



Chelan County
Solid Waste
Management
Plan

Final Draft
October 2006

FINAL DRAFT

**CHELAN COUNTY
SOLID WASTE
MANAGEMENT PLAN**

October 2006

Prepared for:

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ACKNOWLEDGMENTS

The Chelan County Public Works Department would like to thank the following organizations and individuals for their assistance in the development of this plan:

- Chelan County’s Solid Waste Council members, past and present, and the municipalities they represent.
- Chelan County’s Solid Waste Advisory Committee members, past and present, and the agencies and businesses they represented.
- the Chelan–Douglas Health District staff.
- Washington Department of Ecology staff.

Chelan County residents and businesses also contributed to this document through comments provided during public meetings and through various other channels. The Board of County Commissioners and the Public Works Department gratefully acknowledge this input by the citizens.

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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 and the cities (through their Public Works Departments and the Solid Waste Council), and the Solid Waste Advisory Committee (SWAC). The SWAC members represent the interests of their agencies and businesses, and as residents and members of the community they also 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 70.95.090) 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 1999). The Solid Waste Management Act specifies that this Plan must “be maintained in a current and applicable condition” through periodic review and revisions (RCW 70.95.110).

GOALS AND OBJECTIVES

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

- 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 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 by 2007.
- 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 to the waste generators in the planning area.
- 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 (2003) amount of solid waste generated in Chelan County is approximately 104,000 tons per year. Of this, an estimated 20% is diverted through recycling and other programs, while the remaining 80% (85,580 tons in 2003) is shipped to the Greater Wenatchee Regional Landfill.

The amount of waste generated in Chelan County is expected to increase to 139,300 tons per year by 2025. At the current recycling and composting rate, 27,900 tons per year of that future amount will be diverted by recycling and other methods, while 111,400 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 25% by 2010, the amount of waste disposed will remain about the same as in 2003 while the amount recycled and diverted will approximately double (increasing from 15,500 in 2003 to 29,300 in 2010). In 2025, there would be an additional 7,000 tons of waste per year that would be recycled and diverted instead of being disposed (leaving only 104,600 tons per year that would be landfilled) at a 25% recycling and diversion rate.

PROCESS AND SCHEDULE FOR ADOPTION 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 in April 2006. Once adopted by the county and the five cities, and then approved by the Department of Ecology, this will become the final plan.

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 the development of procurement policies.

Chapter 4: Recycling

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

- R1) Adopt UGA’s 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 education efforts with waste reduction programs.
- R5) Provide information to assist local businesses with recycling.
- R6) Continue curbside programs in Cashmere and Wenatchee.
- R7) Expand 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 examines existing and potential activities for composting, land application, and other methods for handling organics such as yard waste and biosolids. The following recommendations are made for improving organics management in Chelan County:

- O1) Develop a central processing facility for organic materials.
- O2) Develop a second smaller facility in Chelan.
- O3) Hire an additional staff person to implement these recommendations.
- O4) Expand Dryden compost site.
- O5) Monitor septage disposal systems, consider development of future programs if necessary.
- O6) Explore options and partnerships for land application of all types of organic materials.
- O7) Continue to support composting education efforts conducted by WSU Cooperative Service.

Chapter 6: 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, but a recommendation is being made for a refinement to the current system:

- WC1) All areas of Chelan County should use collection systems and rates that encourage resource conservation.
- WC2) Municipal and private haulers should use local transfer stations.

Chapter 7: Transfer and Disposal System

Transfer System: This Plan examines the system of transfer stations currently used in Chelan County, but these were also examined more thoroughly in a related effort, the *Solid Waste Facilities Study* (the recommendations from that study are provided later in this

section, and the complete study is shown in Appendix C). Hence, this chapter of the Plan contains only the following recommendation:

- T1) The recommendations made by the Facilities Study should be adopted as part of this Plan.

Waste Import and Export: Significant amounts of solid waste are being brought into Chelan County from other areas (“waste import”), consisting primarily of waste from Douglas County 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.

In-County Landfilling: Discussion of in-county landfilling led to the following recommendations:

- L1) Identify potential sites for landfills.
- L2) Inventory old dumpsites in Chelan County.

Chapter 8: Moderate Risk Wastes

Chapter 8 examines existing and potential practices for proper disposal of hazardous wastes from homes and businesses in Chelan County. Three recommendations are proposed, and the first of these is considered a high priority:

- MRW1) Develop a permanent MRW facility.
- 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

This Plan examines the sources and existing programs for six special waste streams, and concludes that five of these (all but industrial wastes) pose current or potential disposal problems. For these five waste streams, the following recommendations were developed.

