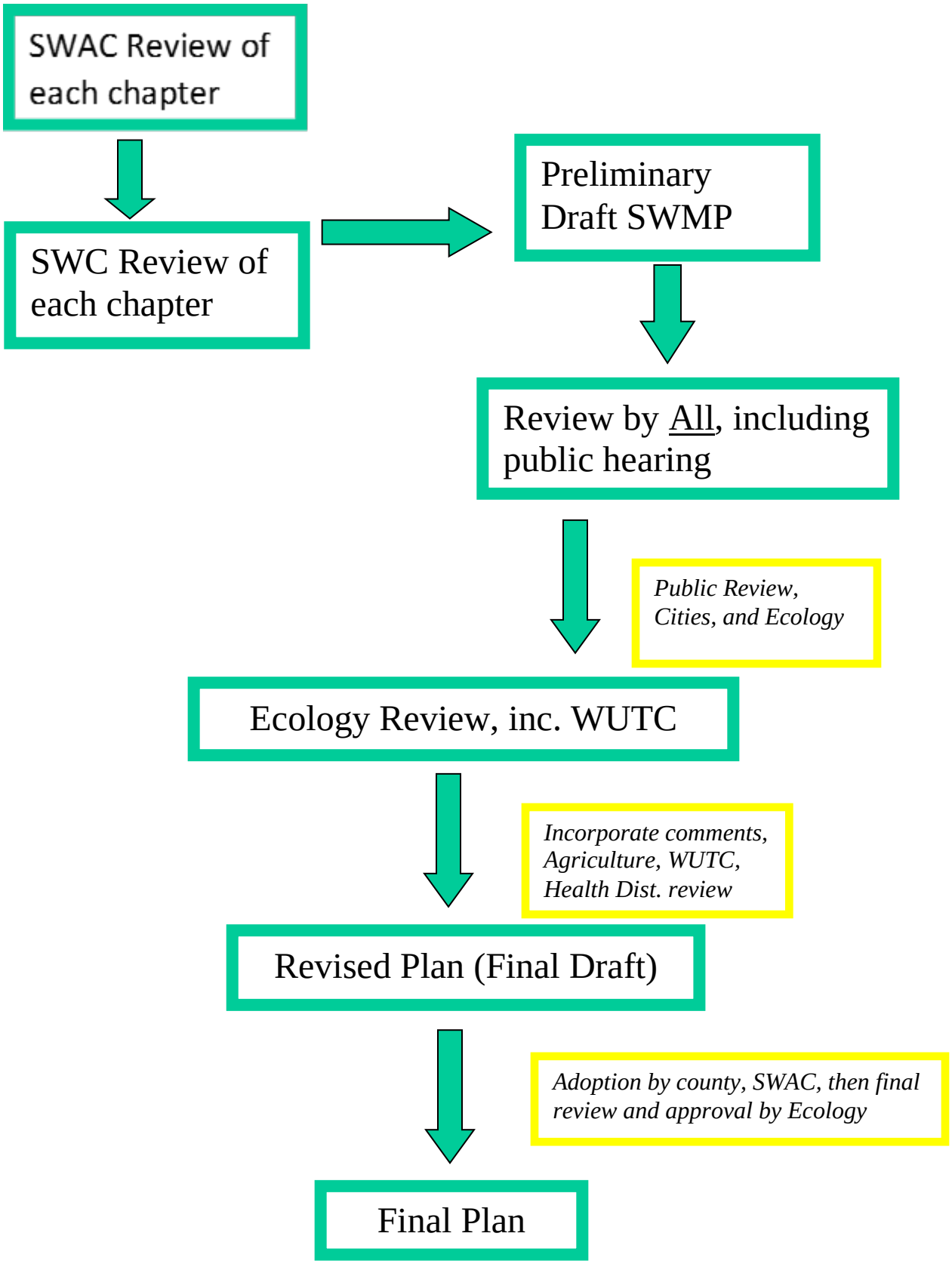
During the Plan's implementation, changes may occur in planned activities, assigned roles and responsibilities, and budget requirements. These changes may occur as new information is gathered, as state legislation or regulations are revised or adopted, and as other events occur that influence planned activities. Changes that the SWAC determines to be minor and consistent with the Plan will not require a plan amendment. Such changes will be documented, however, and provided to the cities and towns in the county. The steps to be taken to amend the plan are shown in Table 1.2.

This plan will also be reviewed periodically to determine if amendments or updates are necessary.

Table 1.2 Plan Adoption Process

1) Before any significant changes to the Plan are undertaken, a review of the Plan will be prepared by the participating jurisdiction initiating the change.
2) The proposed plan will be presented to the SWAC for review and comment. SWAC will consider which participating jurisdictions are affected by the plan and determine its regional significance.
3) The SWAC will act upon the plan proposed by the initiating participating jurisdiction and form its recommendations in a timely manner.
4) The SWAC's recommendation will be forwarded to the SWC for its review. The SWC could take a variety of actions, such as forwarding the plan (with or without revisions) to the participating jurisdictions, requesting clarifications or rejecting it.
5) The proposed plan will then be reviewed by all participating jurisdictions, including the Health District.
6) The proposed plan will then be subject to public review and comment. At a minimum, one public hearing will be held to allow citizens and other interested parties the opportunity to present their views.
7) The proposed plan will then be revised as necessary and submitted to Ecology for review and comment. Ecology will submit the proposed plan to the Department of Agriculture and Washington Utilities and Transportation Commission.
8) The proposed Plan will then be revised as necessary and presented to the participating jurisdictions for adoption.
9) Once the amendment has been adopted, it will be submitted to Ecology for final approval. Approval will be coordinated through Ecology's Central Regional Office.

Figure 1.1 Planning Process



1.8.3 Environmental Review Process

The State Environmental Policy Act (SEPA) requires an environmental evaluation of actions that involve decisions on policies, plans or programs (WAC 197-11-310). The purpose of this evaluation is to determine if decisions on policies, plans or programs could lead to actions that would have a significant adverse impact on the environment. Chelan County has determined that adoption of this Plan would not lead to actions that would have a significant adverse impact on the environment. A copy of the Determination of Non-Significance (DNA) is shown in Appendix E.

1.9 ORGANIZATION OF THE PLAN

The remainder of the *Chelan County Solid Waste Management Plan* is organized into the following chapters, each addressing particular elements of the County's solid waste management system:

Chapter 2: Background of the Planning Area
Chapter 3: Waste Reduction
Chapter 4: Recycling
Chapter 5: Management of Organic Materials
Chapter 6: Solid Waste Collection
Chapter 7: Transfer and Disposal System
Chapter 8: Moderate Risk Wastes
Chapter 9: Special Wastes
Chapter 10: Administration and Public Education
Chapter 11: Implementation Plan

Chapter 2 provides important information about demographics, waste quantities and other factors common to the remaining chapters. Chapters 3 through 10 address each component of the solid waste system in a format that:

- Reviews existing programs, activities and policies in Chelan County and the cities for each element of the solid waste system.
- Identifies needs, problems or opportunities not addressed by existing activities and programs.
- Examines alternatives to meet the identified needs, problems and opportunities.
- Recommends future programs or actions as appropriate to the needs and abilities of the county's and cities' residents, businesses and service-providers.
- Presents implementation schedules and costs for the recommended programs and facilities.

Chapter 11 provides a summary of the implementation details (costs, schedule, responsible parties and priority level) for each of the recommendations shown in Chapters 3 through 10. The appendices to this plan contain information relevant to the planning process, including the WUTC Cost Assessment Questionnaire and the SEPA Checklist.

CHAPTER 2: BACKGROUND OF THE PLANNING AREA

2.1 INTRODUCTION

This chapter describes the existing physical and economic characteristics of Chelan County and also provides information about the current quantities and composition of the county's solid waste stream. This information is required by the Department of Ecology and it is useful background information for several of the following chapters of this *Solid Waste Management Plan* (Plan).

2.2 DESCRIPTION OF THE PLANNING AREA

An understanding of the environmental, demographic and land use conditions in Chelan County is important because it provides a frame of reference for discussions about existing solid waste practices and future solid waste handling needs.

2.2.1 General Physical Features

Chelan County is located at the geographic center of Washington State. The exact center point is about 10 miles west/southwest of Wenatchee. Chelan County contains 2,921 square miles, which comprises 4.4% of the state's 66,511 square miles. Chelan County is approximately 85 miles long (measured north to south) and 40 miles wide. About 80% of Chelan County is mountainous land, divided into three major valleys: the Wenatchee River Valley, Lake Chelan and the Entiat River Valley. Changes in elevation in Chelan County vary greatly, from valley floors that are located between 600 and 1,000 feet above sea level to the east slopes of the Cascade Mountain range that reach typical heights of 2,000 to 3,000 feet. The highest elevations in Chelan County are Mt. Stuart (9,415 feet) near the southern boundary and Clark Mountain (8,576 feet) in north central Chelan County.

2.2.2 Climate

The climate of Chelan County is influenced by elevation, topography, distance and direction from the ocean, prevailing westerly winds and the position and intensity of the high- and low-pressure centers in the western Pacific Ocean. Table 2.1 lists the average maximum, minimum and mean temperatures for specific locations in Chelan County.

Precipitation is generally light in summer, increases in the fall and peaks in the winter with a gradual decrease in the spring. Table 2.2 shows average monthly and total annual precipitation for specific locations in Chelan County. Elevation and topography play key roles in the amount of precipitation an area will receive. The higher elevations of Chelan County receive 60 to 80 inches of annual rainfall while 10 to 35 inches is the norm for the lower slopes and higher valleys.

The amount of precipitation and snowfall can affect solid waste operations. Rain and snow affect collection vehicle mobility and total leachate generation. Many areas are prone to flooding, which eliminates them as potential landfill or facility sites. These areas include major tributaries of the Columbia River and some canyon areas. Average winter snowfalls range from 20 to 35 inches in lower elevations, 40 to 80 inches in intermediate areas and 100 inches or more along the east slopes of the Cascades. Singular events, such as the 0.45 inches received in the Wenatchee area on Oct. 17, 2004, can cause temporary transportation problems due to rockslides and flooding.

Table 2.1 Temperature Variation in Chelan County

Station	Data	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Chelan	Average Max	33.6	40.8	51.5	61.1	69.9	76.8	84.5	84.9	75.3	61.1	43.2	33.5	59.8
	Average Min	24.4	27.4	33.7	40.5	48.3	55.2	60.9	60.1	51.4	41.1	31.2	24.8	41.7
	Mean Temp.	29.0	34.1	42.6	50.8	59.1	66.0	72.7	72.5	63.4	51.1	37.2	29.2	50.8
Leavenworth	Average Max	35.0	43.0	53.2	62.3	71.1	78.3	86.8	87.4	78.3	63.4	43.0	33.6	61.4
	Average Min	20.7	22.9	28.3	34.1	41.0	47.2	52.0	51.0	42.7	33.9	26.7	20.8	35.2
	Mean Temp.	27.9	33.0	40.8	48.2	56.1	62.8	69.4	69.2	60.5	48.7	34.9	27.2	48.3
Plain	Average Max	34.2	40.7	49.2	58.1	66.4	73.1	80.9	81.2	72.9	58.4	40.1	32.3	57.4
	Average Min	21.8	23.6	27.5	31.8	38.3	44.5	49.0	48.3	40.8	33.3	26.8	21.4	34.0
	Mean Temp.	28.0	32.2	38.4	45.0	52.4	58.8	65.0	64.8	56.7	45.9	33.5	26.9	45.7
Stehekin	Average Max	33.8	39.0	48.3	58.8	68.9	76.1	84.1	83.9	73.1	57.3	40.2	33.0	58.2
	Average Min	25.2	26.6	30.5	36.3	43.5	50.1	55.3	55.0	47.0	37.9	29.9	25.3	38.7
	Mean Temp.	29.5	32.8	39.4	47.6	56.2	63.1	69.7	69.5	60.1	47.6	35.1	29.2	48.5
Stevens Pass	Average Max	29.6	32.4	37.9	42.6	49.5	57.1	63.8	65.6	57.6	47.4	32.8	28.3	45.5
	Average Min	20.6	22.5	26.3	29.6	34.7	40.2	45.4	46.5	40.6	34.3	24.1	19.1	32.1
	Mean Temp.	25.1	27.5	32.1	36.1	42.1	48.7	54.6	56.1	49.1	40.9	28.5	23.7	38.8
Wenatchee	Average Max	36.4	44.0	55.2	64.3	72.9	80.1	87.6	87.5	78.1	63.5	45.6	35.7	62.7
	Average Min	25.7	28.5	34.3	40.8	48.8	55.7	61.1	60.3	51.8	41.1	31.6	25.7	42.2
	Mean Temp.	31.1	36.3	44.8	52.6	60.9	67.9	74.4	73.9	65.0	52.3	38.6	30.7	52.5

All of the above figures are in degrees Fahrenheit (F), for the period from 1981 through 2010.
Source: Office of the Washington State Climatologist (www.climate.washington.edu/climate.html).

Table 2.2 Average Monthly and Annual Precipitation (inches)

Station	Elevation (ft)	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Chelan	1,110	1.63	1.24	0.95	0.65	0.94	0.87	0.43	0.31	0.38	0.77	1.62	1.90	11.69
Leavenworth	1,128	4.18	2.99	2.07	1.15	1.21	1.01	0.49	0.40	0.70	2.08	4.35	4.85	25.48
Plain	1,860	4.49	3.19	2.17	1.29	1.27	0.93	0.51	0.53	0.79	2.35	4.80	4.84	27.17
Stehekin	1,150	6.21	4.04	2.66	1.58	1.15	0.88	0.63	0.64	0.99	3.53	6.78	6.62	35.69
Stevens Pass	4,085	10.11	9.45	6.61	5.62	4.31	3.69	2.11	1.73	3.65	7.93	15.91	11.47	82.59
Wenatchee	634	1.29	1.96	0.66	0.50	0.65	0.63	0.35	0.21	0.31	0.56	1.36	1.58	9.06

All of the above figures are averages for the period 1981 through 2010.
Source: Office of the Washington State Climatologist (www.climate.washington.edu/climate.html).

The prevailing wind direction in the area is influenced by topography and seasonal changes. Winds are predominantly northwest to southeast in the summer in Chelan County. The winds are strongest in the spring and decrease through the summer months. There is usually little wind in the late fall and winter months.

2.2.3 Hydrology

Mountain ranges divide Chelan County into three major drainages: the Wenatchee River, the Entiat River and the Stehekin River, including Lake Chelan. Each of the drainage areas contains a number of canyons, some of which have a high flash flood potential. All surface runoff eventually finds its way to the Columbia River.

The county's major source of domestic water supply comes from surface streams, rivers, lakes, and river-related aquifers. Some domestic water is provided from wells. Groundwater appears to be available in significant quantities only in the immediate vicinity of streams and rivers where sufficient alluvium has been deposited. The remaining land tends to be steep and rocky with frequent outcroppings of bedrock, which generally precludes groundwater storage.

2.2.4 Geology

There are four types of geologic formations in Chelan County in areas where disposal sites may be established. The southeastern portion of the county is underlain with dark gray to black dense aphanitic basaltic rock. The central portion, including the Lake Chelan area, is underlain with granitic rock. The Entiat Valley portions of the Wenatchee Valley and the eastern portion of Lake Wenatchee are underlain with alluvial deposits and glacial drifts containing sand, gravel, silt and clay. Around the foothills of the Columbia River and the lower drainage area of the Wenatchee River, the land is surrounded by Swauk bedrock formations, consisting primarily of sandstone.

2.2.5 Soils

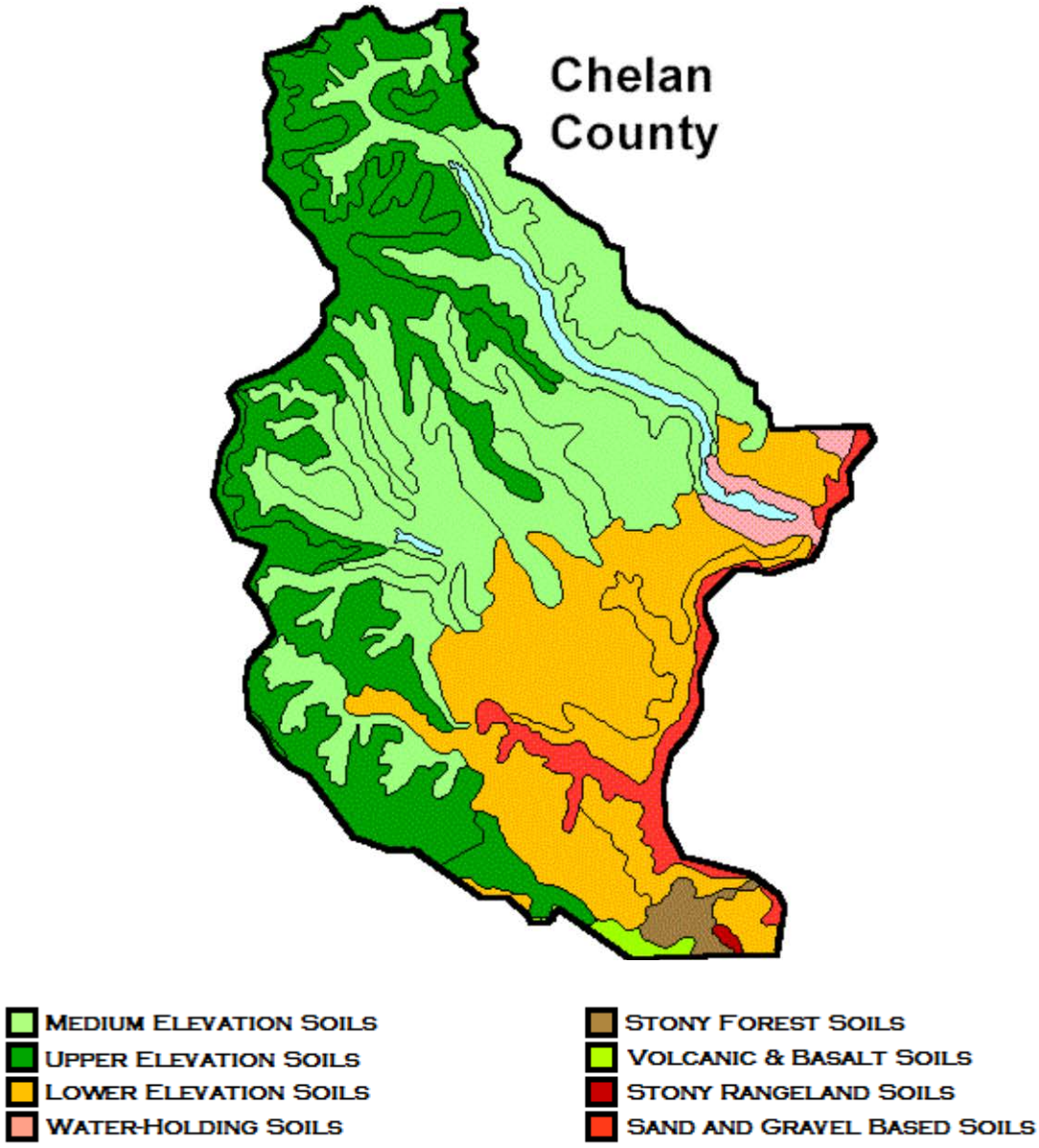
There are several separately recognized soil types in the planning area (see Figure 2.1). The soils along the Columbia River are predominantly sandy and gravelly, affording excellent drainage for the extensive orchard crops. The remaining lowland soils, except for those found in the coulees and other geologic breaks, are usually a form of silt-loam, utilized primarily for dry land farming.

Soil formation is influenced by topography, climate and type of vegetation. The soil types that can be found in Chelan County area can be grouped by elevation:

Upper elevation soils: Shown in dark green in Figure 2.1, the soils found at higher elevations include no soil (exposed bedrock) interspersed with deposits of cindery-textured soils containing pumice and ash, with low fertility and low water-holding capacity (the Cattcreek-Vanson-Colter-Sinnice-Minniepeak-Goffpeak soil series). This area also includes a lesser amount of a soil series (Playco-Kindy-Hatchet-Wollard-Getchell-Rock Outcrop) that consists of a layer of pumice or ash-based soil underlain with glacial till or colluvium.

Medium elevation soils: Shown in light green in Figure 2.1, the soils found at medium elevations are primarily alternating bands of two types of cool to cold soils: Choralmont-Palmich-Ramparter and Nevine-Chemawa-Choralmont. The former forms on glaciated foothills and mountain slopes

Figure 2.1 Soil Map for Chelan County



Source: Remote Sensing and GIS Lab, Crop and Soil Sciences, Washington State University, 2005. This map can no longer be viewed online and no additional soil surveys have been performed on the Chelan County soil since the 2005 study.

and is based on pumice and ash deposits, with low fertility, low water holding capacity and low slope stability. The latter is a deep, stony forest soil that forms in valleys and at the foot of slopes. This area also includes a deposit of a third soil type in the southwestern part of the county, the Moscow-Vassar-Prouty-Brickel-Mobate soil series. This soil type is developed from volcanic ash and loess over granitic bedrock on unglaciated foothills and mountain slopes.

Low elevation soils: The area shown in orange in Figure 2.1 consists primarily of Nard-Dinkelman-Ampad, which is a loess-influenced soil derived from rocks with some clay content in the subsoil. The area shown in orange also includes, at lower elevations, the Tyee-Ginnis-Yaxon-Dinkels-Taneum-Tieton soil series. The area of orange in the southeastern corner is the Clerf-Bakeoven-Vantage soil series, which is a dry, stony rangeland soil. The small area of orange shown at the south-southwestern edge is a pocket of the Spokane-Tekoa-Dragoon-Schumacher soil series, which is also loess-influenced but primarily derived from rocks with clay-enriched subsoils.

Areas shown in pink in Figure 2.1 include a pocket of Newbon-Swakane-Conconully-Rock Outcrop to the north and Chelan-Supplee-Rock Outcrop around the south end of Lake Chelan. These soils have greater water-holding capacity than the soils at higher elevations and thus are suitable for crops, orchards and rangeland.

The area shown in red in Figure 2.1 is Pogue-Cashmere-Aeneas, which is derived from glacial outwash. These soils have some influence by volcanic ash in the upper portion and are underlain by gravel or sand.

In the southeastern corner of the county, there is a small area of Naxing-Pird-Alfir-Saydab-Darland-Ganis (shown in lime green color), which is a cold, stony soil that stays moist year-round and is formed from volcanic ejecta and basalt. There is also an area consisting of Loneridge-Jumpe-Berson-Para-McGowan-Gunn-Sutkin (shown in brown), which is a cool, stony forest soil. Finally, there is a small area (shown in dark red) of Kuhl-Rock Creek-Badge-Lickskillet soil series, which is a stony rangeland soil with humus-rich topsoil.

The above information is from the Remote Sensing and GIS Lab, Crop and Soil Sciences, Washington State University (WSU 2005).

2.2.6 General Land Use

Approximately 80% of Chelan County is mountainous, sparsely to heavily forested and undeveloped. Major urban-rural development has largely been restricted to the narrow valley floors. The major land use activity within the valley areas is agricultural, consisting largely of the production of apples, pears and soft fruits.

Industrial development in Chelan County is limited. For the most part, industrial activities are located along the Columbia River in the Wenatchee urban area. There are some manufacturing activities spotted throughout the agricultural areas, most of which are associated with the fruit production industry.

The main residential and commercial concentrations are located in and around the incorporated towns and cities. There are extensive year-round and summer home developments along the shores of lower Lake Chelan and, to a lesser degree, around Lake Wenatchee. Also, some limited tourist

commercial activities are located along U.S. Highway 2 up through the Wenatchee Valley. Leavenworth, at the upper end of the valley, and Chelan, at the north end of Hwy 97-A, have developed extensive tourist and commercial facilities.

Much of Chelan County's land area is reserved for recreational purposes including a number of ski areas, camping facilities, fishing and hunting, boating and hiking. Approximately 74% of the land area within Chelan County is either U.S. Forest Service or National Park Service land.

The amount of land used for agricultural purposes has decreased as land is converted to other uses, especially residential homes. The 2005 Census of Agriculture shows that the number of farms decreased from 1,334 farms in 1997 to 1,193 farms in 2002 (NASS 2005). The amount of farm acreage declined during that same period from 131,200 to 112,023 acres.

The most recent Census of Agriculture shows that the number of farms decreased from 979 farms in 2007 to 890 in 2012 (NASS 2012), a net loss of 9%. The amount of farm acreage declined during that same period from 93,883 to 75,820, a net loss of 20.3%.

2.2.7 Economic Activity Centers

The major economic activity center in the county is the Wenatchee area. It functions as the regional center and distribution point for much of North Central Washington. The towns of Chelan, Cashmere and Leavenworth function as secondary trading centers serving the local market and tourist trade.

Agriculture is one of the two main industries in Chelan County, which houses nearly 76,000 acres of farmland and employs nearly 25 percent of the total covered employment in the area. This farmland produces a wide variety of fruits and other crops while also generating an increase in the county's population during harvesting seasons.

The climate and natural beauty of the planning area is an important economic resource because it is largely responsible for the increase in tourism, the other main industry in the county. Mountain recreation areas are popular during all four seasons. Lake Chelan and the City of Leavenworth both receive around 2 million visitors each year.

Chelan County contains private and federal commercial timber that is being harvested on a sustained yield basis and provides some income to the private sector and to the County itself. A significant portion of forested federal lands in the county, including those with a wilderness designation, provide varied opportunities and activities for public recreation. Chelan County also contains mineral resources, though mining is mostly related to gold prospecting and the level of such activity varies with the price of gold.

Industrial development in the area has been limited.

2.2.8 Transportation Network

Two major state highways traverse the county providing east-west and north-south transportation. U.S. Highway 2 (across Stevens Pass and along the Wenatchee River Valley to Wenatchee) follows the east-west link from the Puget Sound area. A direct north-south route from California to Canada follows U.S. Highway 97A across Swauk Pass through the Wenatchee and Columbia River Valleys to points in Okanogan County.

Two minor state roads link rural areas of the county with the major north-south and east-west highways as follows: State Route 150 links Manson with Chelan and U.S. Highway 97A; and access to Lake Wenatchee from U.S. Highway 2 is provided by State Route 207.

Railroad service is vital to the area because a portion of the fruit and industrial products originating in the county are transported by rail. The main east-west transcontinental route of the Burlington Northern and Santa Fe Railroad (BNSF) runs through the area, generally paralleling U.S. Highway 2. A spur line extends north along the Columbia River into Okanogan County to the Canadian border. Passenger rail service is provided in the county through an Amtrak station in Wenatchee. Passenger bus service is also available in the county.

There are four airports in Chelan County but no airlines provide regularly scheduled public transportation services to these airports. The nearest such services are provided at Pangborn Memorial Field in East Wenatchee. The four airports in Chelan County include the Chelan Municipal Airport (owned and operated by the city of Chelan), the Stehekin Airfield (operated by WSDOT), the Lake Wenatchee State Airport (a state-owned facility), and the Cashmere-Dryden Airport (a County-owned facility). These airports provide a base of operation for private planes, helicopters and other emergency aircraft, and planes-for-hire for scenic tours and personal trips. The Stehekin Airfield and the Lake Wenatchee State Airport are only operated seasonally (closed in the winter).

River navigation has been restricted due to the construction of hydroelectric dams across the Columbia River. Regular boat service on Lake Chelan serves up-lake communities. Solid waste generated in the Stehekin Valley is transported down-lake by Stehekin Maintenance and Machinery. Recyclable materials from both Stehekin and Holden Village are also transported down-lake by boat.

In Chelan County there are three bridges that are of insufficient weight or height standards to handle larger solid waste collection vehicles. These bridges are listed in Table 2.3.

Table 2.3 Bridges in Chelan County with Weight Limitations

Bridge Name	Type of Route	Limiting Factor(s)
West Monitor	Arterial	15 ton weight limit
*West Cashmere	Access	22 ton weight limit
*Stemilt Creek	Access	17 ton weight limit

*The West Cashmere Bridge and the Stemilt Creek Bridge have different weight restrictions for semi-truck types. (West Cashmere Bridge: type 3 at 14 tons, type 3-S2 at 22 tons and type 3-3 at 26 tons. Stemilt Creek Bridge: type 3 at 17 tons, type 3-S2 at 28 tons and type 3-3 at 34 tons.)

Various other Chelan County roads have vehicle weight restrictions placed upon them during the spring thawing period in late February and early March. These restrictions usually extend for a period of three to six weeks. This affects the solid waste system; loaded vehicles to the Greater Wenatchee Regional Landfill may have to be moved with weight-reduced loads during this period. These restrictions should not affect any other aspect of the solid waste system.

Particular attention must be given to these restrictions when designing a transportation network and selecting the types of vehicles to be used. Current road restrictions have a direct effect on

collection, transportation and disposal activities by placing greater limitations on the use of some roads and bridges. Thus, it is important to select equipment and locate transportation routes that allow the greatest amount of flexibility.

2.2.9 Population Characteristics

The population of Chelan County is estimated to be 73,967 people (2013 U.S. Census). From 2000 to 2013, the county population grew 10.1%. Population centers are found around three distinct geographic areas: the Columbia River Valley, the Wenatchee River Valley and the Lake Chelan Basin. The largest population distribution extends 42 miles along the Columbia River, an area that includes two incorporated cities, Wenatchee and Entiat.

The Washington State Office of Financial (OFM) provides estimates by county and city for the years that fall between the national census data that is collected every 10 years. The OFM's estimates (OFM 2012) are shown in Table 2.4. Also shown in Table 2.4 are population estimates by Census County Division (CCD), which are geographic subdivisions of the county. This data is only available for the years that the census was conducted.

In addition to permanent residents, Chelan County experiences a pronounced seasonal flux in population. Seasonal changes in population are caused by the farm labor force, tourism and outdoor recreational users and the living patterns of some retired persons. The increase in trailers, campers, resort condominium units and summer homes are reflected by increased summer populations. The national census figures do not document the seasonal changes because the census is based on the location of permanent residence.

Table 2.4 Chelan County Population by Area

By City	1990[1]	2000[1]	2002[1]	2005[1]	2010[3]	2013[3] (Estimated)
Cashmere	2,544	2,965	3,045	2,980	2,982	3,033
Chelan	2,976	3,526	3,535	3,526	4,073	4,142
Entiat	449	957	990	957	1,164	1,183
Leavenworth	1,692	2,074	2,095	2,074	2,327	2,367
Wenatchee	21,829	27,856	28,270	27,856	30,910	31,436
Unincorporated	22,760	29,238	29,665	29,985	31,273	31,806
Chelan County Total	52,250	66,616	67,600	69,200	72,729	73,967

By CCD	2000[2]	Change	2010[2]	Change
Cashmere CCD	10,824	21.7%	10,895	0.7%
Chelan CCD	6,222	25.7%	6,396	2.8%
Entiat CCD	2,130	41.3%	2,217	4.1%
Leavenworth-Lake Wenatchee CCD	5,902	34.5%	6,250	5.9%
Malaga CCD	3,506	34.4%	3,762	7.3%
Manson CCD	3,248	40.7%	3,813	17.4%
Stehekin CCD	106	-14.5%	152	43.4%
Wenatchee CCD	34,678	26.2%	38,967	12.4%
County Total	66,616	27.5%	72,453[4]	8.8%

Notes: 1. From *Population Estimates for the State, Counties, Cities and Towns* (OFM 2012). 2. 2010 population figures by CCD are from the Census Bureau's web page. 3. Estimates based on % change (OFM 2012) and actual population (US Census 2013). 4. Actual is 72,729.

The *Population Trends: Chelan and Douglas Counties* study completed in 1984 by the Chelan County Planning Department estimated that the apple harvest draws approximately 8,400 workers to Chelan and Douglas counties from other areas. The study further estimated that the tourist population in Chelan County during a typical summer weekend may equal almost half of the resident population and equal the resident population during peak periods.

The population of Chelan County is expected to continue to grow into the future (see Table 2.5). As of 2013, the population of 73,967 is less than the expected medium series projections (OFM 2012). This could be due to the negative effect economic difficulties have had on the area and state (reduction in farms, labor force, etc.). The OFM medium series is based on ideal and expected population trends. Table 2.5 shows the actual growth of the county population based on US Census data (2013).

Table 2.5 Chelan County Population Trends

Year	Total Population[1]	Annual Percent Change[2]
1960	40,744	---
1970	41,090	0.1%
1980	45,061	1.0%
1990	52,476	1.6%
2000	66,688	2.7%
2005	69,066	0.7%
2010	72,729	1.0%
2015	76,365	1.0%
2020	79,801	0.9%
2025	82,993	0.8%

Notes: 1. Population figures for the years 1960 through 2010 are based off the *US Census* (2013).
2. Percent change is calculated by dividing the increase from the previous year by the amount in the previous year and then expressed as a percentage.

2.2.10 Global Economic and Environmental Trends

Several global trends may have an impact on the factors discussed above and on the programs discussed later in this Plan. Three such trends are:

- Global warming
- Increasing oil prices
- International shifts in manufacturing activities and demand for raw materials

It is impossible to predict the exact nature and degree of local impacts that may result from these trends because the magnitude and timing of these trends is highly uncertain. Furthermore, the actual local impacts of these trends could be both positive and negative, and some aspects could even cancel each other out to a degree (at least on a local level).

Global warming: The magnitude and causes of global warming are still being debated and researched at the time of this writing, but there is a growing body of evidence that the world is undergoing some type of climate change. The existing climate models are not predicting such severe storms for Washington State or for Chelan County, but it's possible that the summers in the Cascade Mountains will be longer, hotter and drier than they have been in the past. This could increase the demand for water in Chelan County at the same time that runoff might be reduced when it is needed the most (mid to late summer). Even if there were no large changes in Chelan County, however, impacts to other areas could cause high energy prices and material shortages, such as occurred in the summer of 2016 for California drought (extensive wildfires and resulting damages).

One point that should be made about the impact of global warming is that it may not only lead to warmer temperatures, but it also could lead to more variable weather patterns and severe storms of any type. Increased global temperatures could actually make some areas colder or wetter by changing normal weather patterns.

Increasing oil prices: In the long term, the price of petroleum products will increase as the supply of oil shrinks, unless demand shrinks as well. In other words, it is not the point at which the world runs out of oil that is important, but the point at which supply can no longer keep up with demand. Factors that may alter oil prices include increasing demand, over-inflated estimates of reserves, difficulties in extracting the remaining reserves cost-effectively and inadequate investments in oil production systems. Concerns about future supplies and the economic impacts of increased prices are being raised by many different groups now, including the International Energy Agency (IEA). In addition to concerns about economic impacts of increasing prices, the IEA has raised concerns about the increasing amount of oil production in the Middle East, which now contains two-thirds of the world's oil reserves (WSJ 2005).

The increase in oil prices is a trend that could have both positive and negative impacts on Chelan County's economy and on solid waste programs. Increased gasoline prices will be bad for tourism and industries that depend heavily on shipping (such as fruit and agricultural products in general), although it is also possible that Chelan County could become a significant producer of energy from hydroelectric dams. The net impact to solid waste programs could include:

- There could be more or less solid waste generated if tourism or seasonal population patterns are affected,
- Higher fuel costs will lead to higher prices for collection and other transportation-based programs, thus making waste export less cost-effective and efficient transfer systems more important,
- Recycling could become more or less cost-effective, depending on the competing impacts of transportation costs versus the value of recyclable materials, and
- Local composting systems could become more important.

International shifts in manufacturing and demand for raw materials: There is already a large amount of manufacturing capacity that has shifted to China and other countries. Recently, however, there has been increased recognition in China of the environmental costs of these activities. This plus other factors, such as unpredictable fuel costs, make it uncertain whether worldwide shipping practices will continue to be as competitive in the future.

2.3 QUANTITY AND COMPOSITION OF SOLID WASTE

This section describes the waste stream in Chelan County, and forecasts future disposal levels. An estimate of the composition and future quantities of solid waste in Chelan County is necessary to provide the basis for determining solid waste handling needs for the next twenty years.

2.3.1 Definition

Most of the solid waste in Chelan County is disposed in landfills and some is recycled, incinerated, used as soil amendment or disposed of in sites designated for a specific type of special waste. The largest component of the waste stream is mixed municipal solid waste (MSW). MSW is generally disposed of at landfills, and consists of waste typically generated by residences, businesses and institutions. Wastes generated by industrial and agricultural sources are generally included to the extent that these are handled through the MSW disposal system, but these sources also generate wastes that require or benefit from special handling. Special wastes include materials such as bio-solids, demolition debris, petroleum-contaminated soils, hazardous waste, biomedical wastes, asbestos and tires (see Chapter 9).

Figures used in this report reflect a key difference between disposed quantities and generated quantities. As used in this report, disposed solid waste is considered to be all solid waste disposed in landfills within or outside the county. On the other hand, waste generated in the county is the sum of disposed waste and recycled materials.

2.3.2 Historical Solid Waste Data

The Greater Wenatchee Regional Landfill (GWRLF) receives the majority of Chelan County's municipal solid waste. Some waste is directly delivered to GWRLF, but most of the waste is sent there from one of the four transfer stations in Chelan County. The waste accepted at the transfer stations and landfill has been recorded by volume (cubic yards) in the past; however, the landfill, the South Wenatchee Transfer Station and the Dryden Transfer Station have moved to weight-based transactions. At the Chelan Transfer Station, waste deliveries are noted as "compacted" (generally brought in by garbage trucks) and "loose" (generally brought in by "self-haul" customers). The amount of waste handled by each transfer station in 2010, 2011 and 2013 is shown in Table 2.6. The Stehekin Transfer Station's waste is shipped down Lake Chelan by barge and is collected at the Chelan Transfer Station and is therefore incorporated in the Chelan Transfer Station's total waste collected.

It should also be noted that as of 2014, the GWRLF is receiving shipments of MSW from Spokane, Washington and reduced the current capacity by half with an estimated 85 years remaining to maximize the landfill capacity.

Table 2.6 Solid Waste received at Transfer Facilities			
Transfer Station	**2010**	**2016**	**2013**
Chelan Transfer Station	6,151 tons* (22,782 yards)	~10,433 tons* (38,641 yards)	10,880 tons
Dryden Transfer Station	8,935 tons (33,159 yards*)	~19,958 tons* (88,702 yards)	19,671 tons
South Wenatchee Transfer Station	46,302 tons* (171,490 yards)	~46,253 tons* (160,196 yards)	9,582 tons**
Stehekin Transfer Station	128.8 tons***	N/A	103.4 tons***

* Approximations of tonnage/yardage based on a cubic yards-to-tons conversion ratio of 1:0.27. Estimated of 450 lbs/cubic yard
** The dramatic decrease in tonnage at the South Wenatchee Transfer Station is due to a change in dumping policy. In previous years, the transfer station was receiving Waste Management MSW Trucks. These trucks now deliver loads directly to the landfill.
*** The Stehekin Transfer Station delivers collected MSW to the Chelan Transfer Station. This data is also included in the total amount of solid waste collected by the Chelan Transfer Station.

No surveys or waste composition studies have been conducted specifically for Chelan County, but data from a study in Yakima County can be used to estimate the breakdown by source for Chelan County's waste stream (See Table 2.7).

Table 2.7 Waste Deliveries by Type		
Type of Waste	**Rate (%)[1]**	**Tonnage[2]**
Self Haul	24.6	27,388
Residential	28.1	31,285
Commercial / Industrial	47.3	52,661
Total		111,334

Notes: These figures are not precise and should only be taken as an indication of the relative amounts of waste in Chelan County's waste stream. 1. Percent by weight figures are from a study done for Yakima County (GS 2003). 2. Based on the 2013 MSW tonnage for Chelan County from Ecology's annual survey (111,334 tons) and percentages shown in the column to the left.

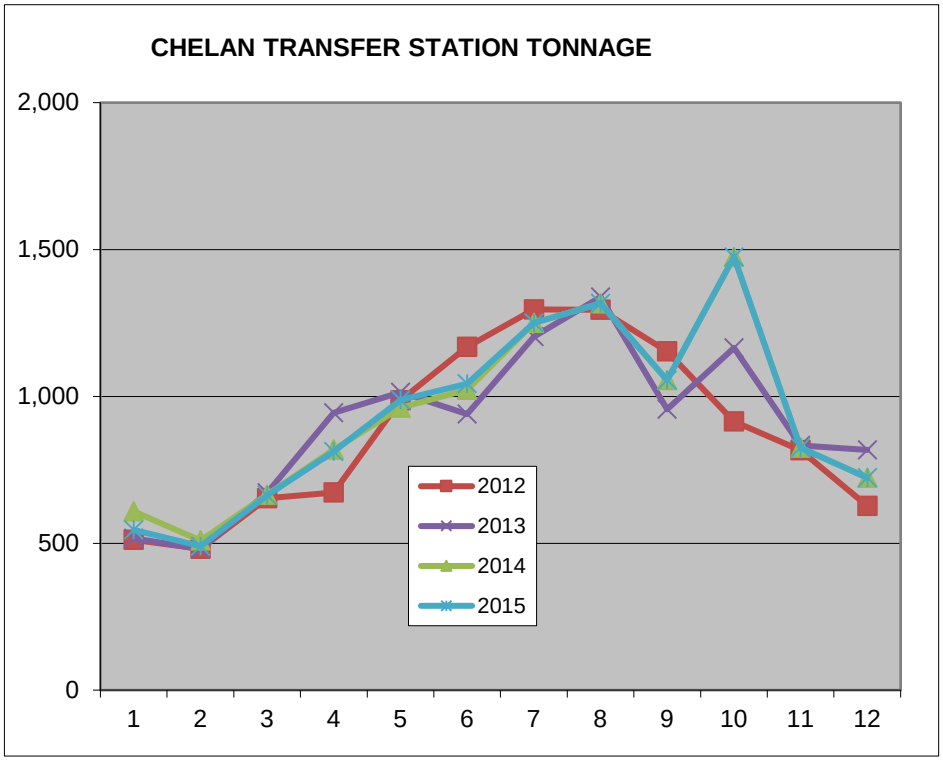
The rate at which solid waste is generated varies throughout the year due to seasonal differences in residential and commercial activities. Chelan County is subject to major seasonal population fluctuations. The summer months bring substantial increases in tourist, recreational and farm labor population. The population fluctuations are reflected by commensurate increases in solid waste generation. Federal, State, Public Utility and local parks generate increased disposal volumes during the summer months. The variation in waste delivery amounts for occurring at two of the facilities in Chelan County can be seen in Figure 2.2.

2.3.3 Current Recycling Levels

It is estimated that approximately 35% of Chelan County's waste stream (~39,579 tons in 2013) is currently recycled and composted (see Table 2.8). This figure is generally called a "recycling rate," although it includes composting as well. Data for some materials and some companies is not reported to the Department of Ecology and so is not shown in Table 2.8. In addition, no estimate is available on the current levels of waste reduction. Based on the 2013 data, Chelan County's diversion rate is approximately 35%. If waste reduction and the missing recycling tonnages could be accounted for, the county's current diversion rate would be higher.

Figure 2.2 Seasonal Variations in Chelan County's Waste Stream

Chelan Transfer Station



Dryden Transfer Station

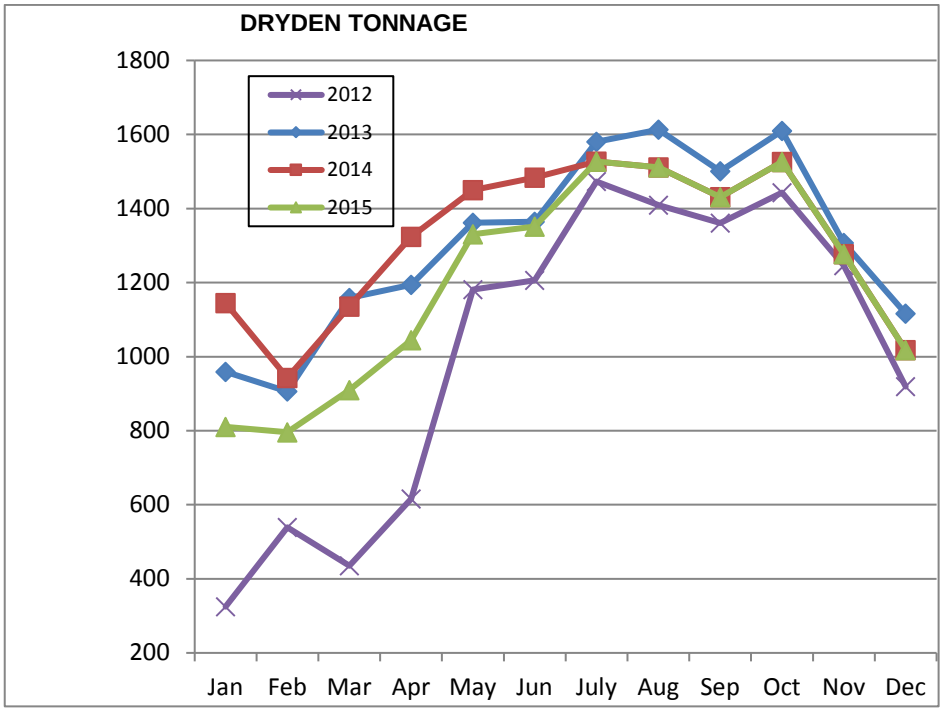


Table 2.8 Recycled Quantities by Material [1]

Recycled Materials	2009	2010	2013
Aluminum Cans	77.76	111	201.6
Computers and Electronics	68.13	16	23.69
Fluorescent Light Bulbs	7.64	6	8.54
Food Waste and Rendering	NA	NA	NA
Glass	602.17	755	1,405
Metals, Ferrous	2,187.7	1,895	9,509.8
Metals, Non-Ferrous	36.53	339	749.94
Paper, Cardboard	4,180.52	5,533	8,063.9
Paper, High Grade	7.67	4	222
Paper, Mixed Waste Paper	1,783.89	1,975	4,432.87
Paper, Newspaper	767.97	6,971	1,883.54
Photographic Film	15.64	7	10.10
Plastic, HDPE Containers	47.39	81	167.36
Plastic, LDPE	79.35	138	277.01
Plastic, PET Containers	60.21	106	311.99
Plastic, Other	45.78	49	105.55
Textiles	251	209	135
Tin Cans	49.26	71	224.89
Tires	151.27	7	36.75
Used Oil	925.90	862	587.23
Vehicle Batteries	141.20	230	312.18
White Goods (Appliances)	369.72	266	*Included in Ferrous Metals
Wood	NA	1,588	4,045.31
Yard Waste	4,372.4	4,606	6,493.73
Tons Recycled	16,229.1	26,141	39,579.57
Diverted Materials		**Tons Diverted**	
Antifreeze	61.43	67	45.95
Asphalt / Concrete	NA	NA	
Batteries, Household and Industrial	0.78	3	3.55
Oil Filters	15.30	15	16.59
Reuse	NA	38	NA
Tires (burned for energy)	114.95	286	300.20
Tires (retread)	NA	12	9.70
Used Oil (burned for energy)	NA	NA	80.87
Tons Diverted	7,329.89	6,157	10,391.1
Tons Disposed	83,575	87,261	89,534.2
Total Tons Generated	104,379	106,097	111,334
Waste Generation Rate, tons/year/person	1.54	1.53	1.51
Recycling/Composting Rate	14.8%	15.6%	35.55%

Notes:
1. Data on recycled, diverted and disposed tonnages is from Ecology's annual recycling survey. Diverted tonnages are materials (such as construction debris) or applications (such as incineration with energy recovery) that are a beneficial use but that do not meet the definition of recycling.
2. To preserve confidentiality for the survey respondents, only those materials with three or more companies reporting are shown above. Data for materials with only one or two respondents, such as high-grade paper, cannot be shown above but are included in the total amount.
3. NA = Not Applicable, no data reported for that material in that year.

As shown in Table 2.8, data for some of the materials is not available for confidentiality reasons. For those materials where only one or two companies are handling a specific material, the amount cannot be reported or competitors would be able to determine too easily how much material other companies are handling.

The data shown in Table 2.8 lists "diverted" materials, which includes materials that are not included in the state's definition of a recyclable material (such as asphalt and concrete) and materials consumed in processes that are not defined as recycling but that are still of beneficial use (such as incineration with energy recovery).

The waste generation rate shown near the bottom of Table 2.8 is the figure for the average number of tons of waste disposed and recycled by each person in the county annually. At 1.51 tons per year per person (or 8.27 pounds per person per day), this amount is slightly higher than the state average at 6.94 pounds per day (*Department of Ecology 2013*).

2.3.4 Solid Waste Facility Data

The disposal sites for Chelan County serve specific areas. A description of areas serviced by each disposal facility is shown in Table 2.9, and Figure 2.3 shows the locations of solid waste facilities.

2.3.5 Forecast Methodology and Results

Table 2.10 shows the projected figures for the amounts of solid waste expected to be disposed and recycled for the duration of the planning period for this Plan.

The methodology used to project solid waste generation rates for the next 10 years was based on population forecasts (see Table 2.5). These projections were developed under the following

Table 2.9 Areas Served by Transfer and Disposal Facilities

Disposal Facility	Waste Generation Area	Population Served[1]
Chelan Transfer Station	Chelan, Manson area, Stehekin, northern parts of uninc. Chelan County, parts of Douglas and Okanogan counties	10,651
Dryden Transfer Station	Leavenworth, Cashmere[2] and western portions of unincorporated Chelan County	18,566
South Wenatchee Transfer Station	Wenatchee, Entiat, Malaga area, southern parts of uninc. Chelan County, E. Wenatchee and other parts of Douglas Co.	44,750
Stehekin Transfer Station*	Stehekin	75
Greater Wenatchee Regional Landfill	Portions of the county and ultimate disposal site for all waste from Chelan County	73,967 (all)

1. The amount of population served by each facility is an estimate for Chelan County only based on year 2013 data (see Table 2.4).
2. Cashmere currently hauls directly to the Greater Wenatchee Regional Landfill.

*Some waste collected at the Stehekin Transfer Station is generated by seasonal and recreational population increases. The solid waste generated at the Stehekin Transfer Station is delivered to the Chelan Transfer Station, which includes Stehekin's 75 permanent residents in total population served.

Figure 2.3 Solid Waste Facilities

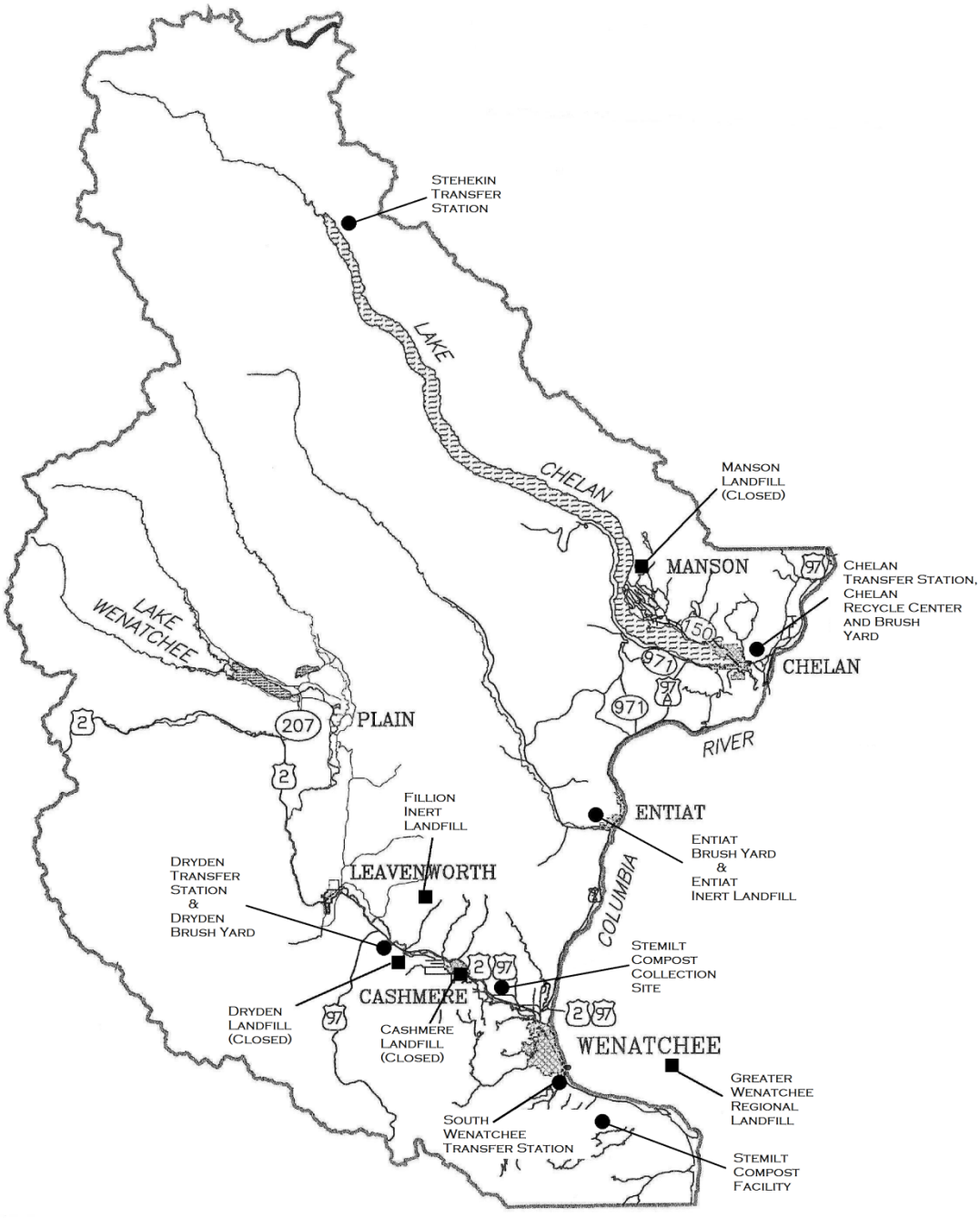


Table 2.10 Solid Waste Disposal Projections for Chelan County						
Year	Population	Tons Generated (at current rate of 1.51 tons per year per person)	Recycling Rate	Projected Tonnages		
				Tons Disposed	Tons Recycled	Tons Diverted
2003	67,900	104,379	15%	83,575	15,489	5,315
2005	71,200	109,600	20%	82,100	21,900	5,580
2010	76,000	117,020	25%	81,800	29,300	5,960
2013	*73,967	111,334	35%	71,754	39,579	10,391
2015	81,100	122,461	40%	73,477	48,984	11,388
2020	85,900	129,709	45%	71,340	58,369	12,063
2025	90,500	136,655	50%	68,327	68,327	12,709

Notes: The above figures assume the recycling/composting goal is met and the diversion rate remains constant at 35% (2013 diversion rate) of the total amount of waste generated for years 2015 thru 2025. The population estimates are based on the medium statistics predictions for population growth (OFM 2012).
*Actual DOE Report statistics for 2013.

assumptions, any of which could change in the future due to the recommendations in this Plan or due to other factors:

- The waste generation rate (how much waste is generated per person, household or business) will remain the same through the planning period, at 1.51 tons per person per year.
- The future recycling/composting goal will be met (40% by 2015, with continued increases after that).
- Materials diverted to other beneficial uses will also continue to be diverted from the waste stream, at the same rate (35% of the total amount of generated waste) as in 2013.

Waste generation is influenced by various demographic and economic factors, including changes in levels of employment and personal income, the value of recyclable materials, the price of disposal services, changes in product design and packaging, and changes in behavior affecting waste reduction and recycling levels. Some of these factors are difficult to measure over time, while others are so interrelated that using them in a statistical analysis lowers the accuracy of the forecast. For these reasons, a forecast was developed based solely on population to indicate the potential increase in solid waste disposal within the counties, but it is important to realize that any of these related factors may change within the forecast period. To ensure accuracy for future planning purposes, the waste stream should be monitored periodically.

The forecast presented in Table 2.10 shows that the amount of waste disposed in Chelan County, without taking into account any increases in recycling or composting, is expected to increase by 11% over the forecast period, from 122,461 tons in 2015 to 136,655 tons in 2025. This is based on a per capita waste disposal rate of 1.51 tons per person per year, or 8.27 pounds per person per day, which is assumed to remain constant throughout the forecast period.

One of the goals of this plan is to increase waste reduction and recycling. As new programs decrease the waste generation rate, the amount of landfilled solid waste will be reduced accordingly as also shown in Table 2.10. A recycling rate approximately double the current rate is used in Table 2.10 to illustrate the potential decrease in the amount of waste landfilled.

2.3.6 Waste Stream Composition

Composition data for Chelan County's waste stream is needed to assist in designing solid waste handling and disposal programs. No detailed waste composition study has been performed to date for Chelan County, but studies have recently been completed in other Eastern Washington counties, including Grant, Okanogan and Yakima counties. Based on similarities in agricultural activities and other parameters, the data from Yakima County seems to be the best fit for Chelan County and so this data is shown in Table 2.11.

Waste composition can be expected to change in the future due to changes in consumption patterns, packaging methods, disposal habits, tourism and other factors. These changes are very difficult to predict in the long term. Furthermore, implementation of this Plan is hoped to affect waste composition in Chelan County by changing purchasing and disposal habits. Prior to any investments in Chelan County that depend on the composition of the waste stream, a detailed local study should be conducted.

Table 2.11 Estimated Solid Waste Composition in Chelan County

Material	Entire Waste Stream: Percent by Weight[1]	Entire Waste Stream: Tons of Material[2]	Typical Composition by Waste Stream, % by Wt.[1]: Residential	Residential Self-Haul	Non-Res. Self-Haul	Commercial/ Industrial
Paper	**19.5%**	**21,710 T**	**24.3%**	**11.9%**	**7.2%**	**21.1%**
Cardboard	4.4	4,899	2.6	4.3	2.9	5.7
Newspaper	2.3	2,561	4.8	2.2	0.1	1.1
Other Recyclable Paper	6.9	7,682	10.5	3.3	1.4	6.8
Compostable Paper	4.7	5,232	5.6	1.6	0.5	5.9
Non-Recyclable Paper	1.2	1,336	0.7	0.6	2.3	1.7
Plastic	**14.4**	**16,032**	**12.7**	**8.9**	**5.8**	**18.5**
PET Bottles	0.7	779	1.2	0.5	0.04	0.6
HDPE Bottles	0.7	779	1.2	0.7	0.04	0.5
Film and Bags	5.3	5,901	5.6	1.9	3.5	6.7
Other Plastics	7.7	8,573	4.7	5.8	2.2	10.7
Glass	**4.4**	**4,899**	**4.3**	**3.3**	**0.3**	**5.3**
Recyclable Bottles	2.5	2,783	4.2	2.6	0.2	1.7
Non-recyclable Glass	1.9	2,116	0.1	0.7	0.1	3.6
Metals	**10.6**	**11,801**	**8.9**	**14.4**	**9.8**	**10.2**
Aluminum Cans	0.6	668	0.9	0.4	0.03	0.5
Tin Cans	1.0	1,113	1.8	0.9	0.03	0.8
Computers, Electronics	1.0	1,113	2.4	1.5	0.2	0.0
Other Metals	8.0	8,907	3.8	11.6	9.5	8.9
Organics	**19.8**	**22,044**	**26.1**	**19.2**	**13.6**	**17.0**
Food Waste	12.8	14,251	16.9	6.4	6.1	13.7
Yard Debris	7.0	7,793	9.2	12.8	7.5	3.3
Other	**15.7**	**17,479**	**21.1**	**16.0**	**6.1**	**13.5**
Disposable Diapers	2.5	2,783	4.9	1.4	0.02	1.7
Textiles	3.1	3,451	4.0	2.0	0.6	3.2
Tires, Rubber Products	0.3	334	0.1	0.8	0.02	0.3
Other Materials	9.8	10,911	12.1	11.8	5.7	8.3
Construction Debris	**13.5**	**15,031**	**1.6**	**24.4**	**54.7**	**11.9**
Wood Waste	9.8	10,912	1.1	17.2	35.5	9.3
Construction Debris	3.7	4,119	0.5	7.1	19.2	2.7
Special Wastes	**2.1**	**2,338**	**1.1**	**2.0**	**2.5**	**2.5**
Animal Excrement	0.6	668	0.7	0.8	0.01	0.4
Other Special Wastes	1.5	1,670	0.4	1.2	2.5	2.1
TOTAL TONS =		111,334				

Notes: These figures are not precise and should only be taken as an indication of the relative amounts of materials that may be present in Chelan County's waste stream. Furthermore, under no circumstances would 100% of the materials be recoverable through a recycling, composting or other waste diversion program.

1. Percent by weight figures are from Yakima County's data.
2. Based on the 2013 tonnage for Chelan County (111,334 tons) and percentages shown in the column to the left.

CHAPTER 3: WASTE REDUCTION

3.1 INTRODUCTION

The solid waste management activities discussed in this chapter are organized into two sections:

3.2 A preface to the Waste Reduction, Recycling and Composting Chapters
3.3 Waste Reduction

The following preface to this and the next two chapters is provided here because there is background information that pertains to all three of the waste diversion techniques (waste reduction, recycling and composting).

3.2 PREFACE TO THE WASTE REDUCTION, RECYCLING AND ORGANICS CHAPTERS

3.2.1 Introduction

This chapter, together with the following two chapters on recycling and composting, describe existing programs and future plans for activities that reduce the amount of solid waste being generated or disposed in Chelan County. This chapter discusses waste reduction methods that reduce the amount of waste being generated while the next two chapters discuss methods that reduce the amounts being disposed. Collectively, these approaches (waste reduction, recycling and composting) are known as "waste diversion" (although Ecology uses the term "diverted materials" in a broader sense to include energy recovery and other activities).

3.2.2 Purpose

Chapters 3, 4 and 5 provide an update of the county's waste diversion methods as well as fulfill state requirements regarding waste reduction and recycling programs. The state requirements are based in the "Waste Not Washington" Act (ESHB 1671), which are in turn reflected in various sections of the Revised Codes of Washington (RCW) and the Washington Administrative Codes (WAC). RCW 70.95 requires that local solid waste management plans demonstrate how the following goals (among others) will be met:

- Washington State's goal is to achieve and maintain a statewide recycling and composting rate of 50 percent.
- There is a statewide goal to eliminate yard debris from landfills in those areas where alternatives exist.
- Source separation of waste (at a minimum, separation into recyclable and non-recyclable fractions) must be a fundamental strategy of solid waste management.
- Steps should be taken to make recycling as affordable and convenient if not more so than waste disposal.
- RCW 70.95 requires that county and city governments assume the primary responsibility for solid waste management and implement effective waste reduction and recycling strategies.

3.2.3 Waste Diversion Goals

The state's goal is to reach and maintain a 50% recycling and composting rate. It is not required that every county and city achieve 50% waste diversion, however, since it is recognized that less-populated areas have greater barriers to cost-effective collection and marketing of recyclable materials. Each community is required to set a goal that suits its situation, provided that the goal is based on justified and sound reasoning. RCW 70.95.090 explicitly recognizes that different levels of collection service will be appropriate for urban and rural areas.

The current (2013) statewide recycling rate is 49%. This rate includes residential, commercial, and industrial recycling. The rate has declined slightly from previous years (The recycling rate in 2011 was 50.68% and the rate in 2012 was 50.08%). Part of the challenge with the recycling rate is that the overall amount of waste generated in the state has increased, and this figure has climbed from 6.5 pounds per person per day in 2002 to 12.63 pounds per person per day in 2012. At its peak, this figure reached 13.44 pounds per person per day in 2010 and while this figure has dropped to 12.63 pounds per person per day (2012), the figure has generally been increasing over the past decade.

3.2.4 Sustainability

Another issue common to waste reduction, recycling and composting is "sustainability." This can be defined as "the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs" (SN 2000). It is an issue that poses new challenges and opportunities for integrating several different problems involving the wise use of resources and environmental concerns. For example, "green building" practices, which attempt to provide a more sustainable alternative to traditional building practices, encompasses several different issues having to do with energy and resource conservation as well as recycling of waste materials and recyclability of building materials.

The concept of sustainability (and related concepts such as green building) is much larger than solid waste management, but can still be considered for future policy and program development.

3.3 WASTE REDUCTION

3.3.1 Introduction

Methods for reducing the solid waste produced (generated) in Chelan County are discussed in this section, which describes current waste reduction programs and activities, outlines needs and opportunities, examines alternatives for addressing these issues, and makes recommendations for waste reduction programs. Methods for reducing the toxicity of the waste produced are sometimes included in the definition for waste reduction, but these approaches are discussed in the chapter dealing with hazardous waste (see Chapter 8).

Waste reduction is accomplished by changing behavior (consumption patterns) so that new habits or practices are developed that generate less waste. Reusing a grocery bag, buying materials in bulk to reduce packaging waste, and reselling or giving away unwanted items instead of discarding them, are typical examples of waste reduction practices. Waste reduction can also be accomplished through changes in the products and packaging offered to consumers, and through other means.

The basic methods for waste reduction are:

1) Decrease the amount of material used to produce or package products.
2) Increase the durability or lifetime of products.
3) Reuse products for their original or compatible purposes.
4) Reduce consumption by using alternatives (product substitution) that generate less waste.

As mentioned above, reducing the toxicity of waste products is sometimes defined as a fifth waste reduction method. Public education and information programs can lead to changes in purchasing practices and product reuse, and so are an important part of waste reduction programs, too. Waste reduction programs are also closely related to recycling programs.

3.3.2 Goals and Objectives for Waste Reduction

Waste reduction is the preferred method for managing solid waste. It is recognized as a viable long-term option for handling part of the solid waste management problems facing communities across the state and nation. By decreasing the amount of waste that must be disposed of, waste reduction programs decrease the costs and environmental problems associated with waste collection, processing and disposal. Successfully reducing waste depends on local, state and federal programs and policies, and the support of businesses, industry and citizens.

The primary waste reduction goal is to reduce the amount of waste generated per capita by educational and legislative efforts directed towards changing consumer and industrial practices. Specifically, Chelan County's waste reduction objectives include the following:

- Develop an education program that encourages waste reduction and reuse, specifically a program that promotes waste reduction at the point of purchase.
- Suggest review of current collection and disposal contracts and franchises.
- Encourage development of incentives to reduce the waste stream going to the regional landfills.
- Continue monitoring and commenting on solid waste legislation that affects the county.
- Develop programs to achieve 5% more reduction in the waste stream by 2020 as measured by the per capita waste generation rate (an increase of 1% per year between 2015 and 2020).

3.3.3 Existing Waste Reduction Programs and Facilities

Waste reduction practices have been implemented in many offices in both the public and private sectors, including reusing blank sides of paper for drafts, increased use of electronic mail (email), increased double-sided copying, increased use of recycled paper and avoiding non-recyclable packaging. The city of Chelan, for example, uses the blank side of paper for notepads and reuses office equipment. Chelan County re uses computer keyboards and peripherals, desks, chairs, file cabinets and various other equipment within the county offices. The use of email further assists with waste reduction in some offices by providing a fast and convenient mechanism for an internal exchange of used furniture and other items.

There are a number of retail stores and personal activities that are occurring in Chelan County that promote the reuse of products and materials. These activities are creating a very significant amount of waste reduction, but are difficult to measure. No data is available as to the quantity of waste diverted by these activities, which includes activities such as:

- Linen services
- Tire re-treads
- Repair services
- Secondhand stores and consignment shops
- Person-to-person transfers (sales or gifts)
- Garage sales, want ads and swap meets
- Antique stores
- Pawn shops
- Charity and thrift stores
- Bookstores
- Clothing and food banks
- Sales of surplus materials by contractors
- Auto wrecking and parts dealers
- Used car, truck and boat dealers
- Precious metals and coin dealers
- Mail services that reuse Styrofoam "peanuts" and "bubble wrap"
- Internet auction websites (e-Bay and others)

For construction and demolition (C&D) materials, Chelan County residents and businesses could use Habitat for Humanity and materials exchanges operated by the Industrial Material Exchange (IMEX), the Department of Ecology (2good2toss.com) and others.

The County conducts an annual auction of old computers, trucks, furniture and other equipment that is coordinated with other jurisdictions and agencies in the area. Other online purchases such as Craigslist is a growing method of reusing items. The City of Leavenworth reduces paper usage by avoiding a second printing of proposed ordinances at city council meetings.

The Washington State Department of Agriculture sponsors an annual event where farmers are encouraged to bring in empty, triple-rinsed barrels. Other chemical pesticide sales companies have collected these and reused them as barrels or processed them to make new products.

Backyard composting is typically defined as a waste reduction method, but this approach is discussed in the chapter that addresses the management of organic materials (Chapter 5).

3.3.4 Service Gaps, Other Needs, and Opportunities in Waste Reduction

Washington State law (Chapter 70.95 RCW) considers waste reduction a primary method of solid waste management, but local options for legislating and enforcing waste reduction are somewhat limited. Waste reduction through legislated product or packaging bans is generally only effective on the state or federal level. Local efforts must be directed principally at educating citizens and businesses to change their behavior so they can reduce the waste they produce each day.

While waste reduction remains at the top of the solid waste management hierarchy, the general public has more difficulty understanding this approach than other management practices such as recycling, energy recovery, and landfilling. Opportunities remain to increase public understanding of the benefits to be gained from waste reduction, or in other words, to promote the idea that using less packaging, nontoxic household products, and reusable products can serve community efforts to protect the environment, conserve natural resources, reduce landfilling costs, increase public knowledge of waste reduction techniques, and delay the need for development of new disposal options.

Because it is difficult to measure waste reduction, local jurisdictions may encounter hardships when attempting to fund programs. The difficulty arises because it is not possible to simply measure a drop in the total waste stream generated because the waste stream is constantly increasing due to population growth. It is also impacted by household income and other socioeconomic factors. Instead, per capita waste stream reduction could be measured by surveying residents and private industry about their activities to reduce waste, or by conducting waste stream surveys for specific materials, products or packaging.

A more effective approach than quantifying the amount of waste reduction may be to gauge success using a "performance-based standard." Through a performance-based standard, waste reduction is presumed to be successful based on achieving a specific level of effort or on other criteria. An example of this approach is to use the number of backyard composting bins that might be distributed as a measure of the amount of yard debris that is kept out of the waste stream. Other criteria can be used and these need to be tailored to each specific waste reduction activity.

The collection and disposal of garbage is relatively inexpensive for residents. It has been proven that if residents paid more for collection, or paid on the basis of the volume of garbage disposed, it would provide incentive to reduce the amount of waste going into the garbage can or landfill. Some residents in the county pay slightly more for each additional can of garbage disposed, while others pay a flat rate. Wenatchee residents pay a flat rate for garbage collection, and Leavenworth residents pay a flat rate for up to one can, with an option to increase their total cans to two for an increased monthly fee. Residents in Chelan County, and the cities of Cashmere and Chelan pay a "tiered rate" based on the number and size of cans they subscribe for. The rate structure could be re-evaluated at opportune times and possibly re-structured to provide more incentive. This approach is discussed in greater detail in Chapter 6.

3.3.5 Waste Reduction Alternatives

Residential programs: There are many alternatives and specific programs that can be implemented to encourage waste reduction in the residential sector. Most center on increased education, legislative action and rate restructuring. Public education is a critical and required element of any successful waste reduction program (see also Chapter 10). Existing or new waste reduction and education programs could be expanded to include more information on the following topics:

- General problem awareness
- Reuse and repair vs. disposal
- Home practices to minimize waste
- Good purchasing habits

The above topics are the primary options for the residential sector, although these can be made to work for the commercial sector as well. Additional options for businesses and governmental agencies are also noted below.

Waste reduction alternatives for governmental offices: Local jurisdictions could develop more comprehensive in-house waste reduction programs. By monitoring and reporting on effectiveness, costs, avoided costs and program revenues for the waste reduction programs, the jurisdictions could provide a model for businesses and schools.

By fostering the waste reduction and recycling ethic at work, the counties and municipalities can also encourage their employees to practice waste reduction and recycling at home. Most importantly, by setting an example in their own departments, the jurisdictions could gain additional credibility when trying to persuade residents and businesses to reduce and recycle.

To ensure the program's continued success, county and municipal employees need to receive regular updates about new waste reduction techniques. This information could be provided by informational notices or newsletters that are routed to all personnel semi-annually.

The following activities could be encouraged in all county and municipal departments:

- Double-sided copying
- Routing slips instead of circulating multiple copies
- Electronic-mail for intra-office messages
- Scrap pads made from used paper
- Reusing large envelopes
- Procurement policies favoring reusable/durable/recycled materials (see below)
- The use of very small cans for trash in individual offices, with larger containers provided for recycling (especially in central areas such as copy rooms where larger volumes are generated)

Agencies could also conduct waste audits of their own departments to identify areas where waste reduction and recycling would be practical and profitable. For example, agencies that are involved with construction could evaluate their construction and demolition activities, to reuse and recycle as much as feasible. Other ways of encouraging reuse and repair is to support those businesses, such as the second hand stores, that are involved with this activity.

Government procurement standards: The participating jurisdictions could set an example for local businesses and organizations, and become an even greater force in the marketplace, by broadening and upgrading procurement policies. Policies could be adopted that set increasingly higher standards for both the quantity and quality of products purchased by the jurisdiction. The jurisdictions could target products that may include goods that:

- Allow for greater waste reduction, such as purchasing copy machines that make double-sided copies more easily.
- Require replacement or repair less often, such as long-life fluorescent bulbs, rechargeable batteries or durable furniture.
- Are easily repaired, such as machinery with standardized, replaceable parts.
- Can be reused, such as washable plates and glasses.
- Have already been used.
- Can be remanufactured, or by making use of existing remanufacturing programs, such as refilling printer cartridges, re-refining motor oil and retreading tires.

- Are nontoxic or less toxic, such as many cleaning agents and solvents now available.

Waste reduction alternatives for businesses and industries: County staff, private consultants or citizen action group participants can promote waste reduction to businesses and organizations using fact sheets, a telephone hot line, directories, workshops, demonstration programs, newsletters and on-site consultations. These services can offer the private sector valuable assistance in gaining the experience and knowledge that can take months or years to develop.

The participating jurisdictions could require or request all or some commercial waste generators to prepare and implement waste reduction plans for their operations. Such a request would have to be accompanied by the appropriate forms to fill out and the offer of technical assistance, should any problems or questions arise. Other types of public-private partnerships could be explored as well.

Government regulations/financial incentives: The increased costs of disposal brought on by more stringent environmental standards and requirements has created an incentive to reduce the amount of waste generated, while the cost of implementing recycling programs will increase the revenue requirements for a solid waste management system. Cities could also modify service levels to provide for a rate structure that will increase revenue generation while promoting waste reduction and recycling. The City of Chelan's solid waste and recycling program is an excellent example of this. They have successfully modified solid waste collection rate structures while promoting waste reduction and recycling.

Product and/or packaging legislation: Regulations banning or restricting non-recyclable materials (for example, mixed materials or materials with wax coatings) and encouraging the use of recyclable products would reduce the amount of solid waste requiring disposal. Many cities, counties and states have proposed legislation designed to reduce their waste stream. These regulations include beverage container legislation and packaging legislation.

Beverage container legislation commonly targets all carbonated beverage containers, including glass, aluminum, and plastic. This legislation places a value on the container. The container either has a per-unit surcharge at the point of purchase, which is refundable upon return, or no surcharge, but a refund available upon return through a redemption system. This type of legislation has been effectively established in eleven states, including Oregon and California, and there is some interest in adopting this approach in Washington State. Other deposits that could be implemented include those on tires, batteries and appliances to encourage reuse by the consumer.

Packaging legislation is a waste reduction strategy that discourages waste generation and encourages the use of recycled materials. This legislation could discourage excess packaging, or packaging produced from virgin materials or that is not recyclable. Labeling requirements could also be established to guide the development of packaging and inform consumers about the impacts of their packaging choices.

Another alternative is to promote the reduction of excess packaging through voluntary actions of the commercial sector. Waste audits can help identify ideal opportunities for such promotional efforts. Other considerations in proposing packaging legislation include the ease of compliance by the affected industry, type of penalty for failure to comply, and means of enforcement. Further analysis would be required at the time legislation is proposed to determine whether any legal restrictions would apply.

Product or packaging returns: The state could provide technical assistance to manufacturers and businesses in setting up a separate system for discarded packaging to be returned to the manufacturer without being handled by the solid waste management system. A good example of this would be a return program for barrels and drums used in agriculture. A similar program has been implemented in Chelan County. Farmers

are encouraged to bring in empty, triple-rinsed barrels. The Washington State Department of Agriculture sponsors an annual event. Other chemical pesticide sales companies have collected the barrels and reused them as barrels or processed them to make new products.

Labeling requirements: The participating jurisdictions could support statewide and federal efforts to promote more effective labeling on products, including: post-consumer recycled content, durability, reusability or recyclability. A successful demonstration of product labeling is the phosphorous content labels on detergents. The jurisdictions may find it difficult to implement additional package labeling requirements on their own because most products are produced outside of the area. However, the jurisdictions could work with or require retailers to participate in a region wide shelf labeling campaign.

The County, if funding allowed, could encourage labeling programs to assist shoppers in making more environmentally sound choices. For example, the "Model Community" program sponsored by the Central States Education Center in Champaign, Illinois, has developed stickers which help shoppers to make the best choice: recyclable, recycled, or safer alternative. Stickers are placed on appropriate products by staff or trained volunteers. When making purchasing choices at the store, consumers are then reminded by the stickers to take into consideration the product's impact on the solid waste system.

Disposal bans: Another way to promote waste reduction is to prohibit the disposal of certain materials to the solid waste system. Although this is primarily a recycling tool, and will be discussed in more detail in Chapter 4, disposal bans can also reduce the waste stream. For example, if large appliances were to be banned from solid waste disposal, this may encourage people to take them to second-hand stores.

A major problem associated with disposal bans is the potential for illegal dumping of the banned material. Therefore, an important component of the disposal ban alternative is the availability of alternative disposal methods. For example, if white goods are banned from the solid waste system, one or more designated recycling facilities should be able to receive the banned items.

Private sector reuse programs: Another method to reduce waste is to encourage greater reuse of items and materials. This could be done through an established waste exchange or a local program (see below). The participating jurisdictions could promote, develop and monitor use of IMEX (Industrial Materials Exchange), Online Exchanges hosted or the "Pacific Materials Exchange" headquartered in Spokane, which is tied into other regions of the country.

The success of any waste exchange program depends on how well it is managed and promoted. Advertisements in local newspapers and flyers are required to keep the waste exchange visible. Existing waste exchange listings could be made available to local trade associations and business groups. Those groups could also be encouraged to subscribe to the listing independently. With good promotion, a waste exchange can effectively reduce waste.

Local materials exchanges: Additional waste reduction can be accomplished by encouraging the reuse of materials and products through barter/borrow boards, "reuse ranches," private efforts such as retail outlets and other activities. The barter/borrow board involves residents and businesses posting offerings of items for barter or requesting to borrow infrequently used items.

A reuse ranch is where reusable materials are left in a designated area, typically at a disposal site, for pick up by others. Alternatively, arrangements could be made with Goodwill or other charities to place a container or truck at disposal sites. Several counties in Washington are working with charities such as Goodwill to divert reusable materials through staffed trailers located near the entrance of a landfill or transfer station.

The idea of private retail outlets for reusable C&D materials, such as those that exist in Whatcom County and several other locations, could be explored. Lumber and other wood products are materials that often could be reused more. Additional efforts could also be made to promote the use of reused and recycled building products by homeowners and builders

Swap events, such as the semi-annual SWAC-SWAP that Jefferson County once conducted, have also proven to be very popular. This approach involves a one- or two-day event where people are allowed to bring in and/or take away reusable materials and products (no garbage is allowed). Implementing this activity requires a large area for drop off of reusable products (usually at a fairgrounds or other "free" space), publicizing the event, providing access control and monitoring of materials dropped off, and disposing of a small amount of residual garbage. If free space can be arranged and labor is provided through volunteers, then the cost for this event is minimal (limited to public information printing and distribution, at approximately $500 - $800 per event, plus an additional few hundred dollars for signage). This event can also be combined with the collection of specific recyclables, such as scrap metal.

Other reuse programs: Businesses and nonprofit groups that promote reuse of items include pallet re-manufacturers, diaper services, equipment rental services, printer cartridge re-manufacturers, furniture reupholstering businesses, appliance re-conditioners, and second-hand retail outlets. All such entities provide an infrastructure that supports waste reduction activities. The county can support these activities in a variety of ways, including promotion in government-produced brochures and booklets, reduced business taxes, and reduced regulatory burdens. A reduced disposal fee could be provided for organizations that can demonstrate they are diverting a certain percentage of waste from the waste stream. The participating jurisdictions could provide space at recycling/disposal sites for a second-hand organization to park a trailer to collect clothing, reusable/repairable furniture, and other items.

3.3.6 Evaluation of Waste Reduction Alternatives

Alternatives for reducing waste should be evaluated using the following criteria.

- **Public acceptability**: This criterion assesses how receptive the public (or the private sector, depending on the target audience for the alternative) will be to the program. Issues such as convenience and willingness to participate are considered.

  Based on similar programs throughout the country, it is expected that the general public will support business waste reduction and internal waste reduction and procurement policies at government offices (as a model for the community to follow). The public is more likely to oppose disposal bans because the perception of regulating a waste stream due to reuse potential may not be reasonable, particularly if illegal dumping continues.

- **Funding availability**: Alternatives will be evaluated according to the variety of funding and implementation mechanisms available (i.e., grants, private sector involvement or community volunteer effort).

  The solid waste management system in the county is mostly operated by the private sector, which limits the revenue available to fund new programs. Because Chelan County does not have control over the entire solid waste collection and disposal system (and the corresponding revenues), it is important to pursue programs that can be funded from a variety of sources. For instance, Ecology offers grant money for many of the recommended programs. Grants are only available on an outcome basis, however, and waste reduction results are difficult to measure.

- **Demand on staff time**: The degree to which the alternative can be incorporated into the workload of existing staff is an important factor. Several alternatives would require a significant amount of staff time to implement and so would be difficult or unlikely to be conducted given current conditions.

- **Cost-effectiveness**: The degree to which the alternative is effective in reducing waste at a reasonable cost is also an important factor. The SWC and the SWAC support programs that can achieve the greatest amount of waste reduction for the amount spent.

An evaluation of the alternatives is presented in Table 3.1.

Table 3.1 Evaluation of Waste Reduction Alternatives

Alternative	Public Acceptability	Demand on Staff Time	Funding Availability	Cost-Effectiveness[1]	Conclusion
Residential education	Medium	Low	Low	Medium	Don't pursue
Waste reduction in government offices	High	Medium	Medium	Medium	Pursue
Government procurement standards	Medium	Low	Low	Medium	Pursue
Alternatives for businesses and industries	High	Low	Medium	High	Pursue
Government regulations	Low	Medium	Medium	High	Don't pursue
Product and packaging legislation	Low	Low	Medium	High	Don't pursue
Product or packaging returns	Low	Medium	Medium	High	Don't pursue
Labeling requirements	High	Low	Medium	Medium	Don't pursue
Disposal bans	Low	Low	High	Medium	Don't pursue
Private reuse programs	Medium	Low	Low	Medium	Don't pursue
Local materials exchange	High	Low	Low	Medium	Don't pursue
Other reuse programs	Medium	Medium	Medium	Medium	Don't pursue

Note: 1. Based on estimated costs and diversion rates. Little research or other data is available on the measurable effectiveness of waste reduction programs.

3.3.7 Recommendations for Waste Reduction

The recommendations for waste reduction are:

WR1) Expand waste reduction programs in governmental offices

The expansion of waste reduction in government offices will "lead by example" for area residents and businesses. Possible activities can include encouraging more use of double-sided copying, continuing to present educational information in staff newsletters, encouraging greater use of electronic mail rather than paper, and encouraging efforts to reuse furniture and equipment.

WR2) Encourage waste reduction programs for commercial and industrial businesses

Commercial and industrial businesses could be encouraged to increase their waste reduction efforts by providing them with specific examples of waste reduction practices. Their efforts could be supported by assisting with questions and encouraging new programs, including public/private partnerships. An additional incentive for them could be created by encouraging the press to cover specific events or activities.

WR3) Support private reuse programs and businesses

Reuse businesses need support and establishment to provide reuse services. Online businesses and nonprofit local businesses offer reuse through exchanges and sales. Promotion of and assistance to such endeavors provides the public with low-cost items as well as reuses items and reduces disposal.

3.3.8 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Waste Reduction

Many of the waste reduction recommendations are ongoing activities that should be continued throughout the effective period of this Plan. The recommendations do not have significant costs to the county or other participating jurisdictions except for additional demands on staff time.

The ideal monitoring method in this case would be an annual evaluation of the per-capita and per-employee waste generation rates; however, this approach is not very precise at this time, so the monitoring method for waste reduction activities will be to monitor disposal amounts.

CHAPTER 4: RECYCLING

4.1 INTRODUCTION

This chapter of the *Chelan County Solid Waste Management Plan* (Plan) discusses the regulatory framework for recycling, describes existing recycling programs in Chelan County, reviews the needs and opportunities for recycling, describes and evaluates alternatives, and provides recommendations. The discussion of recycling options is organized into three sections:

4.2 Overall Recycling Strategy
4.3 Source Separation Recycling
4.4 Mixed Waste Processing Options

4.2 OVERALL RECYCLING STRATEGY

4.2.1 Introduction

This section of this chapter discusses the goals and background information common to the two main types of recycling methods: source separation and mixed waste processing. This material is provided here to avoid redundancy in the next two sections. Source separation is where the generator of the recyclable material keeps it separate from other wastes, and includes "single stream" recycling programs. Mixed waste processing is where garbage is processed to remove recyclables.

4.2.2 Definition of Recycling

"Recycling" refers to the act of collecting and processing materials to return the materials to a similar use. Recycling does not include materials burned for energy recovery, destroyed through pyrolysis and other high-temperature processes, or used as landfill cover.

The official definition of recycling per state rules is "recycling means transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration. Recycling does not include collection, compacting, repackaging, and sorting for the purpose of transport" (Ch. 173-350 WAC).

4.2.3 Overall Goals and Objectives for Recycling

Chelan County's primary recycling goal is to increase recycling efforts and opportunities to achieve a 40% recycling rate by 2020, and increase the recycling rate annually thereafter. The objectives used to meet the recycling goals include the following:

- Maintain and encourage public education/information programs.
- Support convenient recycling opportunities exist for all households, institutions and businesses.
- Raise the current Minimum Level of Service for residential recycling collection, with both drop box recycling and curbside recycling opportunities.

- Support efficiencies of communities adopting to single stream recycling or keeping source separated curbside recycling.
- Encourage recycling services for businesses.
- Participate in the development of markets for recycled product.

These goals and objectives apply to both source separation recycling as well as recycling through mixed waste processing and also include composting of organic materials and waste reduction programs.

The state's *Beyond Waste* plan notes that recycling has risen from 15% in 1986 to 49% in 2013, and that recycling is "a key foundation of the five initiatives proposed as the starting points for beginning the transition to Beyond Waste." The state's plan recommends in favor of a stronger recycling system and puts a priority on "closed loop recycling" and designing for recycling. Closed loop recycling is defined by the state as "a cycle or system where secondary materials (wastes) are reclaimed and recycled back into the process from which they were originally generated." In other words, closed loop recycling is a process whereby recyclables are turned back into the same or very similar product, which should be a more sustainable system in the long run. Examples of closed loop recycling would be turning glass bottles back into glass bottles. An example of something that is not closed loop recycling would be turning high-grade paper into a disposable product such as tissues.

4.2.4 General Service Gaps, Other Needs and Opportunities in Recycling

Chelan County's existing recycling rate is estimated to be 35% (see Table 2.9). Increasing this rate would provide benefits to the environment and economy of the county. Broad benefits to the residents and businesses in Chelan County would occur through increased sustainability of future activities. Ideally, local recycling activities could also have a more immediate benefit to the county's residents and businesses by providing options for proper management of various waste materials and through partnerships with businesses to help them with their operations.

To increase the recycling rate, recycling programs must be planned, implemented and continued throughout the 20-year planning period. The County should make an effort to coordinate any current and new recycling programs into an integrated system that best serves the needs of County residents and businesses in an efficient and cost-effective manner. Programs should be organized so that any current or future educational and promotional efforts by individual jurisdictions and other organizations can be consistent throughout the region. In today's political climate of reducing government spending and taxes, these programs must also be as cost-effective and financially self-sustaining as possible.

As discussed more thoroughly in the previous chapter, Washington State's goal of achieving and maintaining 50% recycling, composting and waste reduction must be addressed in solid waste plans, but each county is expected to set its own goal based on local conditions and constraints. State planning guidelines (Ecology 2010) also require solid waste plans to establish urban-rural boundaries and to designate a list of recyclable materials that must be collected by programs in the county (see the next two sections of this chapter, Sections 4.2.5 and 4.2.6). Solid waste plans must also address markets for recyclable materials, which in this plan is included with the discussion of designated recyclable materials (see Section 4.2.6).

One service gap is the lack of a permanent, moderate-risk waste facility that would accept household and business hazardous waste on a year-round basis for recycling and proper disposal. This has been a goal within the *1972 Chelan-Douglas Solid Waste Plan* and *1982 Chelan-Douglas Solid Waste Plan* as a method to reduce the solid waste and reuse hazardous waste, thereby reducing hazardous and dangerous

wastes. A facility will enable more reuse and recycling than collection events. And the area is too large for collection events to be cost efficient. The Dryden Transfer Station has an area at the entrance with shelving where residents can place their materials in new or almost-new condition and residents can select and take products home for use. Products like gardening items such as pesticides or lawn fertilizers are common products that are safe for residents to utilize. The best way for hazardous waste to be properly handled is to utilize the product as intended. The facility construction is not completed as of this date. Motor oil and antifreeze are recycled at the transfer stations; however, more household hazardous waste can be safely recycled with a facility to conduct the work. The construction of the permanent hazardous waste facility is discussed more thoroughly in Chapter 8.

Various areas of the County are notorious for illegal dumping and need an improved recycling program. A tremendous amount of illegal dumping is occurring at the recycle drop-off sites, creating a health problem.

In this plan, serious considerations have been given through discussions with SWAC and haulers to provide better recycling in areas of Chelan County, particularly the Chelan Valley. The Chelan Recycle center was a state-of-the-art facility for some time; however, with source separated recycling causing more labor and injuries and not as convenient as the upcoming single stream recycling, the facility may need to be upgraded with equipment for sorting. A more convenient recycling program will enable the County to meet the recycling goal as well as provide programs to meet the requirements of RCW 70.95 and the local Comprehensive Solid Waste Plan.

Franchise haulers can offer collection of recycled items at the curbside, but in the Chelan Valley it is drop-box recycling where residents and businesses sort the material. Curbside recycling in Chelan Valley is hindered by the lack of a single-stream processing facility and costs for transportation.

Several other state rules and regulations affect the manner in which recycling can be conducted in Chelan County, including RCW 70.95, RCW 70.95C, RCW 81.77 and various WACs (most notably the recently adopted Chapter 173-350 WAC). Counties have no authority over most solid waste management options but are allowed to contract for the collection of residential recyclables, or request the Washington Utilities and Transportation Commission (WUTC) to carry out the recycling provisions of this Plan. Cities and private companies have more flexibility, and can conduct their own recycling programs or contract with various companies for recycling services. One opportunity that ties into the WUTC's jurisdiction is the establishment of rate incentives to encourage recycling. Through this Plan, an "incentive rate" structure can be established in the certificate (franchise) areas (see Chapter 6). Cities can also set rates that encourage recycling and waste reduction.

Another opportunity to assist recycling that is noteworthy is through grants available from the Washington State Department of Ecology (Ecology), which provides grants to local agencies to assist with activities that collect or process recyclable materials. However, these funds are dwindling with legislation budgets and are not sufficient to provide the infrastructure needed in the County. Funds are awarded based on population, which makes it difficult for small rural counties to construct infrastructure. Infrastructure costs are not different in a more populated county than in a less populated county. So while it would cost the same to construct a Moderate Risk Waste facility in Chelan County as it would in a more populated county, fewer dollars are received in Chelan County to construct such a facility. Other aspects such as efficiencies are incorporated to base awards; however, it is not enough to provide financial relief for rural or small counties.

Finally, state law also requires a program "to monitor the collection of source separated waste at nonresidential sites where there is sufficient density to sustain a program" (RCW 70.95.090.7.b.ii). Federal law prevents any actual control over these activities. In Chelan County, monitoring commercial

recycling activities is being accomplished by Ecology and others who annually collect information on services offered by the private sector and cities to help promote those services. This monitoring should be continued and any problems detected should be reported to the County. Continued reporting of recycled amounts to the state will continue to assist to determine volumes of state recycling.

4.2.5 Designation of Urban-Rural Boundaries for Recycling Programs

State law (RCW 70.95.092) requires that criteria be adopted to designate all areas within the County as either urban or rural, and that recycling and other services be provided as appropriate for each type of area. For urban areas, the recommended minimum service level for recycling is curbside collection (alternatives are allowed if these can be shown to be as or more appropriate). For rural areas, the minimum service level recommended is promoted to voluntary curbside recycling. Efforts are underway to provide improved single stream recycling. Ecology's planning guidelines (Ecology 2010) suggest using land-use plans, utility service plans, population densities and growth projections, and other relevant data. The designation criteria should also include a process for periodic review and adjustment of urban-rural boundaries. Most of these requirements are satisfied by the existing efforts conducted for another document: the *Chelan County Comprehensive Plan*.

This Plan satisfies the requirements for establishing urban and rural boundaries by adopting the urban boundaries shown in the *Chelan County Comprehensive Plan* (CC 2007). By incorporating by reference the urban boundaries shown in the Comprehensive Plan, including any future revisions, the programs and policies of this solid waste plan are consistent with that important document, and are automatically updated as the urban boundaries are revised in the Comprehensive Plan.

4.2.6 Designation of Targeted Recyclable Materials

State regulations (RCW 70.95.090.7.c) require "a description of markets for recyclables." State planning guidelines also require designation of what materials will be collected for recycling, with marketability being one of the factors to consider in this designation process. The designation of recyclable materials has taken on more importance with the adoption of Ch. 173-350 WAC, which defines recyclable materials as being those materials "that are identified as recyclable materials pursuant to a local comprehensive solid waste plan."

A description of markets for materials collected in Chelan County is provided below. This is intended to be only a brief report of current conditions and it should be noted that market conditions for recyclables can change drastically in a short amount of time. This is a problem for a long-range document such as this plan. Rather than provide an exhaustive review of current market conditions, this plan will be more useful in the future if it can be responsive to changing conditions. Hence, the list of designated materials includes a description of the process for revising that list.

Market overview: A significant factor for current market conditions is the demand by Chinese buyers for many of the recyclable materials (especially paper, plastics and steel). China has become a very significant force in the marketplace because it is improving its infrastructure and also experiencing higher demand due to increased industrial production of consumer goods for internal consumption and for export to the United States and other countries. This demand has changed due to new regulations being implemented by the Chinese government that will prevent the import of loads that are excessively contaminated with garbage.

Another important factor for marketing of locally collected materials is the transportation costs incurred in shipping materials to end-markets or to ports (for export to China or other countries) that are generally located in western Washington or Oregon. Recyclers in the Central Washington area have less access to these markets because the transportation cost is a barrier. The low market value of most recyclables limits the number of materials that can be moved cost-effectively to markets and forces the region to develop creative programs and/or focus its efforts on larger portions of the waste stream.

Paper markets: Recyclable paper products such as newsprint, corrugated containers and high-grade paper make up approximately 19.5% (2013) of Chelan County's disposed waste stream. Local buy-back and drop-off centers currently accept most of these categories of paper. These items are typically recycled because residents can routinely identify these materials as recyclable. Paper densities also allow for efficient collection programs. One difficulty associated with collecting paper is the potential for non-recyclable and lower grades of paper to get mixed in with higher grades of paper, which then decreases the market value of the material. On the other hand, mixing of paper grades is allowed by some markets, depending on the processing methods and end markets. All of the paper grades currently are receiving relatively high market prices.

Old newspapers are often sold to paper mills to be processed into other paper products, and magazines can often be mixed with newspaper for recycling purposes. Most of the newspaper that is collected in Chelan County is used to produce fruit packing trays for locally grown fruit. Both Michelsen's Packaging and Keyes Fiber Corporation use large amounts of newspaper in their daily operations. Old newspapers made up about 4.7% of the materials recycled in Chelan County in 2013.

Large quantities of cardboard boxes are used by commercial industries making this material a worthwhile targeted item for any recycling program. Cardboard is recycled by Keyes Fiber and other Pacific Northwest paper mills. This material is often manufactured into new corrugated containers. Cardboard contributed 20.4% of the materials recycled in Chelan County in 2013. Office paper (largely computer and white ledger paper) is also a commonly recycled commodity. The fiber used to produce these papers usually has a higher market value than other paper such as newspaper and cardboard boxes. Office paper can be recycled into a variety of paper products, including writing paper, computer paper and household paper towels. Most recycling centers in Chelan County collect office paper.

Mixed waste paper is usually a combination of a variety of grades of paper. Mixed paper is used to manufacture low-grade paper products. The market price for mixed paper is generally lower than other grades of paper because processing costs are higher and the value of the end product is lower. Most mixed waste paper collected in Washington is currently exported to Asian markets. Most recycling centers in Chelan County collect mixed paper.

Glass recycling markets: Recyclable glass represents approximately 4.4% of the County's total waste stream. In Chelan County, 755 tons of glass was recycled in 2013, which comprises 3.5% of all materials recycled. Handling and transportation costs are relatively expensive, however, and the raw materials that compete with glass (sand and other common materials) are relatively inexpensive, and so the market conditions for glass are generally poor. The markets for clear glass are better than for colored glass because there is more demand for clear bottles in this region. Several products shipped into Washington are contained in green or brown bottles, whereas local bottlers do not use much of the colored glass and so there is generally a surplus of colored glass bottles. The amount of additives required to turn glass from clear to brown or green is very small, so there are strict requirements for keeping these materials separate from clear glass and from each other.

Developing local uses for glass, to the extent that this is possible, is often the best strategy. Some possible uses are utilizing glass as a filter medium in water processing operations, as a fill material for roads, for

use in sandblasting or as fiber glass. This process is hampered by the lack of a large, local fiber glass manufacturer and by the high costs of shipping recycled glass. Ground-up glass can be used as daily cover for landfills such as the Greater Wenatchee Landfill. This might be an effective way to use glass in Chelan County (although it is a reuse of the product rather than recycled) because it reduces transportation costs.

Metal recycling markets: Metals in the waste stream include aluminum and tin cans, ferrous and non-ferrous metals, and "white goods" (large appliances). Metals represent approximately 10.6% of the total waste stream in Chelan County, and almost all metals have some market value.

Aluminum cans are relatively easy to handle due to easy identification by generators, and prices for aluminum cans have historically been higher than most other recyclables. Shipping used aluminum beverage cans usually requires the compaction of the cans into bales or size reduction by shredding. Much of the aluminum collected by recycling programs is used by the aluminum industry. An aluminum recycling plant in Kootenai County, Idaho, ships molten aluminum to the Kaiser plant in Spokane. Also, Seattle Iron and Metal, Fibres International and other plants process aluminum for sale overseas or to domestic markets. Aluminum cans are collected by the North Chelan Recycling Center, Reynolds Aluminum in Wenatchee, Central Washington Recycling in Wenatchee and other facilities.

Ferrous metals are those that contain iron, but tin-plated ferrous cans ("tin cans") usually must be kept separate from other ferrous metals for recycling. Tin cans are made of steel covered by a thin layer of tin to protect the container from corrosion. To be recycled, the cans must go through a de-tinning process, which results in steel that can be used in a manufacturing process. Once removed, the tin plating on ferrous cans typically receives a higher price per ton than ferrous metals.

Currently there is only one permitted scrap metal collector in Chelan County, which is Rowe's Towing Service in Chelan. E-Z Auto Towing & Wrecking and Wenatchee Valley Salvage (both located in Douglas County) take certain types of scrap metals. Wenatchee Valley Salvage also operates a small collection site at old station in Wenatchee that provides some extra metal collection to Chelan County. The North Chelan Recycling Center also accepts some types of copper, brass and aluminum scrap. Efforts are being made to encourage E-Z Auto to take metals more consistently and to permit an additional scrapyard in Chelan County.

Chelan County has developed a metals collection yard at the Dryden and Chelan transfer stations to reduce illegal disposal of scrap metal. Scrap metal, appliances and refrigeration units may be disposed at this site for recycling at a reasonable cost. In the past, various salvaging companies have offered to crush and haul the material to metal recyclers in the western part of the state; recently this has been put out to bid because of the higher prices received for scrap metals. As of 2014, the market for recyclable metals has decreased substantially. If this trend continues, it may make the shipment of metal recycling through a contractor less viable which may require higher rates for recycling metal or implementing alternate processes for metal collection and recycling. At this time, it is a viable avenue for recycling large amounts of metal in Chelan County.

Plastics recycling markets: Plastics in the waste stream include PET and HDPE bottles, film and bags, expanded polystyrene ("Styrofoam"), and other plastics (see Table 4.1 for plastics identification information). Plastics are commonly used for packaging, but a lot of plastics are also used to make a variety of products, from toys to building materials. Approximately 14.4% of Chelan County's total waste stream is plastic, of which slightly less than half is packaging.

Four recycling centers in the region currently accept some plastics, such as PET bottles (pop bottles) and HDPE bottles (milk jugs). Dolco Packaging will accept No. 6 plastic (Styrofoam). Several locations (mailing and shipping services) also accept Styrofoam "peanuts" for reuse.

Table 4.1 Plastics Identification Guide

Abbreviation	Full name	Typical products	SPI Code
PET	Polyethylene terephthalate	Bottles: soft drink, liquor, dish detergent, peanut butter jars.	1 (PET)
HDPE natural	High density polyethylene	Jugs: milk, distilled water. Bottle: juice (not clear), large vinegar.	2 (HDPE)
HDPE colored	High density polyethylene	Bottles: laundry and dish detergent, fabric softener, bleach, saline solution.	2 (HDPE)
PVC	Polyvinyl chloride	Bottles: mineral water, salad dressing, mouthwash. Also blister pack "bubbles" and building materials such as windows, wiring, conduit.	3 (V)
LDPE	Low density polyethylene	Usually appears in flexible film bags for dry cleaning, bread, trash, etc.; also some rigid containers such as food storage containers and flexible lids	4 (LDPE)
PP	Polypropylene	Battery cases, medical containers, some dairy tubs and yogurt cups, combs, snack wraps.	5 (PP)
PS	Polystyrene	Some yogurt cups and tubs, clear carryout trays, most fast food cutlery, desk accessories.	6 (PS)
EPS	Expanded (or foamed) polystyrene	Some carryout containers (clamshells etc.), meat and produce trays, hot cups, egg cartons, packing peanuts. Commonly called "Styrofoam."	6 (PS)
Other	Varies	Plastics other than the six most common or made of multiple layered resins (i.e. microwaveable serving ware, most snack bags, squeezable bottles for condiments)	7 (OTHER)

Sources: Resource Recycling, May 1990 and Recycling Today, January 1991.

Wood and yard debris markets: Markets for wood and yard debris are discussed more thoroughly in the next chapter, but are briefly mentioned here because of the need to consider these for the list of designated recyclable materials. Pending greater details on markets in the next chapter, it is assumed that an area such as Chelan County, with a significant amount of agricultural activities, can absorb large amounts of composted yard debris and other organics. Likewise for wood wastes, it can be assumed that local markets can be found for a variety of products made from wood wastes.

Food waste markets: If food waste could be effectively collected and composted, it too could be absorbed by agricultural lands. The difficulty and expense of collecting food waste from residential sources may prevent this material from being added to the list of designated materials, but the next chapter will discuss the possibility of similar materials being collected from commercial and industrial sources. At a recent environmental conference held in Chelan County, conference organizers utilized a hog farm to recycle all source-separated food waste generated by the event. Although this farm was located in neighboring Douglas County, similar approaches could be implemented to recycle large amounts of source separated food in Chelan County.

Other recycling markets: Other materials collected for recycling in Chelan County include computers, fluorescent light bulbs, textiles, car batteries, antifreeze and motor oil. Markets for these materials are generally good, although not so good in many cases that collection services can be provided without charge. Even where services are provided for a charge, however, for all but textiles there is another compelling reason (toxicity) for keeping these materials separate from the waste stream.

Designated recyclable materials: As mentioned above, state laws and Ecology guidelines require that counties develop and adopt a list of recyclable materials that are designated as the materials to be commonly recycled in the county. In this case, the list is not intended to create the requirement that every recycling program in Chelan County collect every designated material. Instead, the intent is that through a combination of programs offered throughout the County, residents and businesses should have an opportunity to recycle all of the designated materials through at least one program. In other words, if plastics are on the designated materials list, then at least one program in the County should collect plastics. Ideally, there would actually be an opportunity to recycle each material in each of the three recycling service areas in the County (see discussion in Section 4.2.7).

The criteria for designating recyclable materials should include:

- Potential waste stream diversion.
- Collection efficiency and feasibility.
- Processing requirements (including costs).
- Market conditions.

Table 4.2 shows an evaluation of the recyclability of various materials according to these four criteria (diversion potential, collection efficiency, processing requirements and market factors). The main factor considered for evaluating a material's potential for waste stream diversion is the percent (by weight) of the material in Chelan County's total waste stream, but with consideration given to volume in the case of PET and HDPE plastic bottles. The primary consideration used to evaluate the collection efficiency of a source-separated recyclable material is a relative assessment of how easily the material can be handled, both in preparation and collection/loading. Processing requirements were evaluated by assessing the relative degree of difficulty and the reliability of the technology used to prepare the material for market. The assessment of market factors is based on the preceding discussion of markets. Note that the evaluations shown in Table 4.2 assume a traditional source separation approach, and would be different for single stream recycling or mixed waste processing.

Table 4.2 Evaluation of Recyclable Materials				
Recyclable Material	**Diversion Potential**	**Collection Efficiency**	**Processing Requirements**	**Market Factors**
Paper:				
Cardboard *	High	High	Low	High
Newspaper *	Medium	High	Low	High
High-grade paper *	Medium	High	Low	High
Magazines/catalogs *	Low	High	Low	High
Mixed waste paper *	High	High	Medium	High
Glass:				
Clear glass bottles *	Medium	low	Low	low
Brown glass bottles *	Low	Low	Low	Low
Green glass bottles *	Low	Low	Low	Low
Metals:				
Aluminum cans *	Low	High	Low	High
Tin cans	Medium	High	Medium	High
Electronics	Low	High	High	Low
White goods	Low	High	High	Moderate
Ferrous metals *	High	Medium	Medium	High
Non-ferrous metals *	Low	Medium	Medium	High
Plastics:				
PET bottles *	Medium	Medium	Low	High
HDPE bottles *	Medium	Medium	Low	High
Other bottles (3-7)	Very low	Low	Medium	Low
Styrofoam	Low	Low	Medium	Medium
Plastic film, bags	High	Medium	High	Low
Other plastic pkg.	Medium	Low	High	Low
Organics:				
Yard debris *	High	High	High	High
Wood waste	Very high	High	High	Medium
Food waste	Very high	Low	High	Low
Industrial wastes	High	High	High	Medium
Biosolids	High	High	High	Medium
Other:				
Construction debris	High	Medium	High	Low
Motor oil *	Low	High	Low	High
Tires	Low	High	High	Low

The rating system for the above criteria is:

Diversion potential; high = more than 3% remaining in the waste stream, medium – 1-3%, and low = less than 1%.

Collection efficiency; the rating is a relative assessment of the ease of preparation and handling.

Processing requirements; the rating is a relative assessment of the ease of processing the material (note: this approach assumes some degree of separation by the waste generator, not single stream or mixed waste processing. For single stream systems and mixed waste processing, all processing = high and market factors are generally diminished by one grade).

Market factors; the rating system shows high for high-value materials, low for materials hard to transport to market.

* Shown on the list of designated recyclable materials (see Table 4.3).

Table 4.3 List of Designated Recyclable Materials	
Material	**Amount in the Waste Stream[1]**
Cardboard	4,899 TPY
Newspaper	2,561
Office paper/ other high-grade paper	7,682
Magazines/catalogs and phone books	
Mixed waste paper	
Aluminum cans	668
Ferrous/non-ferrous scrap	8,907
PET and HDPE plastics	1,558
Yard debris and brush	7,793
Used motor oil	NA
Automobile batteries	NA

Notes:
1. "Amount in the waste stream" is from Table 2.11, based on 2013 quantities from all sources (residential, commercial and agricultural).
2. TPY = tons per year. All figures shown are in tons per year.
3. NA = data not available.

Based on the evaluation shown in Table 4.2 and information presented in other parts of this Plan, the proposed list of designated recyclable materials is shown in Table 4.3. This list of designated recyclables should be used to help guide program development and implementation. As mentioned above, however, the list of designated materials is not intended to be universally mandatory. Residents and businesses in Chelan County should have the opportunity to recycle these items through at least one program in each of three service areas (see discussion later in this chapter about service areas).

Process for revising the list of designated recyclables: The list of designated recyclable materials should be evaluated periodically to consider adding or subtracting specific materials. The above list is based on existing conditions (collection programs and markets), so future markets and technologies may warrant changes in this list. There could be many possible reasons for revising the list, including but not limited to:

- The market price for an existing material becomes so low that it is no longer feasible to collect, process and/or ship it to markets, or no market can be found for an existing recyclable material, causing the material to be stockpiled with no apparent solution in the near future.
- New local or regional processing or demand for an existing material occurs.
- Local markets and/or brokers expand their list of acceptable items based on new uses for additional materials or technologies that increase demand for a new material.
- The potential for increased or decreased amounts of diversion.
- Other conditions not anticipated at this time.

Any proposed changes in the list of designated materials should be submitted to the SWAC and SWC for their discussion and approval. The SWAC membership may at any designated meeting recommend changes to the designated recyclables list and then forward the recommended changes to the SWC. The list of designated materials also should be reviewed at least annually by the SWAC. The SWC should review and discuss any suggested changes during a regular meeting, and then the committee should vote on whether to adopt the change or not. Only until the SWC has voted with a quorum of members, as stated in the by-laws, can the list be officially changed. A change in the list of designated materials does not require an amendment to the Plan.

4.2.7 Service Areas and Minimum Service Levels

Since Wenatchee is the primary business hub in Chelan County, the recycling centers there (especially Central Washington Recycling) provide an important opportunity to recycle for residents throughout the County. It should not be assumed, however, that all residents will always want to or be able to combine shopping or business trips to Wenatchee with a trip to unload recyclables. Chelan County can be divided into three service areas that recognize population centers and traffic flows (see Figure 4.1). These three service areas are the Wenatchee Area, the West County Area (Cashmere to Leavenworth) and the North County Area (Entiat to Chelan to Manson). Providing a full-service recycling center or a combination of services within each of these areas will ensure that no resident is too far from a recycling opportunity. What can be viewed as "access" to recycling opportunities can vary, however, depending on the type of participant (see Table 4.4).

Figure 4.1 Chelan County Recycling Service Areas

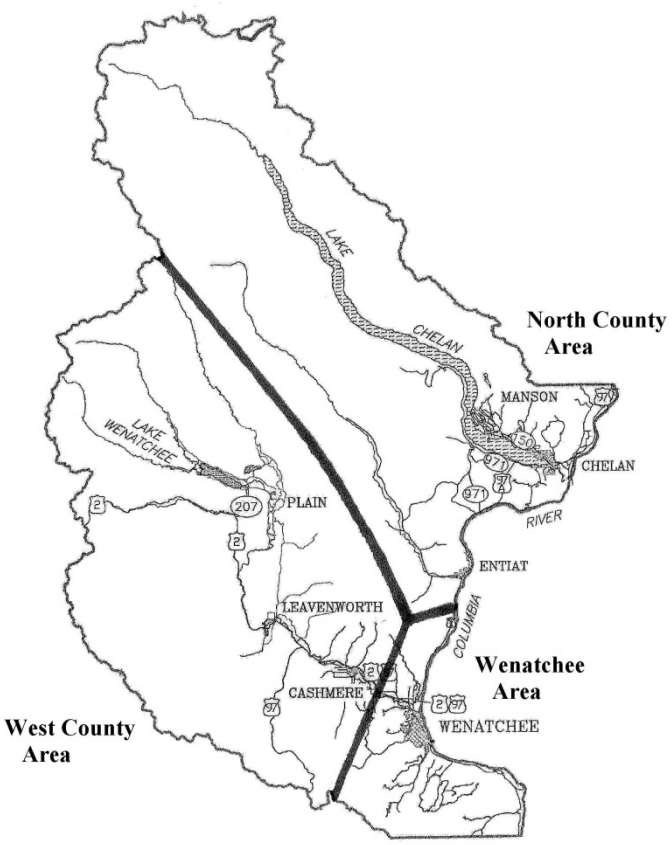


Table 4.4 Minimum Service Level by Area				
Type of Customer and Source	**Area**			**Current Service Gaps**
	Chelan / Entiat/Manson (North County)	**Leavenworth / Cashmere (West County)**	**Wenatchee**	
Single-Family Homes within city limits	C, D	C, D	C, D	Leavenworth and Cashmere are transitioning to curbside. Chelan area is striving to provide curbside but source-separated collection is not as efficient as single-stream.
Single-Family Homes, unincorporated	C, D	C, D	C, D	All unincorporated areas strive to have curbside recycling, but lack of single-stream processing in Chelan only allows drop box at this time.
Multi-Family	D	D	D	
Commercial, Industrial, Institutional	D, S	D, S	D, S	Need more special services.
Yard Debris and Brush	D	D	C, D	Curbside yard waste is only in Wenatchee. Drop-off brush is throughout the County.
Transfer Station Customers	D	D		

Key: C = Curbside recycling services should be available.
D = Drop-off facilities should be available in the service area. For yard debris, the minimum service level could be satisfied by seasonal drop-off locations (open during the growing season and during spring and fall cleanup periods, with some provision for Christmas tree recycling).
S = Special services (primarily pickup services from the business location) should be promoted to handle large quantities of materials and also special materials generated by industry and other non-residential sources.

Table 4.4 shows the minimum level of services proposed for each area of Chelan County. As shown in this table, a distinction is made between single-family homes within city limits and outside of city limits, based on the fact that the service providers are different for these two areas.

Once approved through the adoption of this Plan, any changes to the minimum service levels shown in Table 4.4 should be implemented similarly to changes in the list of designated materials. In other words, any proposed changes in the minimum service levels should be submitted to SWAC and SWC for their discussion and approval. The SWAC membership may at any designated meeting recommend changes to the service levels and forward the recommended changes to SWC. SWC should review and discuss any suggested revisions during a regular meeting, and then the committee should vote on whether to adopt the change or not. Only until SWC has voted with a quorum of members, as stated in the by-laws, can the list be officially changed. If SWC initiates the proposed revision to the service levels, its recommendation should be reviewed by SWAC before proceeding. The minimum service levels should also be reviewed at least annually by SWAC. A change in the minimum service levels does not require an amendment to the Plan.

4.2.8 Recommendations for Recycling Programs in General

The recommendations for recycling and composting programs in general include:

R1) Adopt UGAs from *Chelan County Comprehensive Plan* as urban areas for purposes of recycling services.

This Plan adopts the urban areas, including the urban growth boundaries (UGAs) shown in the *Chelan County Comprehensive Plan* (see Figure 4.1), as the urban areas for the purposes of solid waste service levels. The remainder of the county, which is not designated by the Comprehensive Plan as an urban area or UGA, is hereby designated as the rural areas for the purposes of solid waste service levels.

R2) The list of designated materials, and process for amending this list, is adopted.

The list of materials shown in Table 4.1 is hereby adopted as the list of materials designated for recycling in Chelan County. The process for updating this list in the future will be conducted through SWAC.

R3) Minimum service levels and service areas are adopted.

Adopt minimum service level for voluntary curbside recycling in unincorporated areas.

4.2.9 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Recycling Programs in General

The approval of this Plan is all that is needed to implement R1 and R2, although both of these recommendations may require periodic updates in the future, per the processes and criteria described in this Plan.

Solid waste service levels should be revised as necessary to reflect any changes in the rural areas as shown in the Comprehensive Plan, and any required revisions to solid waste services should be implemented within 90 days after adoption of this Plan. Changes in service levels per future revisions to the urban boundaries in a new or amended *Chelan County Comprehensive Plan* should also be adopted within 90 days after changes to the comprehensive plan are approved.

4.3 SOURCE SEPARATION RECYCLING

4.3.1 Introduction

Recycling strategies that rely on source separation must be addressed in solid waste plans. "Source separation" is where the waste generator (a home or business) keeps recyclable (or compostable) materials separate from non-recyclable wastes. Because the recyclable materials are kept separate, the materials stay cleaner and are more easily recycled. Source separating is difficult and costly for haulers due to the specialized equipment with separate compartments and the labor injuries and extra time associated with the collection and sorting at the truck.

4.3.2 Existing Source Separation Recycling Programs and Facilities

Numerous private recyclers, volunteer organizations and municipal agencies provide various recycling services within Chelan County. An inventory of existing recycling drop-off and buy-back sites is shown in Table 4.5.

Drop-off/buy-back programs: Several private and public organizations are involved in the collection of recyclable materials. A variety of materials are collected through these programs.

North Chelan County Recycling Project: The North Chelan County Recycling Project is located in the city of Chelan but it serves about 9,000 residents in the entire region (including Okanogan County residents in the Brewster and Pateros areas, plus summer tourists mainly in the Chelan area). This recycling center accepts a full line of recyclables, including newspaper, cardboard, computer paper, magazines, mixed paper, clear and colored glass containers, aluminum cans, some non-ferrous metals (aluminum, copper and brass), tin cans, and plastic bottles (PET and opaque HDPE) and cathode ray tube units. Quantities collected are listed in Table 4.6. A review is being conducted to consider single stream recycling in the community. This could be done by the collection and processing by a private provider, or an overhaul sorting system at the center.

The North Chelan County Recycling Project operates out of a facility owned by the city of Chelan and is open five days a week including Saturdays. One public drop-off site is maintained by the recycling center, and several drop-off sites have materials baled by the center, including Entiat. Businesses in Chelan, Entiat and Manson may request curbside collection services for recyclables by the beginning of 2018. Business pick up is being considered in the Lake Chelan Valley as a cost for service. In all other areas of Chelan County, businesses have curbside services available. If the Chelan Recycle Center can go to single stream recycling processing, than the recycling curbside services will be able to offer single stream collection, rather than source separated. Currently, it is an issue for haulers to provide curbside collection because it causes more labor to pick up the various materials and separate in containers on the truck. It also poses more possibilities for back injuries for an industry that is beginning to use trucks with automation pick up.

All of the materials, except glass, are baled at the Chelan facility and then picked up by trucks to be brought to markets that are mostly in Western Washington. The typical weight of the loads is about 30 tons. Glass is crushed and then placed in large, heavy-duty bags that hold about one ton of glass per bag. Continuation of glass is being reviewed due to difficulty and costs to transport to markets. To the extent possible and storage space permitting, materials are accumulated and held until market prices are the most favorable.

Stehekin: The National Park Service is responsible for solid waste collection and disposal within the boundaries of the Lake Chelan National Recreation area. The Park Service provides recycling drop-off services there and the recyclables are transported by Stehekin Maintenance and Machinery to the North Chelan Recycle Center. The ferry system operated by Stehekin Maintenance also carries the vehicle that hauls recyclables from Holden Village. Currently a new transfer station is planned for construction in a location outside of the flood plain. The new facility will have improved recycling opportunities. In remote areas, such as Steheikin where garbage and recyclables are barged over waters, it is cost efficient to utilize recyclables locally, particularly compost. Transportation will be less costly if organics are kept out of the garbage and composted locally.

Central Washington Recycling: Central Washington Recycling operates a drop-off/buy-back center behind the Sav-Mart furniture store in Wenatchee. Materials collected include newspaper, cardboard, plastic bottles, magazines/catalogues, computer paper and aluminum cans. Large customers include the North Chelan Recycling Center and individuals who collect materials. The newspaper is used by

the other division of the company, Michelsen's Packaging that produces fruit trays for the region's crops. Approximate amounts of the various recyclable materials collected are shown in Table 4.7.

Leavenworth: The city of Leavenworth provides a cardboard recycling box for use by city residents and businesses and also conducts a cardboard collection route for businesses in the downtown area, which is described more fully below with other commercial programs. Waste Management provides single stream recycling pickup to residents and businesses. Leavenworth also maintains a recycle center located at 216 14th St. This recycle center is open two days a week (depending on the weather/season) and accepts cardboard, mixed paper, PET plastic and aluminum cans.

Table 4.5 Quantities collected at North Chelan County Recycling Project (2014)

Material	Tons/year
Cardboard	407
Newspaper	174
Mixed paper	158
Aluminum cans	15
Tin cans	18.5
Glass bottles	375
PET plastic	34
HDPE plastic, clear	18
Plastic bags	10
Annual total	1,209.5

Note: Quantities shown are partly from out-of-county sources.