Asbestos: Small amounts of asbestos-containing wastes continue to be created by demolition and other activities, leading to the following recommendations:

- S1) Continue asbestos disposal using approved and permitted methods.
- S2) Increase public education for residential generators of asbestos.

Biomedical Wastes: Syringes (“sharps”) and other biomedical wastes are occasionally found improperly disposed, leading to the following recommendation:

- S3) Increase education for proper disposal methods for biomedical wastes.

Construction and Demolition (C&D) Wastes: C&D wastes are generated in significant quantities but lack adequate recycling or cost-effective disposal options, leading to the following recommendations:

- S4) A central processing facility and/or salvage operation should be developed.
- S5) Information should be distributed about the potentially dangerous materials that can be found during demolition activities.

Contaminated Soils: There is a need for improved disposal options for contaminated soils, but the nature of this problem does not lend itself to a single solution, hence the following recommendation:

- S6) Continue current practices for contaminated soils and evaluate options on a case-by-case basis.

Tires: There is also a need for improved options for tires, leading to the following recommendations:

- S7) Encourage proper disposal of tires.
- S8) Investigate engineering and other alternative applications for tires.
- S9) Conduct further research into designating a local site for tire disposal.

Chapter 10: Administration and Public Education

Administration and Regulation: Discussion of administrative and regulatory needs for solid waste management led to several recommendations:

- A1) Provide adequate staffing for solid waste programs.
- A2) Continue to improve interagency coordination and oversight.
- A3) Support adequate Health District solid waste enforcement activities.
- 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) Develop additional revenue sources to help fund solid waste programs.
- A7) Continue to apply for grant money for the funding of solid waste programs.

Public Education: Discussion of public education programs concluded that these are important, leading to the following recommendation:

- 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.

Solid Waste Facilities Study

The *Solid Waste Facilities Study* was conducted concurrently with this *Solid Waste Management Plan*, and this Plan proposes adopting the recommendations from it. Those recommendations are shown below.

Dryden Transfer Station: Several of the alternatives and proposed solutions examined for the Dryden Transfer Station would be worthwhile to pursue, contingent on the availability of funding to accomplish these modifications. Specifically, the following recommendations should be considered:

- F1) Repair damaged pit floor.
- F2) Improve stormwater drainage.
- F3) Install gutters.
- F4) Install scale.
- F5) Expand compost site.
- F6) Add storage area for compost on top of old landfill.

Chelan Transfer Station: Each of the three main alternatives examined for the Chelan Transfer Station could help make this site more useful, but two require a substantial investment:

- F7) Install scale.
- F8) Add metal recycling.
- F9) Expand facility.

South Wenatchee Transfer Station: There are three improvements that should be considered for this private facility:

- F10) Add recycling opportunities.
- F11) Add queuing space for traffic.
- F12) Expand facility.

Entiat Transfer Station: The expense of constructing and operating a new facility to handle the relatively small amounts of waste generated in the Entiat area leads to a fairly high cost for garbage disposal, thus the following recommendation:

F13) Periodically review need to construct new facility.

MRW Facility: The Solid Waste Facilities Study examined the costs and advantages of constructing a permanent facility to collect hazardous waste. The study concluded that a permanent facility can operate more effectively and efficiently than the annual events, and thus provide more of a service to the community in controlling potential hazards associated with the chemicals that are collected, hence the following recommendation:

F14) Pursue development of an MRW Facility.

Recycling Facility for Leavenworth Area: The Solid Waste Facilities Study also examined facility-based solutions for additional recycling options in and around Leavenworth. The study concluded that additional collection opportunities are needed, that a fully-equipped facility would be expensive relative to current volumes, and so the following recommendation was made:

F15) Use phased-in approach for Leavenworth Recycling Facility.

IMPLEMENTATION SCHEDULE AND SUMMARY OF COSTS

Chapter 11 of the Plan provides a summary of the implementation details for the recommendations, including the lead agency, level of priority, cost, funding sources (see Table 11.1) and proposed timeline (see Table 11.2).

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 and applicable condition” through periodic review and revisions (RCW 70.95.110), hence the need for this Plan. This document is an update of the *1994 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). At a meeting on October 18, 2004, 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 has 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 1999). 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 twenty years.
- a program for the development of solid waste handling facilities that is consistent with this Plan and that 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.
- a program for surveillance and control.
- 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.
- 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 their first plan in 1972. Subsequent plans were adopted in 1982, which was a joint plan with Douglas County, and 1994.