Table 4.5 Quantities collected at Central Washington Recycling/Michelsen's (2014)

Material	Tons/year
Newspaper/mixed paper	4,098
Cardboard	13,899
Clear glass	N/A
Aluminum cans	148
Used motor oil	N/a
PET plastic	167
HDPE plastic	24
Annual total	18,336

Note: Quantities shown are partly from out-of-county sources.

Table 4.7 Recycling in Chelan County	Cashmere Curbside	Dryden Transfer Station	N. Chelan Recycle Center	Manson Drop-off Site	Unincorp. curbside	Entiat Town Hall Center	Central Wash. Recycling	Waste Mgmt. Transfer Station	Wenatchee Curbside	Options or Notes
Aluminum Cans	Y	Y	Y	Y	Y	Y	Y	Y	Y	Rinse and crush
Appliances*	N	Y	N	N	N	N	N	Y	N	Freon fees charged
Cardboard	Y	Y	Y	Y	Y	Y	Y	Y	Y	Non-waxy only
Chipboard (food boxes)	Y	Y	Y	Y	Y	Y	Y	N	Y	Interior must be gray/brown
Clear Glass	Y	N	Y	Y	*Y	Y	N	N	Y	Clean and rinse
Colored Glass	N	N	Y	Y	*Y	N	N	N	Y	Clean and rinse
Magazines	Y	Y	Y	Y	Y	Y	Y	N	Y	Includes catalogs
Mixed Paper	Y	Y	Y	Y	Y	Y	Y	Y	Y	Sorting varies
Motor Oil [1]	N	Y	N[1]	N	N	N	Y	N	N	Taken by other sites
Newspaper	Y	Y	Y	Y	Y	Y	Y	Y	Y	Many sites
Office Paper	Y	Y	Y	Y	Y	Y	Y	N	Y	Sorting varies
Packaging Peanuts	N	N	N	N	N	N	N	N	N	Call UPS Store
Plastic Milk Jugs	Y	Y	Y	Y	Y	Y	Y	N	Y	No. 2 HDPE plastic bottles, opaque color
Plastic Grocery Bags	N	N	Y	Y	N	N	N	N	N	Most large grocery stores will take these
Plastic Pop Bottles	Y	Y	Y	Y	Y	Y	Y	Y	Y	No. 1 PET clear/ colored plastic bottles
Styrofoam trays	N	N	Y	N	N	N	N	N	N	Clean and rinse, Dolco Pkg.
Tin Cans	Y	Y	Y	Y	Y	Y	Y	N	Y	Remove labels, rinse
Yard Waste	Y[2]	Y	N[1]	N	N	N	N	N	Y	Open hours vary

Notes: 1. North Chelan County Recycle Project does not accept motor oil, antifreeze or yard waste but the Chelan Transfer Station (next door) accepts used motor oil, antifreeze and brush. Used oil is taken by other sites throughout the county.

2. Glass recycling in the unincorporated areas remains costly to recycle.

Waste Management of Greater Wenatchee: Waste Management collects cardboard, newspaper, mixed paper, plastic, glass and aluminum cans at the South Wenatchee Transfer Station. White goods or appliances and scrap metal are still assessed a charge but are kept separate from the garbage and are recycled. Refrigeration and air conditioning units are not accepted for disposal or recycling unless the customer has the proper certification to show that the appliance has had the refrigerant and compressor oil removed by a qualified technician.

Dryden Transfer Station: This facility, operated by Chelan County since September 1998, accepts numerous materials for recycling throughout the year. The materials collected at this site for no charge (or payment) include aluminum cans, cardboard, magazines, mixed/office paper, newspaper, pop bottles, plastic milk jugs, tin cans, motor oil, antifreeze and car batteries. White goods and other scrap metal are collected separately for recycling for $10 per load. Refrigeration or air conditioning units are also charged a purging fee of $25 to remove any remaining refrigerant and compressor oil by a certified technician.

Cashmere: The city of Cashmere is closing the drop-off program for recyclable materials processing facility on River Street and the brush drop-off site. Curbside recycling is now offered in Cashmere. It is a weekly service along with garbage collection provided by Waste Management.

Other recycling programs: An important recycling program that has operated for many years is the recycling (reuse) of clothing and household goods through charitable organizations such as St. Vincent DePaul, the Salvation Army, the YMCA Store, Habitat for Humanity and Goodwill. It is difficult to quantify all the reuse of items through these valuable services. Assistance with illegal dumping, permit requirements, tax deductions and other opportunities to assist these non-profit businesses should be done.

O'Reilly Auto Parts, Kwik Lube, the Dryden and Chelan school bus garages, and Chelan transfer stations collect used motor oil for recycling. In the case of O'Reilly Auto Parts, only five gallons may be recycled at one time for no charge. Used oil has become costly to recycle. It is now charged $1 per gallon. Charges are being considered to charge the public for dumping the oil and antifreeze. At this time, antifreeze is collected at the Dryden and Chelan transfer stations at no charge. However it costs to have the antifreeze collected and recycled. These programs will continually be evaluated and, if not feasible, may threaten to close programs as outlined in the Used Oil Plan.

The Washington State Parks Department offers the public an opportunity to recycle aluminum cans at most parks in Chelan County. Dolco Packaging Corporation accepts Styrofoam (food containers only) for recycling. Many grocery and retail stores collect and recycle HDPE and LDPE plastic sacks and grocery bags. Small propane tanks can usually be exchanged at retail locations that sell new tanks and other locations.

Curbside collection programs: The cities of Cashmere, Wenatchee, Entiat and Leavenworth and a large portion of the unincorporated areas are the jurisdictions currently served by curbside recycling collections in Chelan County. All unincorporated areas of Chelan County shall be served with curbside recycling after adoption of this plan and the beginning of 2018.

Cashmere: Cashmere's program began in 1990 and is now operated by Waste Management. All city residents pay for recycling as part of their garbage bills. There is bi-monthly pick-up (during the second and fourth weeks of the month) of aluminum cans, tin cans, cardboard, chipboard, clear and colored glass, magazines, newspaper, office paper, pop bottles and plastic milk jugs.

Chelan: The city of Chelan implemented a curbside recycling program in April 1993 and discontinued it in 1999. The discontinuation of curbside pickup was in part due to the success of the North Chelan Recycling Center. The system of dropping off recyclables at the center or other convenient drop boxes is financially efficient and it appears that approximately the same amounts of materials are recycled as with curbside pickup. However, political pressure is requiring a second look at the economics of the curbside collection again. With this, consideration for a single stream recycle program could be implemented and affect the Chelan Recycle center.

Waste Management of Greater Wenatchee: Waste Management offers curbside collection of recyclables to its customers in the unincorporated areas of Chelan County and the residents of Leavenworth and Entiat. The curbside collection program currently uses a 64-gallon, mixed/single stream approach.

Wenatchee: The city of Wenatchee initiated curbside pickup of recyclable products in 1995 through its contract with Waste Management. That agreement was renewed through a 20-year contract that will provide curbside recycling services to single-family homes in Wenatchee through 2020. Under that contract, residents pay a flat fee for garbage collection that includes the collection of recyclable materials.

Waste Management picks up recyclables weekly in Wenatchee. Recyclable materials collected include cardboard, chipboard (cereal type boxes), mixed paper, computer paper, magazines, aluminum, tin cans, clear glass containers, plastic pop bottles, milk jugs and newspaper. Optional service pick up includes brush and yard waste. Currently materials are taken to the Wenatchee Transfer Station and then delivered to the Spokane Materials and Recycling Technology Center in Spokane, Wash.; Waste Management has the option to select where recyclable material is taken.

Commercial recycling programs: In addition to the commercial programs described below, there are several services that collect specific materials from commercial sources. Examples of these services include grease collections by rendering companies and fluorescent tube and computer collections. A few other individuals or businesses (besides those described below) have also made private arrangements to collect cardboard from local businesses. Several private businesses bale their own cardboard and either deliver it themselves to the recycle center or Central Washington Recycling may pick it up if there is a sufficient quantity. There are also several shredding companies that operate in Chelan County, and most of the paper they collect is recycled. Newspaper, paper and cardboard are bearing a high demand in the local area for recyclable material.

North Chelan County Recycling Project: Businesses in Chelan and Manson may request collection services provided by the North Chelan Recycling Center as described above (see discussion under Drop-Off/Buy-Back Programs). This service is provided free because the revenues from the commercial materials help offset operation costs. As of June 2016, more than 170 businesses were receiving this service. The commercial collections help prevent excessive amounts of materials (especially cardboard) from being brought to the drop-off sites.

Manson: The unincorporated community of Manson is in need of continued recycling services for commercial businesses and households. A fee will be required to enable the city or other hauler to continue these services. Manson's rural character and distance to the recycling center cause collection services to be more expensive than the more condensed population of the city of Chelan area. Support services are needed for the recycling drop-off site and/or curbside recycling in Manson. The recycling drop-off site is used frequently and requires daily collection and pick up of illegal dumping, and is becoming a health hazard. Businesses are encouraged to haul materials to the Chelan center; however,

oftentimes large amounts of cardboard are dumped. The franchised hauler Zippy Disposal is undergoing the development of a recycling program for businesses and residents for a voluntary, fee-based curbside recycle program.

Leavenworth: The city of Leavenworth conducts a cardboard collection route for businesses in the downtown area. The fee for this service is $5 per month. It is included as part of the waste collection rate and is, therefore, mandatory. This route is conducted five days per week with an approximate participation rate of 90%. Waste Management provides curb-side pickup of recyclables for city residents.

Waste Management: Waste Management of Greater Wenatchee currently provides commercial collection of cardboard to businesses in Wenatchee's downtown core. In previous years, this service was only for cardboard, but it has been changed to collect all recyclables in a single container. In 2015, 161 businesses were contracting for this service. The cardboard is delivered to the Wenatchee Transfer Station.

Agricultural plastics recycling: Northwest Ag Plastics Inc. (509-457-3850) recycles pesticide containers collected by distributors in Chelan County and in other areas throughout Washington, Oregon and Idaho. The distributors take empty pesticide containers that have been properly rinsed and decontaminated back from customers at no charge. Then Northwest Ag Plastics collects the containers from the distributors about four times per year.

Government office programs: There is no formal in-house recycling program sponsored by participating jurisdictions; however, individual organizations and departments may collect materials such as aluminum, office paper and newspaper and transport them to a local recycler. For example, the U.S. Forest Service (USFS) District Offices and the Supervisor's Office generally have a staff member designated as recycling coordinator. Commitment at each location varies depending upon the personnel involved. All federal agencies had to develop an Environmental Management Service in response to an executive order that requires them to minimize pollutants and eliminate waste. The USFS eliminated the use of aerosol cans in response to the executive order and expects to place a greater emphasis on recycling in the future.

The North Chelan County Recycling Project collects recyclables from government offices and schools in its service area. The city of Chelan recycles its cardboard and other paper through this program, and it also recycles confidential documents that are shredded.

Chelan County Courthouse facilities have recycling opportunities for office paper and cardboard recycling collected by the janitorial staff. Each department may choose to collect other materials. The Public Works office collects aluminum, HDPE plastic bottles and magazines, in addition to paper and cardboard. Supervised inmate workers collect and stockpile the recyclable materials from numerous offices on a weekly schedule and then haul the materials to Central Washington Recycling.

Processing of recyclable materials: The processing of recyclables in the County is conducted by either Waste Management, Central Washington Recycling or the Chelan Recycle Center. A limited amount of processing is also conducted by businesses such as Keyes Fibre.

Central Washington Recycling: Central Washington Recycling, a division of Michelsen's Packaging, handles a variety of recyclable materials and has processing centers for recyclables in Wenatchee and Yakima. Aluminum cans are densified and made into 20-pound biskets, stacked and shipped to buyers. Corrugated paper (cardboard) is baled and sold to various mills in Oregon and Washington. The newspaper collected is sent to another division of Michelsen's Packaging, where it is put into apple bins, ground and

placed between two layers of paper before the edges are sealed to make fruit packing pads. Central Washington Recycling collects magazines and then bales and ships them for further processing. Contaminants are removed from high-grade paper. Then the paper is put into corrugated bins and sold to companies outside the county.

4.3.3 Service Gaps, Other Needs and Opportunities in Source Separation Recycling

Recycling service gaps: There are several service gaps that currently exist for recycling in Chelan County. Providing new or expanded services to address these gaps would aid in increasing the recycling rate for Chelan County.

Recycling gaps by service area: As discussed in Section 4.2.7 (see Table 4.4), there are a few gaps in recycling opportunities for the designated materials for each service area. The South Wenatchee Transfer Station accepts only a few of the designated materials. Continued support of all the transfer stations so they can provide recycling services needs to be continually reviewed and supported. Areas such as Stehekin, Manson and Plain will benefit from improved recycling services. Multi-family housing, particularly in Wenatchee, needs to have information readily available to inform residents of local recycling facilities if such facilities are not available at the complex.

South Wenatchee Transfer Station: The South Wenatchee Transfer Station accepts only a few materials for recycling. An expanded program at this facility would help provide recycling opportunities at this intermediate solid waste handling facility, which is an important factor. It would also provide an additional opportunity for Wenatchee, the primary population center in the county. Drop-off centers are typically an important backup for curbside recycling programs, providing an opportunity for residents and businesses to continue to recycle if they have missed a pick-up date or have other problems. The drop-off center in this case should accept the same materials as are accepted through Wenatchee's curbside recycling program.

Stehekin: The Stehekin Valley solid waste system is in need of newer facilities and the re-examination of responsibility for disposal of solid wastes by the National Park Service, private residents and businesses. The National Park Service will provide solid waste services through a contracted hauler. The Stehekin Solid Waste Advisory Committee (SWAC) was formed in January 1999 to assist in developing solutions for solid waste disposal. The Stehekin SWAC examined options for handling and properly disposing of garbage, hazardous wastes and recyclable materials generated at Stehekin. Some of the options were prevented from implementation by various barriers, including current federal regulations and laws. The National Park Service will continue to manage the solid waste system in Stehekin and provide expanded recycling and hazardous waste disposal solutions.

Multi-family recycling opportunities: Recycling opportunities for multi-family units (apartments) are currently limited to drop-off and buy-back centers. Recycling collection programs for this type of customer are difficult to implement and maintain due to the transient nature of apartment dwellers, language barriers and designated storage sites. Storage sites can be accommodated if placed near areas of garbage disposal, near screened areas. Building codes could require sufficient room in screened areas for both garbage dumpsters and recycling containers.

Special wastes: Recycling opportunities are currently lacking for several specific materials, especially sheetrock, wood and other construction wastes. The nearby Dryden Transfer Station has a recycle pile for untreated and unpainted wood. These wood products are chipped and sold to Stemilt Composting.

Revenue-sharing agreements: A state law (RCW 81.77.185) allows waste collection companies to retain up to 30% of the market revenues they receive for recyclables collected in the certificate areas. This provision was adopted to encourage further investments in recycling and to provide motivation for increased recycling. Previously all market revenues were required to be used to offset expenses in the calculation of permissible rates and so certificate haulers had less incentive to maximize recycling. To implement this system, a proposal must be developed by the collecting company and County and submitted to the WUTC for approval. The County must certify that the proposal is consistent with the solid waste management plan. The proposal must demonstrate how the retained revenues will be used to increase recycling.

Urban versus rural programs: RCW 70.95.090 requires rural residents be served by drop-off boxes, buy-back centers or a combination of both at each solid waste transfer, processing or disposal site, or some other convenient location. The statute also states that programs in urban areas shall include collection of source separated recyclable materials from residential dwellings, unless the urban area designs a program that will collect an equivalent amount of recyclables using some other method. If any urban area is considering an alternative to curbside collection of recyclables, the following criteria, as outlined in RCW 70.95.090 (7) (b) (i), should be used to evaluate the alternative:

- Anticipated recovery rates
- Level of participation
- Availability of environmentally-sound disposal capacity
- Access to markets for recyclable materials
- Unreasonable cost impacts on the ratepayer over a six-year planning period
- Utilization of environmentally sound waste reduction and recycling technologies

Data collection and monitoring: Several problems exist with the adequacy of data for the current recycling system. For some recycling (and disposal) options, information is not available on the amount of recyclables from out-of-county sources. This is especially a problem with quantities handled at Central Washington Recycling and the North Chelan Recycling Center. In other cases, data is not readily available on the amount of materials collected from businesses in the County for special materials. The lack of this data prevents adequate monitoring of recycling and other waste management methods.

Garbage collection rates: Some residents currently pay a monthly fee for one level of garbage service. This type of system does not create an incentive for recycling like a volume-based system would. This issue will be addressed more thoroughly in the chapter on refuse collection (see Chapter 6).

4.3.4 Source Separation Recycling Alternatives and Evaluation

This section evaluates a range of potential recycling methods. This evaluation will be used by the participating jurisdictions to decide on implementation of new or expanded recycling programs.

Drop-off programs: A drop-off system typically involves a collection site or sites conveniently located in the community where individuals deposit one or more of their recyclable materials. These sites can also be used by commercial, industrial and institutional waste generators, although their participation can be limited by need to move large volumes of materials and the cost for paid employees to transfer

recyclable materials to a drop-off location. Existing examples include the North Chelan County Recycling Project and Central Washington Recycling in Wenatchee. A comprehensive drop-off program may have multiple collection sites, depending on the size of the community, each with containers for a number of recyclable materials; however, this type of facility generally depends on participants to deliver their recyclables. More complex drop-off centers that include processing of the collected recyclables are also included in this category. If the drop-off center pays for the delivered materials, it is often described as a "buy-back center."

Diversion potential of drop-off programs: Diversion potential for drop-off/buy-back centers varies considerably according to the location of the site, the number of materials collected, the hours of operation and the level of promotion associated with the center. Typical drop-off programs divert 1% to 10% of the waste stream. A very successful drop-off program was conducted in Auburn, Wash., and was estimated to be diverting 31% of the residential waste stream at the height of its program. Eventually, however, it became difficult to maintain a sufficient number of sites and the city switched to curbside recycling as its primary strategy.

Technical feasibility of drop-off programs: Drop-off programs are less technically demanding than curbside collection programs. Fewer trucks are required and residents may choose when they want to use the center and what quantities they want to bring in. Drop-off sites require that someone watch for contamination and disposal of solid waste, and provide cleanup and maintenance at the site. It is recommended that drop-off bins be placed in a highly visible public area. The continued operation of a drop-off facility (or other recycling program) often depends on the availability of an individual or group dedicated to the success of the program. High contamination and illegal dumping of other non-recyclable items are a problem at drop-off sites. It is expensive to handle the large and continuous garbage disposal at these sites. Regardless of surveillance cameras and monitoring, notification of items dropped takes a tremendous amount of time when including law enforcement and court times. Resources to clean up and haul garbage away from these sites is difficult to plan and coordinate.

Cost of drop-off programs: Costs of drop-off programs vary depending on the number of materials collected, processing methods and the type of bins used. Chelan County programs use specially designed collection containers that can cost between $5,000 and $10,000 each and baling systems that can cost approximately $50,000 to $100,000. The cost of trucks to move containers starts from $150,000 to $250,000.

Entiat, Chelan and Manson have such a site available at a convenient location. Staffing creates an additional expense, and the cost of garbage disposal (from illegal dumping or contaminated materials) may need to be weighed against the cost of staffing the sites. Drop-off sites are often used by out-of-area residents or visitors who don't help to pay for the program. This is proven during the tourism season in Manson and Chelan, as well as the fruit harvest season in these areas, when contamination and illegal dumping increases during these times. State grants awarded through Ecology are not consistent in providing disposal of garbage as a result of recycling operations. County support of these facilities, including garbage disposal, is cost-prohibitive and jeopardizes the continuation of programs.

Curbside recycling programs: Curbside recycling consists of residents setting out bins of recyclable materials at their curb or alley for regularly scheduled pick up by municipal or private collectors. The recyclable materials must be segregated from the general waste stream by residents. The recyclable material may be either separated into bins by type of material or placed non-segregated into one large bin at the curbside. If the material is not segregated by the generator, then it must be further segregated at a processing center often known as a materials recovery facility (MRF). The more separation that is done by the participant, the lower the processing costs. This approach also has the disadvantage of not only

higher collection costs due to the requirement for collection vehicles with separated compartments but also potentially lower participation due to the greater amount of effort involved by the participant. There is a second level of sorting with the source separated method that involves the driver of the recycling vehicle to sort materials as they are placed in the containers on the truck. This step also helps to screen for garbage and other problems.

Curbside recycling has continued in the incorporated cities of Wenatchee, Leavenworth, Entiat and Cashmere. Cashmere operated the entire collection system for garbage and recycling. The city is very proud of its successful program and the level of community involvement in reducing solid waste; however, the city found it more economically feasible to contract the services. Waste Management now conducts the garbage and recycling collection.

Waste Management provides single-family, residential pick up of recyclables as part of its garbage collection contract with the city of Wenatchee. This does not include the residents in multi-housing units, such as apartments, but there are convenient drop-off locations for these customers.

Curbside recycling was formerly practiced in the city of Chelan from 1993 through 1999. The city stopped curbside recycling due to the costs associated with the program and evaluations that showed the public's recycling habits would continue by using the North Chelan Recycling Center. The drop-off sites were enhanced to be able to accept an increased volume when the city underwent the change from curbside to strictly drop-off. The volumes of materials received at the drop-off sites have surpassed the city's expectations. This has helped the city stay within its budget without hindering the volume of recyclable materials received. The city is always evaluating the most economical method to continue recycling, as well as consideration for convenience of residence with curbside, single stream collection.

Diversion potential for curbside recycling: Curbside collection programs typically have a participation rate of 50% or more of all households. A typical average of 28 pounds per household is collected each month. Wenatchee's records show that an average 124 tons per month (1,484 tons per year) are collected through the curbside recycling program in Wenatchee.

Technical feasibility for curbside recycling: Multi-stream curbside collection programs are technically more complex than most other collection programs, such as the single stream collection. Special compartmentalized trucks may be required and a promotional education program is necessary to teach residents proper methods to prepare the materials. Information will include collection times, acceptable materials and proper preparations. Efforts must be made to ensure that only designated materials are collected to keep truck drivers sorting time at a minimum.

Cost for curbside recycling: The cost of curbside collection is typically added onto residential refuse collection fees. The average fee for the county is around $7to $9 per household per month. In Wenatchee (and most areas serviced by Waste Management) residents are charged a flat rate for curbside garbage collection and recycling. A comparison between curbside and drop off collection is shown in Table 4.9.

Rural Areas: A significant deficiency in recycling is providing affordable and convenient recycling opportunities in the North County area. The franchise hauler can provide curbside recycling opportunities but is not efficient with only source separated processing available in the area.

Table 4.8 Comparison of Curbside Collection of Recyclables to Drop-Off Collection		
	Curbside	**Drop-Off**
Advantages	High diversion potential (35% of service area's waste stream)	Low cost
	Convenient	High participation
	High public acceptability	
Disadvantages	Low participation due to higher cost $20.	Contamination may bring lower price for materials (need to monitor drop-off areas)
	No current local infrastructure for single stream recycling. Higher costs to separate with equipment and labor.	Costly garbage collection and disposal due to contamination and illegal dumping.

Multi-family collection programs: A significant deficiency in most recycling programs is the difficulty in servicing large multi-family housing complexes. "Multi-family" is defined as housing that contains four or more units. Apartment buildings and condominium complexes typically use one or more large "dumpsters" into which all tenants place garbage. The design of these complexes makes the use of individual curbside recycling containers for each tenant difficult or impossible. These facilities present a major challenge to communities implementing residential recycling programs. Some programs report problems with contamination of garbage to recycle bins. Of the communities currently operating multi-family housing recycling programs, several are using large containers (typically 90-gallom "toters") placed next to the garbage dumpsters, where the residents can place separated recyclables. These programs collect the materials with a special truck designed to handle the containers and keep the different materials separate. In Miami, multi-family recycling is required, but the complex owners are able to choose three materials to recycle from a list that includes high-grade paper, newspaper, cardboard, glass, aluminum and steel.

Diversion potential for multi-family collection programs: The level of diversion can vary substantially between complexes. Factors to be considered include convenience of location, materials accepted, level of promotion, and support of the manager and owner. Most multi-family housing is located within the incorporated areas. Cities have the authority with contracted garbage collection to impose a requirement to offer recycling.

Technical feasibility for multi-family collection programs: Multi-family programs have unique implementation problems. Locating a central, convenient space is sometimes difficult. In addition, controlling the materials collected is more difficult, which may result in contamination problems similar to drop-boxes. All programs require the support of the complex owner. Provisions for collecting recyclables in apartment complexes can be made a design requirement for new apartment construction by amending the building and zoning codes.

Cost for multi-family collection programs: Costs may tend to be higher in Chelan County because tonnages will be lower, but fixed costs may remain high. It is difficult to find firms to haul recyclable materials in the County. If prices of materials increase, more firms may be willing to pick up the materials. If single stream is available, as it is in Wenatchee and areas served by Waste Management, contamination from multi-housing recyclables will be less. Encouraging the City of Wenatchee to provide multi-housing with recyclable collection would increase recycling rates.

Commercial/industrial/institutional recycling alternatives: Commercial, industrial and institutional (including government buildings and schools) on-site recyclable collection programs have a longer history than residential programs, primarily because of the economics associated with larger quantities, the consistent nature of the recycled material and the ability to capture the avoided disposal costs associated with these recycling programs. Formal and informal arrangements exist where specific materials, especially cardboard, various metals and other industrial scraps, are kept separate from the remainder of the waste stream to be picked up by scrap dealers and scavengers. The cyclical nature of the secondary material markets, however, sometimes causes the value of the materials to fall to a level where it is not profitable to collect and transport them. At such times, more of the secondary materials end up in the waste stream or are stockpiled indefinitely.

Waste Management of Greater Wenatchee, Inc., currently offers collection services for mixed recyclables to businesses in Wenatchee and other areas of Chelan County. As of 2005, 126 businesses had contracted for this service. More businesses could benefit from this program but there may be a feeling that preparing cardboard for recycling is inconvenient and time consuming, or it may be a lack of knowledge on how affordable this program is. Further education and promotion of the program might increase participation. A local business may request any size container, between one cubic yard and eight cubic yards, with pickup.

The North Chelan County Recycling Project collects from businesses in that area of the County. Approximately 50% to 75% of all businesses in that area use the service. A fee scale is being evaluated to impose for these services.

When the price for cardboard is good, individuals often drive up and down the alleys in Wenatchee to collect cardboard from dumpsters. Because these individuals are not offering their services for a fee, they are not subject to the transporter licensing requirements of RCW 70.95.

Because they can generate large quantities of waste, it is very important to provide businesses with opportunities to recycle. Four possible options are available and are described below:

Encourage businesses to use recycling centers: Drop boxes are over utilized and are costly to reload and haul to nearby recycling centers. We want to encourage businesses with large amounts of cardboard to haul to the center or sign up and pay the fee for curbside collection if it is available. As with any commercial program, this alternative should be accompanied by appropriate education stressing the cost savings of recycling and the ease of preparation.

Encourage businesses to contract with private and public recyclers: Businesses can contract with a private recycler or register with the franchised contract hauler whether it is to have recyclable materials collected and transported to processing facilities or markets. Depending on the material (and the amount and condition of the material), the business may then be able to receive payment for the recyclables. Many businesses use the services of the North Chelan County Recycling Project in the northern section of the County or Waste Management in the Wenatchee area. These and other services could be promoted to the businesses. To simplify the search for a recycler and save the generator's time, a referral system connecting businesses with recyclers of a particular commodity could be

provided by the County or the municipal governments, or an existing service such as Ecology's 1-800-RECYCLE system could be publicized.

Commercial recycling could also be increased by expanding existing collection services to include new materials.

Establish a city-franchised commercial recycling program: The cities could administer a contract with an area recycler for collection of municipal recyclables. Businesses would be sent a notice announcing the available service, although businesses would not be required to participate.

Establish a recycling program for small businesses: Large businesses (typically over 20 employees) have little trouble locating a recycler. Their volume of recyclable materials makes providing the service more cost effective for the recycler. Small businesses, or larger businesses generating small quantities of source separated recyclables, are sometimes unable to easily locate a recycler to collect their materials. Recycling levels would increase if recyclable materials from these businesses were collected. Chelan County or the municipal governments could identify potential businesses in need of recyclables collection and coordinate service opportunities with local recyclers.

The evaluation of the preceding alternatives for commercial recyclable collection is shown in Table 4.10. These alternatives and the public sector alternatives (see Table 4.12) are evaluated according to the following criteria:

- **Diversion potential**: This criterion provides a relative assessment of how much organic material could be diverted by the alternative.
- **Technical feasibility**: Alternatives can be evaluated according to degree of difficulty for implementing the alternative, where a "high" rating means the alternative is well-tested and proven to perform, and a lower rating is due to implementation problems or issues.
- **Political feasibility**: Alternatives that require significant policy decisions or changes to existing services need to be assessed as to the political likelihood of implementing the alternative.
- **Cost-effectiveness**: The degree to which the alternative is effective in reducing waste at a reasonable cost is also an important factor. The SWC and SWAC support programs that can achieve the greatest amount of waste reduction for the amount spent.

Single stream collections versus multi-bin systems: Many recycling programs in other areas throughout the country have recently adopted a more fully commingled approach. Whereas some level of commingling (mixing) has typically been used by almost all recycling programs, this trend is based on all of the materials being placed into a single collection container. This approach has several advantages and disadvantages (see Table 4.11).

One of the primary advantages of single stream recycling is a reduction in collection costs. With all materials in one container, automated collections (where the driver does not need to leave the vehicle to pick up containers) can be conducted. This makes collections faster and less strenuous for the driver, providing substantial benefits from a reduction in worker injuries. The collection savings are not fully passed on to the program participants, however, because there is also an increase in costs for processing single stream materials and a reduction in market revenues caused by a downgrading of material quality.

Market revenues are reduced because materials can't be fully separated once mixed together. For instance, newspapers that are separately collected through more traditional recycling programs can achieve the specifications for the cleanest grade of this material, whereas newspapers separated by

machinery after being collected in a single stream program end up being a mixture of newspaper and other papers (along with bits of glass and some plastic bottles and aluminum cans). This mixture has a lower market value, plus leads to the loss of recyclables. The plastic bottles and aluminum cans that are shipped to paper markets, for instance, are typically not recovered and end up being landfilled by a paper mill. One solution to these problems is to remove glass from the mix.

Table 4.9 Evaluation of Commercial Recycling Alternatives

Program	Diversion Potential	Technical Feasibility	Cost-Effectiveness	Conclusions
Encourage businesses to haul materials to recycle center	Low	Medium	Medium	Institute a fee based curbside collection Pursue
Contract with private recycler	High. Cardboard and high-grade paper are a large percent of the waste stream.	High	High	Pursue
Establish a city franchise system	High	Medium. More difficult to administer. Businesses may resent govt. involvement.	Medium	Don't pursue
Recycling program for small businesses	Medium	Medium. More difficult to coordinate and administer.	Medium	Pursue

Table 4.10 Single Stream Recycling Advantages and Disadvantages.

	Possible Advantages	Possible Disadvantages
Operating Costs	Collection costs are reduced.	Processing costs are increased. (1)
Capital Costs	New trucks may be needed, but are more versatile due to lack of compartments.	Significant capital investment needed for processing system.
Markets for Recycled Materials	Regional markets have adjusted to new blends and grades.	Cross-contamination is a problem, and materials are being down-graded.
Participation Rates	Participation rates may be higher due to greater convenience.	Part of increase could be temporary, due to publicity for new program.
Total Amount Collected	More may be collected due to a variety of factors.	Increases offset by "lost recyclables." (2)
Other	Additional materials can be added to recycling programs.	More garbage collected due to automated approach, could get worse over time. (3)

Notes:

1. *A study for the American Forest and Paper Association reported collection cost savings for single stream of $10-20/ton, increased processing costs of $5-15/ton, and increased costs at mills of $5-13/ton, for a net system-wide increase of $3/ton. 2. A survey by Government Advisory Associates found that the average amount of residuals from single stream is 16.6%, compared to 6.4% for two-stream collections. 3. Data collected for King County, WA, showed that the amount of garbage doubled, from 0.8% to 1.8% by weight, within 6 months after switching from 3-stream to single stream.*

Public sector involvement: The public sector can promote recycling in several ways including the following: expanding in-house recycling programs, expanding education programs, developing a citizen action group, developing an awards and recognition program, establishing procurement policies, providing waste audits to businesses, establishing a recycling data collection program and lobbying for state and federal legislative action.

Continue and expand governmental office recycling programs: The participating jurisdictions could continue to collect recyclable materials generated by their offices, including white paper, cardboard, plastic bottles, aluminum cans and newspaper. In-house education could be supplemented with increased opportunities for diverting wastes from disposal, reusing items and avoiding waste generation in the first place.

Implement recycling education programs: The participating jurisdictions should continue to expand their public education and awareness programs, which are discussed in Chapter 12. The participating jurisdictions could sponsor a Recycling Day or Week, which could involve contests between businesses, publicity events (such as building a sculpture out of recyclables and placing it in a prominent place), sponsoring an exhibit of recycled products, purchasing newspaper and radio ad space, holding noontime public rallies, giving out bumper stickers and other similar events. Comprehensive education programs can also be coordinated with the introduction of any drop-off and/or curbside collection programs.

Participating jurisdictions could implement a business recycling education program in conjunction with its source reduction program. The County can help business and industry in a number of ways to identify and act upon these opportunities with education and information programs. Such programs could be targeted at businesses in general and/or could be tailored to businesses with similar waste generation or management characteristics. Part of the County's business and education program should include maintaining information about waste exchanges and products with recycled material content.

Develop an awards and recognition program: Participating jurisdictions could also implement a program of recognition and awards for companies with successful recycling programs. These awards could be publicized and businesses receiving this recognition could also let their customers know of their achievements through advertisements or by display of the award on their premises.

Provide waste audits to interested businesses: Another business and industry education and assistance program could offer waste audits that examine purchasing patterns, production practices, and the types of waste produced by an individual business or groups of businesses. The businesses could receive an environmental and technical evaluation that would address how to reduce both the volume and, in the case of hazardous waste, the toxicity of waste. Business audits can be used to distribute educational and technical assistance materials, as well as to publicize other services such as waste exchanges or composting. An alternative is to provide businesses with a self-audit checklist that does not require county or city staff-time for implementation.

Establish a recycling data collection program: Chelan County could establish a database for measuring recycling activities and monitoring the residential and commercial waste streams. A data collection program could gather data on a monthly or annual basis from franchised collection companies, buy-back centers and other private and nonprofit recycling activities. At its most basic, the data collection program should collect information on types of materials collected, tonnages, customers (residential vs. commercial, in-county or out-of-county) and end markets. For this approach to be useful it should tie into public education or other efforts to address any problems noted.

Lobby for state and federal legislative action: The participating jurisdictions and their residents could lobby for state and federal policy changes on recycled content of products, procurement standards, and recyclability of packaging. Writing to elected state and federal officials could stress the need for market development of recyclable materials, which is critical for establishing recycling program success. Passage of state and federal legislation mandating the purchase of materials with recyclable content will help to stimulate markets.

Implement residential rate incentives: Rate incentives can be provided through the fees paid by residents for refuse collection. A common rate incentive is a variable can rate, which depends on the volume of mixed-waste (number and/or size of cans) collected. For this incentive to work, there must be adequate recycling opportunities available. These rate types are discussed in greater detail in Chapter 6.

Encourage haulers to annually distribute recycling information. Commercial, industrial and institutional waste generators generally already have rate incentives to recycle because their charges are usually based on the volume of waste disposed. The benefits of participating in recycling programs is not well documented for businesses to review and choose recycling services. Franchised haulers can more readily distribute rate brochures to businesses that will show the cost savings of reducing garbage volumes and attaining recycling services.

Advanced disposal fees: Charging a consumer for disposal fees when they purchase a product is known as an advanced disposal fee (ADF). In other words, a small fee or tax is added to the product's price to cover disposal costs. The consumer does not recoup these costs as he or she would with a deposit, but the ADF would help fund a program to deal with that type of waste.

Mandatory recycling: Mandatory recycling can be implemented to increase participation in recycling programs if voluntary efforts fall short of recycling goals. Mandatory programs can take one of two forms:

Mandatory pay/voluntary participation: In cities that contract for recycling and waste services and cities that conduct their own collections, the rates for residents and businesses can include a fee for recycling. In this case, all of the residents and businesses that are already paying for the service can then voluntarily participate at no additional cost. A similar approach can be used in the certificate (franchise) areas through a service level ordinance and approval of rates by the WUTC (see Chapter 6). Increased recycling services such as curbside collection provided by the hauler would be beneficial. Residents and businesses could voluntarily utilize the curbside recycling services. This would be an efficient way to provide recycling in the Chelan Valley.

Mandatory participation: Another alternative for mandatory programs is to pass an ordinance that requires all residents and/or businesses to recycle, or one that establishes a disposal ban for specific materials. A disposal ban is viewed by some as being more flexible because it allows residents and businesses to engage in a variety of alternative programs (waste reduction, composting, etc.) rather than requiring them to recycle. A key to the success of mandatory recycling programs is that there are convenient and effective recycling programs and/or other alternatives available.

Seattle implemented a disposal ban that became effective Jan. 1, 2005. Through this ban, residential customers are prohibited from disposing of "significant amounts" of paper, cardboard, glass, plastic bottles, and aluminum and tin cans, while businesses are prohibited from disposing of significant amounts of paper, cardboard and yard debris. Yard debris was banned from disposal for residential customers in 1989.

Develop a citizen action volunteer group: Citizen action volunteers could promote waste reduction, recycling, composting and other programs. Activities undertaken by local citizens could be determined by the recycling programs to be implemented. Some examples of services that could be provided include:

- Implementing education programs (source reduction, recycling, backyard composting)
- Conducting commercial waste audits
- Providing technical assistance
- Operating a recycling assistance "hotline"

Market development: Market development also plays a key role in recycling. Market uncertainty is a primary barrier to recycling. It is difficult to effectively influence market development on a local level, but local markets can sometimes be created for specific materials with some creativity and hard work. Other approaches related to market development are described below:

Support expansion of processing facilities for source-separated recyclables: Participating jurisdictions could support expansion of existing processing capabilities by implementing incentives and removing barriers to secondary processing materials within the County. To make recyclables collected in the County more attractive to processing companies, the jurisdictions could identify ways for improving the quality of collected recyclables. Focusing efforts on the collection of source-separated recyclables is the best way to ensure a high degree of quality in collected recyclables.

Promote siting of re-manufacturing businesses in Chelan County: One significant effect that the participating jurisdictions can have on the recyclable market is to encourage the siting of an industry that would use secondary materials available within its market area. Participating jurisdictions could encourage industry siting in the County by aiding in the development of an infrastructure as well as by providing tax incentives. Elected officials could also promote the siting of re-manufacturing businesses in or adjacent to Chelan County. Coordination between the County and the re-manufacturing businesses could be arranged. While encouraging the siting of new facilities, the County and cities should maintain support for existing local industries that use recyclables.

Establish governmental procurement standards and purchasing guidelines: A governmental procurement policy could be established to encourage the purchase of recycled content products, emphasizing the importance of products made with "post-consumer" recycled material. The goal of such a "Buy Recycled" campaign is to increase the purchasing of products made from recycled materials by businesses and public agencies.

In October 2004, Gov. Gary Locke signed Executive Order 04-06, which set new standards for procurement of recycled paper (and energy conservation and green building). These standards could also be adopted or applied by local governments and public schools for their procurement practices. If the jurisdictions in Chelan County adopted similar procurement policies, or addressed the issue in a public meeting, it could increase awareness of the need to purchase materials with recycled content and may provide a model to encourage local businesses to adopt a comparable commitment.

Lobby for federal policy changes that currently favor the use of virgin materials: The participating jurisdictions and their residents could support lobbying efforts for federal policy changes that currently favor the use of virgin materials. Oil producers, for example, can deduct a depletion allowance from their taxes, while oil recyclers are subject to regular corporate income tax. Federal policy is an important component in ensuring that recycled materials can compete favorably with virgin materials.

Implement product testing and promotion: Markets for recyclable materials may also be expanded by conducting product testing programs and promoting the results of the analyses. For example, the different end-users for yard debris, such as nurseries and landscapes, have different product specifications for the composted product. Product testing programs would allay any perception among potential users that composted yard debris was contaminated with glass, plastics or other materials.

An evaluation of the public involvement alternatives is presented in Table 4.12.

Table 4.11 Evaluation of Public Sector Involvement Alternatives

Alternative	Diversion Potential	Technical Feasibility	Cost-effectiveness	Conclusions
Continue and expand in-house recycling	Medium	High	High. Sets good example for the public.	Continue
Education programs	High	High	Medium. Difficult to justify grant funds in a short time frame.	Continue as is
Awards and recognition program	Medium	Medium	Medium. Gives incentive to businesses that generate large amounts of recyclables.	Don't pursue
Waste audits to businesses	Medium	Low	Medium. Personal assistance is very effective.	Don't pursue
Data collection program	Not applicable	Medium	Not applicable	Don't Pursue
Lobby for state and federal action	Low	Medium	Medium	Don't pursue
Residential rate incentives	High	Medium. May negotiating contracts or WUTC approval.	High	Pursue
Commercial waste generator incentives	Medium	Low. Difficult to administer.	Medium	Don't pursue
Advanced disposal fees	High	Medium. Businesses will oppose.	Medium	Don't pursue
Mandatory pay, voluntary recycling	High	Medium.	Medium	Don't pursue
Mandatory recycling or disposal ban	High	Low. Public and businesses will object.	High	Don't pursue
Citizen action group	Medium	Low	High. Relies on volunteer time.	Pursue
Market development (several approaches)	High	Low. Developing new markets is difficult.	High	Pursue

4.3.5 Recommendations for Source Separation Recycling

Recommendations were developed based on the evaluation of the alternatives shown above. Increasing the level of recycling in Chelan County will require a number of aggressive and coordinated programs. Public sector organization and support will be necessary if these programs are to be successful. Therefore, it is recommended that Chelan County and others take the following actions. (Note that Recommendations R1 – R3 are shown on pages 4-13):

R4) Coordinate funding for education efforts with waste reduction programs.

In conjunction with the waste reduction education program, the following actions are recommended:

- Seek financial support for expanding education efforts, such as producing and distributing written materials, and presenting information to community groups;
- Use radio/newspaper advertising, press releases and articles; and
- Support a school-age education program.

R5) Provide information annually to local businesses and residents with both garbage and recycling rates.

- Encourage franchised haulers to distribute annually to businesses and residents garbage rate information, including recycling programs.

R6) Continue curbside programs in Cashmere, Leavenworth and Wenatchee and voluntarily in unincorporated areas.

The cities of Cashmere, Leavenworth and Wenatchee will continue their curbside recycling programs. Variable can rates should be used to encourage participation in these recycling programs. Unincorporated areas of Chelan County should receive curbside recycling programs. Minimum Service Level shall establish curbside collection in unincorporated areas.

R7) Re-evaluate drop-box system in urban and rural designated areas.

Drop-off sites in Leavenworth, Entiat, Manson, Wenatchee and Dryden should be re-evaluated for cleanliness and effectiveness. Chelan and Entiat should continue their drop-box recycling systems, provided the contamination is controlled. Manson drop-box system has unhealthy conditions and a tremendous amount of contamination, and, unless better controlled, should be removed. Buy-back centers should be supported and encouraged to continue.

R8) Encourage multi-family dwelling owners to contract with private recycler.

Managers or owners should be provided with names of local recyclers and assisted with setting up recycling programs. Efforts should be coordinated with local haulers for an efficient collection program.

R9) Encourage municipal permitting agencies to recommend that builders incorporate recycling collection areas into their building plans for multi-family and commercial buildings.

Municipal permitting agencies should recommend that builders incorporate recycling collection areas into their building plans. Provisions for collecting recyclables in new multi-family

complexes should be made a design requirement for new construction by amending the building and zoning codes.

R10) Continue and expand recycling programs in governmental offices.

Collection of office paper, newspaper, aluminum cans and other recyclable materials should be encouraged in governmental offices.

R11) Develop a monitoring/reporting system.

Support the state requirement that all recycling service providers report quantities collected on an annual basis (broken down into material categories). Utilize the Washington State Department of Ecology annual survey so that all information is consistent. Explore methods to determine out-of-county quantities that are going to in-county facilities.

R12) Continually investigate and encourage local, cost-effective markets.

Local applications for recyclable materials should be sought as much as possible. A better market, recycled or re-used, is especially needed for glass.

R13) Support government procurement policies.

Develop purchasing policies that give priority to recycled products with post-consumer content for all jurisdictions. Use state guidelines where appropriate. See also Recommendation WR3.

R14) Encourage private companies to adopt procurement policies that promote the use of recycled materials.

Private companies should be encouraged to use products or supplies containing recycled (post-consumer) content materials. Local manufacturers should be encouraged to label products and packaging as recyclable, if appropriate.

R15) **Evaluate any proposals for recycling through mixed waste processing.**

Transitioning from source separated recycling to single stream recycling should have the cooperation of the municipalities to ensure success, even across boundaries.

4.3.6 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Source Separation Recycling

These programs are designed to help meet the recycling (and composting) goal of 50% by 2025. The progress toward meeting that goal should be assessed annually and increased efforts considered if progress appears to be falling short. Support for technology and equipment for source separation in areas needed.

4.4 MIXED WASTE PROCESSING OPTIONS FOR RECYCLING

4.4.1 Introduction

This section of the Plan addresses options for recycling materials that are recovered by processing mixed waste (garbage). Unlike the other recycling options discussed previously in this chapter, this type of approach is not defined as source separation.

4.4.2 Existing Mixed Waste Processing Programs and Facilities for Recycling

There are no mixed waste processing facilities operating within the County currently.

4.4.3 Service Gaps, Other Needs and Opportunities in Mixed Waste Processing for Recycling

Any solid waste processing technology that is considered should be economically feasible and designed to fit the specific needs of the County's residents and businesses. An emphasis should be placed on developing "closed-loop recycling" methods, where recovered materials are returned to usage identical or similar to the previous use (see discussion of Beyond Waste plan in Section 4.2.3), or the mixed-waste processing system may not be sustainable in the long run.

Data from waste composition studies in other areas indicates that between a third and a half of the waste stream is recyclable materials, although not all of this material could be recovered by a waste processing system due to contamination. In other words, materials removed from mixed garbage are often too dirty to be marketed as recyclable. Reusable materials could also be recovered from mixed waste. Data from a waste composition study conducted for Snohomish County (GS 1998) shows that the waste stream for that county contains 3.7% (by weight) of reusable materials (materials that could be directly used for their original purpose). Data from a similar study for Thurston County (GS 2000) shows that the amount of recoverable materials in the waste stream (i.e., the recyclable materials that have not been rendered un-marketable after being mixed with garbage) is only about a third of the total amount of disposed recyclables, or about 9.1% of the waste stream in the case of Thurston County.

4.4.4 Mixed Waste Processing Alternatives for Recycling

Mixed waste processing systems range in complexity from simple "dump-and-pick" operations to highly mechanized facilities.

Dump-and-pick recycling options: With dump-and-pick operations, recovery is typically limited to larger items that are easily removed (such as cardboard boxes and scrap metal). In this case, the disposal facility must have a tipping floor to allow loads of waste to be dumped out of collection vehicles onto a flat surface, ideally with space to spread out each load to allow access to all sides of it. Other requirements include additional labor to pull out materials plus containers for both temporary and long-term storage of the recovered materials. A forklift and other equipment are also necessary for moving and emptying the containers used for temporary storage. Dump-and-pick operations may create a situation where workers have extensive contact with raw garbage, with the subsequent risks to their health, and may lead to back injuries due to the poor ergonomic conditions typically present.

Pursuing the idea of a dump-and-pick operation would require a careful examination of the operational issues for the various options, as well as examining the overall feasibility, particularly on a cost-benefit basis. The results of this examination may be different for a private facility versus a public facility, but in general the operational issues for a dump-and-pick operation include:

Tipping floor: Significant remodeling would be needed at any of the transfer stations in Chelan County to provide space for a dump and pick operation. If a new private or public facility is used, the tipping floor could be designed to provide extra space on the tipping floor.

Staffing: The operation would require more staff at a disposal facility. Whether at a public or private facility, however, staff could be employees of a private company.

Proceeds: Materials removed from the waste stream could be given away or sold. Any revenues could be used to offset the costs of this activity. Another option would be to contract the recovery operation to a private entity and allow that entity to keep any profits, in which case some benefit would still be derived from avoided disposal fees.

Liability: Issues of liability, insurance and associated costs would need to be addressed prior to establishing a dump-and-pick operation. Back injuries and other problems can be an issue for dump-and-pick operations.

Effectiveness: The ability to recover materials from mixed waste is limited, especially in areas where recyclable materials are already being diverted by source separation programs. Dump-and-pick operations often resort to recovery of only the larger materials (wood, sheetrock and metals) due to the high cost of recovering the smaller materials (bottles and cans) in this way, and also due to the fact that only about a third of the smaller materials are still marketable after being mixed with garbage.

Mechanized waste processing: Mechanized waste processing requires a facility or system that is designed to accept garbage and process it to remove the recyclable materials. Processing typically includes a combination of mechanical systems, which are effective at removing only certain materials, and manual sorting. Mechanized waste processing could be used in place of source separation, although often it is used in addition to traditional recycling programs to remove materials remaining in the waste stream. Mechanized waste processing could also be used with a co-collection program, where recyclables are placed in a special bag that is then recovered at a central facility.

A typical mixed waste processing facility of this type might include a tipping floor for removing bulky and other non-processible materials; trommel screens (a rotating drum with one or more sizes of holes in the side) and/or air classifiers for the initial separation of waste components; a picking line for manually removing materials; magnets for removal of tin cans and ferrous metals; and conveyors to link these elements together. The materials recovered from this type of facility would typically be lower in quality (dirtier) than source-separated recyclables, and the cost-effectiveness of this approach in other areas has often relied on the availability of a waste-to-energy plant to purchase the light fraction (paper and plastic) as a fuel.

Mixed waste processing can be an expensive and risky approach for recovering recyclable materials, and so it is usually not pursued unless there is a strong mandate for increased recycling or very high disposal fees (i.e., a high potential for avoided disposal costs). If part of the facility or equipment is already available, however, then mixed waste processing may be more feasible.

4.4.5 Evaluation of Mixed Waste Processing Alternatives for Recycling

Alternatives for processing mixed waste should be evaluated using the following criteria:

- **Economic feasibility**: Alternatives will be evaluated according to the feasibility of funding new processing systems and for the potential for those projects to be financially self-sustaining. On the assumption that any mixed waste processing systems that would be implemented in Chelan County would be financed and operated by the private sector, this criterion is also a measure of the cost-effectiveness of an option.

- **Technical feasibility**: Some recycling programs involve highly complex technology and equipment that may be difficult to use efficiently and effectively. This criterion focuses on whether or not the program is considered feasible for Chelan County.

- **Public acceptability**: This criterion assesses how receptive the public (or the private sector, depending on the target audience for the alternative) will be to the program. Issues such as convenience and willingness to participate are considered. The potential for a negative public response should also be considered if appropriate to a proposed approach.

A summary evaluation of alternatives is presented in Table 4.13.

Table 4.12 Evaluation of Mixed Waste Processing Alternatives for Recycling

Alternative	Economic Feasibility[1]	Technical Feasibility	Public Acceptability	Conclusions
Dump and Pick Operations	Medium	Medium	Medium	Don't pursue
Mechanized Waste Processing	Low	Medium	Medium	Don't pursue

Note: 1. Based on estimated costs and diversion rates. Little research or other data is available on the "measurable" effectiveness of waste processing systems.

4.4.6 Recommendations for Mixed Waste Processing for Recycling

The recommendations for mixed waste processing are (see pages 4-14 and 4-33 for Recommendations R1 – R14): TBD

R15) Any proposals for recycling through mixed waste processing should be evaluated.

Mixed waste processing systems could contribute to achieving recycling goals and provide economic benefits to the County, but could also have negative impacts if not conducted properly. Any future proposals for mixed waste processing should be evaluated as appropriate.

4.4.7 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Mixed Waste Processing Options for Recycling

Any future proposals for mixed waste processing should be evaluated in a timely fashion and discussed with SWAC and SWC as appropriate.

CHAPTER 5: MANAGEMENT OF ORGANIC MATERIALS

5.1 INTRODUCTION

This chapter of the *Chelan County Solid Waste Management Plan* (Plan) discusses the goals and regulatory framework for composting and other organics management methods, describes existing composting programs in Chelan County, reviews the needs and opportunities for expanding upon existing practices, describes and evaluates alternatives and provides recommendations.

5.2 ORGANICS STRATEGY

5.2.1 Introduction

Composting has long been of interest to the businesses and municipalities in Chelan County. Some steps have been taken to implement composting in Chelan County, such as the composting system that was previously used at the Dryden Transfer Station. The largest composting program in Chelan County is conducted by Stemilt in Wenatchee, but the company is subject to many of the drawbacks associated with a private composting business, such as seasonal availability and supply-and-demand issues (Stemilt prioritizes the utilization of produced compost on Stemilt-owned orchards before making the remainder available to the public). Direct land application of organic materials has also been practiced, such as the city of Wenatchee's biosolids, which are sent out of County. The other major area of interest is the large increase in brush collection. Seasonal collection sites have been implemented throughout the County; however, due to fire prevention concerns and the increase in these collection sites, the County is receiving large amounts of brush. This increase in brush has been addressed by producing woodchips and mulch. Overall, these approaches are working well and SWAC, as representatives of the mainstream community, believes composting and organic management in the County is excellent.

Finally, increased local interest in organic farming (which increases demand for compost) increased interest in more cost-effective garbage collection (which underscores the need for a separate handling system for yard waste), increased local and statewide interest in sustainability and related issues, and other trends all point to increased diversion of organic materials as a desirable goal.

5.2.2 Chapter Scope

This chapter addresses various types of handling methods for organic materials, such as composting, chipping of brush and other woody materials, and land application. Both small-scale (such as backyard composting) and large-scale methods are evaluated. The materials addressed in this chapter include yard waste (grass clippings and brush), agricultural wastes (manures and orchard wastes such as pruned brush and surplus fruit), biosolids and food processing wastes. Other organic materials, such as food waste, mixed solid waste, and soiled paper, are addressed to a lesser extent.

Composting is defined as "the biological degradation and transformation of organic solid waste under controlled conditions designed to promote aerobic decomposition" (Chapter 173-350-100 WAC). Ch. 173-350 WAC also defines crop residues as "vegetative material leftover from harvesting of crops, including leftover pieces or whole fruits or vegetables, crop leaves and stems," but not including food processing wastes and spoiled fruit from warehouses (which are defined as "industrial solid waste"). "Home composting" is defined as "composting of on-site generated wastes, and incidental materials beneficial to the

composting process, by the owner or person in control of a single-family residence, or for a dwelling that houses two to five families, such as a duplex or clustered dwellings." Yard debris is defined as "plant material commonly created in the course of maintaining yards and gardens and through horticulture, gardening, landscaping or similar activities," such as "grass clippings, leaves, branches, brush, weeds, flowers, roots, windfall fruit and vegetable garden debris."

"Biosolids" are defined as "municipal sewage sludge that is a primarily organic, semisolid product resulting from the wastewater treatment process, that can be beneficially recycled and meets all applicable requirements under Chapter 173-308 WAC, Biosolids Management" and includes septic tank sludge, or septage. Residual solids (grit, screenings, ash and sewage sludge) from wastewater treatment plants are defined as solid wastes, but residuals that have been treated to meet the standards of Ch. 173-308 WAC are defined and regulated as a commodity, not as a solid waste (except when landfilled or incinerated, in which case the residuals are defined as solid waste). Ch. 173-308 WAC addresses biosolids used in land application, transferred from one facility to another, or disposed in a landfill or through incineration. Composting of wastewater residuals is one of the acceptable treatment methods to prepare biosolids for land application.

Composting mixtures that contain both biosolids and solid wastes (such as yard debris and wood, in quantities above what is needed as a bulking agent) could potentially be regulated under both Ch. 173-308 WAC and Ch. 173-350 WAC. In these cases, however, Ecology allows such facilities to be covered under Ch. 173-350 WAC as long as: 1) the facility is not part of a wastewater treatment plant; 2) the facility will be producing a Class A/Exceptional Quality biosolids product; 3) there is written agreement between Ecology and the health department that a Ch. 173-350 WAC permit will be sufficient; and 4) the permit that is issued under Ch. 173-350 WAC is at least as stringent in its requirements as a Ch. 173-308 WAC permit. Absent any of those conditions, Ecology will require a permit under the Ch. 173-308 WAC rules, and the health department may also require a Ch. 173-350 WAC permit unless they grant a deferral to the Ch. 173-308 WAC permit. This arrangement is intended to avoid the need for a facility to have to acquire two separate permits.

Ch. 173-350 WAC classifies organic materials according to four types of feedstocks for composting. The organic materials are classified largely on the basis of their potential for carrying human pathogens. The feedstock grades are:

Type 1 feedstocks: Source-separated yard and garden wastes, wood wastes, agricultural crop residues, wax-coated cardboard, pre-consumer vegetative food wastes, and other materials that the local health department determines to have a relatively low risk of containing hazardous substances, human pathogens and physical contaminants.

Type 2 feedstocks: Manure and bedding from herbivorous animals that the local health department determines to have a comparably low risk (comparable to Type 1 feedstocks) of containing hazardous substances and physical contaminants.

Type 3 feedstocks: Meat and postconsumer source-separated food wastes or similar source-separated materials that the local health department determines to have a comparably low risk of containing hazardous substances and physical contaminants, but that may contain human pathogens.

Type 4 feedstocks: Mixed municipal solid waste, post-collection separated or processed solid waste, industrial biological treatment sludges, and similar compostable materials that the local health department determines to have a comparably high risk of containing hazardous substances, human pathogens and physical contaminants.

These types of feedstocks, as well as the sources and volumes handled, are taken into consideration when establishing permitting, monitoring and other regulatory standards for a particular facility or process.

5.2.3 Goals and Objectives for Organics Management

Chelan County's primary interest in managing organics is to assist cities and businesses with local disposal issues. Composting organics will also help to achieve the 50% recycling/composting rate by 2020. The objectives used to meet the composting goals include the following:

- Maintain and encourage public education/information programs.
- Encourage convenient and cost-effective opportunities for all households, institutions, and businesses to divert organics.
- Safeguard public health over all other needs when considering recycling of organic wastes.
- Participate in the development of markets for composted product.
- Promote private sector involvement.

The state's Beyond Waste plan identifies "increasing recycling of organic materials" as one of the five primary initiatives, or areas of focus, that need to be addressed to move the state toward a more sustainable waste management system in the future. The "organic materials initiative" was selected because:

- Organic materials represent a significant portion (about 30% by weight) of the waste stream.
- The potential for beneficial use of organics is very high.
- Statewide, much is already being done with organics.
- Recycling organics provides significant environmental and human health benefits, especially in comparison to the alternatives (burning orchard and crop debris, landfilling, etc.).

The state's goals, as expressed in the Beyond Waste plan, is to see that "robust" markets are developed for organic materials (markets such as soil amendments, recycled products and green energy), and that collection and processing system are optimized and organics are directed to the highest and best use. The organic materials addressed by the Beyond Waste plan include yard waste, food waste, manures, crop residues, soiled/low-grade paper, wood and biosolids.

5.2.4 Existing Programs

Dryden Mulching Facility: The Dryden Transfer Station still accepts tree trimmings, brush and untreated lumber at a reduced disposal rate. Those materials are stockpiled temporarily and then ground up approximately every 12 months using a grinder. The resulting chips are made available to the public to use as mulch or to businesses, such as Stemilt, for composting components. Despite the program no longer creating new compost, the Dryden Transfer Station will continue to collect organic materials for wood chip and mulch production.

In 2003, a composting operation was installed at the Dryden Transfer Station. Composting was conducted on an asphalt pad constructed for this purpose, and any liquids draining from the pad, including rainwater that falls in that area, were directed to a special holding pond and eliminated by evaporation and by being pumped out once a year. Yard waste and biosolids were mixed and then placed in long piles ("windrows") on the asphalt pad and turned regularly using equipment specifically designed for this purpose (a Frontier "windrow turner"). Finished compost was sold at the site for $55 per ton. In 2014,

approximately 92 tons of screened compost was sold to the general public and various businesses. While this compost was sold regularly, it had no circulation among organic farming operations due to the use of biosolids for its production. The main factor in the closure of the compost system at the Dryden Transfer Station was due to the programs seasonal nature (eight months open per year). During the winter months Leavenworth, which provided the biosolids for compost production, started hauling its biosolids to Mansfield and, to maintain consistency, decided to send all of its biosolids to Mansfield throughout the year, thus removing the supply and making it financially unviable to continue producing compost.

City of Cashmere: The city of Cashmere has an active program for collection and processing of yard debris. In the summer months, Cashmere residents may sign up to have grass clippings collected using a separate garbage can that is picked up bi-weekly. A special collection route for brush and yard waste is also conducted twice a year but is available to only residents who sign up for the service. On the average, 80 ten-yard truckloads of debris are collected by the city each year, not including the material brought in by the public on its own.

City of Leavenworth: The city of Leavenworth allows citizens to put out brush twice a year, in the spring and fall, for a month each season. Approximately 25% of the households participate in this collection. The Leavenworth recycle site will also accept brush during the months of May through October. The brush is compiled at the Leavenworth recycle site and then chipped with the city's wood chipper.

Other yard waste programs: The city of Wenatchee operates a neighborhood chipping program. This program provides a small, city-owned chipper to local residents on a reservation basis to allow them to chip materials accumulated by at least three or four residences, or up to an entire neighborhood. Local residents are encouraged to recycle their chipped material as mulch or compost. The purchase of the chipper was funded through by the County Solid Waste program and Ecology's Coordinated Prevention Grant program.

Waste Management offers weekly yard waste pickup in supported areas of Chelan County (city of Wenatchee, urban growth areas, etc.). Customers of Waste Management's curbside pickup can order a 96-gallon container for yard waste for an additional monthly fee.

Chelan County operates a brush drop-off site next to the North Chelan Recycling Project and the North Chelan Transfer Station. Brush can be dropped for a small charge at this site, where it is then chipped. There have been some problems with trash being dropped off at the site; otherwise, the site is functioning well. Once the brush has been chipped, it is sold to the public for a small fee. This site may need expanding in the future as it is experiencing capacity limitations due to increased drop off. This drop-off increase has been caused by citizens removing more brush from their land largely in an attempt to reduce the possibility of brush fires. In addition, drop off is difficult to control as some customers will enter the site through the exit, drop their material and leave, thus avoiding the drop-off fee.

City of Entiat: The city of Entiat operates a brush drop-off site for county residents. The site is open once Saturdays for a few hours and accepts brush at no charge. In previous years, this site was open several days a week and charged for brush disposal. Due to the low amount of brush that was disposed, the site's operation decreased to one day a week and removed the charge. If the amount of brush disposed at this location were to increase, potentially due to fire prevention or increased advertisement, it is possible the site may return to being open more than once a week. Other concerns include potential encroachment of residential neighborhoods, where complaints can occur. It is important to continue this brush collection and composting operation for city and County residents. It is a close location for diverting organics; the closest transfer station is 35 miles away.

Private programs: Two resorts in the County – Holden Village and Sleeping Lady – operate composting systems for their organics. These systems are exempt from permitting because they are only handling materials generated on-site; however, they must meet operating and performance standards. Holden Village uses a system designed specifically for the resort, which consists of six to eight bins that are used on a rotating basis. The bins are outfitted with forced aeration. Materials composted by Holden Village include the food waste from its dining hall mixed with sawdust (from its own carpentry work) and yard debris. The Sleeping Lady places compostable materials mixed with some horse manures in a dirt field in long rows ("windrows"), which are turned every four days until the compost is ready for use. Both Holden Village and Sleeping Lady use the finished compost in gardens and landscaping at their locations.

Stemilt Compost: Stemilt initially began composting organic wastes in 2005 on Stemilt Hill. As of 2015, the Stemilt Composting Facility has grown to 18 acres. The compost is created by using the green waste generated by Stemilt, horse manure from local stables, recycled lime from Stemilt Refrigeration, various other ingredients (such as crab shells) and materials collected at the Stemilt Organic Recycling Center, which receives organic materials from the public for a small fee throughout the year (weather permitting). Stemilt uses this compost on 1,400 acres of orchards and makes it available for purchase to the public. It is estimated that the collection of organic material, chipping and compost production keeps nearly 4,000 tons of green wastes from being disposed of at landfills annually. Stemilt's composting facility has grown to such a large size that it would be reasonable to consider this facility as a "Central Processing Facility" (minus biosolids) for the County.

Biosolids programs: The city of Wenatchee brings its biosolids to a site near Malaga (the "Malaga site" is about 10 miles south of Wenatchee and five miles south of the town of Malaga) that is owned by Chelan County. The city leases about 5 acres of this site. Specially constructed holding ponds (drying beds) are used to dry the biosolids, and then those are shipped to Colfax, Wash., to be land-applied.

The city of Cashmere uses a lagoon that only needs to have the biosolids removed every 10 years under normal operating conditions. The city is, however, in the process of switching to a different sewage treatment that would instead generate biosolids on a daily basis. The most recent dredging of biosolids occurred in 2012 and the biosolids were transported to Boulder Park for land application.

The city of Chelan generates biosolids on a regular basis and has been land-applying them at Boulder Park in Mansfield. The biosolids were temporarily land-applied at the Manson Landfill in 2005 to help establish vegetative cover on that closed landfill.

The city of Entiat generates only a very small amount of biosolids, about two tons, or one truckload, a year. The biosolids were previously dried and bagged. The city upgraded its wastewater treatment plant in 2005, constructed a concrete pad and obtained specialized equipment for compost generation. The city now uses collected biosolids to produce compost.

The Peshastin treatment plant, operated by the Chelan County PUD, dries its biosolids in bags and then de-bags it and trucks it to Boulder Park. The Peshastin plant produces about 30 wet tons a year. The PUD is also responsible for the sewer system in Dryden, which is similar to a large-scale septic system. The only solids produced by this plant are from the pumping of the septic tank. The septage is disposed by the private company doing the pumping.

The fish hatchery in Leavenworth employs a lagoon that only needs to be cleaned out every 20 years or so.

Private programs: Prior to closing, Tree Top converted apples and other fruits to juice and various other products. In the future, it may be worth exploring the possibility of suggesting that fruit packaging

companies, such as Crunch Pak in Cashmere, start reusing their organic waste to create pomace or fruit slurry to prevent a large amount of organic material from entering the waste stream.

5.2.5 Service Gaps, Other Needs and Opportunities in Organics Management

Quantities disposed: There is a significant amount of tonnage of organic materials that is currently being generated in Chelan County. Table 5.1 shows the amounts of organic materials recycled, diverted, disposed and generated in Chelan County. The data shown in this table was collected from the Department of Ecology.

Table 5.1 Recycling, Diversion and Disposal Data of Organics in Chelan County (2013)

Recycled Materials (Tons)		**Disposed Materials (Tons)**	
Fats and Oils	162.87	Organics	19,517.09
Food and yard debris (mixed, residental)	-	Wood Debris	6,314.35
Food Waste (post-consumer, other)	313.70	Soils	1,850.00
Rendering - meat scraps	61.77	**Total Disposed**	**27,681.44**
Diverted Materials (Tons)		**Total Organics Generated**	**45,585.03**
Agricultural Organics	-		
Food (recovered/donated)	97.41		
Food Processing Waste	-		
Food Waste (all other)	-		
Food Waste (pre-consumer, vegetative)	4,243.80		
Industrial Organics	-		
Landclearing Debris	50.00		
Landclearing debris (burned for energy)	77.00		
Other Organics	2,005.00		
Wood - reused	-		
Wood (burned for energy)	35.00		
Yard Debris (burned for energy)	318.00		
Total Diverted	**6,826.21**		

The yard debris shown in Table 5.1 currently is not being collected separately, so a collection system would need to be created if this were to be diverted to a composting facility more efficiently. The amount of brush requiring disposal, however, is increasing due to fuel reduction programs designed to reduce the potential for forest fires. Agricultural wastes, such as spoiled fruit and pruned tree waste, are traditionally handled on the

farms where generated. Wood and food wastes currently also are not being separated from other wastes and would need special arrangements to be collected and sent to a composting or other facility.

A portion of the food wastes and other materials could easily be separated, or might be kept separate and delivered by the generators (in the case of construction companies and other businesses generating wood, for instance), if the cost to bring materials to a composting facility is competitive with other disposal options. In the case of food waste, sources that could be tapped easily could include spoiled fruit from warehouses in Wenatchee and food waste produced by packing companies in the Cashmere area. In addition to spoiled fruit, the fruit warehouses are emptied in the fall in preparation for the new incoming crop, and some of that fruit is not a high enough quality to be turned into juice or used for other products. Landfilling this fruit is expensive and not a desirable option due to moisture content and gas generation. In addition, the "working face" of the landfill becomes soft and odors are created when large quantities of fruit are disposed there.

The figures in Table 5.1 do not take into account materials from outside of the County. For instance, one of the potential sites for a processing facility (Malaga) could be a convenient location to draw in materials from parts of three other counties (Kittitas, Douglas and Grant).

Regulations: The primary regulations dealing with composting are in Chapter 173-350 WAC. These regulations establish minimum operating conditions and other requirements based on the type of feedstock (discussed earlier in this chapter), quantities and sources of material. These regulations also establish limits on the amount of contamination by metals, "sharps" (syringes) and bacteria. Specific types of composting are exempted from regulation because those activities have been determined to present little or no risk to the environment or to human health.

State standards for biosolids, shown in Chapter 173-308 WAC, are the same as federal standards. Management of biosolids are handled through a statewide permit that applies to virtually all public and private facilities (except those on Tribal lands), and addresses pollutant concentrations, pathogen reduction, vector attraction reduction, agronomic rates of application, methods and timing of application, buffers to wells and other sensitive areas, crop harvest restrictions and site management and access. Biosolids applied to areas where human exposure cannot be controlled, such as lawns and golf courses, must meet higher standards than biosolids applied to areas where access control and crop harvest restrictions can be used to prevent human exposure.

Biosolids regulations require that biosolids be put to a beneficial use. Disposal as a waste material, either in a landfill or a "mono-fill" (a landfill dedicated to a single material), is not allowed except on an emergency basis (for up to one year), a temporary basis (for a period of one to five years), or unless it can be demonstrated that no economically feasible options exist. Currently, Chelan County has no land application sites within its borders, and biosolids must be shipped out of the county to be land applied. Some of the septage generated in Chelan County is land-applied within the county, but most of this material is also shipped out of County for proper management. Additional land application sites within Chelan County for biosolids and septage could reduce costs for municipalities and residents.

Yard waste is the most frequent material disposed in Chelan County. The larger piles of this material that are sometimes found in the County are usually the result of regular use by a landscaping firm, sometimes with the landowner's permission.

Other: Waste Management is considering the possibility of putting in a recovery system for yard debris at its East Wenatchee Landfill. While the company is not currently interested in composting the material at the landfill, it is diverting collected organics and delivering that material to Stemilt. Waste Management might also be able to conduct separate collection routes for yard debris in some areas and bring that material to

Stemilt or another possible central composting facility.

Little education is currently being conducted by the County, cities or private companies on the benefits of backyard composting and related issues. More education and promotion of these activities would be helpful.

5.2.6 Organics Management Alternatives and Evaluation

There is a wide range of alternatives that could be used to divert additional amounts of organic materials from the waste stream. These options include:

- Processing facilities
- Non-facility options (backyard composting, direct land application)
- Collection programs
- "Administrative" or regulatory options (education, mandatory requirements, disposal bans)

Processing facilities: Options for processing facility sizes range from small to large facilities, including a range of processing technologies and other factors. Each of these has their advantages, and neither is actually mutually exclusive of the other. So a combination of large and small facilities, or a combination of facilities and non-facility options, could be used to handle different materials or materials from different sources.

Processing technologies for composting are often characterized as low-technology or high-technology methods. Low-technology processing utilizes available space and equipment, typically employing a front-end loader to mix and turn compost piles. High-technology processing systems use specially-designed equipment and containers or containment structures (troughs or vessels). The site requirements, length of processing time, labor and equipment utilized, and costs are different for each technology level, but the end product is essentially the same. Site requirements for composting facilities depend upon the amount of materials processed and the amount of composting time required. The amount of time required depends upon the types of materials being composted and the degree of technology employed. In general, the longer it takes for organic materials to decompose, the more land area needed to accommodate equal amounts of material. High-technology methods (i.e., more intensive processing methods) lead to a shorter composting period and a higher capacity for a given amount of acreage. A facility could start out using lower-level technologies, with their longer composting periods, and then shift to a higher-level of technology as volumes of incoming materials increased (or expand the size of the facility).

A few processing options are described below.

Central processing facility: A single large processing facility could provide advantages in terms of economies of scale (thus lowering the per-ton cost) and in handling a variety of materials. Properly designed, a central facility could accommodate large seasonal, or even one-time, quantities of various materials, such as spoiled fruit or woody material. The facility would need to have temporary storage areas for materials in order to hold some materials prior to processing and/or prior to collecting other materials for mixing.

Potential drawbacks of a large processing facility could be finding a site for it or, in the case of the Malaga site, the fact that it is not centrally located or convenient for all parts of the county. Trucking costs to this site would be significant for organics generated in Leavenworth and Chelan. The Malaga site is a large parcel (40 acres) about five miles south of Malaga that is already owned by Chelan County. Part of this

site (about 5 acres) is currently leased by the city of Wenatchee and contains drying beds being used by the city for its biosolids. A small but central portion of the site reportedly contains a tribal burial ground, and this part would need to be fenced off or otherwise protected. More extensive use of this site would require additional land development (the site is fairly flat but would need to be leveled), a water supply and other improvements. In the long term, purchase of adjacent land or other steps may have to be taken to ensure that an adequate buffer is maintained from residential and agricultural uses.

The processing methods employed by a central facility could range from low technology (static piles mixed by a windrow turner) to a high level of technology (enclosed systems of various types). A central facility would also need a grinder to reduce woody materials. To some degree, the type of technology employed would influence the types of materials that could be processed and the end products, but with the appropriate receiving/processing areas and operating methods, a central facility should be able to handle all types of organic materials.

It is difficult to project the capital or operating cost for a central processing facility without a more clear definition of the design of the facility, but other processing facilities of approximately the same size can be used as an example.

Due to the issues involving the Malaga site, an alternative option could be to encourage Stemilt to expand its composting operations. The large amount of organic material being brought to Stemilt makes it the most likely candidate to be considered a pseudo central processing facility (a "true" central processing facility would also collect biosolids). Currently, Stemilt Growers produces compost using green waste from its orchards, organic materials collected at the Stemilt Organic Recycling Center and other organic materials collected from various locations. This compost is used on Stemilt-owned orchards with excess compost being sold to the public. If Stemilt Compost were to expand, it could increase the size of the collection yard at the Stemilt Organic Recycling Center to accommodate larger amounts of incoming organic materials. Expanding Stemilt's composting site could be mutually beneficial to both Stemilt (increased profits) and Chelan County (little to no development fees, land acquisition, etc.). Additionally, the type of compost produced at Stemilt does not contain biosolids and could therefore fill the needs of organic farmers throughout the County. There are, however, some drawbacks to this possibility. While the Stemilt Organic Recycling Site is centrally located in Wenatchee, the Stemilt Composting Facility is more remote in Wenatchee Heights, and shipments of organic materials might be more expensive to transport directly to this location. Also, because Stemilt is a private business, policies could change in the future that could jeopardize efficient compost production and availability.

Small- to medium-sized processing facilities: Instead of a large central facility, or in combination with a central processing facility, several smaller sites could be used to collect and process materials. Smaller sites would probably not be equipped or designed as well as a large site and generally rely on a low level of technology (front-end loaders for turning and no forced aeration). These sites may not have the capability to handle some types of materials and would be less able to capture economies of scale (i.e., spreading fixed costs for equipment and other expenses over a greater amount of tonnages).

Smaller sites would avoid the transportation costs associated with bringing all materials to a central facility, but overall their cost per ton would probably be higher. Smaller sites throughout the County could, however, act as convenient collection points for brush and other materials. A system of smaller sites could also act as distribution points for finished products.

Another option with small or medium-sized facilities is to expand or upgrade existing facilities to increase their capacity. For instance, if the brush collection sites in Chelan and Cashmere were managed

differently or upgraded, then these sites might be able to conduct composting or other processing techniques.

Export to out-of-county facility: Instead of using an in-county facility, it might be possible to collect and ship organic materials to facilities outside of the County. If the economies of scale at the out-of-county facilities allowed a sufficiently low processing cost, low enough to offset the additional transportation costs, then this approach could be cost-effective. Other composting sites are currently operating in Quincy or in Western Washington (in King and Snohomish counties), but none have been approached about taking Chelan County's materials.

There is also some interest occasionally expressed about importing organics into Chelan County, or transporting organics through Chelan County, such as from Kittitas County to Pacific Topsoil's site in Snohomish County. Any proposals for moving organics in, out, or through Chelan County must address agricultural quarantine requirements for pests such as apple maggot and birch beetle.

Non-facility options: There are a few options that do not require a fixed facility to divert organic materials, including backyard composting and direct land application.

Backyard composting and mulching: Backyard composting provides an opportunity for diversion that does not require collection or processing. Chelan County could promote backyard composting in its literature and provide assistance to residents, institutions and businesses that request it. Backyard composting may be a method for residents to divert some amount of yard debris without implementing a curbside collection program.

A Master Composter program is one way of promoting backyard composting. This program can be designed to recruit volunteers who could be trained in home composting techniques and public outreach. Chelan County could work with the Chelan County Master Gardeners to offer a Master Composter Program. The mission of this volunteer program would be to serve as networkers, educators, researchers, facilitators, consultants and motivators to home composters. To become a Master Composter, a person must take 40 hours of formal classroom instruction, attend three field trips and develop and implement a 40-hour public outreach plan. Upon completion of the program, the volunteer would receive a Master Composter Certificate and become a member of the Master Composters.

Chelan County has worked with the Master Gardeners previously but could operate a more extensive program to conduct activities such as increased public outreach. A successful outreach program could be expected to divert up to 500 tons a year of yard debris. Training sessions could be conducted at a cost of around $1,000 ti $1,500 in staff time, materials and publicity. Once Master Composter volunteers are trained, only a limited amount of staff time would be needed to monitor the volunteers.

In addition to developing backyard composting, the participating jurisdictions can promote the use of self-mulching mowers because grass clippings make up a significant percentage of the yard debris disposed in the waste stream. Chelan County could initiate a "Leave it Lay" campaign, which stresses the value in leaving grass clippings on the lawn to decompose into the soil. This campaign could include promoting the purchase of new strains of grass seed that grow more slowly.

Direct land application: There is some interest and existing programs for direct land application of spoiled fruit and some types of sludge, especially on dry land wheat farms. These programs generally require a significant investment in permitting and monitoring of the application sites, and are only available seasonally (land application generally cannot be done in the wet season). Application using

equipment such as a manure spreader and then tilling in the applied material is preferred. It might be possible to increase the amount of direct land application if better guidelines could be developed for how and when this would be allowed (especially for agricultural materials generated on-site). A study conducted by the Health District concluded there was no environmental damage caused by applying reasonable amounts of fruit waste on agricultural lands.

Collection programs: If a central processing facility were constructed based on future needs, or even with a system of smaller sites, it would be best to develop collection programs that would help direct materials to the sites. The alternatives for collection of yard debris include establishing mobile (temporary) drop-off locations, developing permanent drop-off sites or implementing separate curbside collection.

Yard debris can be dropped off at temporary sites, such as locations that are used one weekend a month during the growing season. A permanent drop-off system would require generators to take bagged or loose waste directly to composting facilities, existing solid waste facilities such as the landfill or transfer stations, or sites set up expressly to collect yard debris. A separate curbside collection system picks up yard debris directly from the waste generator. A limited range of other materials could also be collected through these methods, but in most cases separate collections would be necessary to divert other materials such as food waste and wood. All of these methods would benefit from the use of tiered rates, where a financial incentive was provided to reduce the amount of waste set out for garbage collection.

Curbside collection: Curbside collection of yard debris would be the most convenient method for generators to participate in the program. Yard debris could be set out in containers and collected with similar trucks as regular garbage collection trucks. Some communities encourage residents to purchase biodegradable bags that can be used instead of containers to avoid the capital cost of containers and distribution. Vacuum trucks and "claw vehicles" have also been specially designed for the collection of yard debris. Different frequencies of collection are used, but weekly collection is the most effective. In many areas of the Northwest, the frequency is reduced to monthly collections in the winter months.

This alternative has the potential to collect the largest amount of yard debris. The convenience of not having to haul the debris to another location will encourage residents to use the service. It is estimated that 50% of eligible households in urban areas will participate in the program, with each household placing an average of 50 pounds of yard debris at the curb each month. Contamination problems would be limited because collectors could simply reject any unacceptable material.

Fixed drop-off sites: Residents and commercial/industrial generators could take their yard debris directly to permanent drop-off sites at disposal facilities (landfills or transfer stations), composting facilities or other designated drop-off locations. These sites would generally be open four to six days a week. Separate containers (usually 40 cubic yards in size) could be used to collect yard debris at these drop-off locations, and when full could be hauled to the composting facility.

This alternative would divert significantly less material than a curbside collection program but more than a mobile system because permanent sites are more convenient than temporary sites, and the ongoing presence of the facility reminds residents of the opportunity to recycle their yard waste. In addition, drop-off centers are better able to handle yard debris from large generators. Similar programs in the Northwest have shown that between 10 and 15 percent of the yard debris generated can be collected by this type of program, but the diversion potential of drop-off programs depends on many factors including convenience of location, hours of operation and materials accepted. Additional households and businesses will use drop-off sites for their yard debris with a good public education program. Rate incentives such as variable can rates and reduced tipping fees for separated loads of

yard debris, or even free dumping of yard debris at disposal sites or composting facilities, can also encourage public participation.

The largest difficulty in establishing permanent drop-off sites is the potential contamination problems that might occur if solid waste or other materials are discarded with the yard debris. This problem can be largely avoided if the drop-off sites are located at a staffed facility such as the transfer station.

This alternative can be more expensive than the mobile drop-off sites because the sites require more maintenance and transportation costs are increased because more material would be collected, but the cost per ton collected would be lower with a permanent site than with a temporary site due to the larger volumes collected. Depending on the distance from the collection site to the processing center, the average cost of collection at a permanent drop-off site would be about $60 to $100 per ton. Administration and public education costs would add another $30,000 a year.

Mobile drop-off sites: A mobile drop-off system involves temporary sites used for the collection of yard debris and possibly other materials. For example, once a week or once a month, a container could be set on a site to collect yard debris. At the end of the day or weekend, the container would be hauled to a processing center. Appropriate sites would be located next to general recyclables collection bins, or in other convenient, public locations.

Contamination is the major difficulty involved in operation of drop-off programs. Staffing the site helps to control the types of materials being deposited and limits the amount of contamination by other materials. In addition, mobile drop-off programs require specialized containers and trucks to haul those containers.

Administrative and regulatory options: Options that do not directly involve collection or processing are discussed below. These options are generally not stand-alone solutions but are best used in support of collection and processing options.

Public education: Public education could help support composting programs in several ways:

- Public education could encourage residents to conduct backyard composting and inform them of how to do it properly.
- As compost volumes increase (if a processing facility or other option is implemented), public education could promote the benefits of using compost and help create market demand for it.
- If a collection system is put in place, public education will be essential for informing people of the availability of the program and how to participate.

Ideally, public education efforts for composting and other organics management methods would be part of a comprehensive program that also would address recycling, proper waste disposal, and other solid waste issues.

Disposal bans: Disposal bans could be one way to force the general public or private companies to handle yard debris in some way other than landfill disposal. A disposal ban, however, typically shouldn't be used unless there is an alternative already in place and available. Disposal bans are particularly effective for yard debris because people, at least residential generators of yard debris, have a range of options available to them. Instead of disposal as garbage, they can practice mulching or backyard composting, or they can use a curbside or drop-off program (assuming one or both of these are available). Commercial generators may have fewer options, assuming they cannot easily engage in "backyard"

composting, but many businesses use landscapers that will be among the first to use a central facility or drop-off program as long as the cost is lower.

Disposal bans are an effective method of drawing attention to the "right way" of handling yard debris or other materials. Once their attention is on a subject, it is easier to inform people of the need and requirements for such an approach.

Mandatory programs: Instead of a ban, there could instead be a mandatory requirement for people to participate in a program. This approach actually provides less flexibility, since people are required to participate in a particular program rather than having the options for various alternatives. On the other hand, mandatory programs can be adopted on a smaller scale, whereas disposal bans are typically adopted county-wide or state-wide.

Differential rates: Differential rates can encourage desirable behavior by providing a financial incentive. Volume-based (tiered) rates can be used to encourage people to produce less garbage. In the case of yard debris and other organics where less-expensive collection programs may be available, it can encourage people to use the less-expensive alternatives. In some cases, residential yard debris collection is even offered for "free" (the cost is actually built into the garbage rates), so that people can put out as much source-separated yard debris as they wish without a financial penalty.

At disposal facilities, a lower rate for clean yard debris can be a good incentive for landscapers and other customers (residential and commercial) to keep contaminants out of their loads of yard debris. Yard debris (brush) can be dropped for free at some facilities.

Market assessment: A market assessment helps to define the potential markets in a region. The quality of the compost and the size of specific demands will influence the marketing strategy.

Yard and woody debris can be processed into three primary products: compost, mulch and hog fuel. Compost can be used as a soil amendment, growing media or ground cover. Mulch is used as a top dressing to aid in moisture retention. Woody fractions of the yard debris may be converted into hog fuel, which is a feedstock that can be used to run industrial boilers. The value of mulch and hog fuel is relatively low, and both of these use the woody fractions of the organic materials that might be better used as bulking agents for other organic materials. Some types of wood (such as plywood) cannot be used in composting, so converting some wood to hog fuel should be an option at any future processing facility.

The primary market for yard debris that is composted includes large landscaping firms, nurseries and orchards. Large users of organic material could also include local jurisdictions, such as parks, roads and public works departments, if procurement policies are written to allow or even promote the use of compost and related materials. Individual residents may also be an important market, although they would purchase compost in smaller amounts.

In Chelan County, a growing number of organic orchards represent a huge market for compost, manures and related products, but these orchards cannot use compost that includes biosolids. These orchards are currently purchasing composted chicken manure and other products. Compost produced from yard debris without biosolids will not have nitrogen levels nearly as high as chicken manure, but it might be possible to add an organic source of nitrogen to the finished compost for marketing purposes if necessary. There appears to be little doubt that orchards and farms in Chelan County and neighboring areas could absorb all of the compost potentially produced from the organic materials generated in Chelan County. If Stemilt's composting program were to expand, there is a real possibility that it could provide the types of compost needed by these organic farms.

Much of the market development strategy could be accomplished through educational programs. Potential users could be alerted to the availability of the finished compost and the locations where it can be obtained. Product standards could be established and mailings and media opportunities could be used to distribute this information.

In addition to implementing educational programs, a comprehensive marketing strategy could include developing a regional product name, conducting regular testing and chemical analysis of compost products, requiring local government to establish procurement policies, supporting yard debris diversion through the use of ordinances and policies, and consulting specialized marketing organizations.

5.2.7 Evaluation of Alternatives for Organics Management

A summary evaluation of the alternatives for organics management is presented in Table 5.2. The alternatives for organic materials were evaluated using the following criteria:

- **Diversion potential**: This criterion provides a relative assessment of how much organic material could be diverted by the alternative.

- **Technical feasibility**: Alternatives can be evaluated according to relative degree of difficulty in implementing the alternative, where a "high" rating means the alternative is well-tested and proven to perform, and a lower rating is due to implementation problems or issues.

- **Political feasibility**: Alternatives that require significant policy decisions or changes to existing services need to be assessed as to the political likelihood of implementing the alternative.

- **Cost-effectiveness**: The degree to which the alternative is effective in reducing waste at a reasonable cost is also an important factor. The SWC and the SWAC support programs that can achieve the greatest amount of waste reduction for the amount spent.

5.2.8 Recommendations for Organics Management

Recommendations were developed based on the evaluation of the alternatives shown above. Increasing the level of composting and other organics diversion in Chelan County will require a significant investment, both financial and in terms of a firm commitment by the public and private sector. The result in this case, however, appears to be worth a significant effort, and therefore it is recommended that Chelan County and others take the following actions (see also Recommendation R3, for minimum service levels, on page 4-14):

Table 5.2 Evaluation of Organics Management Alternatives					
Alternative	**Diversion Potential**	**Technical Feasibility**	**Political Feasibility**	**Cost-Effectiveness[1]**	**Conclusion**
Central Processing Facility	High	High	Medium	High	Pursue
Small/Medium Processing Facilities	Medium	High	High	Medium	Pursue
Backyard Composting	Low	Medium	High	High	Don't pursue
Direct Land Application	Medium	Medium	Medium	Medium	Pursue
Curbside Collection	High	High	Medium	High	Don't pursue
Fixed Drop-Off Sites	Medium	High	High	Medium	Don't pursue
Mobile Drop-Off Sites	Low	Medium	High	Low	Don't pursue
Public Education	Medium	Medium	Medium	Medium	Continue as is
Disposal Bans	High	High	Low	High	Don't pursue
Mandatory Programs	High	Medium	Low	High	Don't pursue
Differential Rates	High	High	High	High	Don't pursue

O1) Encourage Compost businesses continue and expand collection and operations.

Because Stemilt has become very efficient at the collection of organic materials and the production of compost, the company's site is acting as a pseudo central processing facility. Continuation of this composting/collection program is an essential service to the County and City of Wenatchee and should be encouraged.

O2) Continue brush disposal in the Chelan/Manson area, Dryden and Entiat.

As the main brush disposal area in Chelan/Manson, the Chelan Transfer Station's brush yard receives a large amount of organic materials. As with Dryden Transfer Station for the southwest area of the County and Entiat, it too should continue. Chipping hauling and reuse should continue, even as much as supporting private businesses with donated material. Funding must continue to provide this diversion. Chips can continue to be hauled and utilized by the compost business and for residential use.

O3) Monitor septage disposal systems, consider development of future programs if necessary.

The private sector is currently doing a good job of handling septage disposal, although most of the sites for this are outside of Chelan County. Should septage disposal become a problem in the future, new or expanded programs may be needed.

O4) Explore options and partnerships for land application of all types of organic materials.

Land application sites in Chelan County would provide a valuable option for private and public generators of organic materials. The large amount of forested and agricultural lands in the County should provide ample opportunity for land application sites that would benefit the local economy as well as the environment. Partnerships involving the municipalities, private companies and others such as Washington State University (WSU) would help accomplish this recommendation.

O5) Continue to support agriculture efforts and disease monitoring conducted by the Chelan-Douglas Pest Board.

Chelan County should continue to support the Pest Board for the monitoring of agriculture diseases.

5.2.9 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Organics Management

Due to the efficient management of organics in Chelan County (as of 2015), it is currently unnecessary to hire additional staff to monitor organic recycling and composting. However, due to potential unforeseen changes in organics handling, it should be acknowledged that if a central processing facility is to be constructed in the future, or the needs for program generation/evolution increase, additional staff would likely be needed to facilitate such projects.

If changes in the organic management process were to dramatically change, the first step that needs to be taken to implement some of the above recommendations would be to hire a part-time staff person. The estimated additional staffing needs are 0.5 FTE (full-time equivalent) for two to three years, then 0.25 FTE after that. The cost for this person, with benefits and expenses, would initially be about $26,300 per year. This person would need to refine the approach for developing a central processing facility, including conducting a final search for the best location (based on water availability and other factors), looking into financing options (including grants, bonds, etc.), developing a Request for Proposals (RFP) and other details. In reality, this person would probably take over part of the existing duties of the Solid Waste Coordinator, who could then perform other additional activities.

Any options for a future final site should be reviewed with the SWAC before proceeding. Once the final site has been determined (if deemed necessary), the basic approach for the construction of a central processing facility would be for the County to issue an RFP for a private company or a public agency to operate a facility on that site. This process could also include a solicitation for a private company to provide the site as well. This solicitation could be part of a "request for interest" or similar method to determine the level of interest and basic details, such as the type of facility, financial arrangement and other important points that would be specified in the RFP. A minimum amount of improvements (leveling and grading the site, water supply and other utilities) might be necessary at Malaga or another site to encourage private proposals and to allow a private operator to begin work more quickly. Prior improvements should be kept to a minimum because a private company may have different or unforeseen needs. The water supply should be addressed as soon as possible in the process, especially if the Malaga site is used. The County may also need to make a larger investment in the site (roads and access, asphalt pad for composting area, holding pond, etc.) but these improvements should be negotiated with the successful bidder for the RFP based on the proposals received.

The County should retain ownership of the site but lease it out for a period of two to five years at a time, or longer if a private company needed to recover a significant capital investment in the site. In this way, the County retains some control over the operation of the site and can dictate some terms while still allowing as much flexibility as possible for the operators. Terms that the County may wish to address in a contract would be to establish guaranteed rates for public agencies, a requirement to accept material from small contractors and the general public, a surcharge for out-of-county waste (if necessary and justified based on the financing used for the site) and possibly other conditions.

A site in the Chelan area should be examined to see if a smaller site there would be cost-effective. The cost of upgrading the existing brush site to conduct composting could be around $150,000 (other sites may be more expensive if land must be purchased or additional land development costs are incurred). User (tipping) fees may help pay for operational expenses once the site is established, but the capital costs associated with site improvements will require grants or other funds.

If Stemilt were to change its operations so that a new central processing facility were needed, the effort to establish a central composting site should begin as soon as possible, assuming the budget for additional staffing is approved and other more pressing projects are completed (MRW Facility, etc.).

CHAPTER 6: SOLID WASTE COLLECTION

6.1 INTRODUCTION

This chapter of the *Chelan County Solid Waste Management Plan* (Plan) discusses solid waste collection activities in Chelan County, including the regulatory framework, existing systems, needs and opportunities, alternatives and recommendations for future improvements.

6.2 SOLID WASTE COLLECTION

6.2.1 Introduction

Solid waste collection programs are an important element of the solid waste system. The manner in which garbage is collected from households and businesses in Chelan County has a significant impact on the overall system efficiency and effectiveness.

6.2.2 Goals and Objectives for Solid Waste Collection

The goals and objectives that pertain to waste collection in Chelan County are:

- Author comprehensive solid waste management plans (RCW 70.95) that include service level policies.
- Use waste collection rates or other incentives that encourage waste reduction and recycling.
- Establish garbage systems in areas to support the solid waste infrastructure and planning programs. Refuse within unincorporated areas of North and West Chelan County shall utilize county transfer stations for the disposal of the regional refuse.
- Impose fees upon solid waste collection services to fund compliance with comprehensive solid waste management plans (RCW 36.58.045).

Population densities (people per square mile) shown here are based on the most recent population estimate for 2013 (Based on United States Census Bureau 2010 Census) and land area as of 2015:

	2013 Population	Land Area, Square Miles	Density
Cashmere	3,033	1.07	2,835
Chelan	4,142	6.351	652
Entiat	1,183	2.741	432
Leavenworth	2,367	1.251	1,892
Wenatchee	31,436	7.768	4,047
Unincorporated	31,806	2,974.819	10.7
Totals	73,967	2,994	24.7

6.2.3 Existing Solid Waste Collection Activities and Regulations

Two cities in Chelan County conduct garbage collection within their city limits: Chelan and Leavenworth. The cities of Cashmere and Wenatchee have contracts for their garbage collection with Waste Management. The city of Entiat opts out of contract for its garbage services and has its refuse collected by Waste Management within the WUTC franchise of the County.

The National Park Service is responsible for garbage collection for the Stehekin area and delivers it to Tom's Barge, a franchised hauler. Garbage collection services for other areas of the County that are outside of city limits are provided by a "certificated" hauler governed under franchise by the WUTC, such as Zippy Disposal for the unincorporated Chelan/Manson area and Waste Management for other unincorporated areas throughout Chelan County. Businesses and individuals can also "self-haul" their garbage to a transfer station.

Municipal collection services: The municipal collection programs in Chelan County are described below. Rates are always changing and can be found by contacting each jurisdiction.

Cashmere: The city of Cashmere contracted with Waste Management in 2016 to handle garbage collection within city limits. Currently, Cashmere is negotiating rates, times, etc., for these garbage collection services. Up-to-date rates are available at the city.

Chelan: The city of Chelan provides garbage collection services to the residential and commercial customers within its city limits. Recycling collection service is provided to city commercial customers by the North Chelan Recycling Project, currently at no additional charge to the businesses. The city provides financial support to the Recycling Project and the cost for this service is built into waste collection rates. Equipment and facilities have had a large contribution from the County and the Solid Waste program, including the state grants. Due to the increasing financial cost of business collection and low economic return of recyclables, the city of Chelan is reviewing the business collection policy and will stop service to areas outside of the city. Businesses may need to pay a fee for these services to offset costly expenses for transportation and labor. Zippy Disposal handles residential garbage collection for the unincorporated Chelan and Manson areas. Discussions with Zippy regarding recycling services are underway. Garbage collected by Zippy Disposal is taken to the North Chelan Transfer Station.

Leavenworth: The city of Leavenworth provides garbage collection services to the residential and commercial customers within its city limits. Cardboard is also collected from commercial customers in the city for an additional fee of $6.95. Charges for residential customers do not use tiered rates, and the basic charge ($25.50 per month) is intended to cover up to two cans per week (64 gallons total). Please see the website (cityofleavenworth.com) or check with the city of Leavenworth for current rates. A monthly $5 incentive rebate is given to residential customers who have signed up for recycling services with Waste Management. In the future, it may be worthwhile to review this charge as an equal financial assessment for a second can could achieve an increase in recycling and extra financial support for Leavenworth waste programs and services. Extra charges are also assessed to customers who require service on weekends. Garbage collected by the city of Leavenworth is taken to the Dryden Transfer Station.

Private collection services: According to the state's records, four haulers currently hold certificates (franchises) in parts of Chelan County: Methow Valley Sanitation Service, Stehekin Maintenance and Machinery, Waste Management and Zippy Disposal.

Zippy Disposal: Zippy Disposal Service Inc., is a WUTC-certificated hauler serving residential and commercial customers in the northern unincorporated areas of Chelan County. Garbage collected by Zippy Disposal in Chelan County (north of the Highway 97A tunnel) is taken to the Chelan Transfer Station. Zippy disposal is evaluating a cost-effective method of providing recycling services to the unincorporated areas, including a single stream collection system. The unincorporated areas of the Chelan Valley need an updated recycling system to meet requirements and goals of recycling.

Zippy Disposal operates under WUTC Certificate No. G-121. The service area under this certificate includes areas of Okanogan and Douglas counties. Waste collected in Okanogan County is taken to the Bridgeport Transfer Station and to the Okanogan landfill; waste from Douglas County is taken to the Chelan Transfer Station and then transferred to the Greater Wenatchee Regional Landfill. Zippy Disposal's contact information is PO Box 1717, Chelan, WA, 98816. The company can be reached at 509-682-5464.

Methow Valley Sanitation Service: Methow Valley Sanitation's certificate (franchise) area is primarily in Okanogan County but includes a small area of Chelan County. The Chelan County area includes only the northeastern-most corner of the County, which is a mountainous area where Highway 20 crosses into the County. This area includes Rainy Pass (elevation 4,860) and Washington Pass (elevation 5,250). There are no commercial or residential customers in this area, so Methow Valley Sanitation's rates are not shown in Table 6-1 and its services are not discussed in other parts of this plan.

Methow Valley Sanitation operates under WUTC Certificate No. G-146. Its contact information is PO Box 656, Twisp, WA, 98856. It can be reached at 509-997-0520.

Stehekin Maintenance and Machinery: Stehekin Maintenance and Machinery is a certificated hauler that only provides service to a single customer – the National Park Service or NPS – for the Stehekin area. This service is provided through a contract between Stehekin Maintenance and the Park Service. Stehekin Maintenance and Machinery operates under WUTC Certificate No. G-191. Its contact information is PO Box 2638, Chelan, WA, 98816, and its phone number is 509-682-2493.

Stehekin Maintenance and Machinery receives solid waste from the NPS at the Stehekin Transfer Station. The collected material is moved via barge (Tom's Barge, a franchised hauler), unloaded at the head of Lake Chelan, loaded onto a flatbed truck and delivered to the Chelan Transfer Station. The National Park Service is discussing the creation and implementation of a new and updated transfer station that would be built outside the flood zone. A new station would not only remove the risk of floods but also reduce waste costs, increase recycling and maximize the efficiency of waste processing.

Waste Management: Waste Management of Greater Wenatchee Inc., provides garbage collection and recycling services within all southern unincorporated areas of the County and in the cities of Wenatchee, Cashmere and Entiat. Services are provided in Wenatchee through a contract with that city; however, in Entiat services are provided as part of the certificated area (i.e., same rates and conditions as the unincorporated areas).

The current contract with Wenatchee, which runs through Dec. 31, 2020, specifies that all single-family residences be provided with a 96-gallon tote for garbage collection. Wenatchee residents are allowed to put out as much garbage as they wish, with extra charges only applying in cases of bulky items, such as furniture and wood. A residential recycling program is included in Wenatchee's contract, which stipulates that Waste Management provide a receptacle specifically for designated

recyclable materials. The garbage collection contract for Wenatchee also allows residents to take up to four loads (one cubic yard or less) a year to the South Wenatchee Transfer Station at no additional charge (applies to owner-occupied residences only). Waste Management is pursuing a new contract with the city of Wenatchee.

Garbage collected by Waste Management west of Monitor is taken to the Dryden Transfer Station for waste collected in the Leavenworth/Cashmere area. The flow of garbage collected in the southwest region of Chelan County's unincorporated areas is necessary to process through the Dryden Transfer Station to assure support of Solid Waste programs as required in the *Comprehensive Solid Waste Management Plan*, RCW75.90.

Waste Management is attempting to secure a transfer modal system along a railway. Contracts out of County are being sought to bring additional waste to the landfill. Waste transferred to the intra-modal site would be transferred from the railcar to a truck and moved by truck to the Greater Wenatchee Landfill. Adding a loading/unloading station would allow larger amounts of garbage to be transported by rail efficiently, potentially making the garbage collection and transportation in and out of the County more efficient. When the greater Wenatchee Landfill is full, rail transfer to another landfill may be a reasonable option for the management of waste in Chelan County. Disposal options are discussed in Chapter 7.

Waste Management operates under WUTC Certificate No. G-237. The certificate covers all of its franchise areas in Washington; however, in Chelan County it includes areas in the western portion of the County (north of Leavenworth), along the Highway 2 corridor, in the southeast part of the County (around Wenatchee), and north along Highway 97 to a point about six miles north of Entiat, where their service area abuts the southern boundary of Zippy Disposal's Service area. Waste Management's service area includes Entiat and the developed areas west of Entiat. Waste Management's contact information is 13225 NE 126th Place, Kirkland, WA, 98034, and locally it can be reached at 509-662-4591.

Collection services for other jurisdictions: Federal and Tribal facilities can arrange for collection services independently of the state or local rules regarding garbage collection. In Chelan County, the only existing example of this arrangement is the National Park Service, which contracts with a certificated hauler (Stehekin Maintenance and Machinery) for garbage and recycling transportation services for the Stehekin area.

Moderate risk waste in garbage collection: A growing concern for waste collection is household moderate risk waste and the difficulty of disposing of it properly. Due to the nature of garbage curbside collection there is little opportunity for screening possible hazardous wastes when intermingled with other refuse. The amount of moderate risk waste included can be mitigated somewhat by increasing education of consumers on what materials should not be included with standard garbage. The best opportunity to capture moderate risk waste is by providing convenient disposal. The opening of the moderate risk waste facility will help reduce the amount of moderate risk waste disposed of incorrectly. completely. Moderate risk wastes are discussed in depth in chapter 8.

6.2.4 Litter Control

Chelan County has a limited program involving the control of litter and illegal dumps. The program consists of a single pick-up truck and dump trailer that collects illegal dumps once or twice a week with a typical winter snow hiatus. The inmate crew, supervised by a paid staff, travels throughout the County collecting garbage. Several hundred tons of garbage are picked up out of ravines, in the mountains and lakes sides. The program is funded through a grant provided by the Department of Ecology (Ecology).

Due to the small nature of this litter control program and the inconsistent funding from Ecology, it is unknown if the program will continue. However, the program provides a valuable service to Chelan County.

6.2.5 Disposal System

The intent is to establish a comprehensive county-wide program for solid waste handling and solid waste recovery and/or reclamation that will prevent land, air and water pollution and conserve the natural, economic and energy resources of the County. To do so requires effective control of the disposal of all non-exempted solid waste generated within the unincorporated areas of Chelan County to use the County facilities for solid waste processing. Currently, Waste Management, the city of Leavenworth and the city of Cashmere tip refuse at the Dryden Transfer Station regularly making the amounts of tonnage received sufficient to keep the transfer station and some of the solid waste planning programs financially viable. Zippy Disposal and the city of Chelan tip refuse at the Chelan Transfer Station regularly making the amounts of tonnage received sufficient to keep the transfer station and some of the solid waste planning programs financially viable as well. Planning programs, including the administration, are beneficial to both the environment and the economy.

The County is responsible for countywide planning and management services for waste generated and collected within the unincorporated areas and municipalities; the development of model recycling collection programs; countywide public education and outreach programs; data monitoring and collection; disposal rates and operating rules; and to feasibly plan for design, siting and closing disposal facilities. Cities are responsible for collection within their jurisdictions; implementation of similar or at least the same residential recycling collection programs; and coordination with the County on additional and all other programs is necessary for the fluid program across boundaries. Disposal and collection rates, the garbage fees paid, include both the cost of collection and the cost of disposal. Additional programs to reduce tipping fees are costly to plan, manage and implement. Increasing programs due to new environmental awareness, including recycling reports and facility permits due to ecology data, require a growing need of revenues. With respect to garbage disposal, the County's authority is delineated in Chapter 36.58 RCW:

> *The legislative authority of a county may by ordinance provide for the establishment of a system or systems of solid waste handling for all unincorporated areas of the County or for portions thereof. A county may designate a disposal site or sites for all solid waste collected in the unincorporated areas pursuant to the provisions of a comprehensive solid waste management plan adopted pursuant to Chapter 70.95 RCW.*

The original Interlocal agreement was last referred in the 2006 Plan, further listing the County responsibilities for the system and cities' roles. The Plan concludes with the Interlocal Agreement, referring to the Solid Waste Advisory Committee for technical direction by all jurisdictions in equal shares and the Solid Waste Council for recommending budgets to the Chelan County Board of Commissioners. The work included in the Interlocal Agreement is necessary to comply with the requirements to prepare and implement solid waste plan and hazardous risk waste plan under RCW 70.95.080, RCW 70.95.110 and RCW 70.105.220. The agreement directs the relationship between the County and cities.

The County is charged with setting out base rates for waste disposal, transfer, recycling, special waste disposal and administration programs. Pursuant to the 1989 Plan and Interlocal Agreement with the cities, Chelan County negotiated a new agreement with Waste Management (WM), to provide disposal services to the Dryden and Chelan transfer stations, and all cities using the County's management system.
.

Flow controls are lawful stipulations allowing local and state governments to delegate where municipal solid waste (MSW) is taken for processing, treatment or disposal. The County solid waste management system requires private MSW collectors in the Upper Valley area (the unincorporated areas surrounding Cashmere and west to the County boundary and all areas between) to utilize the Dryden Transfer Station, and the Lake Chelan Valley area (Highway 97A to the County boundary) to utilize the Chelan Transfer Station. This action ensures existing revenue to support solid waste planning programs.

Chelan County desires to exercise its right to provide facilities to control the disposal of all solid waste generated within the unincorporated areas of its borders and to permit the incorporated municipalities of the County to use its facilities. The consistent stream of waste through the County transfer stations maintains the facilities, as well as the planning programs, including the closure of post-closure landfills. Increased regulations requires the owner to perform additional duties and reports for the closure as well as maintain a closure account equal to the cost of closure, maintained at a rate current with inflation.

Existing rules and regulations: Provided below is a brief overview of the relevant rules and regulations for waste collection in Chelan County. Additional information can also be found in the discussion of alternatives.

State regulations: The Washington and Utilities Transportation Commission (WUTC) supervises and regulates garbage collection companies for their operations in certificate (franchise) areas. Its authority (Ch. 81.77 RCW and Ch. 480-70 WAC) is limited to private collection companies and does not extend to municipal collection systems (Chelan and Leavenworth) or to private companies operating under contract to a city (such as Waste Management's garbage collections in Wenatchee and Cashmere). For private haulers under its jurisdiction, WUTC requires reports, fixes rates and regulates service areas and safety practices.

A state regulation, RCW 46.61.655, applies to people who self-haul their garbage and other materials. This regulation requires that loads be secured, and increases fines for unsecured loads.

Local regulations: Garbage collection service fees are mandatory in Cashmere, Chelan, Leavenworth and Wenatchee. Additional provisions for garbage collection are contained within the municipal codes for these four cities.

Other regulations: Additional regulations on a local, state and federal level apply to waste collections and collection equipment. One example of this is motor vehicle noise performance standards that apply to trucks transporting solid waste (Ch. 173-62 WAC). There are also weight limits, emissions standards and other regulations regarding motor vehicles that apply to garbage trucks. More stringent emissions standards for diesel engines went into effect in 2002 and 2004, and in 2007 the allowable emission levels will become even stricter for new engines. The 2007 emissions standard will be met in part by lowering the sulfur content of diesel fuel.

6.2.6 Service Gaps, Other Needs, and Opportunities in Solid Waste Collection

Future service demands: State planning guidelines (Ecology 2012) require that collection needs to be addressed by this Plan. Significant population growth is expected to occur throughout Chelan County in the next 10 years (see Table 2.5), but the gains over the next six years will be more modest. In general, the County's population is expected to increase by approximately 1% annually for the next five to 10 years. A 1% annual growth is the equivalent of a 6.2% increase over a six-year period. All existing

collection systems should be able to accommodate this much of an increase in their customer base, depending on other services and factors.

Minimum service levels: Minimum service levels for garbage collection are generally adequate. In the unincorporated areas, refuse and residential recycling collection are not mandatory. Residents and businesses may choose to self-haul their waste to the transfer station or have curbside collection by a franchised collection hauler. The city of Wenatchee has mandatory refuse and recycling collection services. Yard waste collection is optional at an additional fee. The city of Entiat has chosen to remain under the WUTC franchise with the same voluntary services as the unincorporated areas. Garbage services provide optional recycling in the unincorporated areas south of Stayman Flats and the Lake Chelan Valley area. Garbage collection provided north of Stayman Flats and the Lake Chelan Valley area and unincorporated areas of the County have voluntary garbage service and will soon have voluntary recycling services.

Increaseed minimum service levels for recycling are discussed in Chapter 4, where considerations for the hauler, residents and the environment include the option for a hauler to implement a single stream curbside collection to provide adequate service in unincorporated areas.

Geographical routes: Chelan County exists of variable terrain and steep roadways, especially in the unincorporated areas. Some residents must haul their garbage container to a main arterial if their roadway is too narrow for a compactor truck, does not allow for necessary turn around area, is beyond a steep 20% grade or seasonal conditions prevent access (snow/ice). These difficulties for access are the same for a potential curbside recycling program.

Seasonal collection: Another service gap is the demand on a rural area with a high influx of seasonal tourists. Such a large influx of tourists triples the populations driving programs to be overwhelmed. Due to impacted tourist areas such as Leavenworth, Chelan and Manson, start-up and closure costs of services should be adequate to be continued or adequate for the service provider to add resources during peak seasons, and they should support continued services for staff lay off and storage of resources throughout the off seasons. Infrastructure for the seasonal influx remains the same price for capital and equipment regardless of how small or large the service area. Changes throughout the season are difficult because infrastructure must be built to accommodate the peak yet must generate funding to support during the low seasons.

Garbage collection rates: Residents of Leavenworth and Wenatchee currently pay a standard monthly fee for one level of garbage service. This type of system does not provide an incentive for recycling or waste reduction, nor is it an equitable system (in this type of system, low-volume waste generators subsidize high-volume generators). However, it is believed that illegal dumping of garbage is reduced due to the garbage service. Recycling is included in the garbage rate, and Wenatchee residents enjoy four free drop-offs (4 cubic yards of selected waste streams) at the Wenatchee transfer station, via Waste Management and Wenatchee contract scheduled to end in 2020.

Public education: Waste Management already has a tiered service level for County residents (unincorporated and Entiat), but it could be better publicized. A law was passed in 2001 (WAC 480-70-361(7)) that requires solid waste collection companies to inform customers at least once a year about solid waste and recycling services that are available. Waste Management provides up-to-date information on its website; however, it could provide mailed information with rates for both garbage and recycling regularly on customers' bills. Zippy Disposal does regularly send out the required information and also includes notices about special events in customers' bills.

6.2.7 Solid Waste Collection Alternatives

Possible alternatives to the current collection system include changes in the municipal systems and a service ordinance for other (unincorporated) areas of the County. Both of these approaches could be used to institute new programs or requirements for collection services in the respective areas that are covered by each. Other possible alternatives could include changes in the collection rate structure, mandatory subscription to garbage collection and co-collection.

Municipal options: Cities and towns have several options for managing solid waste collection under state law. None of these options prevent a resident or business from hauling their own waste, although the resident or business may still be required by a city to pay for garbage collection even if they choose not to use it. Counties, on the other hand, have limited options for direct involvement in collection programs, unless they choose to create a collection district (see Chapter 11) or contract for residential recycling in the unincorporated area. The cities' options for waste collection programs include:

- A city may operate its own municipal collection system.
- A city may contract with a garbage hauler for collection services in all or part of the city.
- A city may require a certificated collector to secure a license from the city.
- If a city does not wish to be involved in managing garbage collection within its boundaries, collection services can be provided by the waste collector certified by the WUTC. In this case, specific services can still be required by a service ordinance (see below).

If a city is conducting its own collection system and part of an adjacent area served by the certificate hauler is annexed by that city, the hauler retains the right to service that area for another seven years after annexation. Even after the seven-year period, however, a hauler can claim "measurable damages" and a city may need to pay for the right to include an annexed area in their service area.

In Chelan County, the cities are largely already exercising their rights in respect to garbage collection services.

Other cities that currently operate their own collection systems (Chelan and Leavenworth) may occasionally be faced with the question of privatizing their systems. The concept of privatization is sometimes presented as a method to reduce costs by eliminating the overhead associated with public employment. On the other hand, the private sector may have lower overhead expenses but also has a profit margin to maintain. If a city chooses to look at privatizing its collections, this should be done in a controlled fashion (through a "request for bids"), and the city's existing collection system should be allowed to place a bid as well, to allow a fair comparison of the alternatives.

Service ordinances and minimum service levels: Minimum levels of garbage and recycling services can be established:

- By contract, for cities contracting for garbage collection services (such as Wenatchee);
- By ordinance (by either cities or counties, for those areas within their jurisdiction); or

Service ordinances can be adopted by a county to set minimum service levels, require new services or address other requirements. These ordinances can be used to establish minimum service levels in certificate (unincorporated) areas for curbside recycling, yard debris collection, or other services. Once

adopted, these requirements can be taken into account by the WUTC when they review a hauler's rates and services.

Service ordinances cannot be used to set rates in the certificate areas, because that authority belongs exclusively to the WUTC. Service ordinances can, however, influence the rate structure through requirements such as "attaching" (embedding) the cost of recycling to the garbage collection fees. In the certificate areas of Chelan County, fees for recycling are in addition to the garbage collection fee. Although it can be argued that residential (and commercial) customers can reduce garbage collection fees by diverting part of their materials to the less-expensive recycling service, this is still not the best approach for encouraging recycling. Attaching the cost of recycling collections to the base fee for garbage has been found to be effective for encouraging participation in those waste diversion activities (SRM 1999). Another option is the use of an "incentive rate" or reduced rate to encourage recycling, such as Waste Connections offers in Pierce County, where the combined rate for garbage and recycling services is lower than the rate for the same level (i.e., same number of cans) of garbage service alone. Implementing incentive rates in the certificate areas requires that the county adopt a service ordinance that provides the foundation for this approach.

Most of the above discussion of rates pertains primarily to residential rates, but in Chelan County there is also more that could be done with commercial rates. Perhaps the most significant example of this is in Chelan, where commercial customers could be charged for the recycling services they are receiving. Several cities in Washington (Auburn and Tacoma, for instance) include a fee for recycling in their commercial rates to help support that activity. If handled properly, it is also a good incentive to the businesses to participate, since "they are paying for it anyway."

Volume-based rates: There are several options possible for structuring collection rates, but rates that are based on volumes collected are often viewed as the most equitable and are also effective for encouraging waste reduction and recycling (SERA 1996). The unincorporated areas and two of the incorporated cities already use tiered (volume-based) rates for residential customers. Rates for commercial customers are generally volume-based throughout the county, since commercial customers pay for garbage collection services based on the size of their dumpster and frequency of collection.

Areas that could use improvement, however, include the residential garbage collection fees in Leavenworth and Wenatchee. The city of Leavenworth has a flat rate of $22.00 per month for residential garbage collection that allows up to two cans per week or for one large container (64 gallon tote) to be placed at the curb. The city of Wenatchee has a contract with Waste Management that provides for one large container (96 gallons) to be used by all single-family homes, plus additional amounts can be put next to the tote for no extra charge along with a free recycling can and a yard waste receptacle for an additional fee. If a Leavenworth or Wenatchee resident only disposes of a partial can of garbage each month, the cost to them is still the same, as opposed to a tiered rate system where the residents pay according to the amount they dispose of. The city of Wenatchee feels that this approach helps to avoid "junk properties" (together with code enforcement activities).

As indicated in Table 6.2, the largest problems with the flat rate approach are that it is inequitable to low-volume generators and does not encourage recycling and waste reduction. Greater equity is achieved if residents are charged according to the amount of garbage disposed. In the case of Wenatchee and Leavenworth, small households and low-volume generators are subsidizing the large-volume generators and the households that make no attempt to reduce or recycle their wastes. The low-volume generators often include senior citizens and others that have low or fixed incomes. Although Wenatchee provides a price break to low-income senior citizens, not all seniors qualify for this. The Cities of Leavenworth and Chelan have inquired about scales on collection vehicles and the ability to charge residents by the weight as opposed

to volume. Equipment is difficult to maintain, certify and costly, and therefor has not been utilized as of this time.

Tiered service level systems can be especially effective at providing an incentive for composting or separate yard waste collections, since yard debris is a large percentage of waste generated (at least at some periods of the year).

Table 6.1 Comparison of Flat Rate to Tiered Rates for Garbage Collection

	Flat Rate	Tiered Rates
Advantages	Helps keep properties clean	More equitable to residents
	Provides a high level of service to all. Simple Billing.	Provides incentive for waste reduction and recycling
Disadvantages	Inequitable	Requires extra effort to set up and maintain a variety of billing rates
	Does not encourage recycling and waste reduction and must be cost-effective for hauler.	

Note: Flat rates include unlimited service (such as provided in Wenatchee) and rate structures where a base rate covers a large amount of garbage (such as in Leavenworth)

Garbage collection rates provide a better level of incentive for recycling and waste reduction when those rates are "linear" (so that the cost of two-can service is twice the cost of one-can service, etc.), or when the additional cost for higher levels of service is even greater. There are some concerns that such large differences in volume-based rates may tempt residents to illegally dump their waste, but studies have shown this to be only a minor and temporary problem (Resource Recycling 1995 and Resource Recycling 1996). Even so, any new or additional volume-based rates must be properly designed and publicized to avoid negative public reaction. Another concern is that such rates will lead to people packing too much waste into one can (what was coined the "Seattle Stomp" after that city implemented linear rates years ago). A study in Vancouver, Washington, concluded that there are no substantial differences in waste densities (pounds per can) for one can versus two cans per week service levels (SRM 2001).

Rates in the certificate area served by Waste Management are required by the WUTC to be based on a cost-of-service calculation that doesn't allow a linear rate system.

In either the certificate or municipal collection areas, rates can also be reduced by decreasing the actual cost of collection. One method to decrease costs is to reduce collection frequency. Several communities, including Olympia and Vancouver, have reduced the frequency of garbage collection to once every two weeks without suffering problems with odors or mess. However, the schedule is confusing for the resident.

Mandatory garbage collection: Another alternative to meet collection needs for Chelan County is mandatory garbage collection services in the rural areas. Currently about 38% of the County's residents are in areas where collection fees are already mandatory (i.e., the one city that provides or contracts for

garbage collection) and the remainder of the residents are either in cities that do not want to mandate or are residents living in largely rural areas where subscription to collection service is voluntary.

Mandatory collection programs throughout the rest of Chelan County would provide some benefits, but not without possible drawbacks. Potential benefits include a reduction in illegal dumping; a reduced need for enforcement of illegal dumping, littering and other laws; and greater ability to provide curbside recycling programs (assuming a combination of recycling and garbage services). Mandatory collection can, however, act as a disincentive for those who are actively trying to reduce wastes.