1.4.1. The 1994 Chelan County Comprehensive Solid Waste Management Plan

The goal of the 1994 plan was “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 also adopted the regional landfill concept that continues in place today. Many, but not all, of the recommendations from the 1994 plan have been implemented. A summary of the recommendations from the 1994 plan and the status of those recommendations is 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. This Plan is intended to replace the 1991 *Moderate Risk Waste Management Plan*.

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 their 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 2004) addresses solid waste handling and disposal facilities through conditional use permits, 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.

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 Interlocal 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 October 18, 2004, 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
Greg Pezoldt	Chelan County
Brenda Harn	Chelan County
Lisi Ott	Citizen
Michelle Taylor	City of Cashmere
Larry Sweeney	City of Chelan
Bob Whitehall	City of Entiat
Mike Deason	City of Leavenworth
Dan Curry	City of Wenatchee
Susan Hyde	Health District
Richard Bates	Michelsen’s Recycling
Glen Sagdal	Tree Top
Richard Emmick	U. S. Forest Service
Ted Woodward	Waste Industry and Business
Glen Austin	Zippy Disposal

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

This 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 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 1994 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 (2005-2025). 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 April 2006 for public review and comment as well as Ecology and WUTC review. A public hearing was held on the Preliminary Draft Plan as part of that review process.

Comments received on the Preliminary Draft were reviewed with the SWAC on September 12, and then revisions were made to produce this Final Draft. Once adopted by the county and five cities, then reviewed and approved 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.