Mandatory collection in unincorporated areas could be provided through a solid waste collection district. State law (Ch. 36.58A RCW) enables a county to establish such a district. The concept of a solid waste district is discussed in greater detail in Chapter 11.

Another type of mandatory requirement for collection would be a disposal ban on specific items. Banning items from the waste collection system is often a method to achieve greater recycling or composting (in the case of materials such as cardboard or yard waste) or help to ensure proper disposal (in the case of potentially toxic materials such as electronics or fluorescent light bulbs).

Co-collection of waste and recyclable materials: Recycling programs in Chelan County could potentially benefit from a co-collection approach. Co-collection is the collection of waste and recyclable materials (or yard debris) at the same time. Co-collection can be accomplished using methods that can be categorized as either bag-based or bin-based systems.

> **Bin-based methods**: Bin-based co-collection systems use a truck with two or more compartments to hold different materials. The compartments are then emptied separately at two different facilities, or at the same location if a facility can process recyclables as well as transfer garbage. If two separate facilities are used to separately process the garbage and recyclables, then these facilities must be adjacent or located closely to each other to avoid transportation inefficiencies.
>
> **Bag-based methods**: This approach uses special bags to hold recyclables (or yard debris), which are then placed in the same compartment as bags of garbage and recovered later after the load is deposited on the floor of a transfer or processing facility.

The advantages of co-collection are that the cost of collection and the amount of truck traffic may be reduced. Disadvantages include the inefficiencies that result from incorrectly-sized compartments (for the first approach listed above) or the loss of recyclable materials due to bag breakage (for the second approach). Several co-collection programs have been tried and failed due to such problems.

Changes in collection frequency: One method to effectively reduce collection costs is to reduce the frequency of collection pickups to once every two weeks instead of once weekly for residential customers. Most of the collection cost paid by residential customers is due to the expense for a truck to drive from stop to stop, and only a small part of the cost is based on the actual volume of garbage picked up. If the collection frequency was reduced to once every two weeks, the bulk of the expense associated with collection services would be cut in half.

Several cities, such as Vancouver, Wash., have offered reduced collection frequency (once every two weeks or once monthly) as an option to their residents. The city of Olympia, Wash., took this approach a step farther a few years ago and now provides every-other-week collection to all single-family residential customers (multi-family units and commercial customers are still served largely by dumpsters that are collected on a frequency that depends on the amount of garbage generated). Single-family homes in Olympia are provided with garbage collection one week and then curbside recycling collection the next

week. It might be possible to adopt a similar strategy in Wenatchee or other cities in Chelan County. In Wenatchee's case, residential customers could still be allowed to put out as much garbage as they wish, but the option to only have recyclables picked up on alternating weeks may increase participation in recycling.

6.2.8 Evaluation of Solid Waste Collection Alternatives

Alternatives for waste collection alternatives should be evaluated using the following criteria:

- **Economic feasibility**: Collection alternatives should be evaluated according to the feasibility of assessing charges to support the collection system.

- **Technical feasibility**: Some collection programs are more susceptible than other approaches to technical and related problems; this criterion focuses on whether or not the program is considered feasible for Chelan County.

- **Public acceptability**: This criterion assesses how receptive the public (or the private sector, depending on the target audience for the alternative) will be to the program. Issues such as convenience and willingness to participate are considered. The potential for a negative public response should also be considered if appropriate to a proposed approach.

- **Political feasibility**: Collection alternatives may require changes to contracts and other policy-related changes, which may or may not be easy for elected officials to implement.

An evaluation of the collection alternatives is presented in Table 6.3.

Table 6.2 Evaluation of Solid Waste Collection Alternatives					
Alternative	**Economic Feasibility**	**Technical Feasibility**	**Public Acceptability**	**Political Feasibility**	**Conclusion**
Attaching the cost of recycling to garbage fees in the uninc. areas	High	High	Medium	Medium	Pursue
Service fee for commercial recycling in Chelan	High	Medium	Medium	Medium	Pursue
Converting to tiered rates in Leavenworth and Wenatchee	Medium	low	Medium	Low	Support a review
Mandatory garbage collection	Medium	Medium	Low	Low	Don't pursue
Disposal ban(s)	High	Low	Very Low	Very Low	Don't pursue
Continue current voluntary curbside garbage collection	High	Medium	High	High	Continue
Co-collection of garbage and recyclables	Low	Low	High	High	Support review
Reduced collection frequency	High	High	Low	low	Don't pursue
Haulers of unincorporated areas utilize the County transfer station facilities for consistent support of facilities and programs, Chapter 36.58 RCW.	High	High	High	High	Pursue
Assess a fee to haulers collecting garbage in unincorporated areas, supporting programs such as Moderate Risk waste collection, RCW 36.58	Medium	Medium	Medium	Medium	Pursue

6.2.9 Recommendations for Solid Waste Collection

The recommendations for waste collection are:

WC1) All areas of Chelan County should use collection systems and rates that encourage resource conservation.

Waste collection systems and rates should provide support and incentives for resource conservation activities, including waste reduction, recycling and composting. Waste collection vehicles and other aspects of the collection system should also minimize fuel consumption and promote efficient use of other resources.

WC2) Provide recycling programs throughout the unincorporated areas of Chelan County by curbside collection.

Haulers shall provide curbside recycling voluntarily, as a single stream or sorted, to help increase diversion potential.

WC3) Those cities without tiered rates should consider to change to a system of rates that promotes resource conservation and cost effective recycling.

Garbage rates should be reviewed and considered as a tiered rate to include and encourage recycling. Tiered rates would include reflect costs for garbage to increase at the same rate for increased sizes.

WC4) Regional Waste haulers shall use local facilities. **Haulers shall use nearby County facilities to ensure financial viability for solid waste planning programs as RCW 70.95.**

Waste haulers in geographic regions shall use the County transfer stations. Refuse collected in the Chelan Valley shall be taken to the Chelan Transfer station. Refuse collected in the areas West of Monitor in Chelan County shall be hauled to the Dryden Transfer station.

WC5) Implement a fee upon solid waste collection services of solid waste companies within the unincorporated areas to be paid to Chelan County to fund the administration and planning expenses of moderate risk waste collection and RCW 70.95, as provided in RCW 36.58.

Haulers will collect a fee, as determined by the County Board of Commissioners and within a letter of notice, to be authorized by the WUTC and remitted to Chelan County to pay for the operations of the Moderate Risk Waste facility and programs.

CHAPTER 7: TRANSFER AND DISPOSAL SYSTEM

7.1 INTRODUCTION

This chapter discusses the various components and options for the transfer and disposal system in Chelan County. The solid waste management activities discussed in this chapter are organized into four sections:

7.2 Waste Transfer System
7.3 Waste Import and Export
7.4 Landfill Disposal
7.5 Alternative Disposal Technologies

7.2 WASTE TRANSFER SYSTEM

This section discusses the system of transfer stations that collect waste throughout the county and transfer that waste to a disposal facility.

7.2.1 Background for the Waste Transfer System

A transfer station is a facility that accepts many smaller loads of solid waste from a variety of customers and consolidates those into a few large loads. The large loads are usually placed in a transfer trailer that hauls a net payload ranging from 15 to 30 tons. In this chapter, the term "self-haul" means garbage brought in by residents driving cars and pick-up trucks and small businesses and contractors using various types of trucks and trailers.

Transfer stations are an important element of the solid waste system, especially in an area such as Chelan County that lacks an in-county landfill. The disposal and other services provided by transfer stations are critical components affecting Chelan County's system efficiency and cost-effectiveness.

7.2.2 Goals and Objectives for the Waste Transfer System

Chelan County's goals and objectives for the waste transfer system include:

- Transfer stations should be operated as cost-effectively as possible, but not at the expense of the following two goals.
- Transfer stations should provide a minimum level of services to support the solid waste system.
- Transfer stations should meet current regulatory requirements.

7.2.3 Existing Waste Transfer Activities

There are four transfer stations operating in Chelan County:

Chelan Transfer Station: This station is owned by the County and operated by North Central Recycling and Recovery.

Dryden Transfer Station: The Dryden Transfer Station is owned and operated by the County.

South Wenatchee Transfer Station: This station is owned and operated by Waste Management.

Stehekin Transfer Station: This station provides service to the Stehekin area in Chelan County. It is owned and operated by the National Park. The waste collected at this facility is transported to the Chelan Transfer Station via barge then truck.

The rates (charges) and waste quantities handled by these stations are shown in Tables 7.1 and 7.2, and a more detailed description of each transfer station is provided below.

Chelan Transfer Station: The transfer building at this facility is built with two tipping floors, one with a pre-engineered metal building that is about 50 feet by 50 feet, with three walls constructed of corrugated metal paneling. The other is an uncovered area to be used for construction demolition debris and other municipal solid waste during dry times and not the rainy or wet season. The covered area is a safe way to keep the large compacted trucks away from the self-haulers. Municipal compacted trucks unload on the floor in the covered areas, and the backhoe is used by the transfer station operator to push into the trailers. The self-haulers, with construction debris, furniture and other dry materials can unload in the open tipping floor, similar to drop-box system, where they back up and throw directly into the trailer. A backhoe is used to compact and move material. Rates are subject to change with the current price index and only when authorized by the County commissioners. The rates in the following charts are at the 2016 date; however, for up-to-date rates, current transfer stations rates are posted on the Chelan County Public Works, Solid Waste website.

Table 7.1 Rates at Transfer Stations in Chelan County (2015)

Transfer Station and Type of Material	Cost
Chelan Transfer Station:	
Garbage, per cubic yard, loose	$ 23.60
Garbage, per cubic yard, compacted	$ 39.93
Minimum charge	$ 14.47
Dryden Transfer Station:	
Garbage, per ton	$ 95.00
Garbage, per cubic yard, compacted	$ N/A
Minimum charge	$ 20.00
South Wenatchee Transfer Station:	
Garbage, per ton	$115.00
Minimum charge	$62.00

Table 7.2 Disposal Quantities at Chelan County Transfer Stations					
Transfer Station	**2012**	**2013**	**2014**	**2015**	**2016**
Chelan Transfer Station: Compacted yards Loose yards	10574	10,880	11,229	11,881	11,690
Dryden Transfer Station: Tons	12,153	14,671	15,771	17,560	20,697
South Wenatchee Transfer Station: Total yards			171,308		

Payloads of 20 to 23 tons are typically achieved in each trailer hauled from the transfer stations. With a vehicle weight of about 38,000 pounds and a road weight limit of 96,000 pounds, the payloads could be higher (29 tons), but the load weights also vary depending on the density of the waste that is placed in the trailer. Chelan has purchased 50-foot aluminum trailers with possum bellies for more hauling capacity.

The Chelan facility is owned by Chelan County and operated by a private company, North Central Recycling and Recovery. Only one to two trips per day is made to the landfill in winter. In summer the facility averages three loads per day due to higher volumes of waste. It is a minimum of three hours to haul the load from Chelan to the Greater Wenatchee landfill in East Wenatchee.

The recycling at the Chelan Transfer Station is brush chipping, metal recycling and provisions for antifreeze and motor oil. Other typical recyclable materials can be dropped off at the adjacent North Chelan County Recycling Project, a source separated processing facility on a 2-acre parcel. See Chapter 4 for more details on the Recycling Project. Moderate risk waste is not accepted at the Chelan Transfer Station.

The service area for this transfer station includes Chelan and the surrounding unincorporated areas, North Shore of Lake Chelan, Howard Flats the Manson area and Stehekin. Some of the waste from the Entiat area is brought to this transfer station, but most of the waste from the Entiat area goes south to the Dryden Transfer Station. Waste is also brought to the transfer station from out-of-county sources, including deliveries of Douglas County waste by Zippy Disposal and self-hauled waste from Douglas and Okanogan counties. Waste Management also hauls a weekly load from the Mansfield area in Douglas County. The Chelan County population served by this transfer station is estimated to be about 10,651 people (year 2013 figure, see Table 2.9). This includes temporary tourist residents.

Dryden Transfer Station: The main building at the Dryden Transfer Station is a metal building about 60 feet by 60 feet, with three walls constructed of corrugated metal paneling. Vehicles back through the open east side of the building into one of three unloading stalls. Customers unload their garbage into a waste pit that is about 20 feet wide and varies in depth from about six feet at the south end to three feet at the north. A bulldozer pushes the garbage up the sloping pit floor to a loading chute at the north end of the pit, and then the garbage falls into the top of a 90-yard transfer trailer through an open section of the roof at the rear of the trailer. A fixed-base knuckleboom crane is used to redistribute and tamp waste in the trailer as it is being loaded; it can also be used to remove undesirable items that may be inadvertently loaded into the trailer.

A subcontractor to the County drives the full trailers to the East Wenatchee Landfill, with the current contract for hauling good through 2019. The current disposal charges at the landfill are based on the payload weight in the trailer and a rate of $46.5 per ton plus $1 for the Health District. An amended contract is thru 2022. Typically, the loads range from 15 to 25 tons.

There is a metal collection site at the Dryden Transfer Station that is open year round. Customers pay a fee to discard "loads" of scrap metal in the collection area and an additional fee for any appliances that contain/contained Freon. Three 30-yard roll-off containers are used for receiving recyclables and are parked on the east side of the scale house. Two roll-off containers are used to collect aluminum cans, mixed paper, PET bottles and plastic milk cartons. The third is used strictly for recycled cardboard. Waste Management transports the containers to the Wenatchee transfer station for hauling to the Spokane Mixed Recycling Facility or Michelsen's Packaging in Wenatchee to recycle the collected materials every two to four weeks.

Just south of the transfer building, there are tanks for used antifreeze and used oil. One small container is used to collect automotive batteries. Currently the lead batteries are not a high commodity and reflects the scrap metal market. Collection here may be reconsidered if it continues to have a low volume received. One modular hazardous waste storage container is located east of the transfer building. This container is used on an "emergency basis" for people who need to immediately dispose of moderate risk wastes (MRW) and any MRW found accidentally disposed of with solid wastes. This MRW is stored in the container and is occasionally shipped to a licensed disposal site. (Any materials collected will most likely be delivered to the moderate risk waste facility once it has been constructed. See Chapter 8.)

Separate loads of clean yard debris and woody materials are accepted for a reduced rate at the Dryden Transfer Station ($80 per ton instead of $95 per ton). After being ground, wood and yard debris are sold to the public as woodchips and mulch. In the past, the chipped debris were combined with biosolids to make up a compost mixture. Composting ceased in operations due to the time needed to operate and cost of keeping required state lab reports. Compost sold as much as could be produced. The product was a high-value material and effective use of materials, including grass clippings, woodchips and biosolids. If the pad was expanded, allowing more material to be composted at a time, as well as staffing the process, it would be a viable program.

The service area for this transfer station includes Cashmere, Leavenworth, Wenatchee and the surrounding unincorporated areas, and the Dryden and Peshastin areas. Little waste is brought to this transfer station from out-of-county sources. Stevens Pass ski area brought its biosolids for processing in the compost, but without Leavenworth's biosolids, the compost program is not feasible. The Chelan County population served by this transfer station is estimated to be about 18,566 people (year 2013 figure, see Table 2.9).

South Wenatchee Transfer Station: The transfer building is a three-sided metal building located on the south side of Wenatchee. Vehicles back into the unloading stalls through the west side of the building. There are four usable unloading stalls, one of which is reserved for commercial (packer) trucks. Vehicles back up and unload their garbage into a narrow pit. A hydraulically operated push plate moves the waste to the left end of the pit, where it falls through an open section in the roof of a transfer trailer. The trailer's walking floor mechanism is used to move the waste forward in the trailer. A knuckleboom crane is used to redistribute waste in the trailer as it is being loaded.

Three materials – aluminum cans, newspaper, and scrap metal – are accepted for recycling at this facility. A scrap metals trailer is located below a tipping wall near the site entrance, south of the transfer building. There are no provisions to accept yard debris, brush, tree limbs or other materials for composting at this site. There are also no provisions to accept MRW at this facility. Due to the large volume of recyclables, Waste Management is utilizing the tip pit and temporarily closes the gates to the public for Waste Management to utilize the tipping pit to load the single stream recyclables for hauling to Spokane.

The service area for this transfer station includes Wenatchee and Entiat and the surrounding unincorporated areas and the Malaga area. A significant amount of waste is also brought to this transfer station from out-of-county sources, including self-haul deliveries from East Wenatchee (Douglas County). The Chelan County population served by this transfer station is estimated to be about 44,750 people (year 2013 figure, see Table 2.9).

Stehekin Transfer Station: The Stehekin Transfer Station consists of a small building measuring 24 feet by 24 feet, located next to the NPS Maintenance Facility. Waste is brought to the transfer station by the NPS to be compacted and bailed. The building contains a receiving area, two vertical compactors and storage for baled solid waste. The waste collected represents commercial, public and park sources from throughout the Stehekin area. The collected waste is then hand loaded onto trucks, delivered to a certified hauling barge and sent by barge to the Chelan Transfer Station. The NPS offers garbage services to the Stehekin area at no charge; however, this may need to be evaluated in the future to support the production of a new transfer station and to maintain the facility operations.

Regulatory framework: Solid waste transfer stations are regulated under Chapter 173.350.310 WAC. The regulations specify standards for design, construction, operations and records. Permitting and oversight of solid waste transfer stations rests with the Chelan-Douglas Health District (CDHD). Solid waste transfer stations, whether privately or publicly owned, can be sited, permitted and operated if they are found to conform to federal, state and local regulations, within this *Solid Waste Management Plan* (Plan), and are in compliance with all local zoning requirements.

Counties have the authority to site, own and operate solid waste transfer facilities, or to contract for such facilities and services. Waste hauling from county solid waste transfer facilities is not regulated under the Washington Utilities and Transportation Commission (WUTC) solid waste hauler regulations if it meets the definition of a solid waste transfer station (fenced, staffed during open hours and fees charged to cover the cost of service) and is part of the county solid waste system. Counties may specify within their solid waste hauling contracts where the collected materials are to be disposed.

7.2.4 Service Gaps, Other Needs and Opportunities for the Waste Transfer System

Transfer stations provide an important option for people hauling their own garbage, even though in some cases it may be less expensive for them to subscribe to garbage collection services. Curbside collection of large items is difficult. Those customers (and others in the area) also benefit from the recycling and related services offered by the transfer stations.

Spillage during loading of the transfer trailers is a problem at both the Chelan and Dryden transfer stations due to the design of these facilities. Frequent clean-up is needed during the day to prevent the spillage from becoming a litter problem, and this is more of a problem at the Chelan Transfer Station due to the wind patterns at that facility.

According to state law (36.58.030 RCW), transfer stations need to be financially self-supporting. Limited size of tipping floors at Dryden is causing safety issues. This transfer station needs additional storage in trailers and or an improved tipping floor similar to the design of the Chelan Transfer station, where refuse is placed on the floor and only one piece of equipment is needed to push it into the trailers and distributed. This will require additional trailers at the site as well.

The facilities are not generating enough revenue to maintain and upgrade the equipment and facilities. Increased tipping fees at the Dryden Transfer Station and reduced landfill tip fees are under review. The bulldozer and the grizzly crane have frequent breakdowns and the facility is undersized for the volume. Frequent equipment break downs stop a heavy flow of garbage and affects most of the system, from the inflow of garbage to the overflow of the pit, to trucking the garbage to the landfill within its open hours. More trailers are needed to hold the garbage over until it can be hauled. Once the pit is over full, it is dangerous to the cat operator pushing the garbage as well as the public unloading material. Three bays for unloading is not sufficient for the increasing amount of garbage unloaded, particularly with the large commercial trucks unloading only a few feet from the public hand unloading its materials. A second unloading floor is needed.

Small populated areas such as Entiat, Plain and Manson are distant from a nearby disposal facility. As growth continues the need to evaluate the necessity to establish a disposal facility in these areas will be reviewed.

7.2.5 Alternative Methods for the Waste Transfer System

Alternatives to address the operational problems at Chelan and Dryden Transfer Stations include more frequent clean-ups to prevent spillage from becoming litter. A welder may be able to place some heavy gauge sheets in areas that are frequently spilled over.

A report conducted in 2016 for the Chelan County Solid Waste System includes expansion or modification of the Dryden Transfer Station by providing another tip floor and making available a second truck and trailer to be loaded directly by the public, while the pit can be a separate area for commercial loads tipping.

The Chelan Transfer Station would be improved with the installation of a scale and tonnage system. Property was purchased adjacent to the existing transfer station for expansion improvements to include the scale and scale house. This will improve the processing and assessment of weights and costs to customers as well as a comparable to the garbage dumped at the landfill.

A study conducted in 2006 examined the possibility of a new transfer station in the Entiat area. A simple drop-box system utilizing a "Z" concrete wall could suffice.

Table 7.3. Transfer Station Recommendations

Alternative	Cost	Conclusion
Dryden Transfer Station:		
Add second tipping floor	$475,000	Modify existing gabion wall and extend.
Remove MRW container	$3,000	Improve safety.
Paint caution lines and add signage	$7,000	Improve safety.
Move oil, antifreeze tanks	NA[1]	Can be done as part of other modifications
Replace fencing	$12,000	Add a double swing gate for cat pit.
Improve metal recycling areas	$20,000	Can be done as part of other modifications.
Chelan Transfer Station:		
Install scale and new road.	$470,500	Property purchased for expansion already.
Add a shop	$30,000	Building needed for equipment storage and work.
Fencing	$27,000	Repair dilapidated fence and surround and secure property.
South Wenatchee Transfer Station:		
Add additional recycling opportunities	NA[2]	Should be done soon.
Add queuing space for traffic	NA[2]	Should be done soon.
Limited space	NA[2]	Needs further study.
Proposed Entiat Transfer Station:		
Site with 2 dropboxes	$345,200	All of these options are relatively expensive on the basis of cost per cubic yard disposed due to the small volumes of waste in the Entiat area.

Improvements were recommended for the South Wenatchee Transfer Station. These improvements are important for providing adequate service levels at this transfer station, especially given the large volumes of waste handled there. In addition, if Waste Management is unable to implement these upgrades then it may be necessary to explore the possibility of constructing a new transfer station, whether it is at the same location or at the landfill where the public can access.

The idea of a new transfer station in the Entiat area was also examined by the 2006 Facilities Study but appeared to be prohibitively expensive. This idea should be evaluated periodically in the future or if triggered by other factors. As the population in the Entiat area grows, the cost-effectiveness of a transfer station could improve. This idea could also be revisited if a specific site is found, if that site provides advantages that reduce the cost of a transfer station. The city has offered the area near the brush yard for a future solid waste disposal site. Currently residents have to travel 35 miles to the nearest transfer station in Chelan, or to Dryden or Wenatchee. Other sites to consider placing a limited transfer station include Plain or Manson.

It is also important to note that Waste Management is pursuing the construction of an intermodal facility, a mechanism that will be necessary if additional large amounts of refuse is contracted to go to the landfill. An intermodal facility will operate by loading/unloading container rail cars with waste in order to transfer refuse to the landfill. While this facility has been controversial, this may be a helpful edition for the future of waste control in the county and may be especially significant at such a time when the Greater Wenatchee Regional Landfill will no longer be able to receive waste. The impacts, both positive and negative, and potential importance of such a station should be researched further.

7.2.6 Recommendations for the Waste Transfer System

The following recommendation is being made for the transfer system in Chelan County (see also Recommendation WC2):

T1) Construction improvements to the existing transfer stations should be prioritized and implemented. Dryden Transfer Station needs facility improvements with a second tipping floor to separate commercial and residential. Chelan transfer station needs facility improvements with a scale house and scale(s), as well as other associated infrastructure such as fencing, road and shop.

T2) Also continue to evaluate the need and implementation plan for a transfer station in Entiat, Manson and Plain.

7.2.7 Implementation Schedule/Costs and Monitoring/Evaluation Methods for the Waste Transfer System. Siting for long range plans should include a review of potential locations near railways.

The recommendations for the transfer stations include a number of improvements that would be beneficial for efficiency and safety to implement. All options are underway of budgeting for prioritization, construction, and implementation.

7.3 WASTE IMPORT AND EXPORT

7.3.1 Background for Waste Import/Export

The recognition of problems caused by landfilling (especially groundwater pollution) led to more stringent requirements for landfills in the 1970s, and again in the mid-1980s and 1991. As the standards for constructing and operating landfills increased, so did the expense, and for many counties a local landfill no longer made sense economically. More and more counties in Washington and other states are now transporting their wastes to disposal sites that are hundreds of miles away in some cases.

This section addresses both waste import, where waste is brought into Chelan County, and waste export, where waste from Chelan County is sent outside of the County for disposal purposes. Both of these situations occur in Chelan County, where waste from Douglas County is brought to the Chelan Transfer Station and the South Wenatchee Transfer Station (i.e., waste import) and then waste goes back out of the County to Waste Management's landfill in Douglas County.

7.3.2 Goals and Objectives for Waste Import/Export

Chelan County's goals and objectives for waste import/export include:

- Ensure that facilities receiving waste from Chelan County meet all federal, state and local regulations.
- Ensure that all known impacts of importing solid waste into the county are considered and mitigated.

7.3.3 Existing Waste Import/Export Programs

Existing waste import activities: Solid waste is transported by self-haulers and garbage trucks from East Wenatchee and other areas of Douglas County to the South Wenatchee Transfer Station, located in Chelan County. This transfer station is owned and operated by Waste Management. Waste Management does not allow self-haulers to go to the Greater Wenatchee Regional Landfill. At the transfer station, waste is loaded into transfer trailers for transport to and disposal at the GWRLF.

All solid waste collected by Zippy Disposal (the WUTC-certificated hauler for the Bridgeport Bar area in Douglas County and Lake Chelan Basin) is exported to the Chelan Transfer Station. This transfer station is owned by Chelan County and operated under contract by a private company (as described in the previous section). Waste from the Chelan Transfer Station is loaded into transfer trailers for transport back into Douglas County for disposal at the GWRLF.

Existing waste export activities: All solid waste from Chelan County is exported out of Chelan County to the GWRLF. Most of this waste is first consolidated at one of the three transfer stations and transported in large trailers that are 90 cubic yards in size.

7.3.4 Service Gaps, Other Needs and Opportunities for Waste Import/Export

Waste import needs and opportunities: One potential opportunity for waste import is for Chelan County to charge an importation fee (or a "host fee") at the transfer stations, as Douglas County is currently doing at GWRLF. The host fee would be based on the idea that Chelan County taxpayers are paying to support solid waste facilities and activities, and waste from outside of the county should also help pay for these services if those wastes are using Chelan County facilities. However, a fee could cause a trickle affect where garbage costs to all citizens would increase, and may be a complicated and not well received political imposition. A collection charge to the haulers may be a better method for funding the solid waste system in Chelan County.

Waste export needs and opportunities: There may be alternative disposal sites that could receive Chelan County's waste, and the economics of these could be economically beneficial. The current rate at this time in developing this report, for disposal at the GWRLF is $63.18 per ton, plus extra charges such as fuel and environmental fees. Some counties have implemented waste export systems that use landfills farther away for less than that (see Table 7.4).

Table 7.4. Waste Export Costs (per ton).			
Waste Export System	**Year of Data**	**Waste Amount**	**Cost1**
Ferry County	2006	1,944 TPY	$93.23 per ton2
Jefferson County	2005	19,000 TPY (est.)	$51.55 per ton (transportation = $29.58, disposal = $21.97)
Lewis County	2005	60,000 TPY (est.)	$41.29 per ton
Mason County	2004	33,300 TPY	$44.00 per ton
Skagit County	2004	95,000 TPY (est.)	$45.51 per ton
Thurston County	2000	149,842 TPY	$37.74 (transportation = $18.76, disposal = $18.98)

Notes: TPY = tons per year

1. Many counties attach other expenses to the cost of their waste export system, such as costs for administration, recycling programs, and closure of old landfills, which are not shown here. Many counties also pay on a sliding scale depending on load weights (i.e., depending on the amount of compaction), and the figures shown here are the average or typical costs.
2. Ferry County's costs are relatively high due to the small volume of waste and the fact that it first has to be trucked a long distance (to Spokane) before being put on a train).

7.3.5 Waste Import/Export Alternatives

Waste import alternatives: Waste import alternatives for Chelan County are limited due to the lack of a disposal facility in the County, but there are a few potential options that make use of the existing system:

Establish a host fee for imported waste: An importation fee could be imposed on all solid waste imported from outside the County, or another mechanism used to charge a higher rate for out-of-county waste. This importation fee could be based upon tonnage or volume, depending on the capabilities at the transfer station receiving the waste. Identifying waste from outside of Chelan County could be a problem in some cases, however, and the fee would have to be kept low enough not to encourage illegal dumping.

Establish a host fee for special waste: Another possibility for waste import fees would be special wastes that are handled separately from the general waste stream. If a facility were handling a specific waste, such that it could provide a less expensive and/or more reliable disposal option for that particular waste, then the service area could be larger than just Chelan County. Currently there are no facilities in Chelan County that are designed for this, but a future composting facility or other service might qualify.

Waste export alternatives: There are three components required for a waste export system:

1. A **regional landfill** willing and able to receive the county's waste at a cost-competitive rate.
2. A **transfer system** that has the capability to place waste into containers that can be transported to the regional landfill.

3. A reliable waste **transportation system** capable of moving waste from Chelan County to the regional landfill.

Options for each of these three components are discussed below.

Regional landfills: There are at least three private sites that may be available as disposal alternatives. These three landfills are located within 35 miles of one another, and all are about 200 miles from Wenatchee. The landfills are located in an area that reduces operating expenses due to favorable soils and hydrogeological conditions, low precipitation and other factors. The use of these landfills by large communities (Seattle, Olympia, Snohomish County and Portland, Ore.) has further reduced the disposal costs at these regional landfills by creating significant economies of scale. All these landfills are permitted to accept municipal solid wastes, industrial wastes and construction wastes of the types that are generated in Chelan County, although in some cases limitations may be placed on materials such as tires. In addition, special handling (at an additional expense) may be required for wastes such as asbestos. A municipal landfill may be available for a competitive alternative in nearby Adams County. Hauling contract would need renegotiated. Should the GWRLF become unable to accept waste, the Adams County Landfill may become a reasonable option for waste exportation. All these currently available landfills are accessible by rail, barge, and truck. More information for each of these landfills is provided below.

Columbia Ridge Landfill and Recycling Center: Located in Gilliam County, Oregon, this landfill is owned and operated by Waste Management. This landfill is located on 2,000 acres of former rangeland and receives an average of 9 inches of precipitation a year. At the current disposal rate of 2.28 million tons per year, this landfill has an expected life of 10 years. The landfill currently receives solid waste from several cities including Portland and Seattle.

Finley Buttes Landfill: Located 13 miles southeast of Boardman in Morrow County, Oregon, this landfill was purchased by Waste Connections in February 1999. This landfill is located on 1,200 acres of rangeland and receives about 9 inches of precipitation a year. The landfill has an estimated capacity of 40 million tons, or about 200 years of capacity at the current waste flow. The landfill currently receives waste from Clark County, Washington and Morrow County, Oregon.

Roosevelt Regional Landfill: Located in Klickitat County, about 5 miles northeast of Roosevelt, Wash., this landfill is owned and operated by Regional Disposal Company (originally owned by Rabanco but later purchased by Allied Waste Industries). This landfill is located on a parcel of 2,005 acres, of which only a portion will be developed for landfill purposes, in an arid region receiving about 10 inches of precipitation a year. This landfill has a permitted remaining capacity of 212.5 million cubic yards, for another 80 years of life at the current filling rate. Snohomish County and several other communities have contracts with Regional Disposal Company to haul and dispose of their solid waste.

There are also a few publicly owned and operated sites that may be available, such as landfills in Okanogan and Yakima counties, although Yakima County currently has a policy against accepting out-of-county waste.

As discussed above, Chelan County's waste currently goes to a regional landfill (the Greater Wenatchee Regional Landfill), but the above options could be explored as a "reality check" on the current costs or in case the GWRLF becomes unavailable for some reason.

Transfer system: The economics of waste export and long-hauling to a distant landfill generally require that the waste be compacted before shipment. Therefore, any facility that will export significant quantities of waste would need to be equipped with a pre-load compactor. Currently, none of the transfer stations in Chelan County have a compaction system suitable for this use. Furthermore, road weight limits might prevent maximum compaction and thus impair efficiencies for compaction at the existing transfer stations. Any new waste export system for Chelan County may need to make use of smaller containers or a central site for transferring and compacting waste into shipment containers.

Private versus public ownership: Various components of a waste export system can be either privately or publicly owned and/or operated. A common arrangement is to have a county or other public agency own the main transfer station or inter-modal facility and contract with a private company to operate it. This arrangement allows for a good level of performance monitoring and also provides for competition through periodic re-bidding of services. Another arrangement that is often possible is for a private company to build a transfer station or other facility and then turn the ownership of that facility over to a public agency after a specific period of time (such as 15 to 20 years). The private company can then recover its investment and a reasonable profit margin while operating the facility and the public agency avoid the need to operate the project.

Transportation system: There are three methods used to transport waste long distances: truck, rail and barge. Potential issues related to all three transportation methods include odor, noise, accidents and spills. Odors are possible if the waste is stored for a length of time, either at a loading facility or if the shipment is delayed in transit. Noise is a possible problem also, although all of the modes of transportation would likely be using established routes where the noise problems would have already been addressed. Accidents and other problems that may cause spills could also occur with any of the three transportation methods, with the severity of these problems depending upon the location and amount of waste spilled. Specific details for each of the three transportation methods are reviewed in greater detail below.

Truck transport: The transport of solid waste by truck typically involves the use of tractor trailers hauling compacted solid waste in sealed containers. The current trailers probably could not be used for this, at least not for long-distances, which suggest that a different system of loading the trailers may be necessary at the Dryden Transfer Station. Truck transport is generally most cost-effective for distances less than 100 miles, although in the case of Chelan County other considerations, such as weight limits, may affect the usefulness of transportation by trucks. Other potential problems associated with truck transport include increased wear on roadways and increased truck traffic along the route.

Rail transport: Rail transport becomes increasingly cost-effective as the distance to the disposal site increases. Typically, for one-way distances of more than 300 to 400 miles, rail transport provides significant economies of scale, although in Chelan County's case the presence of rail lines in Wenatchee may make this a more cost-effective option. Transport by rail requires a loading facility (an "inter-modal facility") that can transfer containers of waste from one form of transport (typically from trucks) to trains. Potential impacts associated with rail transport of solid waste include derailment and large spills, congestion created at road crossings, and delays due to shortages of rail cars or locomotives.

Barge transport: A single barge may hold as many as 42 containers, resulting in a total shipment of approximately 1,200 tons of solid waste. It would take about 5-7 days to accumulate this much waste in Chelan County. Barge transport requires the use of a loading and unloading dock, as well as the need for truck transport at either end of the trip. Transportation backup systems may be necessary during periodic maintenance of river locks. Accidents and spills could cause the release of a large amount of waste that would be difficult to recover and clean up, but few other potential problems exist with this mode of transportation.

Barge transportation is generally inexpensive, but this method is not a good alternative for Chelan County because there are dams that prevent barge traffic from reaching the Wenatchee area. Hence, in Chelan County's case there would be the additional expense of trucking the waste to a point downriver where it could then be loaded on barges. This is a viable use from Stehekin to Chelan.

Summary of waste export alternatives: The potential benefits associated with waste export include:

- Solid waste disposal becomes largely a variable cost, thus making it easier to realize savings associated with waste prevention and recycling.
- Significant reductions in local long-term liability and environmental risks are possible, although jurisdictions using a large regional landfill, in combination with other jurisdictions and private companies, may still be liable for future environmental damage under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

Possible negative impacts associated with exporting to a regional landfill include:

- Supporting a monopolization of solid waste services.
- Vulnerabilities associated with high import fees instituted by host communities, transportation disruptions, or natural disasters.
- Lack of control over regional landfill operations.
- Service disruptions can occur if any element of the export system becomes inoperable, and this disruption could become a public health emergency in a short period of time.

Combining the above factors into different alternative systems leads to many different options and variations:

- All waste could be brought to a single facility for compaction purposes, or two or more facilities could be equipped with compactors.
- Existing stations could be modified or a new transfer station (or inter-modal facility) could be built.
- Transfer stations could be privately or publicly owned and/or operated.
- A regional system could be developed by combining efforts with neighboring counties.

The options for waste export can be simplified into a few basic alternatives for further discussion.

Construct a new inter-modal facility in Wenatchee: Whether publicly or privately owned or operated, a new facility in Wenatchee could take advantage of the rail lines and industrial areas there. Siting a new facility could still be a problem, however, as siting any waste handling facility could be a controversial process. This type of facility would typically be either built by a public agency and operated by a private company, or owned and operated by a private company. In the latter case, the construction and operation of the inter-modal facility could be made part of the bidding process for disposal services, but a private company may still want or need assistance with siting.

Construct an inter-modal facility: The construction of this inter-modal facility is being explored by Waste Management. The expected use of this facility will be to import waste from other out-of-county areas to be transferred to the GWRLF. However, once that landfill is no longer a viable final destination this facility could be an important and financially feasible option for exporting waste to other landfills.

With any of the inter-modal facility options, it could be possible to continue to use the existing transfer trailers to move waste from the transfer stations to the inter-model facility, but the waste may need to be emptied from those trailers and compacted into other trailers for shipment to a regional landfill. Railway is necessary to be at any facility for future transportation.

7.3.6 Evaluation of Waste Import/Export Alternatives

Alternatives for waste import and export alternatives should be evaluated using the following criteria, and a summary evaluation of the import/export alternatives is presented in Table 7.5.

- **Economic feasibility**: Import/export alternatives should be evaluated according to the feasibility of financing the new system.
- **Technical feasibility**: Some approaches are more susceptible than others to technical and related problems. This criterion focuses on whether or not the program is considered feasible for Chelan County.

Table 7.5. Evaluation of Waste Import and Export Alternatives.

Alternative	Economic Feasibility	Technical Feasibility	Public Acceptability	Political Feasibility	Conclusion
Host fee for imported wastes	High	Medium [1]	Medium	High	Don't pursue
Host fee for special wastes	High	Medium	Medium	High	Don't pursue
Waste export to alternate disposal site	High	Medium	Medium	Medium	Pursue

Note: 1. Technical feasibility for implementing host fee is rated lower due to concerns about ability to identify out-of-county customers.

- **Public acceptability**: This criterion assesses how receptive the public (or the private sector, depending on the target audience for the alternative) will be to the program. Issues such as convenience and willingness to participate are considered. The potential for a negative public response should also be considered if appropriate to a proposed approach.
- **Political feasibility**: Import/export alternatives may require changes to contracts and other policy-related changes, which may or may not be easy to implement.

7.3.7 Recommendations for Waste Import/Export

There is one recommendation being made for waste import (WI) and one for waste export (WE):

WI1) Consider higher rates for out-of-county wastes.

The impact of imported waste should be periodically evaluated and if desired, options should be explored for charging higher rates if facilities are needed to support the system.

WE1) Explore options for waste export.

It is recommended that the County explore the options and costs for exporting waste to other disposal sites.

7.3.8 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Waste Import/Export

Waste import recommendation: The recommendation for waste import should be implemented through reviews conducted with the SWAC every few years, or as waste import practices become an issue or problem for the capacity or economics of the transfer system.

Waste export recommendation: The implementation details for the waste export recommendation are significant for cost savings, and should be continuously reviewed to maintain the exceptional solid waste system.

If the existing disposal facility (GWRLF) is no longer available or about to become unavailable then the schedule for implementation of a different waste export system would be dictated by the landfill closure schedule. If the landfill were to be filled to capacity or to close for some reason, the allowable schedule would be too short to implement a permanent waste export system, and immediate actions would be needed to implement temporary measures to handle wastes for one to two years. In this case, valuable additional time would be gained if Waste Management agreed to cease importing waste from King County (elimination of this significant volume of waste would lengthen the time span that the remaining landfill capacity would be available to Chelan and Douglas Counties) and from the City of Spokane.

The basic steps for the implementation of a long-term or permanent waste export system include:

- Determine the institutional arrangements (who will be served by the new system, whether a regional approach will be taken with a neighboring county, and how the parties will interact).
- Determine the financial arrangements (how will funds be collected to pay for the system?).

- Develop and releasing Requests for Proposals (RFPs) to construct or contract for components of the new system.
- Choose the successful bidders to the RFPs, develop contracts as needed, and finalize the schedule for implementation of the new system.
- Prepare and submit permit applications and request other approvals (zoning, SEPA, etc.).
- Construct new facilities and/or modify existing facilities.
- Refine efforts in other areas not addressed by new system (handling of special wastes, etc.).
- Begin exporting waste to new site.

As with other components of the solid waste system, various combinations of public and private ownership and operation are possible for waste export facilities, but an arrangement that is working well for other counties is public ownership and private operation. This arrangement increases the competition for the operation and disposal contracts, which in theory should lead to lower costs.

7.4 LANDFILL DISPOSAL

7.4.1 Background for Landfill Disposal

Landfilling activities have undergone major changes in Chelan County and other parts of the United States over the past few decades. Until environmental regulations were enacted in the 1970's, in response to growing recognition of the impacts of landfills on groundwater, "landfills" in Chelan County and other areas were simply open dumps that were periodically burned. Then garbage began to be buried in these landfills, according to the requirements of Chapter 173-301 WAC, to reduce rodents and in an effort to reduce the impacts of these dumps on the environment. The open dumps and early landfills were typically free, due in part to the fact that the cost of operating these sites was very low. Washington State adopted the Minimum Functional Standards (Ch. 173-304 WAC) in 1985, which further refined landfill requirements. Increasing recognition of the impacts of landfills on groundwater, surface water and air quality led to even more stringent federal regulations in 1991, which were then enacted in State regulations through Ch. 173-351 WAC. These regulations shifted the economics and desirability of landfilling activities away from having many local landfills to a few large regional landfills. Like Chelan County, many of the counties in the state no longer have a landfill within their county but instead ship wastes to a regional landfill.

7.4.2 Goals and Objectives for Landfill Disposal

Chelan County's goals and objectives for landfilling include:

- Ensure that sufficient disposal capacity is available.
- Ensure that all landfills accepting County waste meet all federal, state and local regulations.

7.4.3 Existing Activities for Landfill Disposal

There are no solid waste landfills currently operating in Chelan County, but there is one inert waste landfill in Chelan County.

Inert waste landfills: The new regulations adopted a few years ago (Ch. 173-350 WAC) changed the rules for limited purpose and inert waste landfills. Inert waste landfills are now permitted to accept only those materials that are truly inert, whereas limited purpose landfills are intended for specific types of materials that are evaluated on a case-by-case basis.

Filion Inert Waste Landfill: This site is owned and operated by George Filion and is open to the general public, contractors and others. Only inert materials are accepted (for a fee) at this site, primarily concrete, asphalt, bricks, glass and some metals (stainless steel and aluminum). Some salvage activities (recycling) also take place at this facility.

Closed landfills: Even though the landfills in Chelan County are no longer receiving waste, their effects on the environment must still be monitored. Two sites are currently being maintained and monitored by Chelan County: Dryden Landfill and Manson Landfill. These landfills are required to have environmental monitoring programs for 20 or more years after these landfills were closed (the "post-closure" period). The post-closure period for the Dryden Landfill is through 2014, and at the Manson Landfill is through 2016. These periods could be extended if groundwater and gas monitoring results or settlement show ongoing contamination or methane generation problems. Recent additional regulations and a study have been placed by the state which are required to end post closure.

Cashmere Landfill: The city of Cashmere owns a seven-acre closed landfill that used to receive about 1,400 tons of waste per year and was operated by the Cashmere Sanitation Department. The landfill site was closed by the city because it was located adjacent to the Wenatchee River. Wells to monitor groundwater were installed and sampling indicates that there is no violation of groundwater quality standards. In addition, there have been no reported problems with landfill settlement, surface water contamination, or gas releases. The site does not have a bottom liner, leachate collection system or gas collection/control system. Final cover installation has been completed and the site has an approved closure/post closure plan. The site receives approximately 12 inches of precipitation a year.

Dryden Landfill: The Dryden Landfill stopped accepting waste in 1988 when the Dryden Transfer Station was built. The landfill is officially closed and final cover completed. Dryden Landfill is owned by Chelan County and covers approximately 9 acres. Chelan County Public Works operates the site. Monitoring wells have been installed at the facility, and the landfill is currently in compliance with all regulatory requirements. An approved closure/post-closure plan has been developed for the landfill. The site has no bottom liner or leachate collection system, but does have a passive gas collection system. At one time, there was an irrigation ditch leaking thru the landfill causing leachate to appear above the Wenatchee River. This caused some concern from Ecology and the Health District where further study was conducted. However, the leachate was stopped immediately. The landfill required additional cover material on the cap, and was done with Model Toxic Control Account (MTCA) funds. This resulted in the landfill placed on the Hazardous Site list. There have never been any problems reported at the site with surface water contamination, landfill settlement or landfill gas. There is some groundwater contamination at the site, consisting of elevated levels of magnesium and iron. This site receives approximately 10 inches of rainfall annually. Brush collection and chipping is now occurring on the cap. This has been a beneficial use of the property and a great diversion of organics.

Manson Landfill: The Manson Landfill is located on Ivan Morse Road, one mile northeast of the town of Manson in Section 36, Township 28 North, Range 21 East. The landfill was closed and stopped accepting waste in December 1992 because Chelan County determined that it was impractical to upgrade it to meet state and federal requirements.

The Manson Landfill served the residents of the Lake Chelan Basin. It is owned by Chelan County and was operated by Lake Chelan Solid Waste. In 1992, the waste disposal rate was approximately 15,000 cubic yards per year, or approximately 14% of the waste generated in Chelan County. A transfer station has been built outside the city of Chelan in 1994 to service the area following the closure of this landfill. The landfill area is approximately 5 acres and has a total volume of between 230,000 and 280,000 cubic yards. There is no bottom liner at the site. Groundwater monitoring wells have been installed and samples are taken regularly. There have been no problems reported with landfill settlement, surface water contamination or landfill gas. There have been trace amounts of groundwater contamination found in the monitoring wells. There are no nearby drinking water wells nearby. The area is served by the City of Chelan water system. Landfill monitoring and closure has continued for 23 years according to the closure plan. New requirements have been instilled to require yet another study to finish the post closure. Costs for well testing is approximately $7,000. Per landfill each year. It would be in good management to conduct the post closure of this landfill, however with the new regulations of a study, the testing is likely to continue and it is doubtful if the County would get any monetary relief in monitoring.

Abandoned landfills: There are many old landfills ("abandoned landfills") that have been identified in Chelan County, and many more that haven't been fully examined yet. While the abandoned landfills are not required to have routine groundwater monitoring, they still require periodic monitoring and maintenance. Liability and potential public and environmental health issues associated with the abandoned landfills has become a greater concern as development further encroaches on these sites. The Chelan-Douglas Health District keeps a list of these landfills.

Regulatory framework: State laws regulating landfill design and operation are specified within Chapter 173-351 WAC. Regulations concerning inert and limited purpose landfills are contained in Ch. 173-350 WAC (sections 410 and 400, respectively). The CDHD enforces these regulations, which include the siting, design, operation, closure and post-closure activities at the landfills. In addition, the CDHD issues a municipal solid waste landfilling permit to the GWRLF, which ensures compliance with all relevant federal, state and local regulations and environmental monitoring requirements. Ecology assists in enforcement through permit review and technical assistance to the CDHD.

Current landfill disposal site: Waste from Chelan County is transported to the Greater Wenatchee Regional Landfill (GWRLF) for final disposal. The GWRLF is located on South Webb Road in Douglas County, approximately five miles southeast of the city of East Wenatchee, 1¼ miles northwest of the city of Rock Island and 1½ miles north of State Route 28. Pangborn Field, a regional public-use airport, is located approximately 7,000 feet west of the landfill. Access to the landfill is from South Webb Road off of either Grant Road or Batterman Road. Both Grant Road and Batterman Road are structured all-season paved roads. To the north of the landfill are steep cliffs that rise 1,200 feet to the Waterville Plateau. The surrounding land use is primarily agriculture with some rural residential properties nearby. The Columbia River is two miles to the south of the landfill. The landfill receives between 8 and 12 inches of average rainfall annually.

The GWRLF is an active, privately owned and operated landfill. The landfill is currently owned and operated by Waste Management of Washington, Inc. The site has been operated as a landfill since the

late 1960's and was purchased by Waste Management in June 1987. The GWRLF is permitted and operated under the criteria for municipal solid waste landfills, Chapter 173-351 WAC. Permitting and oversight of the GWRLF and its operation is primarily the responsibility of the CDHD. Air quality issues and permit oversight is provided by Ecology. At current inflow rates of garbage, it is estimated that there is 80 years of life remaining. However, numerous other areas are being solicited to bring garbage that if accepted, will reduce the life in the landfill by half. Other landfills are being reviewed for disposal options for Chelan County, including Finley Buttes in Oregon, Roosevelt Regional Landfill in Washington, and Grant County landfill. All the landfills are in compliance with state and federal regulations and have more than 100 years of life left.

7.4.4 Service Gaps, Other Needs and Opportunities for Landfill Disposal

The old dumps throughout the County need further assessment and may require remedial actions in some cases. Additional small dumps may be discovered in the future and will need to be investigated. The Health District has been working to develop a list for an inventory of old umps.

Additional limited purpose or inert waste landfills may be desirable in the future. These types of landfills typically provide a cost-effective disposal option, without excessive environmental impacts, for local industries or special wastes. Currently, Chelan does not have a permitted inert waste landfill.

The regulations (Ch. 173-350 WAC) no longer allow lower standards for other types of special landfills, such as demolition waste landfills, and these are essentially now treated the same as municipal solid waste landfills. The standards for a solid waste landfill do not permit cost-effective operations for small quantities of waste. There is some interest locally in a construction and demolition waste landfill (see Section 9.4.4) or a tire landfill (see Section 9.7.4), but these disposal sites would need to meet the same standards as a solid waste landfill and so probably could not be operated cost-effectively compared to other disposal options for these materials.

Landfill technologies continue to evolve, and changes in technology or regulation could increase the desirability in the future of a local landfill. One such potential change is the growing interest in designing landfills as “bioreactors” that can purposely generate methane gas. This gas can then be collected and used to produce electricity. A landfill designed to maximize gas generation employs different approaches, such as leachate recirculation and other steps to optimize moisture content, that are significantly different from the “dry tomb” and other approaches used for a typical landfill.

7.4.5 Landfill Disposal Alternatives

Options that include the use of an in-county landfill for municipal solid waste have not been examined in great detail in this Plan because an in-county landfill for solid waste is not considered to be a viable option at this time. The Geographic area of Chelan County is mountainous and very little flat land that is not already in private lands. Siting and operating a new local landfill would be a lengthy, expensive, and politically-charged process. The disposal needs of the county are being satisfied by the current waste export system. On the other hand, there may be a need or reason to have such a landfill or an incinerator in the future. Identifying potential sites for that purpose may help expedite a future siting permit process.

7.4.6 Recommendations for Landfill Disposal

The recommendations being proposed for landfill disposal are (see also recommendation S9):

L1) Identify potential sites for landfills/Incinerator.

Potential sites for landfills and incinerators in Chelan County should be identified and possibly held in reserve for future purposes. Lands that are already municipally-owned would be ideal for this purpose, but private lands could also be identified. Sites should be identified that could be potentially used for inert wastes, special wastes (limited purpose landfills), municipal solid waste and incinerator recovery facilities.

L2) Continually review and evaluate other landfill disposal options, including long haul or railway transportation.

L3) Inventory old dumpsites and pursue final closure of Manson Landfill in Chelan County.

Sites that contain old dumpsites should be identified and shown in an inventory. The primary purpose for this inventory would be to notify current and future property owners. The Chelan-Douglas Health District is researching and developing a list. Final closure of the Manson landfill should be pursued.

7.4.7 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Landfill Disposal

Contingent on grant funds being available to finance both of the above recommendations, the implementation of these could begin as early as 2020. Additional staffing/staff time is needed to fully complete these recommendations.

7.5 ALTERNATIVE DISPOSAL TECHNOLOGIES

7.5.1 Background for Alternative Disposal Technologies

This section of the Plan describes alternative disposal technologies and evaluates the potential for their use in Chelan County. The concept of "alternative disposal technologies" has historically been used to refer to various forms of incineration, but lately there has been increasing interest in a range of other alternatives that could create fuel or other forms of energy. Some technologies even claim to be able to create building blocks or other materials. This section focuses primarily on the more well-known alternatives, such as mass-burn, refuse-derived fuels (RDF), and pyrolysis, while attempting to leave the door open for other alternatives should any of those prove to be viable.

7.5.2 Goals and Objectives for Alternative Disposal Technologies

Any large-scale resource or energy recovery technology should meet existing and projected needs within the framework of specific objectives. The solid waste technologies should:

- Be feasible, cost-effective and environmentally sound.

- Incorporate waste reduction and recycling to the greatest degree feasible.
- Contribute to an environmentally safe and reliable disposal system(s) that protects human health, reduces dependency on landfills and complies with the state's rules for solid waste handling.

7.5.3 Existing Activities for Alternative Disposal Technologies

General overview: Incineration involves burning solid waste to reduce both its weight and volume. The resulting ash requires significantly less landfill volume than the original waste. When used with an energy recovery system, incineration can also produce steam and/or electricity for sale. Increasingly stringent environmental regulations and adverse public sentiment, however, has made siting and operation of incinerators more difficult and expensive.

Pyrolysis involves heating waste or other materials to elevated temperatures under low-oxygen or no-oxygen conditions. While the lack of oxygen technically distinguishes pyrolysis from traditional incineration, the two technologies are sufficiently similar (both processes produce heat, air emissions, and ash or other discard materials) that pyrolysis is included in this section of the Plan.

Incineration activities in Washington State: A number of incinerators have operated in the state, but only the Spokane incinerator is currently in operation. Spokane County operates the incinerator using "mass burn" technology. This facility is functioning well although it has experienced occasional problems with air quality, and the cost of operation has not dropped to the lower levels of earlier projections.

Until early 1998, the city of Tacoma incinerated part of its solid waste using a Refuse-Derived Fuel (RDF) process and also produced electricity. The RDF process was problematic and was discontinued for a time, but was recently revived through a new management structure. The plant currently sits idle because the City has not been able to procure permits needed to use different materials as fuel, however, and may be shut down permanently.

Two incinerators in Bellingham experienced several problems and have now been closed. There are no longer any municipal solid waste incinerators operating in Whatcom County.

Skagit County previously operated an incinerator/resource recovery facility (RRF) on Ovenell Road at the current site of their Recycling and Transfer Station. The RRF included two rotary kiln waste combustors, two heat recovery boilers, an ash handling system, air pollution control equipment, and a 2,500 kW steam turbine/electric generator. The RRF was operated from 1988 to 1994. In 1993, ash from the RRF could no longer be disposed at Inman Landfill and instead had to be transported to a distant landfill due to changes in disposal regulations. This and other changes in economics and regulations led to the closure of the incinerator in 1994.

Regulatory framework: Energy recovery and incineration facilities are federally regulated under the Clean Air Act (CAA) and the Resource Conservation and Recovery Act (RCRA). All energy recovery and incinerator regulations are administered by Ecology under Ch. 173-350-240 WAC. Special incinerator ash is also regulated under Ch. 173-306 WAC.

7.5.4 Service Gaps, Other Needs and Opportunities for Alternative Disposal Technologies

There will continue to be a need for disposal of solid waste in the future, although the existing waste export system currently meets this need in a satisfactory manner. Incineration is a technically viable method of reducing waste volumes, and reducing the production of methane (a greenhouse gas) from landfills. It can also use an underutilized renewable resource (solid waste) to produce electricity, for which there is an ever-increasing demand. There is, however, considerable controversy about the extent and severity of health risks associated with incineration. Siting an incineration facility is a politically sensitive issue, even if there are offsetting benefits such as generating electricity. Furthermore, incineration facilities generally require large volumes of waste to be economically feasible, and so many of the technologies may not be financially viable for Chelan County.

7.5.5 Alternative Methods for Alternative Disposal Technologies

There are several options and variations possible with incineration. These options include a choice of different burning technologies, waste streams, and energy recovery systems. Incineration of solid waste is an effective method of volume reduction, although the greater expense of incineration compared to landfilling is a limiting factor. Incineration is generally considered where there are environmental concerns with other disposal options, where a market exists for energy recovered from waste combustion, and/or other factors. At the present time, there appear to be no factors that would favor incineration in Chelan County over other disposal methods.

7.5.7 Recommendations for Alternative Disposal Technologies

No recommendations are being made at this time regarding incineration or other alternative disposal technologies, but any such projects that may be proposed in the future should be evaluated based on an objective review in accordance with the goals and activities discussed in this Plan, and other policies and regulations. Factors that should be considered include the economics and potential impacts on human health and environmental quality, as well as a technical comparison with other existing or potential disposal methods.

7.5.8 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Alternative Disposal Technologies

The potential value of alternative disposal technologies should be reassessed in all future revisions of this Plan.

CHAPTER 8: MODERATE RISK WASTES

8.1 INTRODUCTION

This chapter of the *Chelan County Solid Waste Management Plan* (Plan) discusses the goals and regulatory framework for hazardous waste management methods, to the extent that these wastes are managed by the local solid waste program (i.e., does not include large quantities of hazardous wastes). This chapter describes existing hazardous waste programs in Chelan County, reviews the needs and opportunities for expanding on existing practices, describes and evaluates alternatives, and provides recommendations.

Where appropriate, the discussion in this chapter is further divided into sections that address:

- Household Hazardous Wastes (HHW): Defined as wastes generated by residential sources (single-family homes and apartments) and are specifically exempted from hazardous waste regulations.
- Conditionally Exempt Small Quantities Generators (CESQGs): Commercial, industrial and institutional generators of small quantities of hazardous wastes are exempt from some of the requirements for handling and record-keeping but are still required to properly dispose of hazardous wastes.
- Automotive Wastes: Including oil, oil filters, antifreeze and vehicle batteries. By definition, these wastes are usually included in one of the categories above, but are being separately addressed in this chapter because these wastes are 1) commonplace and widespread, and 2) typically managed separately from other types of moderate risk wastes. Although large quantities of these wastes, usually from commercial and similar sources, are sometimes regulated differently than household quantities, in practice these wastes are often managed in identical ways (but collection programs may vary).
- Agricultural Wastes: In this chapter, "agricultural wastes" refers to pesticides and similar hazardous wastes generated as a result of maintenance at orchards, ranches and farms.

8.2 MODERATE RISK WASTES

8.2.1 Introduction

The term "moderate risk wastes" was created by Washington State's 1986 Hazardous Waste Management Act (RCW 70.105). Most of the wastes that are classified as a moderate risk waste (MRW) are hazardous to human health and the environment but are not regulated because the source or quantities involved makes regulation impractical. Although not regulated, it is still preferable to collect and manage these wastes separately from solid wastes because of the hazards they pose.

The Washington State Hazardous Waste Management Act directed each county to prepare a plan that would establish programs to properly manage MRW (RCW 70.105.220). In Chelan County, this requirement was satisfied by the *1991 Moderate Risk Waste Management Plan*. In order to provide an updated examination of MRW, the previous version of this Plan (2006) addressed the waste stream and acted as a replacement for the 1991 MRW plan. The newest version of this plan (2017) will act as a replacement for the 2006 plan. Table 8-1 shows the recommendations from the *SWMP* (2006) and their status.