Figure 1.1. Planning Process

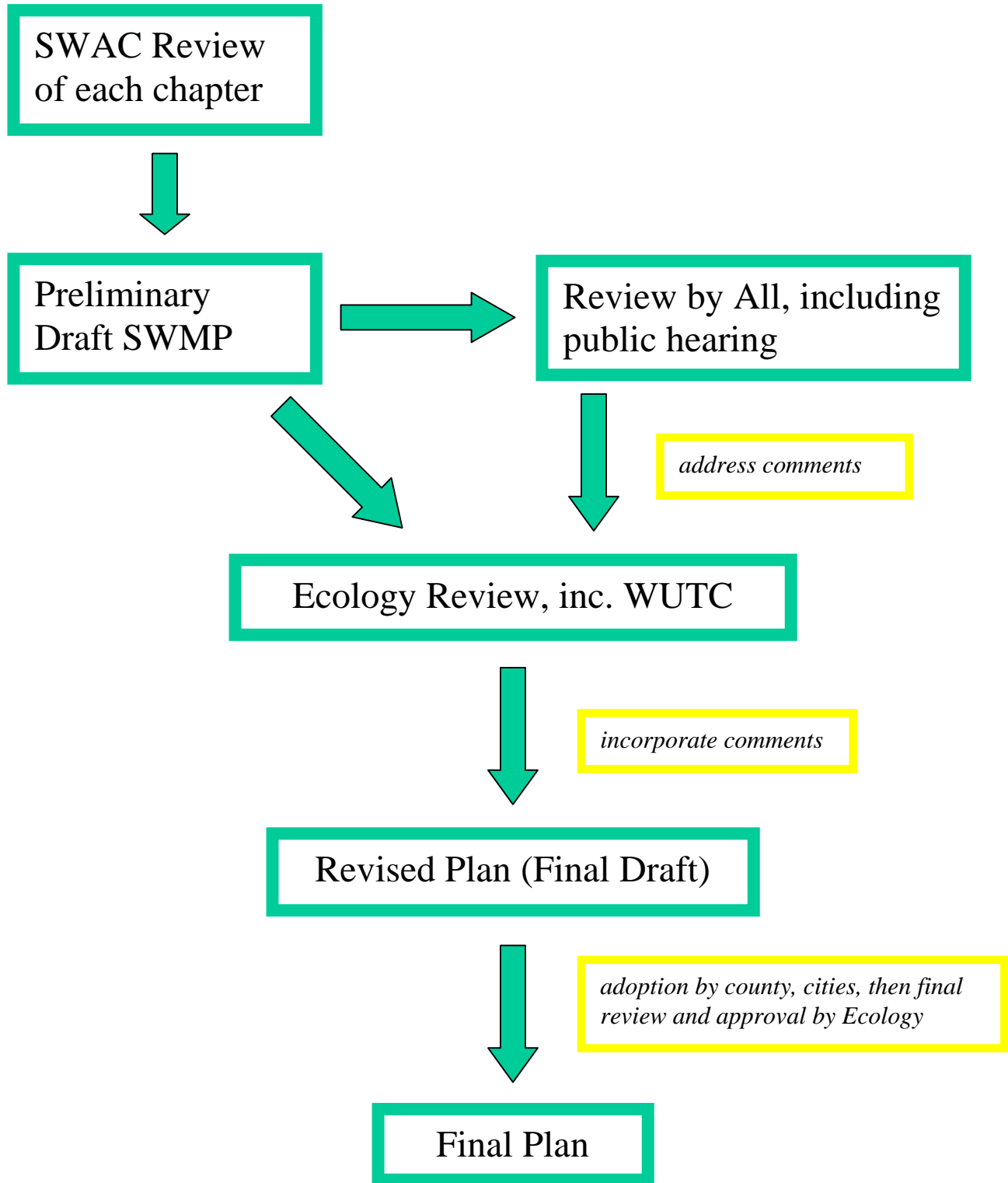


Table 1.2. Plan Amendment Process.
1) Before any significant changes to the Plan are undertaken, an amendment to the Plan will be prepared by the participating jurisdiction initiating the change.
2) The proposed amendment will be presented to the SWAC for review and comment. SWAC will consider which participating jurisdictions are affected by the proposed amendment, and determine its regional significance.
3) The SWAC will act upon the amendment proposed by the initiating participating jurisdiction and form their recommendations in a timely manner.
4) The SWAC's recommendation will be forwarded to the SWC for their review. The SWC could take a variety of actions, such as forwarding the amendment (with or without revisions) to the participating jurisdictions, requesting clarifications, or rejecting it.
5) The proposed amendment will then be reviewed by all participating jurisdictions.
6) The proposed amendment 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 amendment will then be revised as necessary and submitted to Ecology for review and comment.
8) The proposed amendment 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.

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 city's 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 Ecology and it is also 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 ten 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 winter with a gradual decrease in 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 October 17, 2004, can cause temporary transportation problems due to rockslides and flooding.

Station	Data	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Chelan	Average Max	32.7	39.8	51.1	61.4	70.3	77.2	84.4	84.9	74.9	61.2	43.9	33.6	59.6
	Average Min	21.9	26.1	32.7	40.3	48.4	55.6	60.6	60.3	51.2	40.5	31.9	24.0	41.1
	Mean Temp.	27.3	33.0	41.9	50.9	59.4	66.4	72.5	72.6	63.1	50.9	37.9	28.8	50.4
Leavenworth	Average Max	33.9	42.0	52.4	62.4	71.4	78.7	87.1	87.6	78.5	64.2	44.0	33.7	61.3
	Average Min	17.2	21.6	27.3	33.4	40.1	46.3	50.6	50.2	41.7	32.8	27.4	19.5	34.0
	Mean Temp.	25.6	31.8	39.9	47.9	55.8	62.5	68.9	68.9	60.1	48.5	35.7	26.6	47.7
Plain	Average Max	32.8	38.9	47.9	57.0	65.4	71.8	79.4	79.9	72.1	58.3	39.8	31.5	56.2
	Average Min	20.0	22.9	26.9	31.3	37.9	43.9	47.9	47.9	40.2	32.5	27.7	21.0	33.3
	Mean Temp.	26.4	30.9	37.4	44.2	51.7	57.9	63.7	63.9	56.2	45.4	33.8	26.3	44.8
Stehekin	Average Max	32.8	38.3	47.7	58.9	68.7	75.9	83.6	83.3	72.9	57.4	40.8	32.9	57.8
	Average Min	23.9	26.2	30.2	36.3	43.4	50.0	54.9	54.9	46.7	37.7	30.8	25.1	38.3
	Mean Temp.	28.4	32.3	39.0	47.6	56.1	63.0	69.3	69.1	59.8	47.6	35.8	29.0	48.1
Stevens Pass	Average Max	30.1	32.5	37.2	42.2	49.6	56.2	65.0	65.7	58.7	47.8	34.4	30.2	45.8
	Average Min	20.0	21.5	24.5	28.0	34.0	39.2	44.9	45.8	40.2	33.8	24.6	19.9	31.4
	Mean Temp.	25.1	27.0	30.9	35.1	41.8	47.7	55.0	55.8	49.5	40.8	29.5	25.1	38.6
Wenatchee	Average Max	35.1	42.8	54.9	64.6	73.1	80.1	87.8	87.2	77.7	63.7	46.0	35.7	62.4
	Average Min	23.2	27.4	33.9	40.8	48.6	55.5	61.0	60.2	51.2	40.8	32.2	25.2	41.7
	Mean Temp.	29.2	35.1	44.4	52.7	60.9	67.8	74.4	73.7	64.5	52.3	39.1	30.5	52.1

All of the above figures are in degrees Fahrenheit (F), for the period from 1971 through 2000.
 Source: Office of the Washington State Climatologist (www.climate.washington.edu/climate.html).

Station	Elevation (ft)	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Chelan	1,110	1.57	1.23	0.99	0.70	0.82	0.81	0.38	0.44	0.46	0.59	1.61	1.74	11.34
Leavenworth	1,128	4.40	3.23	2.09	1.10	0.85	0.84	0.39	0.58	0.75	1.74	4.27	4.83	25.07
Plain	1,860	4.86	3.62	2.21	1.31	1.08	0.99	0.48	0.66	0.78	1.95	4.68	5.40	28.02
Stehekin	1,150	6.38	4.27	2.88	1.49	1.04	0.90	0.63	0.82	1.17	2.94	6.50	7.17	36.19
Stevens Pass	4,085	12.90	9.30	7.31	4.83	3.86	3.35	1.61	1.81	3.56	6.46	13.83	14.04	82.86
Wenatchee	634	1.35	0.94	0.64	0.51	0.51	0.69	0.30	0.41	0.40	0.49	1.36	1.52	9.12

All of the above figures are averages for the period 1971 through 2000.
 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

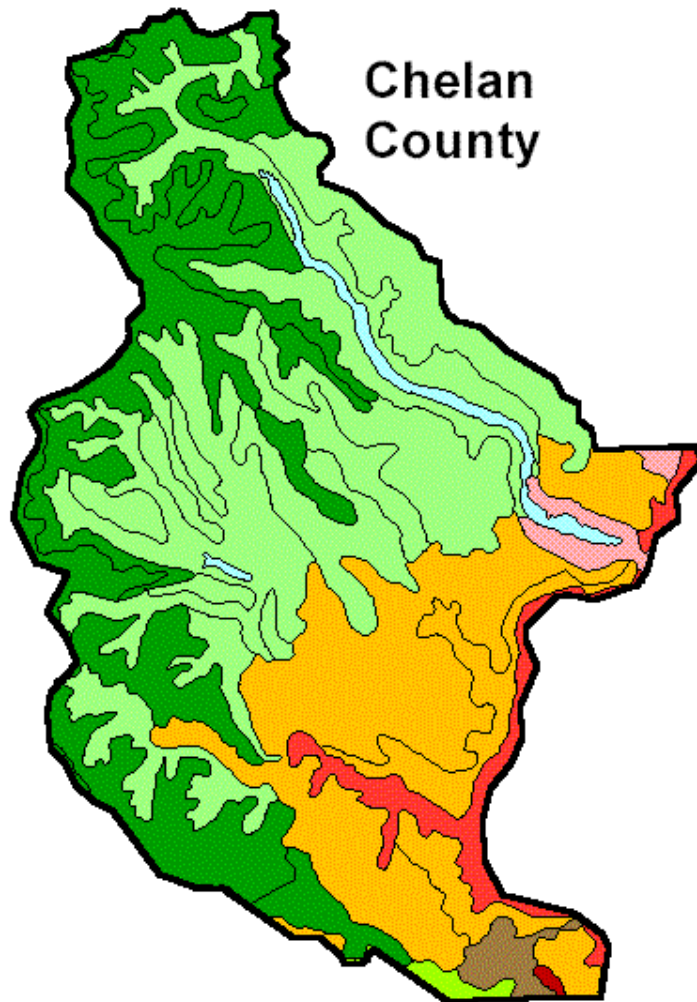
There are several separately recognized soil types in the planning area (see Figure 2.1). The soils along the Columbia River are predominantly sandy and gravelly, affording excellent drainage for the extensive orchard crops. The remaining lowland soils, except for those found in the coulees and other 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, 1998. Map can be viewed at http://www.remotesens.css.wsu.edu/washingtonsoil/Chelan_soils/Chelan_soil_map.htm.

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 and 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 of 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 part 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 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-Licksillet 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, University of Washington (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 most recent 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.

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.

Chelan County contains vast stands of private and federal commercial timber that are being harvested on a sustained yield basis and provide a continuing 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.