Table 8-1 Status of Past Plan Recommendations	
Household Hazardous Waste Education	**Current Status**
Provide educational materials	Ongoing
Establish school programs	Not being conducted due to staff limitations
Provide educational and informational support to community groups	Ongoing
Household Hazardous Waste Collection	
Conduct annual collection events	On Hiatus*
Construct and staff a permanent facility	Construction In Progress (2016)
Establish an incentive program for private waste oil collection	No longer needed
Agricultural Generator Education	
Expanding and coordinating activities with WSU Cooperative Extension	No longer needed
Developing and distributing a guide for farmers	Currently conducted by WSDA
Agricultural Generator Waste Collection	
Support the Dept. of Agriculture's collection event	No longer needed
Examine the need and feasibility for agricultural waste collection service	Ongoing
Commercial Generator Education	
Establish a voluntary consulting program for targeted groups	Currently conducted by Ecology
Develop local educational materials, supplemented with materials from Ecology	Ongoing
Provide specific educational materials to targeted business types	Not being conducted currently due to staff limitations
Commercial Generator Waste Collection	
Coordinate efforts to increase MRW collection by private services	Ongoing
Health and Safety	
Incorporate an MRW component into the H&S training for public employees who may be exposed to those wastes	Ongoing
Make training materials available to private waste management companies	No longer needed
Coordinate training sessions given by Ecology and Labor & Industries	Not being done
Compliance and Enforcement	
Establish a task force to draft local MRW ordinances	Not completed
Review solid waste facility permits for opportunities to include MRW management requirements	Ongoing
Plan Evaluation	
Assign plan oversight and revision to Chelan SWAC	Ongoing
Establish a database for tracking survey results, costs, etc.	Ongoing
Recommendations for State Activities	
Ecology or Labor & Industries to develop an MRW training component for public and private training programs	Ongoing
Provide and maintain adequate funding to assist local governments to implement MRW management activities	Ongoing
Establish mechanisms for local governments to derive funding for MRW and solid waste programs	Ongoing
Continue to expand educational and technical assistance programs	Ongoing
Encourage state cooperation with the federal government to eliminate or reduce hazardous products	Ongoing
Encourage state and federal government cooperation with trade associations to ensure clear product labels	Ongoing

** Due to the significant cost, the county has discontinued collection events to funnel efforts and funds into the permanent moderate risk waste facility's completion; thus eliminating the need for these events in the future. Should the construction process of the MRW facility be delayed, an event may be required as a "stop gap" measure to reduce MRW and alleviate the public's needs and concerns.*

8.2.2 Goals for Moderate Risk Wastes

The goals established by the *1991 Moderate Risk Waste Management Plan*, the *2006 SWMP*, and this plan are to:

- Protect the natural resources and public health in Chelan County by eliminating the discharge of moderate risk wastes into solid waste and wastewater treatment systems, and the environment through indiscriminate discharge.
- Manage moderate risk wastes in a manner that promotes, in order of priority:

  - Waste reduction
  - Recycling
  - Physical, chemical and biological treatment
  - Hazardous waste incineration
  - Solidification and stabilization
  - Landfill disposal
- Increase public awareness of the importance of proper disposal and available alternatives for disposal of moderate risk wastes.
- Improve opportunities for citizens and businesses within Chelan County to safely dispose of moderate risk wastes.
- Reduce the health threats presented to workers coming into contact with moderate risk wastes disposed in the solid waste stream or in wastewater treatment systems.
- Coordinate improved systems for moderate risk waste management with existing and planned systems for waste reduction, recycling, and other programs for solid waste management within Chelan County.
- Encourage cooperation and coordination among all levels of government, citizens, and businesses in managing moderate risk wastes.
- Emphasize local responsibility for solving problems associated with moderate risk waste.
- Comply with the requirements of the Washington State Hazardous Waste Management Act.
- Seek opportunities to coordinate programs with neighboring counties.

These goals are still valid today and can provide direction for the programs discussed in this chapter.

8.2.3 Existing Moderate Risk Waste Activities

Automotive wastes: Used motor oil is currently being collected at a number of auto parts stores, service stations and transfer stations in Chelan County, including the following:

Kwik Lube (Wenatchee)

O'Reilly Auto Parts (Wenatchee)

Dryden Transfer Station

Chelan Transfer Station

Antifreeze is collected at the Dryden Transfer Station and Chelan Transfer Station. Antifreeze and oil are also collected at the periodic household hazardous waste collection events (see Table 8.2) and will be collected at the Moderate Risk Waste Facility once it begins operations.

Oil filters are not separately collected from the general public at any site in the County. Residents are typically advised to drain the filter well (bringing the oil to an oil recycling site), while wrapping and disposing of the oil filter with their household garbage. Service stations and other businesses that generate large quantities of oil filters, either from servicing their own fleet or from other vehicles, are supposed to dispose of these filters through special services. Due to filters being primarily metal, once thoroughly drained, they can be recycled with other scrap metal.

Vehicle batteries are generally returned to the stores where new batteries are purchased and a "core charge" (refundable deposit system) helps ensure that this system collects most of the batteries. Car batteries are also collected at the Dryden Transfer Station. They are collected by local battery businesses. Depending on the market of steel, prices paid fluctuate.

Household hazardous wastes (HHW): A variety of educational efforts are currently conducted regarding household hazardous waste and related topics. Chelan County maintains a web page (http://www.co.chelan.wa.us/pw/pw_solid_waste.htm) with information on recycling, reducing waste and hazardous waste disposal. Additional information is posted on this web page as projects and events arise, such as the Conditionally Exempt Small Quantity Generator registrar and the Solid Waste Management Plan. Reports and surveys are continuously being conducted. Informational articles in the local media and mass mailings are provided to inform the public of procedures and programs for reducing hazardous waste, proper handling and storage methods for hazardous waste, and disposal opportunities.

Chelan County has conducted annual collection events for household hazardous wastes (HHW) for years. These events collect hazardous wastes from households at no charge (although a $5 donation is requested). The results of the collection events for 2014 are shown in Table 8.2.

These events are typically held at multiple locations throughout the County to make participation as convenient as possible. (In 2014, the event was held at a single location in an attempt to reduce costs due to the increased financial requirements of building a permanent MRW facility.) For instance, past events were held in 2012 at the County shop in Wenatchee, at Peshastin Elementary School, at Chelan County Fire District No. 7 in Chelan, and in Entiat. The Park Service also collects wastes from residents of Stehekin and brings those to the collection event. Radioactive and explosive materials are not accepted at the annual events.

The cost of the annual collection event is significant. Disposal costs for the event in 2014 were $71,872.52 (conducted at a single location). These events also depend on publicity, labor (in addition to the labor provided by the disposal contractor) and equipment donated by others. Funding for contractor costs is provided by CPG funds administered by Ecology, which covers 50% of applicable costs, and Chelan County Public Works, which covers the remaining event costs. These events will most likely be discontinued once the permanent facility is completed.

There are also collection programs for specific types of MRW:

> **Propane tanks** can be exchanged for new tanks at many locations. Amerigas and Wenatchee Petroleum have taken old tanks.

Computers, through the state E-Cycle program funded by the manufacturers of televisions and computers, pay receiving sitesto collect and ship for dismantling and recycling of the components. This is a very successful program. Chelan County has two receiving sites, Salvation Army and the Chelan Recycle Center.

Rechargeable batteries and cell phones can be recycled through many of the retail outlets that sell these products. This program is organized by the Rechargeable Battery Recycling Corporation (RBRC), a non-profit organization supported by more than 300 manufacturers. The RBRC has collected over 100 million pounds of rechargeable batteries since its inception in 1996.

Table 8.2 Quantities Collected through 2014 MRW Events

Waste Type	HHW (IN POUNDS)	CESQG (IN POUNDS)
Aerosols	957	50
Antifreeze	1,750	1,000
Acids	548	1,500
Bases	778	1,250
Batteries;		
Alkaline	400	100
Automotive	0	0
Ni-Cd	70	0
Flammable Liquids	2,450	2,000
Flammable Toxic Liquids	10,600	2,000
Flammable Butane, Propane, etc.	132	0
Flammable Solids	0	0
Fluorescent Light Tubes	2,800	150
Paint Related Materials	63,400	3,300
Latex Paint	3,971	1,700
Mercury	50	20
Oil Based Paint	see paint related materials	0
Oil, Non-Contaminated	0	0
Oil, Contaminated	see paint related materials	0
Organic Peroxides	6	0
Oxidizers	82	50
PCBs	500	300
Pesticides, Liquid	0	0
Pesticides, Solid	4,000	0

Notes: Locations in Chelan County include five businesses in Wenatchee (Day Wireless Systems, Battery Systems Inc., Tool Mart, Home Depot, and Lowes Hardware), and a few other locations such as Raycom in Chelan.

Conditionally exempt small quantity generator wastes (CESQG): Small Quantity Generators (SQGs) are defined as companies generating only small amounts of hazardous wastes (Ch. 173-303-070 WAC). SQG wastes are hazardous wastes generated by businesses in quantities of less than 220 pounds per year or per batch for dangerous wastes, or less than 2.2 pounds per year or batch for extremely hazardous

wastes. SQGs that manage their wastes properly are exempt from the reporting requirements under the Dangerous Waste Regulations and are termed "conditionally exempt." To remain exempt, CESQGs must treat or recycle wastes on site under an appropriate permit, or dispose of wastes at a permitted facility or a legitimate recycling or reuse facility. Commercially produced hazardous wastes generated in quantities greater than the SQG limits are fully regulated under the Dangerous Waste Regulations (WAC 173-303). Chelan County maintains an open channel of communication in regard to business technical assistance. Numerous calls are made in reply to inquiries about SQG wastes, to discuss correct procedures for handling, storage and disposal. A mass mailing is conducted each year for all interested businesses and brochures are distributed at special events and on an as-requested basis. The names of interested businesses are recorded in a registrar that is updated and maintained each year over the most recent period of three years. The mailing educates the business industry about Chelan County's annual disposal event, and eventually MRW Facility.

A Conditionally Exempt Small Quantity Generator waste collection event is conducted, periodically each year and as a stop gap event until the Moderate Risk Waste Facility is constructed and in operation. Chelan County uses a mass mailing to inform businesses of the opportunity to register for the disposal event. Businesses are provided some guidance as to whether they are a small-, medium- or large-quantity generator. If the business is an SQG, it may pre-register with Chelan County for participation. Generators pay for waste disposal, but are able to pay the County's contracted price due to Chelan County's coordination of this collection with the household hazardous waste collection event. In 2014, 21 CESQGs participated in the collection events, bringing in 13,420 pounds of waste. This event will most likely continue once the permanent MRW facility is operational.

Agricultural wastes: Waste pesticides are collected by a special program administered by the Washington State Department of Agriculture (WSDA). WSDA conducts eight to 20 regional collection events across the state each year. Participation is free, but the program does require participants to pre-register and to provide an inventory of the chemicals they wish to dispose of. In Chelan County, waste pesticides are collected at the Household Hazardous Waste Collection Events through a cooperative effort between the County and WSDA. Once the Moderate Risk Waste Facility is constructed and in operation, the partnership will continue pesticide collection at the facility. It is an effective and beneficially shared program for all. Farmers do not have to wait for a special event in their area, and will be able to dispose at the facility year round. Residents can clean out any unwanted orchard pesticides at the facility, and WSDA will pick it up, with no charge for Chelan County handling the waste. It keeps the material out of the environment and in safe hands.

The intent of WSDA's pesticide disposal program is to collect and properly dispose of pesticides that are no longer usable. Unusable pesticides include pesticides that are no longer allowed to be used (such as DDT, EDB, endrin, dinoseb, and chlordane) or that cannot be used due to the age of the product, the loss of identification or application information, or because the owner is no longer farming. Acceptable chemicals include insecticides, rodenticides, fungicides and herbicides. The WSDA program does not accept empty containers, fertilizers or other types of hazardous wastes (paint, oil, solvents, etc.). Empty plastic pesticide containers are, however, collected by a private company (Northwest Ag Plastics, Inc. based in Moxee, Wash.).

Current compliance and enforcement activities: Chelan County Public Works does not conduct compliance and/or enforcement activities on a regular basis, although in rare cases County staff may be the first to respond to a complaint or incident and then would help define the problem and possible solutions. Typically, the objective for the Chelan County Solid Waste program is to provide convenient

opportunities for the proper disposal of hazardous waste and thus prevent incidents. In cases where County staff receives the initial notification of any compliance issue, this is generally referred to the Chelan-Douglas Health District and/or Ecology. Depending on the nature and magnitude of the problem, either or both of these might be the appropriate agency to respond. In general, the Health District responds to small spills (at least to conduct an initial investigation) and illegal dumping cases, and Ecology responds to larger spills and other incidents.

Summary of statewide programs: Each year, Ecology reports on the status of solid waste management in Washington State, including MRW programs. The information on MRW programs is derived from reports provided by each of the counties, as required by state law (RCW 70.105). The most recent data available is from the Twenty-Second Annual Status Report (Ecology 2013) for the year 2012. As shown in that report, there were 11.3 million pounds of HHW, 7.4 million pounds of used oil and over 4.4 million pounds of CESQG collected through the various programs in Washington in 2012. Table 8.3 shows the historical trend for these materials and Table 8.4 shows the top six wastes collected in 2012.

The Twenty-Second Annual Status Report states that all but seven counties (Chelan, Douglas, Ferry, Garfield, Grant, Skamania and Wahkiakum) have permanent HHW facilities. Although several counties have programs that collect paint, a large portion of all hazardous waste programs. The report shows the collection results for each of the counties, and Table 8.5 shows this data for Chelan and several other representative counties. The statewide average participation rate was 6.2% in 2012; however, in the counties without permanent facilities, the average participation rate was only 1.7%.

Table 8.3 Total Pounds of Waste Collected in Washington (millions of pounds)

Year	HHW	Used Oil	CESQG	Total MRW
2007	14.9	9.7	7.6	32.2
2008	14.2	8.6	8.3	31.1
2009	12.3	8.9	4.9	26.0
2010	11.6	9.2	5.4	26.2
2011	11.0	7.9	5.0	23.8
2012	11.3	7.4	4.4	23.1

Note: All figures are in millions of pounds per year.

Table 8.4 Top MRW Materials Collected in 2012 in Washington

Waste Type	Total Pounds
Oil, Non-Contaminated *	7,417,694
Antifreeze	2,537,926
Paint Related Materials	1,691,421
Latex Paint	1,508,477
Oil-based Paint	1,411,845
Electronics	1,194,708
Total for 2012	15,762,071

* Does not include amounts collected privately.

Table 8.5 Household Hazardous Waste (HHW) Data by County for 2012						
County	**Number of Households**	**HHW Participants**	**Participation Rate**	**Cost / Participant**	**Pounds / Participant**	**HHW Collected, lbs**
Chelan *	35,743	716	2.0%	$92.63	105.87	75,081
Clallam	35,971	604	1.7%	$141.95	75.82	45,793
Grant *	35,736	358	1.0%	$142.76	127.85	45,772
Okanogan	22,395	430	1.9%	$143.27	42.86	18,430
Skagit	51,895	4,290	8.3%	$30.18	22.50	96,529
Snohomish	290,592	9,544	3.3%	$68.46	64.15	612,264
Statewide Totals	2,922,343	182,492	6.2%	$52.02	65.83	12,013,011

** Counties without permanent facilities*

8.2.4 Existing Moderate Risk Waste Regulations

Federal regulations: A growing awareness of the human health and environmental problems being created by improper management of solid and hazardous waste led to the passage of the Resource Conservation and Recovery Act (RCRA) in 1976. Among other issues, RCRA helped identify problem wastes and provided the U.S. Environmental Protection Agency (EPA) with the authority to promulgate regulations for hazardous wastes. The EPA adopted final hazardous waste regulations in 1980, and in that same year Washington State law (RCW 70.105) was amended to give Ecology authority to regulate hazardous waste. Thus, the regulation of hazardous waste passed from federal to state authority.

State regulations: In 1982, Ecology adopted rules that combined the state and federal regulation of hazardous wastes. These rules, as amended several times in the ensuing years, are contained in Chapter 173-303 WAC and are the main body of regulations for hazardous wastes in this state. In 1983, the state legislature adopted a hierarchy of hazardous waste management methods in RCW 70.105.150. In descending order of priority for management, the hierarchy is as follows:

a) Waste reduction
b) Waste recycling
c) Physical, chemical, and biological treatment
d) Incineration
e) Solidification/stabilization treatment
f) Landfill

Amendments to RCW 70.105 in 1985 and 1986 defined MRW and required that local governments (counties) develop plans for the proper management of MRW. As stated in RCW 70.105.007(3), the legislature's intent was "to promote cooperation between state and local governments by assigning responsibilities for planning for hazardous waste to the state and planning for moderate-risk waste to local government." In 1987, the legislature appropriated funds for grants to counties to assist in their planning efforts and clarified the schedule. The legislature enacted the Used Oil Recycling Act, Chapter 70.95I RCW in 1991. This statute requires local governments to manage used oil in conjunction with their

MRW programs and to submit annual reports to Ecology. Local governments were required to adopt used oil recycling amendments to their MRW management plans by July 1, 1993.

New *Solid Waste Handling Standards* (Ch. 173-350 WAC) were developed by Ecology and became effective Feb. 10, 2003. These standards primarily address MRW facilities (construction, record keeping, reports, etc.). According to Ecology's website, the process for rule changes and additions began in 2013 with no fixed date for a final revision.

The *Dangerous Waste Regulations* (Ch. 173-303 WAC) have been amended several times to address new issues and to incorporate new provisions of state and federal regulations.

On Jan. 1, 2006, the Mercury Education and Reduction Act (RCW 70.95M) made it illegal to sell most items that contain mercury, including thermometers, manometers, toys, games and jewelry. The sale of thermostats containing mercury will also be illegal unless the manufacturer provides a thermostat recycling program. The sale of fluorescent light bulbs will be allowed, but labels must be used to warn consumers that the bulbs contain mercury.

On March 24, 2006, former Governor Christine Gregoire signed a law that established a system to recycle electronic wastes, including computers, monitors and televisions. This system charges consumers when they purchase electronics, and then disposal is financed by manufacturers of the electronic equipment.

On Jan. 1, 2015, the LightRecycle Washington Program began. This program delegates certain collection sites to receive up to 10 privately purchased, used mercury-containing lamps per day for recycling. The lamps can no longer be disposed of as garbage at transfer stations, dumps and landfills in Washington.

Beyond Waste plan: One of the five key initiatives of the state's *Moving the State Beyond Waste and Toxics* plan is "Managing Hazardous Waste and Materials." The background information for this initiative explains that perhaps as little as 1% of CESQG waste is properly managed on a statewide basis. For HHW, only about 16% is estimated to be collected through local programs. The discussion shown in the *Moving the State Beyond Waste and Toxics* plan concludes that, while local programs provide several important benefits, it is unlikely the current system can manage all of the MRW. However, since this determination, a steep education curve has occurred, as well as access to convenient disposal methods. Now people are trying to dispose of hazardous materials without efficient disposal programs funded throughout the state. Chelan County's Moderate Risk Waste facility will provide a much needed and convenient disposal option, providing education to reduce and use safer alternative options and keeping the nearby estuaries clean of contamination.

The Beyond Waste's vision for the future of hazardous waste is based on 30-year goals for:

- Safer products and services
- Efficient materials management
- Greater economic vitality

The *Beyond Waste* plan also provides several recommendations:

MRW1 – Develop a prioritized approach to identify and eliminate MRW substances that enter the solid waste stream.

MRW2 – Reduce threats from mercury.

MRW3 – Reduce threats from polybrominated diphenyl ethers (PBDEs).

MRW4 – Develop an electronics product stewardship infrastructure.

MRW5 – Ensure proper use of pesticides, including effective alternatives.

MRW6 – Reduce and manage all architectural paint wastes.

MRW7 – Lead by example in state government.

MRW8 – Ensure MRW and hazardous substances are managed according to hazards, toxicity and risk.

MRW9 – Fully implement local hazardous waste plans.

MRW10 – Ensure facilities handling MRW are in compliance with environmental laws and regulations.

In addition to these recommendations, the *Beyond Waste* plan adopted "five-year milestones" that echo the above recommendations.

8.2.5 Service Gaps, Other Needs and Opportunities in Moderate Risk Wastes

The primary service gap being addressed by this chapter of the *Solid Waste Management Plan* and the MRW plans and programs for Chelan County is the construction and operation of a fixed Moderate Risk Waste facility. The State plan cannot be implemented without effective infrastructure in place.

Automotive wastes: Convenient opportunities for recycling waste oil are present in all parts of Chelan County. Opportunities for recycling antifreeze are available at both transfer stations. Opportunities to recycle car batteries are present throughout the County.

Opportunities to recycle or properly dispose of oil filters are is unknown to the general public. Better education can encourage the importance of draining the oil and recycling the filters in scrap metal. Most commercial generators should be familiar with necessary steps, but occasional education may increase these habits. Based on results from other areas, the amount of oil filters being improperly disposed by commercial generators could be as high as 80%. The oil filter manufacturers have sought and received an exemption for oil filters from EPA's hazardous waste regulations, although this exemption requires that the filters be punctured and properly drained. The State of Washington, however, exempts oil filters from the dangerous waste regulations only if the filters are recycled. Thus it is possible that any businesses improperly disposing of oil filters are acting with the misunderstanding that the filters are not classified as a hazardous waste, and are disposing in regular trash.

Household hazardous wastes: CPG funds are currently the primary funding source for MRW activities in Chelan County, but an alternative source could provide additional and more secure long-term funding. A collection fee upon the solid waste system will help enable the operations of a Moderate Risk Waste

facility. Also fees collected at the Moderate Risk Waste facility are essential for education and disposal, much like the requested $5. Donation requested at the events.

Conditionally exempt small quantity generator wastes: Few CESQGs are currently participating in the annual MRW collection events. In 2014, 21 companies participated in the CESQG collection events, although other businesses and institutions could also be using the private collection services offered by hazardous waste disposal companies. Also, commercial businesses are more often able to return the used product back to the company when purchasing items routinely. An example are automotive repair shops, which once had a problem with spent cleaning solvents. Today they are able to return solvents to sales companies or are provided recycling system tanks to clan the solvent, allowing it to be used for longer periods.

Future trends: At some future point, waste reduction and product substitution (i.e., replacing toxic products with non-toxic alternatives) may reduce the amount of MRW that is generated and collected. On the other hand, it is unlikely that people will cease using paint and motor oil, which make up a substantial amount of MRW collected, and the designation of additional materials as hazardous, such as fluorescent tubes and possibly computer monitors, will also prevent the universe of MRW from shrinking in the near future.

One area where product substitution will make wastes less hazardous, although it probably won't affect the waste quantities generated, is the replacement of oil-based paints and related materials with water-based products. The use of oil-based paint is being discouraged in several states in the eastern United States (New York, New Jersey, Pennsylvania, Maryland and Delaware) through a regulation that became effective Jan. 1, 2005. The regulation does not ban oil-based paint but restricts the allowable content of volatile organic compounds (VOCs) in paint, which effectively eliminates many oil-based paints. A similar regulation took effect in 2003 in California. Because many paint companies are national in scope, these regulations are expected to impact local availability of products (JLC 2005).

8.2.6 Moderate Risk Waste Alternatives

The following alternatives address service gaps identified in the previous section:

Automotive wastes: The following alternatives are shown in no particular order:

1. Increase public education regarding recycling of used oil and other automotive wastes.
2. Construct and operate the Moderate Risk Waste facility.
3. Increase management of used oil and antifreeze at various locations throughout the County.

Household hazardous wastes: The results of recent HHW collection events demonstrate that these events continue to be popular and have predictable costs and results. The one-day collection events are expensive, however, and have limited effectiveness due to the limited opportunity for people to bring wastes. Other alternatives include:

1. Construct a permanent MRW facility for the regular collection of HHW throughout the County. Based on the designs and other information shown in the Facilities Study (see Appendix C), the construction of a permanent MRW will cost about $1,200,000. State-coordinated prevention grant funds have been used exclusively for the purchase of land, permitting and construction. Further construction is needed, and expected to need two phases of the grants, depending on legislative

budget cuts. Annual operating expenses are contingent on the number of open hours and other factors, but these costs are estimated by the Facilities Study to be about $150,000 a year. In other words, only slightly more than the current expense for the annual collection events. The availability of a local permanent facility would allow the annual collection events to be discontinued. This strategy has been adopted by Chelan County. As of 2016, the land needed to construct the facility was purchased and demolition of the current structures on the site is complete. However, the project has been put on hold until further funding can be found.

2. Use satellite facilities to provide more convenient disposal sites for most common materials. A drawback of a permanent facility, aside from the initial cost, is that people from other parts of the County would need to travel to it. For these other residents, satellite facilities could be used for a limited range of materials and could be placed at the two transfer stations (Chelan and Dryden). The cost of a satellite facility would be an additional expense ($55,000 for a storage unit, plus staffing, operations, transport and disposal expenses), and the wastes from these sites could be transferred to the permanent facility.
3. Continue to provide collection events, until which time the facility is open year round. These could be effective method to capture the public hazardous waste, while continuing the construction and until the facility is in operations. This extends the time to construct and open the facility because valuable resources are used for expensive events rather than steps towards construction completion.
4. Increase the number of HHW collections, providing more frequent collections and additional locations. This option would increase the number of people served and pounds collected, but would also be relatively expensive.
5. Provide more information to the public about the hazards of products that may end up as HHW. More educated consumers could choose to avoid buying the most toxic products, and do a better job of using up the entire product.
6. Target specific materials only, starting with the most important waste categories, for reduction through more education and other steps. Education could focus on substituting less toxic alternatives and reducing wastes. Another step could be exploring the possibility of take-back program for paint or other specific materials.
7. Institute bans and voluntary substitutions by retailers, or use other methods to encourage or require replacing more toxic products and materials with safer alternatives.

Conditionally exempt small quantity generator wastes: The amount of CESQG waste collected through the annual HHW collection events is relatively small, and participation in these events means that businesses need to store wastes for up to a year while waiting for the next event. It is unknown what the other CESQGs in the County are doing for disposal, but some percentage of this waste is probably being improperly disposed of and thus posing a risk for the future environmental health of the area.

The following alternatives for CESQG wastes are shown in no particular order:

1. Increase public education/advertising for CESQGs in the areas of waste reduction, recycling and waste disposal. Ecology may be able to provide technical assistance for this effort.
2. Expand CESQG collection events, both in number and in areas served. The drawback to this alternative would be the high cost of the collection events, particularly if not well utilized by businesses.

3. Combine HHW collection events with CESQG events and charge a fee for all participants. This could reduce the cost of holding separate CESQG events and eliminate confusion about which events are for businesses and which are for households.
4. Eliminate CESQG collection events due to the low participation rate and increase the amount of information made available to businesses about alternative means of hazardous waste recycling and disposal (also to reduce the amount and toxicity of wastes generated).
5. Build a permanent facility (see discussion under HHW options) and accept CESQG wastes at that facility. Depending on the financial arrangements for construction and operation of the facility, it will be necessary to charge a fee to accept CESQG waste. Any fees should be kept as low as possible, however, to avoid discouraging participation.
6. Establish a materials exchange program or assist businesses to connect with existing programs such as the Industrial Materials Exchange (IMEX).
7. Improve CESQG waste tracking through regulatory requirements and inspection programs. This alternative would require significant resources for staffing a program.
8. Institute bans and voluntary substitutions by wholesalers, and use other methods to encourage or require product substitutions to replace more toxic products and materials with safer alternatives.
9. Schedule special collections, possibly through existing garbage/recycling collections, for a limited range of wastes (such as paints only).
10. Develop a recognition program for CESQGs (or all businesses) that are doing a good job reducing, recycling, or managing their hazardous wastes and help promote those businesses with consumers.

Agricultural wastes: There are no known problems with existing efforts to collect waste pesticides from agricultural sources; however many of the same alternatives that could improve CESQG results could also increase results or improve efficiencies for agricultural wastes:

1. Increase public education/advertising for farms in the areas of waste reduction, recycling and waste disposal. The County could also consider working with industry trade associations and other groups to assist with this effort.
2. Expand agricultural waste collection events, both in number and in areas served. The drawback to this alternative is the high cost of the collection events, which another agency (WSDA) would need to agree to fund.
3. Build a permanent facility (see discussion under HHW options) and accept agricultural wastes at that facility. Depending on the financial arrangements for construction and operation of the facility, it may be necessary or desirable to charge a fee to accept agricultural waste. Any fees should be kept as low as possible, however, to avoid discouraging participation.
4. Establish a materials exchange program or help farms to connect with existing programs such as the Industrial Materials Exchange (IMEX).
5. Improve agricultural waste tracking through regulatory requirements and inspection programs. This alternative would require significant resources for staffing a program.
6. Institute bans, voluntary substitutions by wholesalers, and use other methods to encourage or require product substitutions to replace toxic products and materials with safer alternatives.

8.2.7 Evaluation of Moderate Risk Waste Collection Alternatives

A summary evaluation of the alternatives for moderate risk wastes is presented in Table 8.6. The alternatives were evaluated using the following criteria:

- **Diversion potential**: This criterion provides a relative assessment of how much waste could be diverted by the alternative.
- **Technical feasibility**: Alternatives can be evaluated according to relative degree of difficulty in implementing the alternative, where a "high" rating means the alternative is well-tested and proven to perform, and a lower rating is due to implementation problems or issues.
- **Political feasibility**: Alternatives that require significant policy decisions or changes to existing services need to be assessed as to the political likelihood of implementing the alternative.
- **Cost-effectiveness**: The degree to which the alternative is effective in reducing waste at a reasonable cost is also an important factor. The SWC and the SWAC support programs that can achieve the greatest amount of waste reduction for the amount spent.

8.2.8 Recommendations for Moderate Risk Wastes

The following recommendations were developed based on the evaluation of the alternatives:

MRW1) Develop a permanent MRW facility – In Progress.

The construction and operation of a permanent facility should be pursued. Chelan County should be the lead agency on this, with the capital costs of the facility financed through a state-coordinated prevention grant and other funds. The operating costs should be financed by the state-coordinated prevention grant, County-assessed fees and user fees for both household and CESQGs. The permanent facility should be open several days each week and should include a waste exchange area. Satellite facilities should be considered at the Dryden and Chelan transfer stations. Once a permanent facility is established, the annual collection events should be cancelled, but these collections should be continued until a permanent local MRW facility is available. (See the above "Household Hazardous Waste" section for information on the progress of the fixed facility.)

MRW2) Continue to work with WSDA to collect agricultural wastes.

The Washington State Department of Agriculture (WSDA) is the appropriate agency to take the lead on agricultural waste collections, but the cooperative arrangement with the County is an excellent example of efficiency. Working together, a method should be found to increase the publicity for the agricultural waste collection events.

MRW3) Explore methods to reduce MRW waste and associated costs of proper disposal.

The intent of this recommendation is to encourage the County to explore less expensive options for proper disposal or recycling of MRW, but also to encourage the state to conduct more education on safer alternatives.

Table 8.6 Evaluation of Moderate Risk Waste Alternatives

Alternative	Diversion Potential	Technical Feasibility	Political Feasibility	Cost-Effectiveness	Conclusion
Automotive Wastes:					
1. Public education	Medium	Medium	Low	Medium	Don't pursue
2. Antifreeze collection in Entiat/Chelan area	Medium	Medium	Medium	Medium	Don't pursue
3. Survey businesses	High	Medium	Low	Medium	Don't pursue
HHW:					
1. Permanent facility	High	Medium	Medium	High	In Progress
2. Satellite facilities	Medium	High	High	Medium	Don't pursue
3. Increase collections	Medium	High	Medium	Low	Don't pursue
4. Mobile collections	Medium	Medium	Medium	Low	Don't pursue
5. Public education	Low	High	Low	Low	Don't pursue
6. Target specific materials for reduction	Low	Medium	Low	Low	Don't pursue
7. Remove products from store shelves	Medium	Medium	Low	Medium	Don't pursue
CESQG Waste:					
1. Increased education	High	Medium	Low	Medium	Don't pursue
2. Increase collection events	Low	Medium	Medium	Low	Don't pursue
3. Charge a fee for all for collection through events	Low	Medium	Low	Low	Don't pursue
4. Promote alternative collection services	Medium	Medium	Low	Medium	Don't pursue
5. Permanent facility	High	Medium	Medium	Medium	In Progress
6. Materials exchange	Low	Low	Medium	Low	Don't pursue
7. Enforcement system	High	Medium	Low	Medium	Don't pursue
8. Remove products from store shelves	Medium	Low	Low	Medium	Don't pursue
9. Special collections	Low	Low	Medium	Medium	Don't pursue
10. Recognition program	Low	High	High	Low	Don't pursue
Agricultural Waste:					
1. Increased education	Low	Medium	Medium	Low	Don't pursue
2. Increase collection events	Medium	Medium	Medium	Low	Don't pursue
3. Permanent facility	Medium	Medium	Medium	Medium	In Progress
4. Materials exchange program	Medium	Low	Medium	Low	Don't pursue
5. Enforcement system	High	Low	Low	High	Don't pursue
6. Remove products from store shelves	High	Low	Low	Medium	Don't pursue

Note: The conclusion stating "don't pursue" means not at this time, but this could change in the future.

CHAPTER 9: SPECIAL WASTES

9.1 INTRODUCTION

9.1.1 Purpose

The purpose of this chapter is to review the generation, handling and disposal methods for several specific wastes in Chelan County. These wastes may require special handling and disposal due to regulatory requirements or for one or more other reasons, such as toxicity, quantity or other special handling problems.

The following special wastes are discussed in this chapter:

9.2 Asbestos
9.3 Biomedical Wastes
9.4 Construction and Demolition (C&D) Wastes
9.5 Contaminated Soils
9.6 Industrial Wastes
9.7 Tires

The nature and sources for each special waste are described in this chapter, as well as the existing programs and facilities in Chelan County for handling these wastes. All of the wastes are also examined for needs and opportunities, but only those that pose disposal problems were further examined for alternatives and recommendations.

9.1.2 Goals for Special Wastes

The goals for special waste utilization and/or disposal programs in Chelan County are:

- Ensure that special wastes are utilized and/or disposed in a manner that complies with all local, state and federal regulations as applicable to the specific waste type.
- Ensure that state waste management priorities are followed, by exploring and encouraging re-use and recycling where feasible.
- Ensure that utilization and/or disposal programs for special waste are cost-efficient.

Two of the five key initiatives of the state's Beyond Waste plan address waste streams that are discussed in this chapter:

- **Construction/demolition waste**: Construction and demolition wastes are addressed by the Beyond Waste plan's initiative to promote green building practices.
- **Industrial wastes**: Another initiative of the state's plan is to "move toward beyond waste with industries," although the Beyond Waste plan defines "industries" to include all non-residential waste generating activities (not just the manufacturing companies that are typically defined as industrial).

9.1.3 Evaluation of Alternatives

Alternatives and recommendations are not provided for all of the special wastes, just those where current programs leave service gaps that need to be addressed. For those special wastes where specific needs or service gaps were identified and so were further examined for alternatives, the following criteria were used for evaluating the potential alternatives:

- **Regulatory compliance**: To what extent will the alternative ensure that special waste is utilized or disposed in a manner which meets or exceeds federal, state, and local regulations?
- **Adequate capacity**: To what degree will this alternative provide adequate capacity for the utilization and/or disposal of waste as needed during the planning period?
- **Sustainability**: To what extent will this alternative provide an environmentally sound handling, utilization and/or disposal option?
- **Cost-effectiveness**: The degree to which the alternative is effective in reducing waste at a reasonable cost is also an important factor. The SWC and the SWAC support programs that can achieve the greatest amount of waste reduction for the amount spent.

9.1.4 Summary and Conclusions

A total of nine recommendations are provided for five of the special wastes: asbestos, biomedical wastes, construction and demolition wastes, contaminated soils, and tires.

9.2 ASBESTOS

9.2.1 Introduction

Asbestos is a fibrous mineral that was considered to be useful for many different applications until it was discovered that it causes lung cancer. The problem is caused by the fact that the fibers are "friable," or crumble easily into very small particles that then become airborne and lodge in the lungs after being inhaled. Because pure asbestos was rarely used, the waste material of actual concern here is any material that contains asbestos in quantities greater than one percent and that is friable.

There are some materials where the asbestos is not friable and so pose less of a health risk. These types of products, such as floor tile (asbestos was used in only the backing of a small percentage of sheet vinyl flooring) and house shingles (again only a small percentage, most commonly found as an exterior wall covering), are relatively inert as long as these materials are not sanded, drilled or otherwise disturbed. Because asbestos is only dangerous when it becomes airborne, one strategy is to "encapsulate" asbestos in place, by spraying it with a binder or otherwise sealing it off, rather than disturbing it through removal methods.

Most asbestos-containing materials still in use can be found in building materials, although very old brake linings containing asbestos may still be found. Building materials containing asbestos include some types of floor tile, exterior wall shingles (cement asbestos-board siding), pipe wrap and other insulation, boards found around heating systems and fireplaces, sprayed-on "popcorn" ceilings (applied from the mid-1960s through early 1980s), and more rarely, ceiling tiles, stucco, plaster and other materials.

9.2.2 Existing Asbestos Disposal Activities and Regulations

Regulation of asbestos is handled through clean air regulations, and is delegated to the Chelan-Douglas Health District (CDHD). Asbestos may only be removed by licensed asbestos contractors or by homeowners if done properly. Asbestos contractors are licensed by the Washington State Department of Labor and Industries.

Locally, most of the asbestos-containing waste is brought to the Greater Wenatchee Regional Landfill (GWRLF). Currently, the GWRLF is the only facility that is licensed to accept asbestos in the region. Disposal costs at the GWRLF are $158 per ton, plus fees and taxes. Over the past three years, the GWRLF has accepted an average of 824 cubic yards of asbestos wastes from Chelan County sources. The asbestos must be double bagged, clearly labeled, manifested and wetted in the bag.

Demolition wastes brought to the GWRLF are required by Waste Management to be surveyed for asbestos prior to disposal. The Environmental Protection Agency (EPA) has established guidelines for handling asbestos, which it was directed to do by the Asbestos Hazard Emergency Response Act (AHERA). Testing of demolition sites by an AHERA-certified inspector is being required in many areas of the state.

9.2.3 Service Gaps, Other Needs, and Opportunities for Asbestos

The use of asbestos was discontinued years ago, but asbestos-containing materials can still be found in some building materials and other applications. The strategy of encapsulating asbestos is generally effective for preventing human exposure but this practice also has the unfortunate effect of delaying the removal and proper disposal of asbestos-containing materials. In other cases, asbestos-containing materials have simply not been discovered yet. Hence, even though the use of asbestos was discontinued many years ago, disposal capacity for asbestos-containing wastes will be needed for many more years.

There are several asbestos inspectors in our region. Generally a walk through, and depending on the confirmation of asbestos, further testing can be done. This way initial assessments will cost approximately $300. for a determination.

9.2.4 Alternatives for Asbestos

The current disposal system for asbestos is effective but alternatives may be needed in the future if the GWRLF should become unable to accept asbestos for some reason. Alternatives related to demolition projects are discussed in the section on construction and demolition wastes (provided later in this chapter). Other alternatives for asbestos include:

Continue current practices: This option involves continuing to dispose of asbestos at GWRLF according to the proper requirements until this facility reaches capacity or a new local facility is developed.

Increased enforcement: Asbestos regulations require a written notice of intent to remove or encapsulate asbestos. Asbestos removal contractors must send a notice of intent to Washington State Department of Labor and Industries (L&I). As noted previously in this chapter, the Health District is responsible for ensuring that requirements for asbestos disposal are followed. More scrutiny by the Health District or L&I might improve handling and disposal practices for sites that have provided notification and for demolition sites in general. The Puget Sound Air Quality has safe practices information for people removing asbestos from their own home for disposal.

Increase public education: Increased public education efforts to warn people about the hazards and potential sources of asbestos might reduce human exposure and illegal dumping.

9.2.5 Evaluation of Asbestos Alternatives

A summary evaluation of the alternatives for asbestos-containing wastes is shown in Table 9.1. The alternatives were evaluated using the criteria shown at the beginning of this chapter.

Table 9.1 Evaluation of Alternatives for Asbestos

Alternative	Regulatory Compliance	Capacity	Sustainability	Cost-Effectiveness	Conclusions
Continue current practices	High	High	Low	High	Pursue
Increased enforcement	High	High	Medium	Low	Don't pursue
Increased public education	High	High	Medium	Medium	Don't Pursue

9.2.6 Recommendation for Asbestos

S1) Continue asbestos disposal using approved and permitted methods.

The current disposal system for asbestos appears to be effective and should be continued.

9.2.7 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Asbestos

As an ongoing activity, the first recommendation should simply be continued and also periodically evaluated for effectiveness and compliance issues.

9.3 BIOMEDICAL WASTES

9.3.1 Introduction

State law (RCW 70.95K) defines biomedical wastes to include:

Animal waste: Animal carcasses, body parts and bedding of animals that are known to be infected with, or have been inoculated with, pathogenic microorganisms infectious to humans.

Biosafety level 4 disease wastes: Contaminated with blood, excretions, exudates, or secretions from humans or animals that are isolated to protect others from highly communicable infectious disease that are identified as pathogenic organisms assigned to biosafety level 4 by the Center for Disease Control (CDC).

Cultures and stocks: Wastes infectious to humans, including 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: Discarded waste human blood and blood components, and materials containing free flowing blood and blood products.

Pathological waste: Human source biopsy materials, tissues, and anatomical parts that emanate from surgery, obstetrical procedures and autopsy. This does not include teeth, human corpses, remains and anatomical parts that are intended for internment or cremation.

Sharps: 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.

9.3.2 Existing Biomedical Waste Activities and Regulations

The Washington State Utilities and Transportation Commission (WUTC) regulate transporters of infectious wastes. The WUTC has issued a statewide franchise to Stericycle to transport biomedical wastes. Their regulations also allow regular solid waste haulers to refuse to haul wastes that they observe to contain infectious wastes as defined by the WUTC.

There are several hospitals, medical clinics and similar generators of biomedical waste in Chelan County. These facilities use the services of licensed biomedical waste haulers to transport and dispose of this waste. Other biomedical waste generators in the county include doctor's offices, dental clinics, and veterinary offices.

Another source of biomedical wastes is home health care. In the more serious health cases, biomedical wastes from this source are often generated under a nurse's supervision and are taken back to the primary hospital or other facility that employs the nurse. In other cases, however, patients may have difficulty finding the proper disposal method. To help address this problem, the Health District accepts "residential sharps" for free. Most of these are collected through local pharmacies and then brought to the Health District for disposal.

9.3.3 Service Gaps, Other Needs and Opportunities in Biomedical Waste

Some sources of biomedical wastes, including dentists, veterinarians, farmers and ranchers, and residents, may not always dispose of biomedical wastes properly.

There is not a clear estimate of the number of syringes that may be improperly disposed locally, but local haulers report incidents of having seen syringes sticking out of garbage bags. On a national level there is an estimated 3 billion to 4 billion injections administered outside of traditional health care settings (Waste Age 2004). Approximately two-thirds, or about 2 billion per year, are estimated to be administered by individuals attending to personal needs. This number is expected to increase due to an aging population and additional medications that have recently become available for home use (for HIV, arthritis, osteoporosis and psoriasis).

9.3.4 Biomedical Waste Alternatives

Improved disposal practices for biomedical wastes could be accomplished through various methods:

Increased education: Additional education for households, dentists, veterinarians, farmers and ranchers to promote safe handling and disposal of sharps. Placing sharps in an enclosed rigid container is not the safest handling but a method that is safe and more readily available than a collection program.

Expand collection program: The collection program could be expanded to include farmers and ranchers. For farmers and ranchers, the collection program might best be accomplished through farm supply stores, since they don't get their syringes at pharmacies.

Conduct a waste generator survey: The CDHD could conduct a biomedical waste generator survey to determine the extent of improper disposal practices.

Increase enforcement: Increased enforcement activities and larger penalties could be implemented.

9.3.5 Evaluation of Biomedical Waste Alternatives

A summary evaluation of the alternatives for biomedical wastes is shown in Table 9.2. The alternatives were evaluated using the criteria shown at the beginning of this chapter.

Table 9.2 Evaluation of Alternatives for Biomedical Wastes

Alternative	Regulatory Compliance	Capacity	Sustainability	Cost-Effectiveness	Conclusions
Increased education	Medium	High	Medium	Medium	Pursue
Expand collection program	Medium	High	High	High	Don't pursue
Conduct a waste generator survey	High	Medium	High	Low	Don't pursue
Increase enforcement	High	High	Medium	Low	Don't pursue

9.3.6 Recommendation for Biomedical Waste

The recommendation for biomedical wastes is:

S2) Increase education of proper disposal methods.

The current disposal system for biomedical wastes appears to be effective, but more education is needed to ensure that used needles are properly disposed, especially for needles generated by farmers and ranchers.

9.3.7 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Biomedical Waste

This recommendation requires additional staff time and so cannot be implemented until additional staff is hired.

9.4 CONSTRUCTION AND DEMOLITION (C&D) WASTES

9.4.1 Introduction

Construction and demolition (C&D) wastes are defined simply as the wastes that are generated from construction and demolition activities. These wastes consist primarily of new and used building materials (wood, sheetrock, plastic sheeting and pipe, metals, shingles, etc.), concrete and asphalt. Land clearing wastes, including soil, stumps and brush, are also sometimes included in this category. To the extent that land clearing debris is taken off site; however, the materials can be handled as a saleable product, inert waste, clean fill or as a wood waste (in the case of stumps and other natural woods).

A category closely related to C&D is "inert wastes." Inert wastes are defined to include some types of C&D wastes, such as concrete and asphalt, as well as certain other materials. The regulatory status of inert wastes differs from C&D wastes, and disposal requirements are less stringent for inert wastes.

The total amount of C&D waste generated in Chelan County is unknown, but for most communities C&D wastes make up one-third or more of the regular solid waste stream. C&D wastes are also generated at a rate that is proportional to construction activity in the county, and so annual amounts will vary depending on population and economic growth and on other factors. Large commercial and other one-time projects also have a significant impact on annual amounts, as do natural disasters and large-scale demolition projects.

Increasing amounts of construction in Chelan County are leading to increasing amounts of C&D wastes as well as regular solid waste from the increased population. Table 9.3 shows the number of building permits issued by the County and most of the cities, as an indication of the amount of C&D waste generating activity over the past 10 years.

9.4.2 Existing C&D Waste Activities and Regulations

Construction and demolition wastes are handled in a variety of ways. Some of it is handled on site at the construction site, but most of it is brought to the transfer stations or the Greater Wenatchee Regional Landfill (GWRLF) for disposal. A limited amount is recycled or reused in Chelan County, through the Dryden Transfer Station and sporadic efforts of construction companies or individuals. Material handled on site is sometimes burned and used to keep workers with a warming fire, or buried, although these are not approved practices. Clean (untreated) wood scraps are sometimes legitimately diverted to firewood

There are few regulations dealing only with construction waste (although demolition waste is a different matter, see below), except to the extent that these wastes are addressed as part of the body of regulations dealing with waste collection and disposal in general. A recent change in regulations affecting C&D wastes is the replacement of Ch. 173-304 WAC by the new solid waste handling standards (Ch. 173-350 WAC). The new regulations eliminate a category of landfill that was previously allowed ("inert demolition landfills"), and replaced that with inert landfills and limited purpose landfills. Inert landfills can accept only specific types of C&D wastes (such as concrete but not wood), and so a disposal site that

Table 9.3 Number of Building Permits in Chelan County

Year	Chelan County Single-Family residences only
2015	234
2014	237
2013	179
2012	159
2011	145
2010	133
2009	211
2008	339
2007	323
2006	232
2005	246

Table 9.4 Housing Units

	Housing Units		
Region	2000	2010	2015 est
TOTAL COUNTY	**30,407**	**35,465**	**35,934**
Cashmere CCD	4,114	4,504	4,719
Chelan CCD	4,134	4,570	4,506
Entiat CCD	1,032	1,121	1,125
Leavenworth-LK Wenatchee CCD	4,076	5,461	5,708
Malaga CCD	1,323	1,507	1,743
Manson CCD	1,568	2,194	2,374
Stehekin CCD	166	278	300
Wenatchee CCD	13,994	15,830	15,459

Notes: Census Data QT-H1 Table; 2015 estimated data from American Fact Finder (DP04).

Notes*: Figures in Table 9.3 are from the planning departments of Chelan County and the cities. The information was collected in September 2016.*

The County has seen an increase of over 5,500 housing units from 2000 to 2015. The largest increase of housing has been located in the Leavenworth-Lake Wenatchee CCD (1,632 units) followed by the Wenatchee CCD (1,465 units) and Manson CCD (806 units).

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Table 3.1 Housing Units

accepted mixed C&D wastes would need to be regulated as a limited purpose landfill, or these wastes need to go to a solid waste landfill.

Demolition wastes are an area of concern for many agencies and businesses because older buildings may contain products that are now recognized as potentially hazardous. From Ecology's website (www.ecy.wa.gov/programs/hwtr/demodebris/index/htm), the following wastes are potentially regulated under the Dangerous Waste rules (Ch. 173-303 WAC):

- **Treated Wood**: New types of treated wood are now being used, and those products are treated with copper and other less-toxic chemicals instead of the previous formulation that included arsenic and chromium. So treated wood from current construction sites are not a significant concern, but any treated wood from a demolition project is most certainly the previous type of treated wood (assuming the building being demolished was constructed prior to 2004-2005).

- **Paints and other Coatings**: Previously, some paint products were being produced and used that contained asbestos, mercury, PCBs, and lead.
- **Plumbing and Pipes**: Some older types of pipe, and associated products such as pipe wrapping materials, may contain asbestos or lead.
- **Light Bulbs**: Fluorescent and high intensity discharge (HID) lamps may contain mercury.
- **Batteries**: May contain lead, mercury or PCBs.
- **Thermostats, Switches, and other Electrical Devices**: May contain mercury.
- **Other Materials**: Various other products might contain asbestos, PCBs or other hazardous constituents.

Whoever first declares a material to be a waste, such as a contractor or property owner, is responsible for determining if the Dangerous Waste rules apply. Sampling and testing may be necessary in many cases to determine if demolition wastes are regulated under the Dangerous Waste rules. Locally, Waste Management is requiring loads of demolition waste to be certified free of asbestos.

The Beyond Waste plan addresses construction and demolition wastes in one of the five initiatives established in that plan, "making green building practices mainstream." The short term goal of the Green Building Initiative is "to dramatically increase adoption of environmentally preferable building construction, operation and deconstruction practices throughout the state and the region." The long-term goal of this initiative is "for green building to be a mainstream and usual practice throughout the state."

Other governmental actions have been taken on the state and local level. The High Performance Green Building Bill was signed in to law by then-Governor Gregoire on April 8, 2005. This bill adopts LEED (Leadership in Energy and Environmental Design) standards for state-owned buildings and schools. On June 22, King County Executive Ron Sims announced new incentives for green building and low impact developments. The incentives are intended to encourage builders to design and construct buildings in ways that are more environmentally friendly.

9.4.3 Service Gaps, Other Needs and Opportunities for C&D Waste

A significant need for C&D wastes in Chelan County is that more could be reused and recycled. Recycled clean lumber is chipped at the Dryden Transfer Station. The lumber can have screws or minor amounts of metal attached; however, wood must be free of paints, stains or any treatment. The chips are composted and or used in a co-generator at the Colville Mill site.

Other chipping sites for clean untreated lumber in the Wenatchee, Entiat and Chelan areas could be a beneficial deterrent. A limited purpose landfill is another option to be sited in Chelan County. This would free up space in the Greater Wenatchee Regional Landfill and would be an environmentally sound way to dispose of this material. Siting and constructing a limited-purpose landfill would be a costly endeavor; however, Chelan County should consider. The amount of construction and demolition waste generated each year is expected to continue to be substantial. Locally, there is reported to be an increasing number of construction projects as significant numbers of new homes and hotels are built in the Chelan, Wenatchee and Leavenworth areas. On a national level, it is estimated that half as many buildings will be needed in 2030 as existed in the year 2000, or about 60 million more housing units in the U.S. (US Today 2004). A typical 2,000-square-foot home is estimated to require about 13,000 board feet of framing lumber and 6,210 square feet of wood sheathing (WN 2003), and to create 3,500 pounds of wood waste in the process (FH 2003).

9.4.4 C&D Waste Alternatives

Potential alternatives for C&D waste include increased recycling and reuse, green building practices and other alternatives.

Recycling alternatives: Reuse and recycling options for C&D wastes include:

Salvage for on-site and off-site reuse: This option generally applies to demolition projects although a small amount of reusable materials and products are also generated at construction sites. To be effective, salvaging requires pre-demolition removal of reusable materials and hence requires some allowances in the project's schedule. Off-site reuse can be accomplished through a variety of means, including reuse stores and private efforts.

On-site crushing and grinding for reuse and recycling: This generally applies to concrete and asphalt, which can be crushed to serve as road base or replace other basic materials, although in some cases wood and other materials can also be handled on-site.

Source-separation for off-site processing: Source separation at construction and demolition sites can allow recycling of wood and sheetrock, and other materials to be diverted to a limited purpose landfill. There are also several opportunities for specific materials in the C&D waste stream, such as a national recycling system for ceiling tiles.

Mixed C&D processing off-site: Processing of mixed C&D wastes is a convenient means to handle large amounts of wastes, but requires a facility or facilities that are properly equipped and operated to handle this waste.

Central site for recycling and reuse: An ideal option could be a facility, or a series of local facilities that combine reuse and recycling as appropriate for the material. These facilities could sell salvaged products as well as crush or grind other materials (concrete, wood, etc.) for recycling.

Collection depots at transfer and disposal facilities: Collection containers for reusable and/or recyclable C&D materials at solid waste facilities could allow these materials to be transferred to a central processing or salvage facility. Transportation costs can be a significant barrier, however, since the recovered materials typically have only a low monetary value.

Other Alternatives: Other options for management of C&D wastes include:

Increased education and promotion of recycling and reuse: An important strategy would be to get contractors and building owners to plan ahead for recycling and reuse.

Increased education about potentially dangerous materials in demolition wastes: Contractors and homeowners could probably benefit from more information about the potentially hazardous materials that can be uncovered during demolition activities. Information should include proper handling and disposal, as well as the potential health impacts. This could lead to less illegal dumping.

A regional landfill for C&D wastes: This is hardly an option any longer, since the new solid waste handling regulations (Ch. 173-350 WAC) make limited purpose landfills about as expensive to construct and operate as a solid waste landfill.

Require deposit and proof of proper disposal when building permits are issued: If proof of proper disposal were required for the return of a deposit, there would be less financial incentive to illegally dump C&D wastes.

Green Building

Over the past several years, there has been increasing attention paid nationally to the idea of "green building." This idea was born in the late 1980s when individual efforts in solar power, indoor air quality concerns, C&D recycling and other aspects were combined in recognition that all aspects of construction, and the resulting buildings, were important to the health of the residents and environment. As mentioned earlier in this section, Ecology has adopted green building one of the five primary initiatives in the state's Beyond Waste plan. The Beyond Waste plan adopts the following definition of green building from the United States Green Building Council (USGBC):

> Design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants are included in five broad areas:
>
> - Sustainable site planning
> - Conservation of materials and resources
> - Energy efficiency and renewable energy
> - Safeguarding water and water efficiency
> - Indoor air quality.

Another way to look at green building is that it involves both products and practices. Green building practices include a building design that allows healthier or less wasteful occupancy of the finished building, as well as more environmentally friendly construction practices (including reuse and recycling). Products contribute to green building by being made from recycled or sustainable materials, by being manufactured in less-polluting fashion, by assisting with green building practices, by reducing energy and water consumption once the building is being occupied, and/or by not introducing toxic emissions into the finished building. In many cases, the products and practices that qualify as green building are easily identified, at least to the extent of improving current building practices and products. In other cases, the choice between two or more products or practices may not be so clear, and may in fact require a life-cycle assessment (a complicated and costly analysis) or other extensive research.

While the scope of green building is very broad and covers many important topics, there are only a few of these topics that fit within the context of this Plan. Issues dealing with energy efficiency, water conservation and indoor air quality, for instance, have little to do with topics such as C&D recycling or even the use of recycled products. The green building activities that are relevant to this Plan are limited to:

- Recycling of C&D wastes.
- Promoting the use of building products with recycled content.
- Promoting de-construction activities that allow reuse and recycling.

9.4.5 Evaluation of C&D Waste Alternatives

An evaluation of the alternatives for C&D wastes is shown in Table 9.4. The alternatives were evaluated using the criteria shown at the beginning of this chapter.

Table 9.5 Evaluation of Alternatives for C&D Wastes

Alternative	Regulatory Compliance	Capacity	Sustainability	Cost-Effectiveness	Conclusions
Salvage reusable materials	High	High	High	Medium	Don't pursue
On-site crushing and grinding	Medium	High	High	Medium	Don't pursue
Source separation	High	Medium	Medium	Medium	Don't pursue
Mixed C&D processing	High	Medium	Medium	Medium	Don't pursue
Central processing site	Medium	Medium	High	Medium	Pursue
Collection containers at transfer stations	High	High	Medium	Low	Don't pursue
Increased education	Medium	Medium	High	Medium	Don't pursue
Education about hazards	High	High	High	Medium	Pursue
Regional landfill	High	High	Low	Low	Don't pursue
Deposit system	High	High	High	High	Don't pursue
Green building	High	High	High	Medium	Don't pursue
Expand chipping sites	High	Medium	High	Medium	Pursue

9.4.6 Recommendations for C&D Waste

The recommendations for C&D wastes are:

S3) A central processing facility and/or salvage operation should be developed.

There needs to be an opportunity to recycle and reuse building materials.

S4) Other collection and chipping sites established at the transfer stations and nearby brush chipping operations for clean, not treated or painted, lumber.

S5) Information should be distributed about the potentially dangerous materials that can be found during demolition activities.

Many materials can be found in older buildings that are no linger in use and/or not easily recognized, such as asbestos, PCBs, and wood treated with arsenic. There needs to be education about the hazardous materials that can be found in demolition materials, the proper handling and disposal methods, and the reasons not to illegally dump these materials.

9.4.7 Implementation Schedule/Costs and Monitoring/Evaluation Methods for C&D Waste

The first recommendation requires additional staff time and so cannot be implemented until additional staff can be funded. As an ongoing activity, the second recommendation should be considered as ongoing development of the Chelan Transfer Station expansion, as well as other brush and chipping locations are established. Educating on Dangerous waste can simply be continued and also periodically evaluated for effectiveness and compliance issues.

9.5 CONTAMINATED SOILS

9.5.1 Introduction

This section addresses soils that are contaminated with petroleum products and other substances that create environmental or human health exposure problems:

PCS: Petroleum-contaminated soils (PCS) are generated as the result of spills or leaks of petroleum products. Leaks typically occur from residential oil tanks or commercial tanks, especially at gas stations. Soil contaminated by substances other than petroleum products could be handled in a similar manner, but this would need to be determined on a case-by-case basis depending upon the nature of the substance.

ACS: The other type of contaminated soil that is a problem in Chelan County is soil that is contaminated with lead and arsenic due to previous agricultural practices. Applications of these metals to orchards in the past have resulted in soils with levels that are sufficiently high to pose a concern for alternative uses. These soils, termed agriculturally-contaminated soils (ACS)4, have created huge costs for schools and others that have converted property to other uses.

9.5.2 Existing Activities and Regulations for Contaminated Soils

PCS: The amount of PCS has dropped significantly over the past decade. Aging gasoline and fuel tanks were discovered to be leaking several years ago, forcing a major effort to remove or upgrade these tanks and to clean up the contaminated soil below them. Most of that work has now been accomplished, and the amount of PCS has dropped off considerably. The occasional problem is still discovered, however, and depending on the amount of contaminated soil and the degree of contamination the PCS is currently being treated on site or taken to the GWRLF. On-site treatment can be accomplished by aeration (transferring petroleum products to the air), "land farming" (bioremediation) techniques to degrade or volatilize the hydrocarbons, or PCS can also be treated with heat in various ways to burn off the petroleum products.

ACS: Treatment is not an option for soils that are contaminated with lead and arsenic because these chemicals cannot be removed by biological processes or heat treatment. Current practices generally involve removing the soil; however, if contamination levels aren't too high then on-site encapsulation is also a possibility. Mixing the soil with healthy soil and diluting the contamination, as well as encapsulating, where grass turf is grown or pavement or other methods to control. Removing the soil requires that it be moved to a more contaminated site (in other words, where there is no increase in environmental damage or human health risk) or to a disposal facility (either GWRLF or to a hazardous waste landfill if contamination levels are really high).

Regulatory status: The current regulations for contaminated soils are in a state of flux. The recently adopted solid waste handling standards (Ch. 173-350 WAC) were intended to address contaminated soils but were found to be creating an excessive hardship in some cases. The current regulatory approach is based on a combination of rules governing hazardous waste sites and solid waste handling. These rules take into consideration several factors:

- Whether the contamination is by a naturally-occurring material: By definition, petroleum is not a naturally occurring material but arsenic and other metals exist naturally in Washington soils.
- Whether the site is defined as a hazardous waste site: Any contaminated soils from a designated (listed) hazardous waste site are regulated under the Model Toxic Control Act (MTCA), but agricultural properties are generally not designated as a hazardous waste site.

Even though agricultural soils are not defined as hazardous, in practice the soils must be tested and handled accordingly and this may include disposal at a hazardous waste site.

9.5.3 Service Gaps, Other Needs and Opportunities for Contaminated Soils

There are no significant problems with PCS disposal in Chelan County at this time, and so no further discussion of alternatives and recommendations for PCS is necessary in this Plan. State regulations have increased testing parameters for almost all soils. Chelan County defers to the state regulations and methods for handling. ACS, however, represents a significant problem and a huge cost to many in Chelan County, and alternatives for these are discussed below.