The climate and natural beauty of the planning area is an important economic resource because it is largely responsible for the increase in recreational and tourist activity. Mountain recreation areas are popular in all four seasons. The full recreational potential of the Columbia River has yet to be realized, although new recreational facilities are being constructed.

Industrial development in the area has been limited. The most significant single employer is the Alcoa plant located near Malaga.

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 part of the fruit and industrial products originating in the county are transported by rail. The main east-west transcontinental route of the Burlington Northern Railroad 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. 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 which are of insufficient weight or height standards to handle larger solid waste collection vehicles. These bridges are listed in Table 2.3.

<u>Bridge Name</u>	<u>Type of Route</u>	<u>Limiting Factor(s)</u>
West Monitor	Arterial	4 ton weight limit
Peshastin Creek Saunders	Access	15 ton weight limit
Old Griffith	Access	10 ton weight limit

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 3 to 6 weeks. This affects the solid waste system in that the loaded vehicles to the Greater Wenatchee Regional Landfill may have to be moved less than fully loaded 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 current (2004) population of Chelan County is estimated to be 68,400 people (OFM 2004). From 1990 to 2000, the county population grew 27.5%. 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 ten years. The OFM’s projections (OFM 2003) 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 since the census is based on the location of permanent residence.

Table 2.4. Chelan County Population by Area.			
<u>By City</u>	<u>1990¹</u>	<u>2000¹</u>	<u>2002¹</u>
Cashmere	2,544	2,965	3,045
Chelan	2,976	3,526	3,535
Entiat	449	957	990
Leavenworth	1,692	2,074	2,095
Wenatchee	21,829	27,856	28,270
Unincorporated	22,760	29,238	29,665
Chelan County, Total	52,250	66,616	67,600
<u>By Census County Division (CCD)</u>	<u>1990²</u>	<u>2000²</u>	<u>Percent Change</u>
Cashmere CCD	8,892	10,824	21.7%
Chelan CCD	4,949	6,222	25.7%
Entiat CCD	1,507	2,130	41.3%
Leavenworth - Lake Wenatchee CCD	4,388	5,902	34.5%
Malaga CCD	2,608	3,506	34.4%
Manson CCD	2,309	3,248	40.7%
Stehekin CCD	124	106	-14.5%
Wenatchee CCD	27,473	34,678	26.2%
County Total	52,250	66,616	27.5%

- Notes: 1. From *Population Estimates for the State, Counties, Cities and Towns* (OFM 2003).
 2. 2000 population figures by CCD are from the Census Bureau’s web page.

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). The figures shown in Table 2.5 are based on OFM's medium series projections for population growth. There are, however, several factors that could increase this rate of growth, including an increasing number of retirees and telecommuters moving to the county (WW 2004).

<u>Year</u>	<u>Total Population</u> ¹	<u>Annual Percent Change</u> ²
1960	40,744	---
1970	41,103	0.1%
1980	45,061	1.0%
1990	52,250	1.6%
2000	66,616	2.7%
2005	71,170	1.4%
2010	75,990	1.4%
2015	81,060	1.3%
2020	85,860	1.2%
2025	90,460	1.1%

- Notes:
1. Population figures for the years 1960 through 2000 are from *Total Resident Population by Year by County, 1960 to 2004* (OFM 2002).
 2. Population figures for the years 2005 through 2025 are from *Washington State County Growth Management Population Projections: 2000 to 2025* (medium series) (OFM 2004).
 3. 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 at the time of this writing, but there is a growing body of evidence that the world is undergoing some type of climate change. For example, scientists have documented an increase in ocean temperatures, and there is a possibility that this increase contributed to the record number of hurricanes that occurred in 2005. These hurricanes also tended to be more severe than normal. 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 aftermath of the hurricane Katrina (due to the temporary shutdown of oil rigs in the Gulf of Mexico and ports in the New Orleans area).

One point that should be made about the impact of global warming is that it may not only lead to warmer temperatures, but could also 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. Increases in global temperatures also means that more energy may be available to feed into storms (hence the stronger hurricanes), which on a local level could mean that a single storm could deliver much more rain or snow than typically experienced in the past.

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. Until recently, it was thought that this point was still at least ten years away, but a combination of factors has led many to predict that this point will be reached much sooner than that, possibly in the next year or two. These factors 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 one of those trends 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 Tree Top and agricultural products in general), although it is also possible that Chelan County could become a significant producer of energy from wind farms and bio-based fuels. 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 increasing recognition in China of the environmental costs of these activities. This

plus other factors, such as rising 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 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 biosolids, 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 three transfer stations in Chelan County. The waste accepted at the transfer stations and landfill has been recorded by volume (cubic yards) in the past, but the landfill and South Wenatchee Transfer Station are moving to weight-based transactions. For the county’s transfer stations, 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 2003 is shown in Table 2.6.