9.5.4 Alternatives for Agriculturally Contaminated Soils

Since PCS disposal is not a problem at this time, only alternatives for ACS are shown here:

Cover soils on site: Only those soils removed from the original site are required to be tested and handled according to the amount of contaminants present, and these soils are only a problem where the potential for human and environmental exposure exists. If the soils can be left on the same property and covered or otherwise prevented from coming into contact with people or groundwater, then keeping the soils on site may be the most cost-effective and least problematic approach. In this case, the title for the property should be marked to note the presence and condition of the soils.

Use ACS for daily cover at GWRLF: For soils that need to be removed from the property of origin, using those soils as daily cover at the landfill would at least provide a better use than simply disposing of them. This method will preserve the natural healthy soils from being used as daily cover while utilizing a contaminated soil.

Develop a regional site for ACS: One approach that is allowed under the current regulations is to move contaminated soils to a more contaminated site. If a highly-contaminated local site could be designated as a disposal site for lower-contaminated soils, then there would be no increase in human health or environmental exposure.

9.5.5 Evaluation of Contaminated Soils Alternatives

An evaluation of the alternatives for ACS is shown in Table 9.5. The alternatives were evaluated using the criteria shown at the beginning of this chapter.

Table 9.6 Evaluation of Alternatives for Agriculturally-Contaminated Soils (ACS)

Alternative	Regulatory Compliance	Capacity	Sustainability	Cost-Effectiveness	Conclusions
On-site disposal	Medium	High	High	High	Don't pursue
Daily cover at GWRLF	High	Medium	Medium	Medium	Pursue
Regional disposal site	Medium	Medium	Medium	Medium	Don't pursue

9.5.6 Recommendation for Contaminated Soils

The recommendations for contaminated soils are:

S6) Continue current practices and evaluate options on a case-by-case basis.

While there is a need for more cost-effective solutions for agriculturally contaminated soils, there is no one program that would address every instance and so options will need to be examined on a case-by-case basis.

9.5.7 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Contaminated Soils

As an ongoing activity, this recommendation should simply be continued and also periodically evaluated for effectiveness and compliance issues.

9.6 INDUSTRIAL WASTES

9.6.1 Introduction

The state's Beyond Waste plan addresses industrial waste in one of the five initiatives established in that plan. As shown in the Beyond Waste plan:

> *"The goal of the Industries Initiative is to maintain the economic vitality of Washington State industries as we reduce wastes and toxic releases, and to increase the use of recyclable materials. This can only be accomplished through cooperation and partnerships between Ecology and industry."*

Unfortunately, the Beyond Waste plan goes on to define "industries" to include all sectors of Washington's economy that produce goods and services, including public agencies. Furthermore, the recommendations for this initiative deal primarily with hazardous wastes and other topics that are beyond the scope of solid waste management programs.

A definition of industrial waste that more closely resembles the common usage of this term can be found in the recently-adopted solid waste rules (Ch. 173-350 WAC):

> *"Industrial solid waste means solid waste generated from manufacturing operations, food processing or other industrial processes."*

The reference to manufacturing operations helps to clarify that this section is intended to address special solid wastes from various industrial operations. In other words, this section of the Plan is intended to address those companies classified as manufacturing under the North American Industry Classification System (NAICS, which was formerly known as the Standard Industry Classification system, or SIC). The NAICS codes for manufacturing companies range from 311 to 339. "Industrial wastes" also sometimes includes resource extraction enterprises (agriculture, mining, fishing and forestry), and these are included here to the extent that they are not covered elsewhere in this Plan.

9.6.2 Existing Industrial Waste Activities and Regulations

The primary type of industry in Chelan County is food production, including agricultural activities, warehousing and food processing. Besides hazardous waste and regular solid waste (neither of which is addressed in this chapter), the wastes generated by these activities are primarily crop residues and other organic wastes that are addressed in Chapter 5 (Organics Management).

Other industries in the County include:

Asamera Mining: This mine is now closed but generated industrial wastes in the past.

Alcoa: This company is now closed and formerly took waste to the GWRLF.

U.S. Castings: This foundry in Entiat generates a very small amount of contaminated sand.

9.6.3 Service Gaps, Other Needs, and Opportunities in Industrial Waste

From the information available, it appears that industrial solid waste is being managed properly; therefore, normal procedures for monitoring and managing existing industrial solid waste handling and disposal practices should continue. The Health District and others should continue to monitor and regulate industrial solid waste handling and disposal in the county as appropriate.

9.7 TIRES

9.7.1 Introduction

The term "tires" refers to tires from automobiles, trucks, tractors or any other use. Tires are formed of synthetic rubber and usually reinforced with cords of nylon, fiberglass or steel. Waste tires are sometimes disposed with the metal rim, but in general the rim should be (and is) removed and reused or recycled.

Automobile service centers that sell and install new tires are the primary generators of waste tires. Many of these businesses have made special arrangements to ship tires out of the area to specific disposal sites. Companies that service their own fleets and individuals that take care of their own vehicles may also accumulate old tires. When vehicles are junked, the tires on the vehicle, spares and snow tires may be stored by the owner or wrecking yard. All of these tires should eventually enter the local solid waste handling system as described below, but some do not.

Tires disposal has long been a nationwide problem. They can cause problems at solid waste landfills because the tires are hard to compact. People sometimes accumulate large numbers of tires because of a perception that they have some value, and the resulting piles can pose problems for mosquito habitat and fire potential. Fires that have occurred in tire piles have proved very difficult to extinguish and have created serious air and water pollution problems.

9.7.2 Existing Activities and Regulations for Tires

Tires are currently accepted at the GWRLF. Tire retailer Les Schwab also accepts tires for a fee of $2 per tire. Tire retailers in Chelan County use a variety of techniques to recycle and dispose of tires. A few tires are re-treaded and sold, especially the larger commercial tires that have greater value. Tires that still have tread remaining are sometimes sold for reuse. Individuals and businesses also find creative methods to reuse tires, such as Waste Management's use of tires in their leachate ponds (where the tires double or triple the rate of evaporation of the leachate). Most of the used tires are shipped by tire retailers to an energy recovery facility in Portland, Ore., or to a landfill farther south in Oregon.

Solid waste management regulations (Ch. 70.95 RCW) contain several provisions which address tires. One of these provisions (RCW 70.95.500) addresses disposal of tires at designated sites:

> "(1) No person may drop, deposit, discard, or otherwise dispose of vehicle tires on any public property or private property in this state or in the waters of this state whether from a vehicle or otherwise, including, but not limited to, any public highway, public park, beach, campground, forest land, recreational area, trailer park, highway, road, street, or alley unless:
>
> (a) the property is designated by the state, or by any of its agencies or political subdivisions, for the disposal of discarded vehicle tires; and
>
> (b) the person is authorized to use the property for such a purpose."

This provision appears to give local and other authorities the power to designate specific sites for disposal of tires, but other rules addressing disposal facilities are still applicable as well.

RCW 70.95 also requires that "any person engaged in the business of transporting or storing waste tires shall be licensed" by Ecology, and prohibits businesses from contracting with unlicensed transporters.

State regulations for the storage and handling of tires (Chapter 173-350-350 WAC) require haulers and storage pile owners to obtain a license or a solid waste handling permit. Haulers who transport more than five tires (with exceptions) must be licensed, provide a bond and deliver the tires only to approved facilities. Storage piles are subject to permitting generally only if they exceed 800 tires (or 16,000 pounds) and if storage is outdoors.

RCW 70.95 was amended to reinstate the tire fee, effective July 1, 2005. The original tire fee, which had expired in 1994, had been used to clean up tire dumps, fund a special study of tires and conduct other activities. The new fee is also intended to clean up unauthorized tire dumps and to help prevent future accumulations of tires. The fee is expected to raise $4.4 million per year and expired in 2010. Starting in 2011 a portion of the fee revenue was transferred to the Department of Transportation for road wear related maintenance on state and local public highways (RCW 70.95.532). Other amendments provide for stricter licensing requirements and make tire transporters (licensed or not) liable for the cost of cleaning up illegally stored or dumped tires.

The *Study of Unauthorized Tire Piles* (G-Logics 2005) identified 54 sites in Washington with significant and unauthorized accumulations of scrap tires. All of these sites have been cleaned of tires. However, there are numerous other tire piles in our region and continually we request the assistance of the tire funds to aid in clean up. This tax should continually be available for local agencies to clean up accumulated tire piles.

9.7.3 Service Gaps, Other Needs, and Opportunities for Tires

Tires are often accumulated on residential property or illegally dumped due to the additional cost for disposing of these. In either case, the tires are an aesthetic problem and can provide habitat for mosquitoes. Convenient and inexpensive disposal opportunities are needed to encourage the proper disposal of tires. Handling tires as part of the solid waste system creates problems in collection, transfer and disposal, further reinforcing the need for a separate tire handling system.

9.7.4 Tire Alternatives

The following alternatives for tire recycling or disposal were considered in this Plan:

Develop one or more local, designated sites for tire disposal: One interpretation of RCW 70.95.500 would appear to allow local sites to be designated for tire disposal. Such a disposal site would, however, still need to meet other criteria and be constructed and designed a manner similar to a solid waste landfill. The cost to meet landfill design and operating standards would be prohibitively expensive.

Request assistance in cleaning up tire piles: Chelan County could request assistance from Ecology in cleaning up known tire piles. The latest amendment to the waste tire removal account (RCW 70.95.530) allows for "funding to state and local governments for the removal of discarded vehicle tires from unauthorized tire dump sites."

Promote tire reuse: This alternative would require Chelan County to encourage several different methods of reusing whole tires. For example, the County could develop an environmental park that exhibits products made of used tires (and other recycled materials) and has signs that emphasize the benefits of re-use and recycling.

Chelan County Public Works incorporated chipped tires into a section of designed highway. It has been quite successful in that it utilizes chipped tire and a good educational tool for other jurisdictions and highway departments.

Develop a collection system for tires: In areas hit hardest by illegal dumping and accumulation of tires in residential areas, provisions could be made for ongoing collections of old tires, either for free

(subsidized by Chelan County or others) or for a fee. Tires could be transferred to Les Schwab, GWRLF or others.

Public education: A public education campaign for tires could promote proper tire maintenance (keeping tires balanced and inflated) to extend the life of tires and reduce the number of tires disposed. The campaign could also promote reuse of tires and publicize proper recycling and disposal options.

Promote local recycling options: The State Department of Ecology should research and find better solutions for used tires. With the expense of virgin materials for tires, other methods will rely on the government for research and solutions.

9.7.5 Evaluation of Tire Alternatives

An evaluation of the alternatives for tires is shown in Table 9.6. The alternatives were evaluated using the criteria shown at the beginning of this chapter.

Table 9.7 Evaluation of Alternatives for Tires

Alternative	Regulatory Compliance	Capacity	Sustainability	Cost-Effectiveness	Conclusions
Designate local site	Low	Medium	Low	Low	Don't pursue
Request help in cleaning up tire piles	High	High	Medium	Low	Pursue
Promote tire reuse	High	Low	Medium	High	Pursue
Collection system for tires	High	High	Medium	Medium	Don't pursue
Public education	High	Medium	Medium	Medium	Pursue
Promote State Research	High	High	Medium	Medium	Pursue

9.7.6 Recommendations for Tires

The recommendations for tires are:

S7) Encourage proper disposal of tires.

Proper disposal of tires should be encouraged through public education efforts that inform people of available opportunities. Proper disposal should also be encouraged by continuing to take tires for a reasonable cost at the transfer stations. State tire funds are continually helpful in cleaning up piles and aiding citizens for disposal.

S8) Investigate engineering and other alternative applications for tires.

The use of chipped tires in roadways should be continued. The efforts of Chelan County and other counties to develop this and other applications should be monitored and the potential use of those methods to educate the state.

S9) Support the further research for used tire use.

Encourage the State to support and develop uses for used tires.

9.7.7 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Tires

All the recommendations can be instituted.

CHAPTER 10: ADMINISTRATION AND PUBLIC EDUCATION

10.1 INTRODUCTION

The solid waste management activities discussed in this chapter are organized into two sections:

10.2 Administration and Regulation
10.3 Public Education

10.2 ADMINISTRATION AND REGULATION

This section discusses the administrative and regulatory activities related to solid waste management in Chelan County, including financing options for solid waste programs.

10.2.1 Background for Administration and Regulation

At the federal and state levels, the primary regulatory authorities for solid waste management are the Environmental Protection Agency (EPA) and the Washington State Department of Ecology (Ecology), respectively. At the local level, the responsibility for solid waste administration and enforcement is shared by Chelan County, the cities and the Chelan-Douglas Health District. The private sector also contributes significantly to the proper management of solid waste, and, to the extent possible, public-private partnerships are used to provide the most cost-effective system.

Solid waste regulations for waste collection and disposal have a relatively short history compared to many other municipal activities. Increased recognition of the problems caused by poorly managed solid waste disposal, such as groundwater pollution and the potential for the spread of pests and diseases, led to the initial federal and state regulations 30 years ago. Other problems have led to additional regulations over the years. The body of solid waste rules and regulations that govern waste management continue to evolve in response to new needs, regulations, changes in economics and other factors. Hence, the solid waste system in Chelan County will need to continue to incorporate and adapt to new regulations and requirements over the life of this *Solid Waste Management Plan* (Plan).

10.2.2 Goals and Objectives for Administration and Regulation

Chelan County's goals for administration and regulation of the solid waste system include:

- Ensure the institutional framework defines and delineates the roles and responsibilities of the municipalities, counties, state and private sector.
- Ensure the responsibilities and authorities vested in implementing agencies allow them to function efficiently.
- Ensure funding mechanisms and authorities are sufficient to support adequate management and implementation of the solid waste system.
- Ensure sufficient monitoring and regulatory procedures are in place to adequately manage solid waste.
- Ensure agencies responsible for planning, management, implementation and enforcement are adequately staffed and funded.

- Ensure permitting requirements are modified or established, where necessary, to provide a suitable framework for monitoring various waste streams.
- Ensure citizen groups can participate in planning and implementation activities.

The recommendations shown in the previous solid waste management plans for Chelan County also provide direction for the goals and objectives for the current process:

- Provide adequate staffing for solid waste programs.
- Improve interagency coordination and oversight.
- As new regulations for solid waste monitoring and enforcement are developed, additional Health District staff resources may be required. Clearly communicate to the State the district's need of funding.
- Ensure the Health District is responding to enforcement needs and coordinating with the Chelan County Solid Waste program.
- Determine whether new programs will be managed publicly or privately on a case-by-case basis.
- Develop new ordinances, as needed and funded, to enhance the solid waste management system.
- Support endeavors to adequately provide revenue for solid waste programs.
- Continue to apply for grant money for the funding of solid waste programs.

10.2.3 Existing Administration and Regulation Activities

All levels of government are involved in solid waste management in various ways.

Federal level: At the federal level, the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Solid Waste Disposal Act Amendments of 1980 (42 U.S.C. 6901-6987), is the primary body of legislation dealing with solid waste. Subtitle D of RCRA deals with non-hazardous solid waste disposal and requires the development of a state comprehensive solid waste management program that outlines the authorities of local, state and regional agencies. Subtitle D requires that state programs provide for all solid waste to be disposed in an environmentally-sound manner.

A provision of RCRA requires that federal facilities comply with substantive and procedural regulations of state and local governments, and so federal agencies must operate in a manner consistent with local solid waste management plans and policies. The major federal agencies active in Chelan County are the National Park Service and the National Forest Service. The National Park Service is involved in the collection and transfer of solid waste from the Stehekin area, but other federal facilities in Chelan County are served by local programs.

State level: The Solid Waste Management Act, Chapter 70.95 of the Revised Code of Washington (RCW), provides for a comprehensive, statewide solid waste management program. Ch. 70.95 RCW assigns primary responsibility for solid waste handling to local governments, giving each county, in cooperation with its cities, the task of developing and maintaining a solid waste management plan that places an emphasis on waste reduction and recycling programs. Enforcement and regulatory responsibilities are assigned to cities, counties, or jurisdictional health departments, depending on the specific activity and local preferences.

The Minimum Functional Standards for Solid Waste Handling (Chapter 173-304 of the Washington Administrative Code) were promulgated by Ecology under the authority granted by Ch. 70.95 RCW. This chapter has now been superceded by Ch. 173-351 WAC, Criteria for Municipal Solid Waste Landfills, which contains the current standards for landfills, and Ch. 173-350 WAC, Solid Waste Handling Standards, which addresses the operational and other requirements for recycling and composting facilities as well as inert and special purpose landfills.

Ch. 36.58 RCW, Solid Waste Disposal, delineates the counties' rights and responsibilities regarding solid waste management, including the authority to establish solid waste *disposal* districts (Sections 36.58.100 through 36.58.150) as well as providing special authorization for contracting procedures for solid waste handling facilities (Section 36.58.090). The authority to establish solid waste *collection* districts is provided in Ch. 36.58A.

As described in Chapter 6, the Washington Utilities and Transportation Commission (WUTC) is a state agency that provides regulatory oversight for the waste hauling certificate (franchise) areas. Certificates are issued by the WUTC that allow private collection companies to operate in specified areas at approved rates, and in some cases these certificates are only for specific types of waste. The WUTC sets rates for the regulated haulers, and is the enforcement agency for rules and regulations specific to the certificate areas.

Other relevant State legislation includes Washington's Model Litter Control and Recycling Act. The Model Litter Control and Recycling Act (Ch. 70.93 RCW) and associated state regulations (Ch. 173-310 WAC) generally prohibit the deposit of garbage on any property not properly designated as a disposal site. There is also a "litter fund" that has been created through a tax levied on wholesale and retail businesses, and the monies from this fund are being used for education, increased litter clean-up efforts by the State, and grants to counties for litter and illegal dump clean-up activities. The State conducts litter cleanups on interstate and state highways, while County efforts are focused on local roads.

Additional state rules that impact solid waste management in Chelan County includes the ban on outdoor burning (see Section 5.2.5 for further details), and revisions to Ch. 70.93.060 RCW that provide stiffer penalties for littering and illegal dumping in rural areas. Recent amendments to state law (Ch. 46.61.655 RCW) also provide for stiffer penalties for not properly securing loads of waste and other materials.

Regional level: The Chelan-Douglas Health District (Health District) provides much of the regulatory oversight and enforcement in Chelan and Douglas counties. The Health District is the responsible local authority (per RCW 70.95.160) for issuing permits for solid waste facilities. The Health District also conducts inspections, addresses illegal dumping and conducts related activities.

The permit process for solid waste facilities requires an application and approval for new sites, and an annual review and renewal for existing permits. The application form requires information about the types of waste to be processed or disposed, environmental conditions of the area and an operations plan that must be approved by the Health District.

Local level: In Washington State, the primary responsibility for managing solid waste is assigned to local governments (Ch. 70.95.020 RCW). Under State law, counties must prepare comprehensive solid waste management plans and have a broad range of authority to design, construct and operate facilities and provide services, contract for such facilities or services, and generate revenue. County authority to operate solid waste collection services is very limited, however, and instead cities have significant powers in providing collection services.

In Chelan County, the local agencies involved in solid waste management include the Chelan County Public Works Department and various departments of each of the cities. Each entity has a particular area of operations, providing specific services to the residents within that area and enforcing specific rules and regulations. In addition, the Chelan County Solid Waste Council (SWC) and Solid Waste Advisory Committee (SWAC) play an important advisory role for the solid waste management system (see Section 1.6 for more details). Local rules that affect solid waste management include ordinances, land use plans and zoning codes.

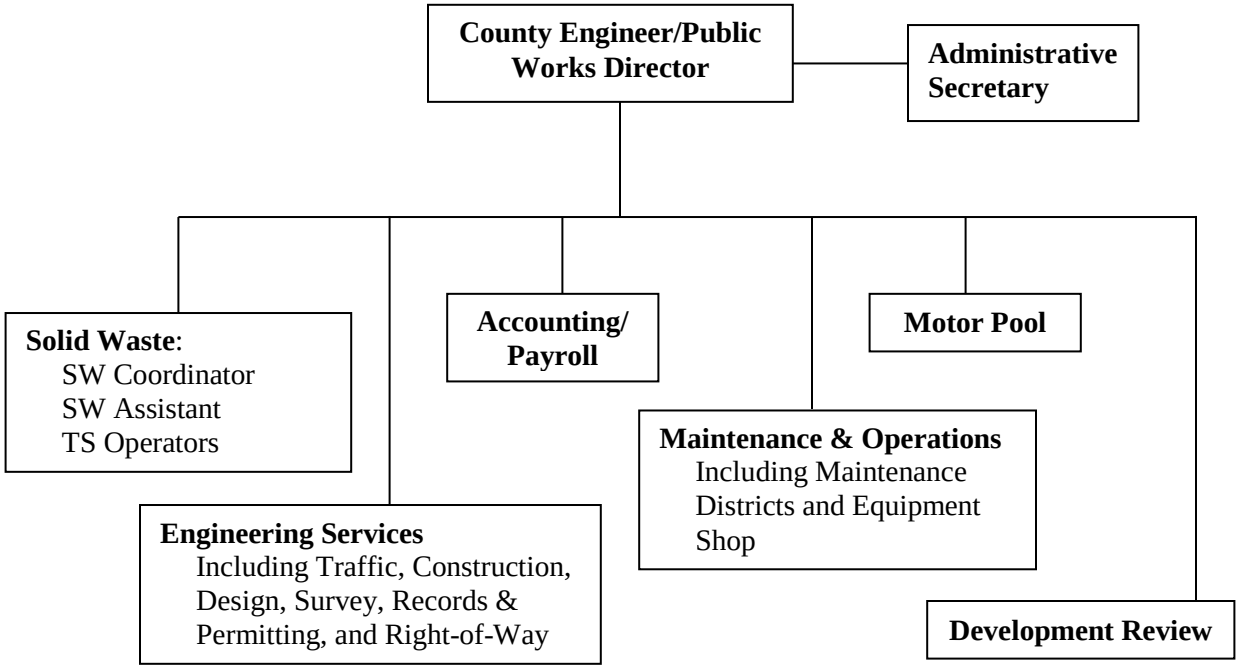
Chelan County Public Works Department: The Public Works Department is the agency primarily responsible for solid waste management activities for Chelan County. The Chelan County Public Works Department operates a solid waste transfer station and contracts with a private company for the operation of a second transfer station. The Public Works Department also conducts the annual Household Hazardous Waste Collection event. Staffing consists of a Solid Waste Coordinator, Solid Waste Assistant, full and part-time transfer station attendants, and assistance as needed from the Public Works Director, Assistant Director, Accountant, payroll clerk, receptionist, Treasurer, Prosecuting Attorney and Auditor. Figure 10.1 shows an organizational chart of the Public Works Department.

Chelan County utilizes two enterprise funds for the solid waste management system. The Solid Waste Fund is overseen by the Board of County Commissioners and the Solid Waste Planning Fund is overseen by the Solid Waste Council. The premise of an enterprise fund is that expenditures must be matched by revenues from service fees and other appropriate funding mechanisms. Revenues must be generated to pay for services. The Solid Waste Fund is used primarily for solid waste operations, including landfill closure costs, and funds are derived primarily from service fees at the two transfer stations. The Solid Waste Planning Fund is used primarily for recycling, waste reduction and hazardous waste programs, and revenues are derived from payments received from the cities (and from the County's other fund) through the Interlocal Agreement, plus grant funds from Ecology. This is an area of concern for funds with the state grants depleting. Proposed fees for residential and business solid waste collection by the haulers will pay Chelan County, which is used to pay the County's share into the Solid Waste Planning fund. Additional details on the budget can be found in Table 10.1.

County and City Planning Departments: The planning departments for Chelan County and each of the cities prepares comprehensive land use plans. They are also involved with conditional use permits that sometimes affect the location and/or operation of solid waste handling and disposal facilities.

Cities: There are five incorporated areas in the County: Cashmere, Chelan, Entiat, Leavenworth and Wenatchee. According to state law, cities may provide or contract for the collection, processing, recycling and disposal of all solid waste generated within the city limits (Ch. 35.21

Figure 10.1 Organizational Chart for Chelan County Public Works Department



RCW). Cities also have the authority to require that their residents have collection service. In addition, cities may set collection rates. The Public Works or Sanitation Departments for the five cities in Chelan County are involved in solid waste management in different ways. The cities of Wenatchee and Cashmere contract with Waste Management for garbage collection services and collect the fee for this service through their utility billings. The next two largest cities (Chelan and Leavenworth) conduct their own garbage collection systems. The city of Entiat allows Waste Management to directly serve the community.

Through the interlocal agreement, Chelan County and the five cities are responsible for the development, administration and implementation of the solid and moderate risk waste management programs within the county.

10.2.4 Service Gaps, Other Needs and Opportunities for Administration and Regulation

The stakeholder surveys conducted in the fall of 2004 for this planning process identified a few issues related to administration and enforcement:

- Inter-county compliance and enforcement problems.
- Illegal dumping, especially near Squilchuck and Manson and throughout the County for construction waste.

- Coordination between County, cities, private companies and local groups is an ongoing need.
- Financing is limited and service fees need to be instituted for solid waste planning.
- Year-round disposal for household and small quantity generator hazardous waste is needed. State funds currently are not adequate to provide sufficient service. Funding sources are needed to secure the solid waste planning, including hazardous waste disposal.

As more programs are developed (both public and private), the Chelan County Solid Waste Program needs to continue to coordinate the solid waste system. Faced with numerous and complex solid waste management issues, the County Solid Waste Program must maintain an organizational structure to implement programs efficiently and effectively throughout the County. Maintaining communication among the participating jurisdictions and private service providers is essential to ensure that programs are reasonably consistent with one another, do not leave gaps in programs or services, and duplicate services.

Cleaning up illegal dumps is an ongoing need for the County Solid Waste Office and the Health District staffing and expenses. This effort has been relatively stable for the past several years, due to State grant funds provided in the Community Clean-up program or other factors that may increase or decrease the amount of illegal dumping. New regulations may also increase the workload and responsibility for the Health District. Monitoring and enforcement responsibilities have increased, as environmental issues at solid waste sites are becoming more complex and demanding on the Health District's resources. These increased efforts place additional demands on staff and funds. Increased funding to allow the Health District to meet these needs may be necessary in the future.

Additional funding will be needed for recycling and disposal programs. Sustainable solid waste programs require funds for capital investments and maintenance, as well as staff, supplies, equipment and associated operations costs. A new facility to handle the hazardous waste and small quantity generator waste needs construction funds as well as operations and disposal costs. Proper handling of toxic waste is a priority in the state solid waste plan. There are opportunities for regional efforts involving neighboring counties (primarily Douglas, Grant, Kittitas and Okanogan counties). Many of these opportunities are in transfer and disposal systems but opportunities exist for other activities as well. There are also several opportunities to work with various local citizens groups to help implement and/or promote programs.

10.2.5 Alternative Methods for Administration and Regulation

The following options address the needs and service gaps identified in the areas of enforcement, administration and funding. Solid waste districts are discussed separately below, as districts could potentially address two or more types of options.

Enforcement options: Illegal dumping could be addressed through increased enforcement activities, universal (mandatory) garbage collection and education. Increased enforcement would require additional funding for personnel and expenses. If needed, additional funding for enforcement activities could be derived from general funds, surcharges on tipping fees, special assessments, increased permit fees and/or increased fines for solid waste violators. Other methods to address illegal dumping could include approaches such as requiring repeat violators to participate on litter crews and video surveillance of "promiscuous" dump sites. Chelan County uses surveillance cameras at the Manson Recycle drop-off site. The monitoring of cameras takes significant staff time to record the perpetrator, copy pictures and deliver to the Sheriff's Office

Table 10.1 Chelan County Solid Waste Budget		
Solid Waste Fund	2015 [1]	2016 [1]
Revenues		
Tipping Fees Dryden Transfer Station	1,130,335	1,244,9711
Surcharge, Chelan Transfer Station	77,420	89,202
Brush Chipping	4,862	5,500
Grants	13,34044,527	46,020
Sales of Salvaged Materials and Misc.	8,200	1,274
Miscellaneous Revenues; equip sale,,	40	12,400
Tax Recovery		
	11,190	32,927
Expenses		
Salaries and Benefits	177,785	181,435
Supplies	12,240	14,800
Services and Charges	900,359	1,212,878
	70,638.	65,500
	,100	452,100
Payments to Other Funds; SWP fees	95,000	87,420
Taxes and Assessments	30,438	45,630
Beginning Fund Balance	247,195	233,109
Total Revenues	1,316,574	1,399,367
Total Expenses	1,330,660	1,659,763
Ending Fund Balance	233,109	27,287
Solid Waste Planning Fund		
Revenues		
Grants (Ecology)	375500	59,717
Interlocal Funds & Utilities	104,500	134,3400
Sales	240	216
Facilities Rentals	1,500	1,400
IMiscellaneous Revenue	4,243	2,348
Expenses		
Salaries and Benefits	109,207	110,242
Supplies	9,477	2,750
Services and Charges	300,978	15,875
Taxes and Assessments	298	210
Payments to Other Funds	18,930	11,891
Capital	240,925	78,445
Beginning Fund Balance	233,574	39,742
Total Revenues	485,983	303,956
Total Expenses	679,815	219,413
Ending Fund Balance	39,742	18,350

Notes:
All figures are in dollars.
1. Figures for 2015 and 2016 are the actual revenues and expenditures.

for enforcement. A critical factor for controlling illegal dumping is to clean up sites as soon as possible, or the sites tend to grow and become a longer term problem.

Implementation of universal garbage collection services could be achieved in several ways, but usually this is accomplished through some form of mandatory collection requirement. One of the more effective means of implementing mandatory garbage collection would be the formation of a collection district (see discussion of solid waste districts later in this section).

Education is an important aspect of addressing illegal dumping and related problems. Additional education efforts could emphasize to residents their responsibilities for proper solid waste management and the options that exist for properly handling garbage. One aspect of this might be to clarify the costs of garbage collection, to dispel the idea that it is significantly more expensive than self-hauling waste to disposal sites. To the extent that people are encouraged to sign up for garbage collection services, this approach could help prevent the accumulation of large amounts of waste in the unincorporated areas of the County.

Administrative options: Additional staff could be provided through a part-time or full-time position, or through interns or volunteers. The recommendations made by this plan that are contingent on additional staff (see Chapter 5) could conceivably be fulfilled by a part-time, temporary employee, although a full-time employee could also take on other duties and serve to further improve recycling and other programs in Chelan County.

Funding options: Solid waste programs in Chelan County are funded through a mixture of tipping fees, surcharges, funds provided by the cities pursuant to the interlocal agreement, State funds/grants and other sources. This system is working well but additional funds are needed to implement the recommendations shown in this Plan. Significant additional funding will be needed in particular for the recommended capital improvements such as the MRW and recycling facilities and the improvements to the transfer stations. Expenses for capital improvements can be funded through internal financing, general obligation bonds, revenue bonds, industrial development bonds and/or increased fees. Administration and enforcement expenses could be funded by assessments to collection systems, general funds and state funds/grants.

The more feasible funding options are discussed below.

Grants: The County and cities receive state allocations called grants only because counties must show substantial improvements to be eligible. The current grant allocations are an especially important part of the funding for existing programs, and are critical for future projects that do not generate significant revenue (such as Recycling drop off sites and the MRW facility).

Service fees and tipping fee surcharges: Service fees and tipping fee surcharges are currently used in Chelan County for solid waste facilities. More could be done, such as instituting a charge for users of used oil and antifreeze disposal at the transfer station sites. Service fees are a necessary funding mechanism for capital improvements at existing facilities. Fees and services charges should be periodically evaluated to determine if those amounts should be raised or lowered.

Collection service fees: A county can impose a fee on waste collection services operating in the unincorporated areas to fund the administration and planning expenses associated with the implementation of this Plan (RCW 36.58.045). This fee only requires 90 days notice to the hauler(s) and the WUTC. In the case of Chelan County, the use of this approach would be a logical addition to the funds collected from the incorporated areas (through the interlocal agreement with the cities, see next paragraph). Subscription rates for garbage collection services are fairly low in the

unincorporated areas, however, so the amount of funding derived from this approach will be easily implemented and minimal to the subscribers.

Interlocal agreements: An interlocal agreement is already being used as a source of funding for Chelan County solid waste programs, or a new agreement with a neighboring county could be used to implement new or expanded programs. This approach often has significant flexibility, plus the power of involving several entities in addressing a specific problem. Conditions addressed by interlocal agreements could include many of the same elements as addressed by collection and disposal districts, but could specifically include:

- Designating a city or county agency to act on behalf of the parties that sign the agreement.
- Designating a specific facility (or facilities) as the only acceptable repositories for waste (i.e., effectively creating flow control).
- Creating a system for sharing risks and liabilities.
- Addressing the financial arrangements for the solid waste management system.

Internal financing: This option involves collecting funds from whatever activity is being financed, thus paying for programs directly or from a capital improvements fund established expressly for this purpose. In this sense, it is similar to the above option, except that funds are generally collected in advance of the expenditure. Funds generated in surplus of the current needs of the system are placed in a capital improvement fund and then used later for capital improvements. This method is not well suited for financing large capital expenditures because of the long period of time required for the fund to reach the required size, but can be useful for small-scale projects, planning studies, and pilot programs.

General obligation bonds: General obligation bonds are often used for large municipal capital projects but are currently only rarely used for solid waste facilities. Revenue bonds (see below) are more commonly used, although general obligation bonds may pay a lower interest rate because the debt is backed up by the municipality in general rather than by a specific activity (i.e., less risk to investors).

Revenue bonds: Revenue bonds are similar to general obligation bonds except that repayment is guaranteed through funds collected from a revenue-producing activity, such as through a tipping fee or excise tax. Revenue bonds may require additional obligations such as a guarantee of a flow of material. Revenue bonds may also cost more than general obligation bonds (and thus require higher tipping fees or other charges) because repayment of a revenue bond is not tied to the county as a whole but rather to the revenue generated by a specific activity. This type of bond typically also requires that additional funds be collected to provide a safety factor against fluctuations in cash flow, which may lead to higher rate increases but may provide surplus funds for later use.

Loans: Various types of loans can be used to finance a new facility or other capital improvements that may be required to implement a new program. The principal and interest for the loans could then be repaid by service fees or other revenues. One type of loan that may be useful for solid waste projects is a low-interest loan from the Public Works Trust Fund. Of course, repayment process must be in place prior to the installation of a loan.

Industrial development bonds: For joint ventures between private enterprises and the County, industrial development bonds (IDB's) may be used for funding capital improvements. IDB's are particularly common in financing waste-to-energy projects, but other joint ventures may be amenable to this form of joint cooperation. There is a statewide cap for such bonds, so any project would have

to compete with other projects throughout the state. This type of funding is often implemented through an Industrial Development Authority.

Private funding: Private solid waste projects or private/public ventures can be financed through private sources. This method of funding capital improvements and programs may be more expensive than the previously mentioned programs due to higher interest rates and profit margins. The cost of privately financed projects could be recovered through charges to customers using the facility.

Enterprise funds: An enterprise fund is established under provisions of the Governmental Accounting Standards Board's 1987 Codification of Governmental Accounting and Financial Reporting Standards, Section 1300.104. Under these standards, a special fund is established and revenues collected are deposited in the fund. An enterprise fund is generally used for regular or periodic expenses, but occasionally surplus funds are accumulated in the fund. As funds accumulate, they may be used to provide for internal financing of less capital-intensive projects. The enterprise fund monies can also be obligated to repaying revenue bonds for large capital projects.

General fund: In this alternative, a solid waste budget is developed and approved through normal methods of raising funds for government activities, which generally means a portion of the tax revenues are directed to solid waste activities. The solid waste activities then need to compete on an annual basis with other projects for available funds.

Providing the required funds to establish solid waste programs under this alternative may require a general tax increase. In general, a tax increase is difficult to implement even for the most-needy programs, and no guarantee can be made as to its ability to be implemented. Without a tax increase, other local government programs would suffer to pay for enhanced solid waste activities.

An advantage of this alternative is that it allocates the cost of the solid waste system to all citizens of the participating jurisdictions. Disadvantages include the difficulty of establishing a budget and funding it, general fund financing of solid waste programs might hamper the establishment of a rate incentive for recycling, and this approach could make it more difficult to add future programs.

Solid waste districts: Chapters 36.58 and 36.58A RCW allow the establishment of waste *disposal* districts and waste *collection* districts, respectively, within a county. Either district can include the incorporated areas of a city or town only with the city's consent. A solid waste district (for collection or disposal) could centralize functions that are now handled by a variety of county and city agencies, but it may be difficult to develop a consensus on the formation and jurisdiction of either type of district. Either type of district may be able to alleviate illegal dumping and other problems, however, through the institution of mandatory garbage collection (for a collection district only) or different funding structures.

Ch. 36.58.040 RCW prohibits counties from operating a solid waste collection system, but the establishment of a solid waste *collection* district that can act in a similar capacity is allowed by Ch. 36.58A RCW. A collection district can be created following the adoption of a solid waste management plan that provides for this approach. A collection district does not appear to possess taxing authority but can assist with the collection of fees due to a private hauler and can use the normal procedures (liens) to collect unpaid fees (Ch. 36.58A.040 RCW).

A solid waste *disposal* district is a quasi-municipal corporation (i.e., an agency that exhibits some of the functions of a public agency and also some of the functions of a corporation, but that is not incorporated) with taxing authority set up to provide and fund solid waste disposal services. A disposal district has the usual powers of a corporation for public purposes, but it does not have the power of eminent domain (i.e.,

the ability to condemn and assume ownership over private property). The County legislative authority (i.e., the Board of County Commissioners) is the governing body of the solid waste disposal district.

Ch. 36.58.130 RCW allows a *disposal* district to provide for all aspects of solid waste disposal. This includes the processing and conversion of waste into useful products, but specifically excludes authority for the collection of residential or commercial garbage. A disposal district may enter into contracts with private or public agencies for the operation of disposal facilities, and then levy taxes or issue bonds to cover the disposal costs. Thus, a disposal district established in Chelan County could assess each resident or business (in incorporated areas only with the city's approval) a pro rata share of the cost of disposal. This could help to discourage illegal dumping by covering at least part of the disposal cost through mandatory payments, so that the additional expense for proper disposal would not be as high as it is currently. In other words, the assessment by the disposal district would be paid regardless of where the resident or business dumped the waste or whether it was self-hauled or transported by a commercial hauler, and the latter two options would be less expensive than current fees by the amount of disposal costs paid by the disposal district's assessment.

Ch. 36.58.140 RCW states that a *disposal* district "may levy and collect an excise tax on the privilege of living in or operating a business in the solid waste disposal taxing district, provided that any property which is producing commercial garbage shall be exempt if the owner is providing regular collection and disposal." The district has a powerful taxing authority, since it may attach a lien to each parcel of property in the district for delinquent taxes and penalties, and these liens are superior to all other liens and encumbrances except property taxes.

The funds obtained by a *disposal* district may be used "for all aspects of disposing of solid wastes...exclusively for district purposes" (Ch. 36.58.130 RCW). Potential uses include:

- Defraying a portion of the present cost of disposal.
- Subsidizing waste reduction/recycling activities.
- Subsidizing the Household Hazardous Waste Collection Center and related programs.
- Closure and post-closure costs for the old landfill and for other solid waste facilities.
- Solid waste planning.
- Cleanup of roadside litter and solid wastes illegally disposed of on unoccupied properties within the district.
- Public information and education about waste reduction and recycling.

This Plan does not provide a recommendation for or against districts, in recognition of the fact that it may or may not be desirable to consider districts in the future as conditions warrant.

10.2.6 Evaluation of Alternatives for Administration and Regulation

Alternatives should be evaluated using the following criteria.

- **Public acceptability**: This criterion measures how receptive the public (or the private sector, depending on the alternative being considered) will be to the program. Issues such as convenience and willingness to participate are considered.

- **Ability to be funded by a variety of sources**: Alternatives will be evaluated according to the variety of funding and implementation mechanisms available (i.e. grants, private sector involvement or community volunteer efforts).

  The solid waste management system in the County is mostly operated by the private sector, which limits the revenue sources available to fund new programs. Because Chelan County does not have control over the entire solid waste collection and disposal system (and the corresponding revenues), it is important to pursue programs that can be funded from a variety of sources. For instance, Ecology offers grant monies that could continue to support recycling facilities. Grants are only available on an outcome basis and measured amounts of recycled materials is available.

- **Local staff time and availability**: The degree to which the alternative can be incorporated into the workload of existing staff is an important factor. Several of the alternatives would require a significant amount of staff time to implement, and so would be difficult or unlikely to be conducted given current conditions.

- **Cost-effectiveness**: The degree to which the alternative is effective in reducing waste at a reasonable cost is also an important factor. The SWC and the SWAC support programs that can effectively improve the results of waste diversion programs.

A summary of the evaluation of administrative and regulatory alternatives is presented in Table 10.2.

Table 10.2 Evaluation of Administrative and Regulatory Alternatives

Alternative	Public Acceptability	Funding Flexibility	Staff Availability	Cost-Effectiveness[1]	Conclusion
Illegal dumping enforcement	High	Low	Low	Low	Continue as is currently done
Mandatory collection	Very Low	Low	Low	Medium	Don't pursue
Collection service fees	Medium	High	High	High	Implement
Increased staffing	Medium	Low	Low	High	Should pursue
Increased funding	Low	High	Low	Medium	Should pursue
Designate Dryden Transfer Station as only repository for Southwest County waste.	Medium	High	High	High	Implement
Solid waste collection district	Low	Medium	Low	Medium	Don't pursue
Solid waste disposal district	Low	Medium	Low	Medium	Don't pursue

Note: 1. Based on estimated costs and increased diversion rates. Hard data on the effectiveness of administration and regulation is not available.

10.2.7 Recommendations for Administration and Regulation

The recommendations for administration and regulation are:

A1) Provide adequate staffing for solid waste programs.

Adequate staffing is critical to the development and implementation of new and existing programs.

A2) Continue to improve interagency coordination and oversight.

Several different jurisdictions and agencies, including the Department of Ecology, Health District, Chelan County and the five cities, are involved in various aspects of solid waste management. Sharing information and resources between these different groups will increase the efficiency and effectiveness of all programs.

A3) Designate County transfer stations, Dryden and Chelan, for only repositories for waste in the areas designated.

Designated areas required to utilize the area transfer station. Secure and stable funding is necessary to continue to provide diversion at the transfer station for commodities, including brush and scrap metal, composting and hazardous waste, and to implement programs within the Solid Waste Management Plan.

A4) Evaluate whether facilities and programs will be managed publicly or privately, when necessary.

The public and private sectors each have their own advantages and disadvantages regarding operating facilities and programs for solid waste. An objective, balanced evaluation of the best choice should be made when considering new (or even existing) solid waste facilities and programs. Opportunities for joint public-private arrangements should also be considered whenever possible.

A5) Develop ordinances, as needed, to enhance the solid waste management system.

Additional ordinances for Chelan County and/or the Health District may be necessary due to local problems or changes in state and federal regulations.

A6) Impose Collection Service Fee.
Impose a fee on waste collection services operating in the unincorporated areas to fund the administration and planning expenses associated with the implementation of this Plan (RCW 36.58.045).

A7) Continue to apply for grant money for the funding of solid waste programs.

Grants, especially those administered by Ecology, are an important funding source. Additional grant funds are necessary for existing and proposed activities.

10.2.8 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Administration and Regulation

The first recommendation above requires an additional staff person to fulfill the extra duties associated with several of the recommendations in other chapters of this Plan. This staff person, and other expenses associated with the recommendations in other chapters, will require additional funds. The remaining recommendations shown above make use of existing staff and funds, and generally are existing activities that should continue to be conducted throughout the planning period.

The recommended sources of funding for the various capital improvements and new activities (from the other chapters of this Plan) are shown in Table 10.3. Only those recommendations with significant additional expense (above current funding levels) are shown in the table. Other recommendations, for continuing ongoing programs and similar activities, are not shown in Table 10.3.

Table 10.3 Recommended Financing Methods

Capital Expense or Program	Estimated Cost	Funding Source
Additional staff to assist with implementing various recommendations in Chapters 3 through 5 and Chapter 9	$35,000	Establish collection fee upon haulers in the unincorporated areas. Re-evaluate the cities' and County contribution.
Complete construction of the Moderate Risk Waste Facility	$450,000 Unknown	Grant funds County funds Private funds
Secondary organics processing site in Chelan (#O2)	$150,000	Grants for initial expense, then service fees for site usage
Expand and improve composting at Dryden site (#O4)	$12,000	Existing county funds
Develop an MRW facility (#MRW1)	$300,000 or more	Grants
Install stormwater drainage at Dryden Transfer Station (#F2)	$2,000	Existing County funds
Install gutters at Dryden Transfer Station (#F3)	$5,000	Existing County funds
Install scale at Chelan Transfer Station (#F7)	$186,500	User fees (increased tipping fee)
Expand Chelan Transfer Station (#F9)	Up to $473,500	Internal financing through increased tipping fee (set aside and accumulate funds for future use)

10.3 PUBLIC EDUCATION

10.3.1 Introduction

Public education is defined to include activities that disburse information and/or motivate people to act in a certain manner. The information can be targeted at a particular group (such as the residents of a specific city or area) or sector (residential or commercial), or can be prepared for a broader audience (all of the residents and businesses within the County). Examples of public education activities include informing people and businesses of the open hours for local disposal facilities, or encouraging them to recycle their waste oil instead of disposing of it improperly.

General public education and information programs are described in this section. Public education programs for specific elements of the solid waste system (recycling, composting, garbage collection and disposal) are also described in the chapters dealing with those activities.

10.3.2 Goals and Objectives for Public Education

The primary public education goal is to develop a program that encourages waste reduction and recycling. Specifically, Chelan County's public education objectives include the following:

- Ensure residents and businesses are aware of options for reuse, recycling, and composting.
- Promote special collections and annual events.
- Assist the cities and private collection companies with regular public information efforts.

10.3.3 Existing Public Education Programs

Public education is critical to realizing recycling and waste reduction goals. It is an important method of achieving the behavioral and attitude changes required for participation in recycling and composting programs. Chelan County, private haulers and other groups have established a number of public education and outreach programs supporting waste reduction and recycling activities. These programs encourage waste reduction and recycling activities by promoting behavioral changes in residents.

Chelan County staff provides information to schools and the general public on request. Educating children about waste reduction and recycling at school has proven to be a successful approach to reaching the public, but Chelan County staff has limited resources to make presentations on solid waste. Many teachers incorporate lesson plans on these topics, and materials are available that meet current educational standards. Citizens groups and others have worked with schools to institute recycling education.

Local environmental groups provide educational waste reduction presentations at booths in local fairs. The Salmon Festival in Leavenworth has a tremendous amount of education programs and invites the County Solid Waste office as well as volunteer groups to sponsor a booth on methods of reducing waste. The Chelan Work Group has also been active in coordinating a fair on Earth Day that focuses on reducing toxic materials. The County is open to work cooperatively with other jurisdictions and local groups to effectively provide solid waste information to the public.

10.3.4 Service Gaps, Other Needs and Opportunities in Public Education

More needs to be done in the area of public education and information distribution, but funding for these activities is limited or non-existent. Education is critical to the success of any waste diversion program. More comprehensive education about waste diversion options for residents and businesses, including the availability and requirements for curbside recycling, is needed.

Several opportunities exist for public education activities (some of these are already in use), including:

- Cooperative arrangements with the haulers, cities and others to distribute information.
- Educational materials on how waste diversion activities fit into broader issues, such as sustainability, global warming and preservation of salmon habitat.
- Educational materials on costs/benefits of various waste reduction activities or methods.
- Information on the fate of recycled materials and the benefits of purchasing recycled products.
- Use of free publicity, such as public access television.
- Targeting special groups, such as businesses or legislators.
- Efforts to address illegal dumping problems, including possible fines.

To be effective, public education methods need to be tailored to specific groups and programs. In Chelan County, messages for the general public should be bilingual (Spanish and English).

Garbage haulers are required by state law to distribute public education materials annually (Ch. 480-70-361(7) WAC). At a minimum, these notices must be distributed to current customers (for garbage and/or recycling) in the certificate (franchise) areas and must describe all of the service and options available for waste collection and recycling (including mini-can rates for residential customers). If a brochure is distributed by a local government directly to the public instead, then the hauler does not need to distribute a brochure as long as the minimum information described above is included. If a local government provides a brochure to the hauler, then the hauler must distribute those, and in this case the brochure may also address commercial recycling and waste reduction options offered by other companies and agencies. Brochures developed and distributed by the hauler are not required to present information on recycling and waste reduction programs offered by others.

10.3.5 Public Education Alternatives

Additional staffing: Additional staffing for Chelan County would allow more public education activities to be conducted, but the extra expense for this is hard to justify due to the difficulty of demonstrating the cost-effectiveness of public education. One way to address this would be to add staff through an intern program or low-cost approach, such as AmeriCorps. An AmeriCorps staff person would cost about $5,000 per year. However a significant amount of time would be needed to train and direct staff by existing staff.

School programs: If funding allowed, County staff could provide the schools and the general community with additional information about waste reduction education programs. Ecology could also resume assisting with updating the state's curricula and incorporating it into today's school requirements. Service to schools

could be enhanced to include distribution of learning aids such as books, videos, and worksheets. A successful school education program must consider the following guidelines:

1) Involve children in the learning process.
2) Make the material personal and relevant to students.
3) Use a multi-media approach that engages a variety of senses.
4) Guide students to conclusions of their own.
5) Encourage students not only to think about the problem but also to take an active part in solutions.

Public education alternatives for businesses and industries: County staff, private consultants or citizen action group participants can offer assistance to business/organization waste generators, using fact sheets, a telephone hotline, directories, workshops, demonstration programs, newsletters and on-site consultations. These services can offer the private sector valuable assistance in gaining the experience and knowledge that can take months or years to develop.

If funding allowed, County staff could organize a waste reduction and recycling workshop or seminar each year, targeting specific businesses that generate large amounts of recyclable materials. These businesses could be identified by surveying local haulers for their recommendations for likely hotels, restaurants or supermarkets.

Guest speakers or consultants could be used to make the workshops most effective. Books, studies or videos that focus on commercial waste reduction/recycling could be made available. To encourage businesses to attend, businesses could be given a certificate of participation, a window decal with the recycling logo and use of the decal on printed advertising, and could also be offered a free waste audit and on-site assistance in establishing a waste reduction/recycling program. All recipients of the certificate could be promoted whenever possible as "good business citizens" in the local media. Businesses could be encouraged to share their knowledge with their customers through displays or other types of educational efforts.

The County could sponsor a trade show that would allow local businesses involved with waste reduction and recycling an opportunity to display their products and network with other businesses. Workshops focusing on specific industries and their solid waste needs could be held.

Awards and public recognition: Awards and public recognition can be used to develop public motivation to reduce waste at the source. Public recognition provides an opportunity for local jurisdictions to publicize innovative waste reduction programs, as well as encourage the business sector to participate in waste reduction activities. Leadership, innovation, volunteer activity, or setting a positive example for others to follow can be recognized by the counties and the municipalities. Local media could be encouraged to report on businesses that practice waste reduction, and possibly have a weekly column that focused on waste reduction and recycling issues.

General public education and information: Chelan County recognizes that education is an important method of changing the public's waste disposal habits. If citizens and businesses do not know of the solid waste problem and how they can help, then little progress on waste reduction or recycling is likely to occur.

Difficulties involved with public education programs include the diversity of individuals targeted to receive the information, multiple programs competing for public attention, and cost. The cost-effectiveness of public education programs can be difficult to measure. To combat these obstacles of measuring effectiveness, public education programs require ongoing coordination between public agencies, schools, businesses and the

general public, and monitoring of participants to measure changes in current practices and impacts of the educational events attended. The following list describes various methods for general public education:

- **Roadside signs/billboards** may be a possibility, though are not necessarily an inexpensive form of advertising. They could inform people about where recycling facilities are located.
- **Web pages** maintained by the County, cities, private haulers and others are an important source of information, especially because they can be accessed 24 hours a day.
- **Flyers** can be distributed at the transfer stations, County and other municipal buildings, libraries and the East Wenatchee Landfill.
- **Newspaper or bill inserts** tend to be an effective method for reaching large numbers of citizens.
- **Demonstration projects** are a means to provide hands-on information about programs.
- **Displays** can be placed in areas with heavy foot traffic, such as public buildings and libraries.
- **Information centers at community gathering places** can be an easy way for residents to gather information about available waste reduction options.
- **Booths at local trade shows and fairs** provide an opportunity for residents to learn first-hand about waste reduction from local government representatives.
- **Videos/slide shows** can be made available to community groups and trade associations for use in presentations.
- **Television and radio advertising and programs** are effective in reaching large audiences, but these can be expensive and the messages may reach beyond city or County boundaries to areas with different programs. The expense can be minimized by using public access television and public announcements, but quality programs still take a significant amount of staff time to create.
- **Magazine/newspaper articles** are effective in reaching large populations, and may be less costly than radio and television advertising.
- **Presentations to community groups and trade associations** provide personal contact with the community.

Each group of citizens exposed to the education programs should be encouraged to share information with friends and neighbors. "Word-of-mouth" has proven to be an effective method of creating behavioral change for recycling and other waste management activities.

10.3.6 Evaluation of Public Education Alternatives

Alternatives for public education should be evaluated using the following criteria.

- **Public acceptability**: This criterion measures how receptive the public (or the private sector, depending on the alternative being considered) will be to the program. Issues such as convenience and willingness to participate are considered. Based on similar programs throughout the country, it is expected that programs the general public will support include school education and general education.

- **Ability to be funded by a variety of sources**: Alternatives will be evaluated according to the variety of funding and implementation mechanisms available (i.e. grants, private sector involvement, or community volunteer efforts). The solid waste management system in the county is mostly operated by the private

sector, which limits the revenue sources available to fund new programs. Because Chelan County does not have control over the entire solid waste collection and disposal system (and the corresponding revenues), it is important to pursue programs that can be funded from a variety of sources. For instance, Ecology offers grant monies that could be used for the educational programs. Grants are only available on an outcome basis, however, and public education results are difficult to measure.

- **Local staff time and availability**: The degree to which the alternative can be incorporated into the workload of existing staff is an important factor. Several of the alternatives would require a significant amount of staff time to implement, and so would be difficult or unlikely to be conducted given current conditions.

- **Cost-effectiveness**: The degree to which the alternative is effective in reducing waste at a reasonable cost is also an important factor. The SWC and the SWAC support programs that can effectively improve the results of waste diversion programs.

A summary of the evaluation of public education alternatives is presented in Table 10.4.

Table 10.4 Evaluation of Public Education Alternatives

Alternative	Public Acceptability	Funding Flexibility	Staff Availability	Cost-Effectiveness[1]	Conclusion
AmeriCorps volunteer	High	Low	Low	Medium	Pursue as time permits
School programs	High	Low	Low	Medium	Conduct as time permits
Alternatives for businesses and industries	High	Low	Low	Medium	Conduct as time permits
Awards and public recognition	High	Low	Low	Medium	Conduct as time permits
General public education	High	Low	Low	Medium	Conduct as time permits

Note: 1. Based on estimated costs and diversion rates. Hard data on the effectiveness of public education is not available.

10.3.7 Recommendations for Public Education

The recommendations for public education are:

PE1) Continue and expand educational efforts to promote waste diversion methods.

Expanded educational efforts should use one or more of the following methods:

- Develop and distribute flyers, brochures and bill inserts.
- Prepare utility bill inserts.
- Present information at community gathering places or booths at local trade shows and fairs on request.
- Use press releases and articles.
- Give presentations to community groups and trade associations on request.
- Work with schools to promote waste reduction in school curricula.
- Coordinate with community action groups.
- Increased use of web pages, maintain frequently.

PE2) Encourage waste haulers and municipalities involved in collection to conduct annual (at a minimum) publicity for waste collection and recycling.

Publicity on waste collection and recycling opportunities from service-providers is an important source of information that often is noticed by a higher percentage of people than information from other sources. Ensure costs for various disposal can size and recycling.

10.3.8 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Public Education

The current level of public education activities can be continued at existing staffing and funding levels, but any expansion of the current efforts is contingent on additional staffing and funds. The additional staffing could be provided through the AmeriCorps program, an internship or similar approach.

Information from service-providers should be provided at least annually, and should be provided in a form that can be retained by the customer for future reference. This publicity needs to have detailed information on recycling opportunities available in the area, with contact numbers for additional information. This publicity needs to be more than a line or two on a customer's bill.

Any public education materials produced for general distribution should be bi-lingual (English and Spanish).

CHAPTER 11: IMPLEMENTATION PLAN

11.1 INTRODUCTION

This chapter of the Chelan County Solid Waste Management Plan (Plan) provides a list of the recommendations of this Plan, and a summary of the associated details such as cost, anticipated schedule and lead agency. These recommendations are generally intended to be conducted over the next six years, while also providing some guidance for as much as the next 20 years.

11.2 IMPLEMENTATION DETAILS FOR RECOMMENDED ACTIVITIES

Table 11.1 shows the recommendations from each of the previous chapters of the Plan, along with information on:

- **Lead Agency (or company)**: Each recommendation requires an agency or company to take charge of seeing that it is implemented in a timely fashion, and Table 11.1 shows the agency or company that is primarily responsible for implementing a recommendation. Rarely is a single agency or company completely responsible for implementing a specific recommendation, however, and often this responsibility is shared between two or more parties. Furthermore, as mentioned in other parts of this Plan, opportunities should always be sought to create public-private partnerships to accomplish the recommended activities.
- **Priority**: The level of priority is shown for each in case limited resources should prevent the implementation of all of the recommendations in the future.
- **Cost**: Cost information is shown where available. For many of the recommendations, the primary expense is staff time (either existing or new staff).
- **Funding source(s)**: the source for the funds to pay for recommended activities is shown in the last column. The funding sources shown are critical in many cases, in that funding from other sources is not possible or likely.

Table 11.2 provides additional information as to the schedule for implementation of the recommendations. Typically the schedule is only approximate or tentative, and the actual schedule will vary depending on the availability of staff time, financial resources and other factors. The schedule shown here is only intended as a guide.

Additional details for most of the recommendations can also be found in the appropriate chapter of this Plan. The recommendations are initialed according to the chapter where they are discussed for easier cross-reference to other parts of the Plan. Recommendation #WR1, for instance, is the first recommendation shown in the Waste Reduction chapter (Chapter 3).

Table 11.1 Implementation Summary for Recommendations				
Recommended Activity	**Lead Agency**	**Priority**	**Cost**	**Funding Source**
Chapter 3, Waste Reduction (see page 3-10): WR1) Expand waste reduction programs in governmental offices.	County, Cities	Medium	New staff time	New funds
WR2) Encourage waste reduction programs for commercial and industrial businesses.	County	Medium	New staff time	News funds
WR3) Support private reuse programs and businesses.	Cities, County	Medium	New staff time	New funds
Chapter 4, Recycling (see pages 4-14, 4-33, 4-34 and 4-37): R1) Adopt UGA's from Comprehensive Plan as urban areas for recycling and solid waste services.	County	High	NA[1]	NA[1]
R2) Adopt list of designated recyclable materials.	County	High	NA	NA
R3) Adopt minimum service levels for voluntary curbside recycling in unincorporated areas.	County	High	NA	NA
R4) Coordinate funding for education efforts with waste reduction programs.	County	Medium	New staff	New funds
R5) Provide information annually to local businesses and residents with both garbage and recycling rates.	County	Medium	New staff	New funds
R6) Continue curbside programs in Cashmere, Leavenworth and Wenatchee and voluntarily in unincorporated areas.	Cities	High	Existing	User fees
R7) Re-evaluate drop-box system in urban and rural areas.	County	High	Existing	Existing
R8) Encourage multi-family dwelling owners to contract with a private recycler.	Cities	High	Existing	Existing
R9) Encourage municipal permitting agencies to recommend that builders incorporate recycling collection areas into their building plans for multi-family and commercial buildings.	Cities	High	New staff time	New funds
R10) Continue and expand recycling programs in governmental offices.	County, Cities	Medium	New staff	New funds
R11) Develop a monitoring/reporting system.	County	Medium	New staff	Grants and private funds
R12) Investigate and encourage local, cost-effective markets.	Ecology, Private	Medium	New staff	Grants and private
R13) Support government policies.	County cities	Medium	Existing	Existing

R14) Encourage private companies to adopt procurement policies that promote the use of recycled materials.	County, Private	Low	New staff	Grants
R15) Evaluate any proposals for recycling through mixed waste processing.	County, Private	High	Existing	Existing funds

Notes: 1. NA = Not Applicable. There is no cost for adopting Recommendations #R1 through R3 because approval of this Plan automatically accomplishes that.