Table 2.6. Solid Waste received at Transfer Facilities.		
<u>Transfer Station</u>	<u>2004</u>	<u>2005</u>
Chelan Transfer Station	10,443 tons	38,642 yards
Dryden Transfer Station	33,710 yards	36,881 yards
South Wenatchee Transfer Station	171,490 yards	171,308 yards

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).

<u>Type of Waste</u>	<u>Rate (%)¹</u>	<u>Tonnage²</u>
Self Haul	24.6	20,560
Residential	28.1	23,480
Commercial / Industrial	47.3	39,530
Total		83,575

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 2003 tonnage for Chelan County from Ecology’s annual survey (83,575 tons) and percentages shown in the column to the left.

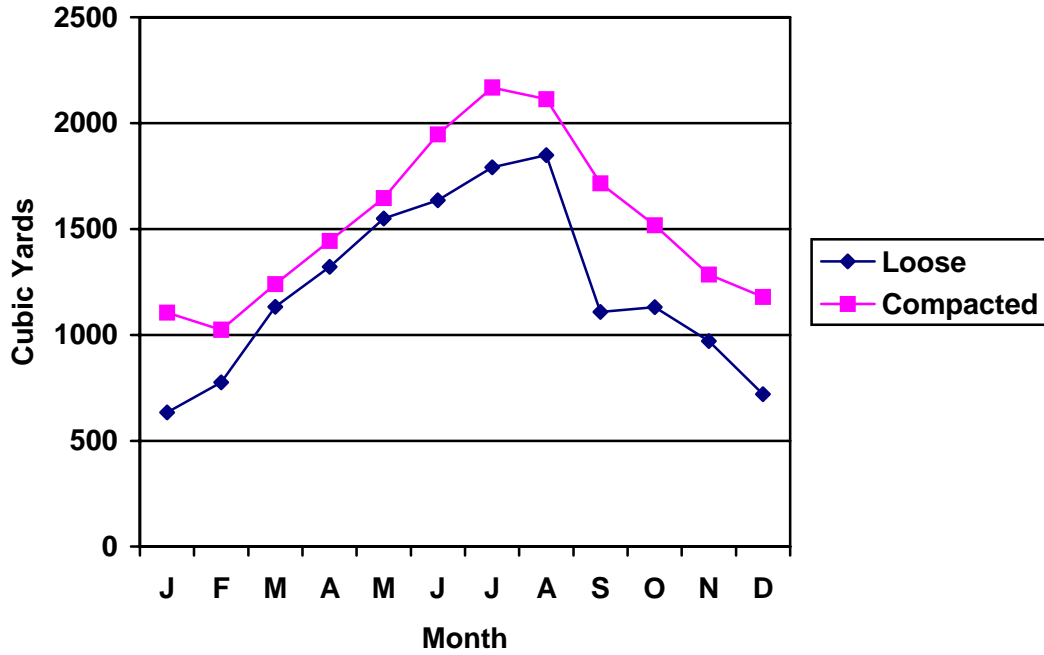
The rate at which solid waste is generated varies throughout the year due to seasonal differences in residential and commercial activities. Chelan County is subject to major seasonal population fluctuations. The summer months bring substantial increases in tourist, recreational and farm labor population. 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 two of the facilities in Chelan County can be seen in Figure 2.2, which uses the average monthly amounts for a five-year period. The data shows that the amount of “loose” (non-compacted) solid waste brought to the two sites varies more than the compacted waste delivered to the sites, but both vary significantly throughout the year. Loose waste at the Chelan Transfer Station varied from a low of 303 yards in January to a high of 1,698 yards in August (almost a six-fold increase). For the Dryden Transfer Station, the pattern is similar, with a low point for loose garbage in January (365 yards) and a high point in October (1,832 yards). These variations in waste delivery must be considered when sizing waste disposal or processing facilities.