Table 11.1 Implementation Summary for Recommendations, continued

Recommended Activity	Lead Agency	Priority	Cost	Funding Source
Chapter 5, Organics (see pages 5-15 and 5-16):				
O1) Encourage private compost businesses to continue and expand collection and operations.	Private, County, City of Wenatchee	High	New funds	County/private
O2) Continue brush disposal and chipping program in the Chelan/Manson area and at the Dryden and Entiat sites.	County, Chelan	Medium	New staff	Grants, service fees
O3) Monitor septage disposal systems; consider development of future programs if necessary.	County, Health District, SWAC	Medium	Existing staff time	Existing
O4) Explore options and partnerships for land application of all types of organic materials.	County, Cities, State, Industry, Health Dist., WSU	High	New staff	County/CPG
O5) Continue to support agriculture efforts and disease monitoring conducted by the Chelan-Douglas Pest Board.	County	Medium	Existing	Existing
Chapter 6, Solid Waste Collection (see page 6-14):				
WC1) All areas of Chelan County should use collection systems and rates that encourage resource conservation.	County, Cities, Haulers	High	Existing staff	Municipal funds and service fees
WC2) Provide voluntary curbside recycling programs throughout the unincorporated areas of Chelan County.	Haulers, County	High	High	User Fees
WC3) Cities without tired rates should develop, review and propose a plan to change to a system of rates that promotes resource conservation and cost-effective recycling.	Cities	Medium	Existing	Existing
WC4) Regional Waste shall use local facilities.	Counties	High	Existing staff	New funds

Recommended Activity	Lead Agency	Priority	Cost	Funding Source
WC5) Implement a County solid waste planning fee upon solid waste collection haulers to collect from residents within the unincorporated area, RCW 36.58	County/Haulers	High	Existing Staff	User Fees
Chapter 7, Transfer and Disposal System (see pages 7-7, 7-15 and 7-20): T1) Construction improvements to the existing Transfer Stations should be prioritized and implemented. Dryden Transfer Station needs facility improvements with a second tipping floor. Chelan Transfer Station needs facility improvements with a scale house and scale as well as other associated infrastructure.	County	High	$1.3 million	User fees
T2) Continue to evaluate the need and implementation plan for transfer stations in Entiat, Manson and Plain.	County	Medium	Existing staff	User fees
WI1) Consider higher rates for out-of-county wastes.	County	Medium	$10,000 per year	Out-of-County fees
WE1) Explore options for waste export.	County	High	Consultant & existing staff	Existing user fees
L1) Identify potential sites for landfills/incinerator.	County	Medium	Existing staff	User fees
L2) Continually review and evaluate other landfill disposal options, including long haul or railway transportation.	County	Medium	Existing staff	User fees
L3) Inventory old dumpsites in Chelan County.	County, Cities, Health District	Low	Existing staff	Existing funds
Chapter 8, Moderate Risk Wastes (see page 8-14): MRW1) Develop a permanent MRW facility. **In Progress.**	County	High	$1.2 million	Grants, Unincorporated SW fee
MRW2) Continue to work with WSDA to collect agricultural wastes.	WSDA, County	High	Existing	Existing
MRW3) Explore methods to reduce MRW waste and associated costs of proper disposal.	County, Ecology, Cities, Private	High	New staff	Grants, Unincorporated SW fee

Recommended Activity	Lead Agency	Priority	Cost	Funding Source
Chapter 9, Special Wastes (see pages 9-4, 9-6, 9-12, 9-15, 9-19 and 9-20): S1) Continue asbestos disposal using approved and permitted methods.	County, Disposal Facilities, L & I, Health District	High	Existing	Existing
S2) Increase public education of proper disposal methods.	County	Medium	New staff time	Grants
S3) A central processing facility and/or salvage operation for construction and demolition wastes should be developed.	County, private companies	Medium	New staff time	Grants, unincorporated SW fees
S4) Other collection and chipping sites should be established at the transfer stations and nearby brush chipping operations for clean, not treated or painted, lumber.	County, private	Medium	New and existing	Gants and user fees
S5) More information should be distributed about the potentially dangerous materials that can be found during demolition activities.	County, Haulers, Health District	Low	Existing	Existing
S6) Continue current practices for agriculturally-contaminated soils and evaluate options on a case-by-case basis.	Ecology, Health District	Medium	Existing	Existing
S7) Encourage proper disposal of tires.	County, Health District	Medium	New staff	Grants
S8) Investigate engineering and other alternative for tires.	County	Low	Existing staff	Highway Grants
S9) Support the further research for disposal of used tires.	Ecology	High	Existing	Tire Trust
Chapter 10, Administration and Public Education (see pages 10-13 and 10-20): A1) Provide adequate staffing for solid waste programs.	County, Cities, Haulers, Health District	High	New staff	SW unincorporated transfer station user fees and grants
A2) Continue to improve interagency coordination and oversight.	County, Cities, others	Medium	Existing	Existing

Recommended Activity	Lead Agency	Priority	Cost	Funding Source
A3) Designate County transfer stations, Dryden and Chelan, for only repositories for waste in the areas designated.	County	High	Existing	User fees
A4) Evaluate whether facilities and programs will be managed publicly or privately, when necessary.	County	Medium	Existing	Existing
A5) Develop ordinances, as needed, to enhance the solid waste management system.	County	Medium	New Staff	SW unincorporated user fees
A6) Impose collection service fee.	County	High	$1/month	User fees
A7) Continue to apply for grant money for the funding of solid waste programs.	County	High	Existing and new staff	SW unincorporated T.S. user fees
PE1) Continue and expand educational efforts to promote waste diversion methods.	County	Low	Existing and new staff	Grants and user fees.
PE2) Encourage waste haulers and municipalities to produce annual (at a minimum) publicity for waste collection and recycling.	Haulers, Cities	High	Existing	User fees

Table 11.2 Implementation Timeline for Recommendations									
Recommended Activity	**2017**	**2018**	**2019**	**2020**	**2021**	**2026**	**2031**	**2037**	**Comments**
Chapter 3, Waste Reduction (see page 3-10): WR1) Expand waste reduction programs in governmental offices.	**Ongoing**								
WR2) Encourage waste reduction programs for commercial and industrial businesses.	Ongoing								
WR3) Support reuse programs and businesses		X	X	X	X	X	X	X	
Chapter 4, Recycling (see pages 4-14, 4-33, 4-34, and 4-37): R1) Adopt UGA's from Comprehensive Plan as urban areas for solid waste services.	X				X	X	X	X	Implementation of these three recommendations occurs with the adoption of the Plan.
R2) Adopt list of designated recyclable materials.	X				X		X		
R3) Adopt minimum service levels.	X				X		X		
R4) Coordinate funding for education efforts with waste reduction programs			X	X	X	X	X	X	
R5) Provide information annually to local businesses and residents with both garbage and recycling rates	X	X	X	X	X	X	X	X	
R6) Continue curbside programs in Cashmere, Leavenworth and Wenatchee and voluntarily in unincorporated areas.	X	X	X	X	X	X	X	X	
R7) Re-evaluate drop-box system in urban and rural areas.	X	X	X	X	X	X	X	X	
R8) Encourage multi-family dwelling owners to contract with a private recycler.									

Recommended Activity	2017	2018	2019	2020	2021	2026	2031	2037	Comments
R9) Encourage municipal agencies to recommend that builders incorporate recycling collection areas into their building plans for multi-family and commercial buildings.	X	X	X	X	X	X	X	X	City of Wenatchee and Chelan County are considering adopting in building permits.
R10) Continue to expand recycling programs in governmental offices.		X		X		X		X	Additional Staff needed to expand.
R11) Develop a monitoring/reporting system.	X	X	X	X	X	X	X	X	Annual reports to DOE.
R12) Investigate and encourage local, cost-effective markets.	X	X	X	X	X	X	X	X	
R13) Support government policies.	X	X	X	X	X	X	X	X	
R14) Evaluate recycle benefits and economics for source separated and single stream processing.	X	X	X	X	X	X	X	X	
R15) Evaluate any proposals for recycling through mixed waste processing.	X	X	X	X	X	X	X	X	
Chapter 5, Organics (see pages 5-15 and 5-16):									
O1) Encourage private compost businesses to continue and expand collection and operations	X	X	X	X	X	X	X	X	Contingent on additional staff.
O2) Continue brush disposal and chipping program at Chelan, Dryden, Leavenworth and Entiat.	X	X	X	X	X	X	X		
O3) Monitor septage disposal systems, consider development of future programs if necessary.	Ongoing								
O4) Explore options and partnerships for land application of all types of organic materials.	Ongoing								
O5) Continue to support composting education efforts conducted by WSU Extension Service.	Ongoing								

Recommended Activity	2017	2018	2019	2020	2021	2026	2031	2037	Comments
Chapter 6, Solid Waste Collection (see p. 6-14): WC1) All areas of Chelan County should use collection systems and rates that encourage resource conservation.	Ongoing								
WC2) Provide voluntary curbside recycling programs throughout the unincorporated areas of Chelan County	X	X							Start-up program
WC3) Cities without tiered rates should develop, review and propose a plan to change to a system of rates that promotes resource conservation and cost-effective recycling.		X	X	X	X	X	X	X	
WC4) Regional Waste shall use local facilities	X	X	X	X	X	X	X	X	
WC5) Implement a County solid waste planning fee upon solid waste collection haulers to collect from residents within the unincorporated area, CRW 36.58		X	X	X	X	X	X	X	
Chapter 7, Transfer and Disposal System (see pages 7-7, 7-15 and 7-20): T1) Construction improvements to the existing Transfer Stations should be prioritized and implemented.	X	X	X	X	X	X	X	X	
T2) Continue to evaluate the need and implementation plan for transfer stations in Entiat, Manson and Plain				X		X	X	X	
WI1) Consider higher rates for out-of-county wastes.	Periodic reviews as needed.								
WE1) Explore options for waste export.	X	X	X	X	X	X	X	X	

Recommended Activity	2017	2018	2019	2020	2021	2026	2031	2037	Comments
L1) Identify potential sites for landfills.		X	X	X	X	X	X	X	
L2) Continually review and evaluate other landfill disposal options, including long haul or railway transportation	X	X	X	X	X	X	X	X	
L3) Inventory old dumpsites in Chelan County	X	X	X	X	X	X	X	X	
Chapter 8, Moderate Risk Wastes (see pages 8-14):									Contingent on Grant funds.
MRW1) Develop a permanent MRW facility.	Ongoing								
MRW2) Continue to work with WSDA to collect agricultural wastes.	Ongoing								
MRW3) Explore methods to reduce MRW waste and associated costs of proper disposal.	Ongoing								
Chapter 9, Special Wastes (see pages 9-4, 9-6, 9-12, 9-15, 9-19 and 9-20):									
S1) Continue asbestos disposal using approved and permitted methods.	Ongoing								
S2) Increase public education of proper disposal methods.				X		X	X	X	
S3) A central processing facility and/or salvage operation for construction and demolition wastes should be developed.	X		X			X	X	X	Additional staff needed.
S4) Other collection and chipping sites should be established at the transfer stations and nearby brush clipping operations for clean lumber.		X		X	X	X	X	X	
S5) Distribute more information about potentially dangerous demolition materials.	X	X	X	X	X	X	X	X	Additional staff needed.
S6) Continue current practices for agriculturally-contaminated soils and evaluate options on a case-by-case basis.	Ongoing								

Recommended Activity	2017	2018	2019	2020	2021	2026	2031	2037	Comments
S8) Investigate engineering and other alternatives for tires.	X	X	X	X	X	X	X	X	Continued by highway engineering jurisdictions.
S9) Support research into disposal for tires.	Ongoing								
Chapter 10, Administration and Public Education (see pages 10-13, and 10-20):									
A1) Provide adequate staffing for solid waste programs.	Ongoing								Dependent on funding.
A2) Continue to improve interagency coordination and oversight.	Ongoing								
A3) Designate County transfer stations for only repositories for waste in the areas designated.	X	X	X	X	X	X	X	X	
A4) Evaluate whether facilities and programs will be managed publicly or privately.	Ongoing								
A5) Develop ordinances, as needed, to enhance the solid waste management system.	Ongoing								
A6) Impose collection service fee.	X	X	X	X	X	X	X	X	
A7) Continue to apply for grant money for the funding of solid waste programs.	Ongoing								
PE1) Continue and expand educational efforts to promote waste diversion methods.	Ongoing								Expansion contingent on additional staffing
PE2) Encourage waste haulers and municipalities to produce and mail publicity annually.	Ongoing								

GLOSSARY

AND REFERENCES

GLOSSARY

The following definitions are provided for various terms used in the *Chelan County Solid Waste Management Plan*:

Bi-monthly: twice per month.

Biomedical waste: infectious and injurious waste originating from a medical, veterinary, or intermediate care facility, or from home use.

Biosolids: includes sludge from the treatment of sewage at a wastewater treatment plant and semisolid waste pumped from a septic system that has been treated to meet standards for beneficial use.

Buy-back recycling center: a facility that pays people for recyclable materials.

Closed loop recycling: defined by state rules as "a cycle or system where secondary materials (wastes) are reclaimed and recycled back into the process from which they were originally generated."

Commercial solid waste: solid waste generated by non-industrial businesses, including waste from business activities such as construction; transportation, communications and utilities; wholesale trades; retail trades; finance, insurance and real estate; other services; and government. This term is also used to refer to all waste except residential, or all waste that is collected using dumpsters.

Commingled: recyclable materials that have been collected separately from garbage by the generator, but the recyclable materials have been mixed together in the same container (see also single stream).

Composting: the controlled biological decomposition of organic wastes to produce a humus-like final product that can be used as a soil amendment. In this plan, backyard composting means a small-scale activity performed by homeowners on their own property, using yard debris that they generate. Centralized composting refers to either drop-off or processing locations operated by a municipality or a business.

Corrugated cardboard (OCC): recyclable kraft liner cartons with corrugated inner liners, as typically used to ship materials. This generally does not include waxed cardboard or paperboard (cereal boxes, microwave and similar food boxes, etc.), but kraft grocery bags are included.

CPG: Coordinated Prevention Grants, a grant program administered by the Washington State Department of Ecology.

CPI: Consumer Price Index.

Curbside recycling: the act of collecting recyclable materials directly from residential generators, usually after the recyclable materials have been placed at the curb (or at the side of the street if no curb exists in the area) by the residents.

EPA: the United States Environmental Protection Agency; the federal agency responsible for promulgation and enforcement of federal environmental regulations.

Ferrous metals: materials that are predominantly (over 75% by weight) made of iron. Includes cans and various iron and steel alloys that contain enough iron such that magnets adhere to them, but for recycling this generally does not include paint cans or other containers that may contain hazardous residues.

Groundwater: water present in subsurface geological deposits (aquifers).

HDPE: high-density polyethylene, a type of plastic commonly used in milk, detergent, and bleach bottles and other containers. Also used for products that line and cap landfills.

Household hazardous waste: wastes that would be classified as hazardous due to their nature or characteristics, except that the amount is too small to be regulated. Includes aerosol cans, solvents, some paints, cleaners, pesticides, herbicides, compressed gases, oil, other petroleum products, car batteries and other materials.

Incentive rates: a rate structure for certificate (franchise) areas that incorporates the cost of recycling into the cost of garbage collection, such that customers who recycle can then be charged a lower monthly fee as an incentive.

Industrial waste: solid waste generated by various manufacturing companies. Includes waste generated by businesses that manufacture the following products; food, textile mill products, apparel, lumber, paper, printing, chemicals, stone, clay, glass, fabricated metals, equipment, and miscellaneous other products. Does not include hazardous wastes generated by these industries.

Inert wastes: includes wastes that are inert in nature, such as glass, concrete, rocks, gravel, and bricks.

Mixed paper: all other types of recyclable paper not included in newspaper, cardboard or high-grade papers. Includes materials such as "junk mail," magazines, books, paperboard (non-corrugated cardboard), and colored printing and writing papers.

Moderate risk wastes (MRW): household hazardous waste (see definition, above) and wastes produced by businesses that potentially meet the definition of a hazardous wastes except the amount of waste produced falls below regulatory limits.

MSW: municipal solid waste (see also "solid waste").

Mulching: 1) leaving grass clippings on the lawn when mowing; 2) placing yard debris, compost, wood chips or other materials on the ground in gardens or around trees and shrubs to discourage weeds and retain moisture.

Multi-family: a residential building containing four or more housing units.

Non-ferrous metals: materials predominantly made of copper, lead, brass, tin, aluminum, and other metals except iron.

PET: polyethylene terephthalate, a type of plastic. Commonly used to refer to 2-liter beverage bottles, although other containers are also increasingly being made from this material, including containers for liquid and solid materials such as cooking oil, liquor, peanut butter, and many other food and household products.

Public education: a broad effort to present and distribute public information materials.

Public information: the development of educational materials for the public, including brochures, videos, and public service announcements.

RCW: Revised Code of Washington.

Recycling: the act of collecting and/or processing source-separated materials in order to return them to a usage similar in nature to their previous use. The official definition of recycling per state rules is "recycling means transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration. Recycling does not include collection, compacting, repackaging, and sorting for the purpose of transport" (Ch. 173-350 WAC).

Recycling bins: the small household containers used to set out materials for curbside collection.

Reusable items: items that may be reused (or easily repaired), including things such as small electronic goods, household items such as dishes, and furniture.

Self-haul waste: waste that is brought to a landfill or transfer station by the person (residential self-haul) or company (non-residential or commercial self-haul) that created the waste.

SEPA: State Environmental Policy Act.

Septage: a semisolid waste consisting of settled sewage solids combined with varying amounts of water and dissolved materials. This waste is pumped from septic tanks.

Sewage sludge: the concentrated solids derived from the treatment of sewage at a municipal wastewater treatment plant (see also "biosolids").

Single stream: refers to the practice of placing all recyclable materials together in one container for curbside collection. This is similar to "commingled" except that glass bottles may or may not be included in a commingled mixture whereas glass bottles are definitely mixed with the other materials in single stream collection programs.

Solid waste: solid and semisolid wastes, including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, demolition and construction wastes, abandoned vehicles and parts thereof, discarded commodities, wood waste, and various special wastes.

Solid Waste Advisory Committee (SWAC): a group assisting Chelan County with this solid waste management plan and other activities, composed of representatives from the general public, private industry, and the cities.

Solid Waste Council (SWC): a group of elected officials that assists Chelan County with policy development and other activities related to solid waste, composed of representatives from each of the five cities and a county commissioner.

Source-separated: recyclable materials that have been removed from garbage or other forms of solid waste by the waste generator. This may or may not include keeping different types of recyclable materials separate from each other (see also "commingled" and "single steam").

Special wastes: wastes that have particular characteristics such that they present special handling and/or disposal problems.

SWAC: see Solid Waste Advisory Committee.

SWC: see Solid Waste Council.

Transfer station: an intermediate solid waste disposal facility at which solid waste is temporarily deposited to await transportation to a final disposal site.

UGA: Urban Growth Area.

WAC: Washington Administrative Code.

Waste reduction or waste prevention: reducing the amount or type of solid waste that is generated. Also defined by state rules to include reducing the toxicity of wastes.

WDOE: Washington State Department of Ecology.

WUTC: Washington Utilities and Transportation Commission.

Yard debris: includes leaves, grass clippings, brush and branches.

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APPENDIX A

INTERLOCAL AGREEMENT

Appendix A

INTERLOCAL AGREEMENT

Between Chelan County, City of Wenatchee, City of Chelan, City of Cashmere, City of Leavenworth and City of Entiat

FOR

The Planning, Administration and Coordination of Solid Waste and Hazardous Waste Management Programs Within Chelan County

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THIS AGREEMENT, made and entered into this 11th day of October 1993, by and between Chelan County, The City of Wenatchee, The City of Chelan, The City of Leavenworth, The City of Cashmere, The City of Entiat, municipal corporations of the State of Washington.

WHEREAS, There is an increased interest and concern within Chelan County for responsible regional solid waste management, waste reduction and recycling,

WHEREAS, Local governments are required to prepare and implement solid and hazardous risk waste plans under RCW 70.95.080, RCW 70.95.110 and RCW 70.105.220,

WHEREAS, The parties hereto wish to enter into a cooperative effort to plan for regional solid and hazardous risk waste management and waste reduction, recycling, and disposal programs for the residents and businesses of Chelan County, and

WHEREAS, The parties hereto recognize that funding resources must be created and allocated to support the administration of solid waste and recycling programs and to undertake County-wide waste handling, reduction and recycling information programs,

NOW THEREFORE, under the provisions and intent of the Interlocal Cooperative Act, R.C.W. 39.34 and in consideration of the mutual benefits contained herein, the member organizations agree as follows:

SECTION 1: AUTHORITY

This Interlocal Agreement is authorized by the respective local municipality's legislative body and each signatory to this agreement and any representative appointed by the municipalities to the Solid Waste Council or the Solid Waste Advisory Committee is authorized to act for and on behalf of the represented municipality. The parties to this agreement have and possess, both jointly and severally, the primary responsibility for

effective solid and hazardous risk waste management and planning under R.C.W 70.95 and R.C.W. 70.105.

SECTION 2: PURPOSE AND SCOPE OF AGREEMENT

The purpose of this agreement is to provide for county-wide planning and administration of solid waste and hazardous risk waste management plans and programs to meet the mandates imposed by R.C.W. 70.95 and R.C.W. 70.105 and the needs of Chelan County and the incorporated municipalities therein.

This agreement defines the terms, conditions, and responsibilities for the on-going planning and administration of solid waste and hazardous risk waste management programs and plans within the County and the municipalities.

SECTION 3: ADMINISTRATION

The County-wide solid waste program shall be administered by the Chelan County Department of Public Works under the guidance of the Solid Waste Council. The Solid Waste Council, as described in Section 7, shall establish policy and determine the level of funding and financial support to be budgeted by the participating municipalities. A Solid Waste Advisory Committee, as described in Section 8, will provide technical advice for the development of solid waste and hazardous waste management programs and for recycling and waste reduction programs.

SECTION 4: COUNTY/CITY RESPONSIBILITIES

A. <u>County Responsibilities</u>

The County shall be responsible for carrying out the county-wide solid waste, recycling, waste reduction, hazardous risk waste, and public information/education programs developed and approved in the annual budgets. The County shall also be responsible for the completion of a comprehensive solid waste management plan for Chelan County complying with RCW 70.95, and for carrying out the programs and requirements of the adopted Chelan County Comprehensive Solid Waste Management Plan.

B. <u>City Responsibilities</u>

Each City shall be responsible for the planning, development, implementation and funding of any solid waste, recycling, waste reduction, hazardous risk waste and related programs that are for the sole use and benefit of the City within their respective corporate boundary or their approved solid waste service area.

SECTION 5: SOLID WASTE MANAGEMENT PLANNING

The participants to this agreement authorize the preparation of a Comprehensive Solid Waste Management Plan for Chelan County which shall provide guidance for the long-range management of the County's and City's solid wastes, including collection, disposal, recycling, education programs, and regulations. The Chelan County Comprehensive Solid Waste Management Plan will utilize all of the applicable portions of the draft regional comprehensive solid waste management plan prepared under the administration of the Chelan-Douglas Solid Waste program.

SECTION 6: HAZARDOUS RISK WASTE MANAGEMENT PLANNING

The participants to this agreement authorize the completion of a Comprehensive Hazardous Risk Waste Management Plan for Chelan County pursuant to R.C.W. 70.105.220. The plan will be a regional plan prepared in cooperation with Douglas County and will provide guidance for the long-range management of the County's hazardous risk wastes. Chelan County may undertake hazardous risk waste reduction and information/education programs in cooperation with Douglas County under the authority of this agreement.

SECTION 7: SOLID WASTE COUNCIL

A Solid Waste Council will be formed to provide policy direction, to develop and propose annual solid waste programs and projects, to prepare annual budgets, and to resolve any conflicts that may arise in program or budget development. Each participating municipal corporation shall appoint one (1) elected official and one alternate as its representative to the Council. The Council will meet quarterly, or as needed, to:

1) review the status of current programs,

2) establish program goals, objectives and policies,

3) develop recommendations for new programs and proposals,

4) determine the level of financial support to be budget for regional solid waste programs by participating municipalities, and

5) assist in coordination of solid waste and recycling programs.

Each municipality shall have one vote on any issue or matter other than budgets and financial matters in which case the voting shall be weighted in proportion to the level of funding support provided by the respective municipalities. In addition, adoption of a

budget proposal for submittal to the Chelan County Board of Commissioners shall require a majority vote, with a minimum of four (4) positive votes of the Council.

SECTION 8: SOLID WASTE ADVISORY COMMITTEE (Technical Committee)

The Chelan County Solid Waste Advisory Committee (SWAC) is a technical advisory board created under authority of R.C.W. 70.95.165. The Solid Waste Advisory Committee will be created to assist in the development of programs, and make recommendations to the Solid Waste Council regarding solid waste and hazardous risk waste handling and disposal, and recycling programs. It is the intent that the committee represent a balance of interests in solid waste and recycling. The Solid Waste Advisory Committee shall include, one representative from each of the participating municipalities, one county resident or interested citizen, and representatives of public interest groups, business and industry, public health and safety, waste management industry, and the recycling industry.

The Solid Waste Advisory Committee shall meet quarterly or as often as necessary to accomplish their development of recommendations for solid waste and hazardous risk waste disposal programs, recycling programs, waste disposal and recycling policies and proposals for solid waste handling and disposal regulations. Quarterly meetings will be scheduled to cover the following general topics and other related solid waste/recycling materials:

1st Quarter	Review of programs and projects for the budget year. Report on previous years activities and reconciliation of prior year expenditures and agency payments.
2nd Quarter	Presentation of proposed solid waste and recycling program and project for consideration of funding for the next budget year and for grant fund applications. Status report and review of current programs.
3rd Quarter	Finalize proposals for grant fund application. Status report and review of current programs.
4th Quarter	Preparation of budget recommendations and programs for the upcoming budget year.

SECTION 9: ANNUAL BUDGET REVIEW AND APPROVAL

The County will prepare an annual solid waste management budget detailing the proposed expenditures and the anticipated revenues for the budget year. The proposed budget will be reviewed with the Solid Waste Advisory Committee whose recommendations will be presented to the Solid Waste Council in October. The Solid Waste Council will determine the programs and funding levels for the subsequent budget year (note: the budget year is coincident with the calendar year) and submit the proposed budget to the Chelan County Board of Commissioners by November 15th.

SECTION 10: BUDGETING

The Chelan County Board of Commissioners shall adopt an annual solid waste budget, not later than December 31st immediately prior to the budget year, in an amount agreed upon by the Solid Waste Council. The annual budget shall fund the adopted regional programs and the administrative costs to be incurred by the County in regional solid waste and recycling programs and projects. Each City shall budget its prorata share of the adopted solid waste program costs and make payment to the County as provided in Section 10. The prorata funding shares shall be determined by the ratio of each municipalities population to the total population of all participants to this agreement. Population figures used to determine the respective funding responsibilities will be those supplied annually by the Office of Financial Management.

The 1994 Solid Waste Program budget, for initial programming purposes, is estimated to be approximately $100,000. The final budget shall be established by the Solid Waste Council and the 1994 allocation to each participant will be based on the following percentages:

Chelan County	44.1%
City of Wenatchee	41.5%
City of Cashmere	4.7%
City of Chelan	5.6%
City of Entiat	0.9%
City of Leavenworth	3.2%

SECTION 11: PAYMENTS BY CITIES

The City's agree to pay their prorata share of the annual program costs, as established in the adopted budget, by making quarterly installments with payments due January 15th, April 15th, July 15th and October 15th.

SECTION 12: EFFECTIVE DATE, TERM AND DURATION

This agreement shall become effective immediately upon signature of all participating municipalities and shall continue in effect with each annual appropriation of the respective participants share of the annual budget.

SECTION 13: RESOLUTION OF CONFLICTS

It is the intent of this program that every attempt be made to resolve any conflict at the lowest administrative level possible. In the event a program conflict or dispute arises at the technical or program administration level it shall be referred to the Chelan County Director of Public Works for resolution. Any program conflict or dispute at the Solid Waste Advisory Committee level shall be referred to the Solid Waste Council for resolution, whose decision shall be the final remedy.

SECTION 14: AMENDMENT OF AGREEMENT

Amendments to this agreement shall be in writing and shall first be approved and ratified by all participating municipalities legislative bodies before the amendment becomes effective. The effective date of an amendment shall be immediately upon proper signature of all participating municipalities.

SECTION 15: CITY SPONSORED PROGRAMS AND PROJECTS

This agreement provides for the funding and administration of solid waste and recycling programs and projects of a 'regional' nature. Regional programs and projects shall be defined as programs or projects including two or more municipalities and can include a program or project sponsored jointly by a City and the County. Nothing in this agreement shall preclude any City from administering or implementing any solid waste or recycling program, including collection, disposal, education, cleanup, and billings within its jurisdiction and at its expense.

SECTION 16: TERMINATION

A municipality may terminate its participation in the regional solid waste program by giving written notice not later than December 1st of the preceeding year. Any municipality that has terminated its participation in the regional solid waste program may rejoin the program by written agreement and payment of its full share of the cost of the fiscal year budget on the same basis as though the municipality were a participant for the full budget year.

INTERLOCAL AGREEMENT

Between Chelan County, City of Wenatchee, City of Chelan, City of Cashmere, City of Leavenworth and City of Entiat

FOR

The Planning, Administration and Coordination of Solid Waste and Hazardous Waste Management Programs Within Chelan County

Dated this 11th day of October, 1993

APPROVED BY:

City of Cashmere — Mayor — Date 9-30-93

City of Chelan — Mayor — Date 10-6-93

City of Entiat — Mayor — Date 10-6-93

City of Leavenworth — Mayor — Date 9-14-93

City of Wenatchee — Mayor — Date Oct 6, 1993

Chelan County Board of Commissioners

Chairman — Date 10-11-93

ATTEST:
EVELYN L. ARNOLD
AUDITOR &
CLERK OF THE BOARD

Commissioner — Date 10 Oct 93

BY
Deputy Auditor/
Clerk of the Board

Commissioner — Date 10-11-93

APPENDIX B

SUMMARY OF RECOMMENDATIONS FROM 2007 PLAN

APPENDIX B
SUMMARY OF RECOMMENDATIONS FROM 2007 PLAN

The following table summarizes the results of the recommendations from the previous solid waste management plan.

Table B-1. Status of Recommendations from the 1994 Plan.

Waste Reduction, Chapter 3	Current Status
WR1 Expand waste reduction programs in governmental offices	Done to the extent described in Plan
WR2 Develop a waste reduction program for commercial businesses	Not completed
WR3 Develop procurement policies	Not completed
Recycling and Composting, Chapter 4	
R1 Adopt UGAs from Comprehensive Plan as urban areas for recycling and solid waste services.	Done
R2 Adopt list of designated recyclable materials	Done
R3 Adopt minimum service levels	Done
R4 Coordinate education efforts with waste reduction programs	Ongoing
R5 Provide information to assist local businesses	Done
R6 Continue curbside programs in Cashmere and Wenatchee	Done
R7 Expand drop-box systems in urban and rural designated areas	Done
R8 Encourage multi-family dwelling owners to contract with private recycler	Ongoing
R9 Encourage municipal permitting agencies to recommend that builders incorporate recycling collection areas into their building plans	Not completed
R10 Continue and expand recycling program in governmental offices	Ongoing
R11 Develop a monitoring/reporting system to track recycling	Done
R12 Continually investigate local, cost-effective markets	Ongoing
R13 Support government procurement policies	Ongoing
R14 Encourage private companies to adopt procurement policies that promote the use of recycled materials	Not completed
R15 Any proposals for recycling through mixed waste processing should be evaluated.	Ongoing
Organics, Chapter 5	
O1 Develop a central processing site for organic materials.	Done
O2 Develop a second, smaller processing site in Chelan	Not completed.
O3 Hire an additional, temporary staff person to implement these recommendations.	Not completed.
O4 Expand Dryden compost site	Done
O5 Monitor septage disposal systems, consider development of future programs if necessary	Ongoing
O6 Explore options and partnerships for land application of all types of organic materials	Done
O7 Continue to support composting education efforts conducted by WSU Cooperative Services	Done
Solid Waste Collection, Chapter 6	
WC1 All areas of Chelan County should use collection systems and rates that encourage resource conservation	Ongoing
WC2 Municipal and private haulers should use local transfer stations.	Ongoing
Transfer and Disposal System, Chapter 7	
T1 The recommendations made for Facilities Study for the transfer stations should be adopted as part of this Plan.	Done
WI1 Consider higher rates for out of county waste.	Ongoing
WE1 Explore options for waste export.	Ongoing
L1 Identify potential sites for landfills	Done

L2 Inventory old dumpsites in Chelan County	Ongoing
Moderate Risk Waste, Chapter 8	
MR1 Develop a permanent MRW facility	Ongoing
MR2 Continue to work with WSDA to collect agricultural wastes	Done
MR3 Explore methods to reduce MRW waste and associated costs of proper disposal	Ongoing
Special Wastes, Chapter 9	**Current Status**
S1 Continue asbestos disposal using approved and permitted methods.	Done
S2 Increase public education for residential generators of asbestos-containing wastes.	Done
S3 Increase education for proper disposal methods of biomedical wastes.	Done
S4 A central processing facility and/or salvage operation for construction and demolition wastes should be developed.	Not completed Construction wood chipping site - done
S5 More information should be distributed about the potentially dangerous materials that can be found during demolition activities.	Not completed.
S6 Continue current practices for agriculturally contaminated soils and evaluate options on a case-by-case basis.	Done
S7 Encourage proper disposal of tires	Done
S8 Investigate engineering and other alternatives for tires.	Done
S9 Conduct further research into a local disposal site for tires.	No longer applicable
Administration and Public Education, Chapter 10	
A1 Provide adequate staffing for solid waste programs	Not completed
A2 Continue to improve interagency coordination and oversight	Ongoing
A3 Support adequate Health District solid waste activities.	Done
A4 Evaluate whether facilities and programs will be managed publicly or privately	Done
A5 Develop ordinances, as needed, to enhance the solid waste management system	Ongoing
A6 Develop additional revenue sources to help fund solid waste programs	Ongoing
A7 Continue to apply for grant money for the funding of solid waste programs.	Ongoing
PE1 Continue and expand educational efforts to promote waste diversion methods.	Ongoing
PE2 Encourage waste haulers and municipalities to conduct annual (at a minimum) publicity for waste collection and recycling	Done
Facility Study	
Dryden Transfer station	
F1) Repair damaged pit floor	Done
F2 Improve stormwater drainage	Not completed
F3 Install gutters	DONE
F4 Install Scale	Done
F5 Expand compost site	No longer applicable
F6 Add storage area for compost on top of old landfill	Done
Chelan Transfer station	
F7 Install scale	NOT COMPLETED
F8 Add metal recycling	Done
F9 Expand Facility	Ongoing
South Wenatchee Transfer station	
F10 Add recycling Opportunities	Ongoing
F11 Add queuing space for traffic	Ongoing
F12 Expand facility	Done

Entiat Transfer Station	
F13 Periodically review need for facility	Done
Moderate Risk Waste Facility	
F14 Pursue development of an MRW facility	Ongoing
Leavenworth Recycling Facility	
F15 Use phased in approach for Leavenworth recycling facility	Done

APPENDIX C

WUTC COST ASSESSMENT QUESTIONNAIRE

COST ASSESSMENT QUESTIONNAIRE

Please provide the information requested below:

PLAN PREPARED FOR THE COUNTY OF: CHELAN

PLAN PREPARED FOR THE CITY OF: WENATCHEE, CHELAN, CASHMERE, ENTIAT LEAVENWORTH.

PREPARED BY: Brenda Blanchfield

CONTACT TELEPHONE: (509) 667-6631 **DATE:** 5/1/2017

DEFINITIONS

Please provide these definitions as used in the Solid Waste Management Plan and the Cost Assessment Questionnaire.

Throughout this document:

YR.1 shall refer to **_2017_.**
YR.3 shall refer to **___2019__.**
YR.6 shall refer to **__2022___.**

Year refers to (circle one) **calendar** (Jan 01 - Dec 31)
fiscal (Jul 01 - Jun 30)

1. **DEMOGRAPHICS:** To assess the generation, recycling and disposal rates of an area, it is necessary to have population data. This information is available from many sources (e.g., the State Data Book, County Business Patterns, or the State Office of Finance and Management).

1.1 Population

1.1.1 What is the **total** population of your County/City?

YR.1 74,853 YR.3 77,121 YR.6 79,458

1.1.2 For counties, what is the population of the area **under your jurisdiction?** (Exclude cities choosing to develop their own solid waste management system.)

YR.1 74,853 YR.3 77,121 YR.6 79,458

1.2 References and Assumptions

2. **WASTE STREAM GENERATION:** The following questions ask for total tons recycled and total tons disposed. Total tons disposed are those tons disposed of at a landfill, incinerator, transfer station or any other form of disposal you may be using. If other please identify.

2.1 Tonnage Recycled

2.1.1 Please provide the total tonnage **recycled** in the base year, and projections for years three and six.

YR.1 34,324 T YR.3 34,954 T YR.6 36,596 T

2.2 Tonnage Disposed

2.2.1 Please provide the total tonnage **disposed** in the base year, and projections for years three and six.

YR.1 91,200 Tons YR.3 93,963 T YR.6 96,811 T

2.3 References and Assumptions

3. **SYSTEM COMPONENT COSTS:** This section asks questions specifically related to the types of programs currently in use and those recommended to be started. For each component (i.e., waste reduction, landfill, composting, etc.) please describe the anticipated costs of the program(s), the assumptions used in estimating the costs and the funding mechanisms to be used to pay for it. The heart of deriving a rate impact is to know what

programs will be passed through to the collection rates, as opposed to being paid for through grants, bonds, taxes and the like.

3.1 Waste Reduction Programs

3.1.1 Please list the solid waste programs which have been implemented and those programs which are proposed. If these programs are defined in the SWM plan please provide the page number. (Attach additional sheets as necessary.)

IMPLEMENTED	PROPOSED
Brush Collection & Chipping	Moderate Risk Waste Fac. Const.
Hazardous Waste coll. Events	ModerateRiskWasteFacility Oper.
Drop box Recycling	Unincorporated Curbside Recycling

3.1.2 What are the costs, capital costs and operating costs for waste reduction programs implemented and proposed?

IMPLEMENTED

YR.1 $153,000 YR.3 $171,400 YR.6 $ 73,000

PROPOSED

YR.1 $474,000 YR.3 $400,000 YR.6 $233,000

3.1.3 Please describe the funding mechanism(s) that will pay the cost of the programs in 3.1.2.

IMPLEMENTED

YR.1 Interlocal funds, grant, user fee
YR.3 Grants,Uninc.Hauler fee, user fee
YR.6 Grants, Uninc. Hauler fee, user fee

PROPOSED

YR.1 Grant or State funds
YR.3 Uninc Haulers.fees, User fees, State grants
YR.6 Uninc.Haulers Fees, User fees, State grants

3.2 Recycling Programs

3.2.1 Please list the proposed or implemented recycling program(s) and, their costs, and proposed funding mechanism or provide the page number in the draft plan

on which it is discussed. (Attach additional sheets as necessary.)

IMPLEMENTED

PROGRAM	COST	FUNDING
Ch. 4, Manson drop Box	$32,000	Interlocal jurisdiction funds
Ch.8 Hazardous Waste Coll.	$82,000	Interlcl.juris.funds and state grant
Ch 5 Brush Collection & chip	$39,000	User fees and state grant

PROPOSED

PROGRAM	COST	FUNDING
Ch 8 ModerateRiskWasteFaciltyconst.	$474,000	State Grant or allocation
Ch. 8 MRW Operations	$220,000	Unincorp. Haulers fee, User fees and State grant
Ch 4 Unincorp. Curbside Recycling	341,000	Voluntary User Fees

3.3 Solid Waste Collection Programs

3.3.1 Regulated Solid Waste Collection Programs

Fill in the table below for each **WUTC regulated** solid waste collection entity in your jurisdiction. (Make additional copies of this section as necessary to record all such entities in your jurisdiction.)

WUTC Regulated Hauler Name: Waste Management of Greater Wenatchee
G-permit # 237

	YR. 3	YR. 6
RESIDENTIAL		
- # of Customers	17,542	17,894
- Tonnage Collected	18,805 T	19,183 T
COMMERCIAL		
- # of Customers	2,196	2,240
- Tonnage Collected	29,469 T	30,061 T

WUTC Regulated Hauler Name Zippy Disposal
G-permit # 121

	YR. 3	YR. 6
RESIDENTIAL		
- # of Customers	2,142	2,185
- Tonnage Collected	3,132 T	3,195 T
COMMERCIAL		
- # of Customers	298	304
- Tonnage Collected	2,583 T	2,635 T

WUTC Regulated Hauler Name **Mountain Barge Services, LLC**
G-Permit # 191

	YR. 3	YR. 6
RESIDENTIAL		
- # of Customers	0	0
- Tonnage Collected		
COMMERCIAL		
- # of Customers	1	1
- Tonnage Collected	520T	530 T

3.3.2 Other (non-regulated) Solid Waste Collection Programs Fill in the table below for other solid waste collection entities in your jurisdiction. (Make additional copies of this section as necessary to record all such entities in your jurisdiction.)

Hauler Name City of Leavenworth

	YR. 1	YR. 3	YR. 6
# of Customers	848	865	891
Tonnage Collected	2,640 T	2,693 T	2,747 T

Hauler Name City of Chelan

	YR. 1	YR. 3	YR. 6
# of Customers	1,249	1,274	1,299

Tonnage Collected	3,849 T	3,926 T	4,005 T

Hauler Name _____City of Cashmere

	YR. 1	YR. 3	YR. 6
# of Customers	994	Waste Management took over contract.	
Tonnage Collected	2,040 T		

3.4 Energy Recovery & Incineration (ER&I) Programs
(If you have more than one facility of this type, please copy this section to report them.)

3.4.1 Complete the following for each facility: NA, no such facility

Name: _____
Location: _____
Owner: _____
Operator: _____

3.4.2 What is the permitted capacity (tons/day) for the facility? _____

3.4.3 If the facility is not operating at capacity, what is the average daily throughput?

YR.1 _____ YR.3 _____ YR.6 _____

3.4.4 What quantity is estimated to be land filled which is either ash or cannot be processed.

YR.1 _____ YR.3 _____ YR.6 _____

3.4.5 What are the expected capital costs and operating costs, for ER&I programs (not including ash disposal expense)?

YR.1 _____ YR.3 _____ YR.6 _____

3.4.6 What are the expected costs of ash disposal?

YR.1 _____ YR.3 _____ YR.6 _____

3.4.7 Is ash disposal to be:
_____ on-site?
_____ in county?
_____ long-haul?

3.4.8 Please describe the funding mechanism(s) that will fund the costs of this component.

3.5 Land Disposal Program

(If you have more than one facility of this type, please copy this section to report them.)

NA, no such facilities.

3.5.1 Provide the following information for each **land disposal facility** in your jurisdiction which receives garbage or refuse generated in the county.

NA, no such facility.

Landfill Name: _____
Owner: _____
Operator: _____

3.5.2 Estimate the **approximate tonnage** disposed at the landfill by **WUTC regulated haulers.** If you do not have a scale and are unable to estimate tonnages, estimate using cubic yards, and indicate whether they are compacted or loose.[1]

YR.1 _____ YR.3 _____ YR.6 _____

3.5.3 Using the same conversion factors applied in 3.5.2, please estimate the **approximate tonnage** disposed at the landfill by other contributors.

YR.1 _____ YR.3 _____ YR.6 _____

3.5.4 Provide the cost of operating (including capital acquisitions) each landfill in your jurisdiction. For any facility that is privately owned and operated, skip these questions.

YR.1 _____ YR.3 _____ YR.6 _____

3.5.5 Please describe the funding mechanism(s) that will defray the cost of this component.

3.6 Administration Program

3.6.1 What is the budgeted cost for administering the solid waste and recycling programs and what are the major funding sources.

Budgeted Cost

YR.1 $277,478 YR.3 $305,919 YR.6 $337,276

Funding Source

YR.1 Grant, Tip fees, Interlocal funds
YR.3 Uninc. Haulers fee, tip fees, grants
YR.6 Interlocal funds, Uninc. Haulers fee, tip fees, grants

---

[1] Compacted cubic yards will be converted at a standard 600 pounds per yard. Loose cubic yards will be converted at a standard 300 pounds per cubic yard. Please specify an alternative conversion ratio if one is presently in use in your jurisdiction.

3.6.2 Which cost components are included in these estimates?

Salaries and benefits, 1 additional staff, and payments to other funds.

3.6.3 Please describe the funding mechanism(s) that will recover the cost of each component.
Existing funds will continue to be used. Required disposal at County transfer stations will be secured for ongoing solid waste planning programs. Tipping fees have been adjusted at the county transfer stations to reflect the needed update to infrastructure.
A new fee will be imposed upon the unincorporated haulers, $12.00 per customer per year to support the MRW facility operations.
Grants will continue to be sought for planning infrastructure and programs.

3.7 Other Programs

For each program in effect or planned which does not readily fall into one of the previously described categories please answer the following questions. (Make additional copies of this section as necessary.)

3.7.1 Describe the program, or provide a page number reference to the plan.
Chapter 4 Minimum Service Level raised to include voluntary curbside recycling.

3.7.2 Owner/Operator: Zippy Disposal

3.7.3 Is WUTC Regulation Involved? If so, please explain the extent of involvement in section 3.8. Yes, WUTC will be involved. Zippy will need to recover costs for curbside recycling and because it is voluntary, not mandatory, costs will be higher due to sporadic routes and collection sites.

3.7.4 Please estimate the anticipated costs for this program, including capital and operating expenses.

YR.1 $341,000. YR.3 $154,000 YR.6 $154,700.

3.7.5 Please describe the funding mechanism(s) that will recover the cost of this component.
Subscription fees

3.8 References and Assumptions (attach additional sheets as necessary)

4. FUNDING MECHANISMS: This section relates specifically to the funding mechanisms currently in use and the ones which will be implemented to incorporate the recommended programs in the draft plan. Because the way a program is funded directly relates to the costs a resident or commercial customer will have to pay, this section is crucial to the cost assessment process. Please fill in each of the following tables as completely as possible.

Table 4.1.1 Facility Inventory

Facility Name	Type of Facility	Tip Fee per Ton	Transfer Cost**	Transfer Station Location	Final Disposal Location	Total Tons Disposed	Total Revenue Generated (Tip Fee x Tons)
Chelan Transfer Station	Transfer Station	$114./T	Propietary	City of Chelan	Greater Wenatchee Regional Landfill	11,644 Tons	$1,327,416.
Dryden Transfer Station	Transfer Station	$86./ T	$17.40/T	Dryden, WA	GWRL	19,890 Tons	$1,710,540.
Wenatchee Transfer Station	Transfer Station	$89/T	Propietary	Wenatchee, WA	GWRL	4,840 Tons	Unknown

Table 4.1.2 Tip Fee Components

Tip Fee by Facility	Surcharge	City Tax	County Tax	Transportation Cost	Operational Cost	Administration Cost	Closure Costs
Chelan Transfer station	$2. Cy	0	0	Propietary	Propietary	NA	0
Dryden Transfer station	$.50 T	0	0	$348,000.	$167,000.	$54,000	0
Wenatchee Transfer Station	0	0	0	Unknown	Unknown	Unknown	0

Table 4.1.3 Funding Mechanism

Name of Program Funding Mechanism will defray costs	Bond Name	Total Bond Debt	Bond Rate	Bond Due Date	Grant Name	Grant Amount	Tip Fee	Taxes	Other	Surcharge
Recycling									100%	

MRW facility const.					State Capital Fund	$450,000				
Moderate Risk Waste Op					Coordinated Prevention grant (CPG)	$100,000	$200,000.	0		0
Administration							$277,000	0	0	0

Table 4.1.4 Tip Fee Forecast

Tip Fee per Ton by Facility	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Chelan Transfer Station	$114./ T	$116.28/ T	$118,61/T	$120,98/T	$123.40/T	$125.87
Dryden Transfer Station	$86./T	$86/T	$86/T	$90.30/T	$90.30/T	$90.30 /T
Wenatchee Transfer St.	$89./T	$90.78/T	$92.60 /T	$94.45/T	$96.34/T	$98.26/T

4.2 **Funding Mechanisms** summary by percentage: In the following tables, please summarize the way programs will be funded in the key years. For each component, provide the expected percentage of the total cost met by each funding mechanism. (e.g. Waste Reduction may rely on tip fees, grants, and collectoin rates for funding). You would provide the estimated responsibility in the table as follows: Tip fees=10%; Grants=50%; Collection Rates=40%. The mechanisms must total 100%. If components can be classified as "other," please note the programs and their appropriate mechanisms. Provide attachments as necessary.

Table 4.2.1 Funding Mechanism by Percentage

Year One

Component	Tip Fee %	Grant %	Bond %	Collection Tax Rates %	Other %	Total
Waste Reduction	100					100%
Recycling	90				10	100%
Collection	100					100%
ER&I	100					100%
Transfer	100					100%
Land Disposal	100					100%
Administration		20			80	100%
Other						100%

Table 4.2.2 Funding Mechanism by Percentage

Year Three

Component	Tip Fee %	Grant %	Bond %	Collection Tax Rates %	Other %	Total
Waste Reduction	100					100%
Recycling	90				10	100%
Collection	100					100%
ER&I	100					100%
Transfer	100					100%
Land Disposal	100					100%
Administration		20			80	100%
Other						100%

Table 4.2.3 Funding Mechanism by Percentage

Year Six

Component	Tip Fee %	Grant %	Bond %	Collection Tax Rates %	Other %	Total
Waste Reduction	100					100%
Recycling	90				10	100%
Collection	100					100%
ER&I	100					100%

Transfer	100					100%
Land Disposal	100					100%
Administration		20			80	100%
Other						100%

4.3 References and Assumptions

Please provide any support for the information you have provided. An annual budget or similar document would be helpful.

See Table 10.1 of the plan for information on the County's budget.

Tipping fees are assumed on proprietary facilities and management to increase 2% annually.

4.4 Surplus Funds

Please provide information about any surplus or saved funds that may support your operations.

Chelan County maintains a minimal fund balance in two enterprise funds. These are for extraordinary or capital expenses, but these are not to be viewed as surplus funds.

APPENDIX D

SEPA CHECKLIST

WAC 197-11-970 - Determination of Non-significance (DNS)

Date of Notice: May 6, 2017

Lead Agency/Proponent: Chelan County Public Works

Project: Chelan County Comprehensive Solid Waste Management Plan

Supporting Information: Information used to reach this determination is available for public review at Chelan County Public Works office located at 316 Washington Street, Suite, 402, Wenatchee, WA; on the Chelan County Public Works homepage, under Solid Waste; or by following: http://www.co.chelan.wa.us/solidwaste

Decision: The lead agency for this proposal has determined that it does not have probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

☐ There is no comment period for this DNS.

☐ This DNS is issued using the optional DNS process in WAC 197-11-355.

☒ This DNS is issued under WAC 197-11-340(2), the lead agency will not act on this proposal for a minimum of 14 days from the signature date below.

Comments must be submitted by May 28, 2017 by 5:00 P.M.

Please refer questions/comments relating to this determination or the proposal to:

Chelan County Public Works
Attn: Brenda Blanchfield, Solid Waste Coordinator
316 Washington Street, Suite 402,
Wenatchee, WA 98801
(509) 667-6415
Brenda.Blanchfield@co.chelan.wa.us

Responsible Official: Eric Pierson, P.E.
Position/Title: Chelan County Public Works Director/Engineer
Address: 316 Washington Street, Suite 402, Wenatchee, Washington 98801
Phone: (509)667-6415

Date: **Signature:** _____

Publish: Wenatchee World
Charge: Chelan County Public Works, 316 Washington St, Suite 402, Wenatchee, WA 98801

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background

1. Name of proposed project, if applicable:

   Chelan County Comprehensive Solid Waste Management Plan

2. Name of applicant:

   Chelan County Public Works

3. Address and phone number of applicant and contact person:

Chelan County Solid Waste
C/O Chelan County Public Works
Attn: Brenda Blanchfield, Solid Waste Coordinator
316 Washington Street, Suite 402
Wenatchee, WA 98801
(509) 667-6415

4. Date checklist prepared:

May 1 2017

5. Agency requesting checklist:

Chelan County

6. Proposed timing or schedule (including phasing, if applicable):

Chelan County is updating the comprehensive solid waste management plan. Implementation of the proposed plan will be phased over numerous years as time, opportunity, and funding presents itself. In the future, if individual projects/tasks related to this Comprehensive Plan require a type of government approval, staff will seek those specific approvals (i.e. environmental permitting, SEPA determination, NEPA analysis, etc.).

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

The Comprehensive Solid Waste Management Plan provides a foundation for future work and is required to be reviewed for updates every 5 years.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Besides this SEPA checklist and threshold determination, no other environmental information is required to be prepared. If a future task or project out of the Comprehensive Plan requires environmental documentation, it will be prepared at that time.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

Not applicable.

10. List any government approvals or permits that will be needed for your proposal, if known.

A SEPA checklist and threshold determination is required. Additionally, formal adoption of this Plan is needed by the Board of County Commissioner..

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this

page. (Lead agencies may modify this form to include additional specific information on project description.)

The Chelan County Comprehensive Solid Waste Management Plan recommends regional policies, programs, and projects to reduce the risk to people and environment from pollution in Chelan County. This plan presents a long-term vision for managing solid waste safely and properly, and addresses projects to address that vision. The plan recommends actions Chelan County and cities in the county may take to reduce solid waste and hazardous waste to protect, restore or enhance communities and environment.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

This Plan applies to the entire county of Chelan, including the cities of Wenatchee, Cashmere, Leavenworth, Entiat, and Chelan.

B. ENVIRONMENTAL ELEMENTS

1. Earth This section is not applicable. The Comprehensive Plan includes site specific capital construction or activities which will positively aid effect environmental elements.

a. General description of the site: Flat, rolling, hilly, steep slopes, mountainous, other

Not applicable.

b. What is the steepest slope on the site (approximate percent slope)?

Not applicable.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Not applicable.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Not applicable.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Not applicable.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Not applicable.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Not applicable.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Not applicable.

2. Air This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such environmental elements.

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Not applicable.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Not applicable.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Not applicable.

3. **Water** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such environmental elements.

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Not applicable.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Not applicable.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

Not applicable.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

Not applicable.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Not applicable.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

Not applicable.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

Not applicable.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Not applicable.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Not applicable.

2) Could waste materials enter ground or surface waters? If so, generally describe.

Not applicable.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

Not applicable.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Not applicable.

4. **Plants** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such environmental elements.

a. Check the types of vegetation found on the site: Not applicable.

____deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
____shrubs
____grass
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?
Not applicable.

c. List threatened and endangered species known to be on or near the site.
Not applicable.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
Not applicable.

e. List all noxious weeds and invasive species known to be on or near the site.
Not applicable.

5. **Animals** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such environmental elements.

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Not applicable.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site.
Not applicable.

c. Is the site part of a migration route? If so, explain.
Not applicable.

d. Proposed measures to preserve or enhance wildlife, if any:
Not applicable.

e. List any invasive animal species known to be on or near the site.
Not applicable.

6. **Energy and Natural Resources** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such environmental elements.

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.
Not applicable.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

Not applicable.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Not applicable.

7. **Environmental Health** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such elements.

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Not applicable.

1) Describe any known or possible contamination at the site from present or past uses.

Not applicable.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

Not applicable.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Not applicable.

4) Describe special emergency services that might be required.

Not applicable.

5) Proposed measures to reduce or control environmental health hazards, if any:

Not applicable.

b. Noise This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such environmental elements.

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Not applicable.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours will noise would come from the site.

Not applicable.

3) Proposed measures to reduce or control noise impacts, if any:

Not applicable.

8. **Land and Shoreline Use** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such elements.

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

Not applicable.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

Not applicable.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

Not applicable.

c. Describe any structures on the site.

Not applicable.

d. Will any structures be demolished? If so, what?

Not applicable.

e. What is the current zoning classification of the site?

Not applicable.

f. What is the current comprehensive plan designation of the site?

Not applicable.

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Not applicable.

i. Approximately how many people would reside or work in the completed project?

Not applicable.

j. Approximately how many people would the completed project displace?

Not applicable.

k. Proposed measures to avoid or reduce displacement impacts, if any:

Not applicable.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

Not applicable.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

Not applicable.

9. **Housing** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such elements.

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

Not applicable.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

Not applicable.

c. Proposed measures to reduce or control housing impacts, if any:

Not applicable.

10. **Aesthetics** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such environmental elements.

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

Not applicable.

b. What views in the immediate vicinity would be altered or obstructed?

Not applicable.

c. Proposed measures to reduce or control aesthetic impacts, if any:

Not applicable.

11. **Light and Glare** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such elements.

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Not applicable.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Not applicable.

c. What existing off-site sources of light or glare may affect your proposal?

Not applicable.

d. Proposed measures to reduce or control light and glare impacts, if any:
Not applicable.

12. **Recreation** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such elements.

a. What designated and informal recreational opportunities are in the immediate vicinity?
Not applicable.

b. Would the proposed project displace any existing recreational uses? If so, describe.
Not applicable.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
Not applicable.

13. **Historic and cultural preservation** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such environmental elements.

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe.
Not applicable.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.
Not applicable.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.
Not applicable.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.
Not applicable.

14. **Transportation** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such elements.

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.
Not applicable.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?
Not applicable.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

Not applicable.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

Not applicable.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

Not applicable.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

There will be an increase in the North County area of 1 recycle truck per week during times 7:00 a.m. to 11:00 a.m. No other traffic increase is expected as a result of the programs in this plan.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

Not applicable.

h. Proposed measures to reduce or control transportation impacts, if any:

No adverse impacts are expected as a result of 1 recycle truck once per week. Trucks are equipped with air emission controls.

15. **Public Services** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such elements.

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

Not applicable.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Not applicable.

16. **Utilities** This section is not applicable. The Comprehensive Plan does not include any site specific capital construction or activities which will effect such elements.

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

Not applicable.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Not applicable.

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee Brenda Blanchfield

Position and Agency/Organization Solid Waste Coordinator

Date Submitted: May 1, 2017

D. supplemental sheet for nonproject actions

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

The Comprehensive Solid Waste Management Plan will not increase discharges to water; emissions to air; production, storage, or release of toxic or hazardous substance; or production of noise. Individual tasks outlined in the Plan, such as capital projects, will be analyzed on an individual basis and include the above environmental elements.

Proposed measures to avoid or reduce such increases are:

Not applicable for this comprehensive plan.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

The Comprehensive Plan will not affect plants, animals, fish, or marine life. These environmental elements will be addressed on a project specific basis.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Not applicable for this comprehensive plan.

3. How would the proposal be likely to deplete energy or natural resources?

The Comprehensive Solid Waste Management Plan will not deplete energy or natural resources. Individual tasks outlined in the Plan, such as capital projects, will be analyzed on an individual basis and include the above environmental elements.

Proposed measures to protect or conserve energy and natural resources are:

Not applicable for this comprehensive plan.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

The Comprehensive Plan will not impact or affect environmentally sensitive areas or area designated for governmental protection. Projects will be analyzed on an individual basis

Proposed measures to protect such resources or to avoid or reduce impacts are:

Not applicable for this comprehensive plan.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

The Comprehensive Solid Waste Management Plan references existing Chelan County Plans, Solid Waste Plan does not impact any Shorelines of the State, and if a specific project is planned within a shoreline all local, state, and federal permits will be obtained before work will beg

Proposed measures to avoid or reduce shoreline and land use impacts are:

Not applicable for this comprehensive plan.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

This Comprehensive Plan proposes to add one additional recycle truck. Population growth will increase garbage demands and will cause an incrementally increase of trucks providing the service. Population increase of an average 1% per year shall cause the increased needs for garbage services, including recycle and garbage collection.

Proposed measures to reduce or respond to such demand(s) are:

All trucks are equipped with safety measures to prevent accidents. Measures to further prevent accidents include operations of curbside collection during the early morning hours, for 4:00 a.m. to 10:00 a.m. No further impacts are expected to occur on the transportation or public services and utilities.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The Comprehensive Solid Waste Management Plan has been carefully developed to ensure local, state, and federal requirements are met for solid waste planning in order to eliminate any potential conflicts. Examples include, Department of Ecology's Washington State Solid Waste Plan Guidelines 2010; and Chelan County's 2015 Comprehensive Plan.

APPENDIX E

RESOLUTIONS OF ADOPTION