2.3.3 Current Recycling Levels

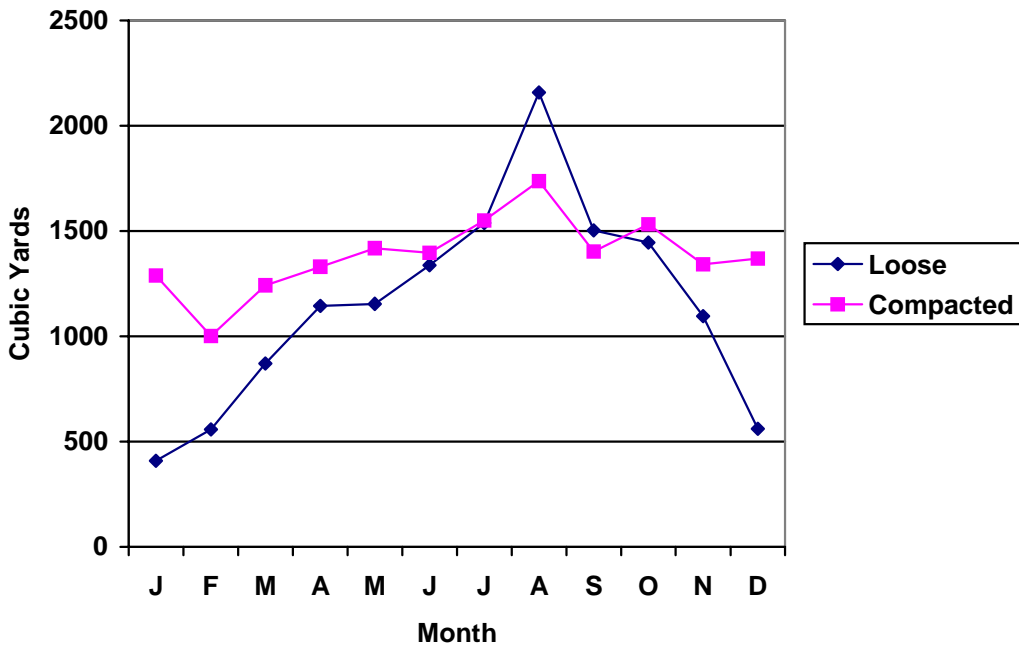
It is estimated that 15% of Chelan County’s waste stream, or 15,489 tons per year in 2003, is currently recycled and composted (see Table 2.8). This figure is generally called a “recycling rate”, although it includes composting as well. Data for some materials and some companies is not reported to the 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. If waste reduction and the missing recycling tonnages could be accounted for, the county’s current diversion rate would likely approach or exceed 18 to 20%.

Figure 2.2. Seasonal Variations in Chelan County’s Waste Stream

Chelan Transfer Station:



Dryden Transfer Station:



<u>Recycled Materials</u>	<u>2003</u>	<u>2004</u>
Aluminum Cans	156.8	114.5
Computers and Electronics	--- ²	22.7
Fluorescent Light Bulbs	1.7	2.1
Food Waste and Rendering	855.9	946.1
Glass	391.6	---
Metals, Ferrous	1,031.6	175.5
Metals, Non-Ferrous	425.4	337.7
Paper, Cardboard	7,012.1	5,392.4
Paper, High Grade	---	---
Paper, Mixed Waste Paper	458.7	460.4
Paper, Newspaper	1,461.6	2,810.0
Photographic Film	---	---
Plastic, HDPE Containers	59.2	46.1
Plastic, LDPE	48.4	90.8
Plastic, PET Containers	---	---
Plastic, Other	---	---
Textiles	---	---
Tin Cans	50.8	---
Tires	672.4	188.0
Used Oil	735.9	992.6
Vehicle Batteries	129.9	82.5
White Goods (Appliances)	---	---
Wood	736.5	616.5
Yard Waste	---	---
Tons Recycled	15,489	16,511
<u>Diverted Materials</u>	<u>Tons Diverted</u>	
Antifreeze	48.4	---
Asphalt / Concrete	---	NA ³
Batteries, Household and Industrial	---	---
Oil Filters	---	---
Reuse	---	---
Tires (burned for energy)	---	---
Tires (retread)	---	NA
Used Oil (burned for energy)	---	NA
Tons Diverted	5,315	372.1
Tons Disposed	<u>83,575</u>	<u>89,214</u>
Total Tons Generated	104,379	106,097
Waste Generation Rate, tons/year/person	1.54	1.53
Recycling/Composting Rate	14.8%	15.6%

- 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 other companies are handling.

The data shown in Table 2.8 includes “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 a beneficial use (such as incineration with energy recovery). If diverted materials were included, then Chelan County’s diversion rate would be 20%.

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 1.54 tons per year per person (or 8.4 pounds per person per day), this is a typical amount compared to other counties. According to their solid waste plan, for instance, Kittitas County’s per capita rate was 8.03 pound per person per day in 2001.

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

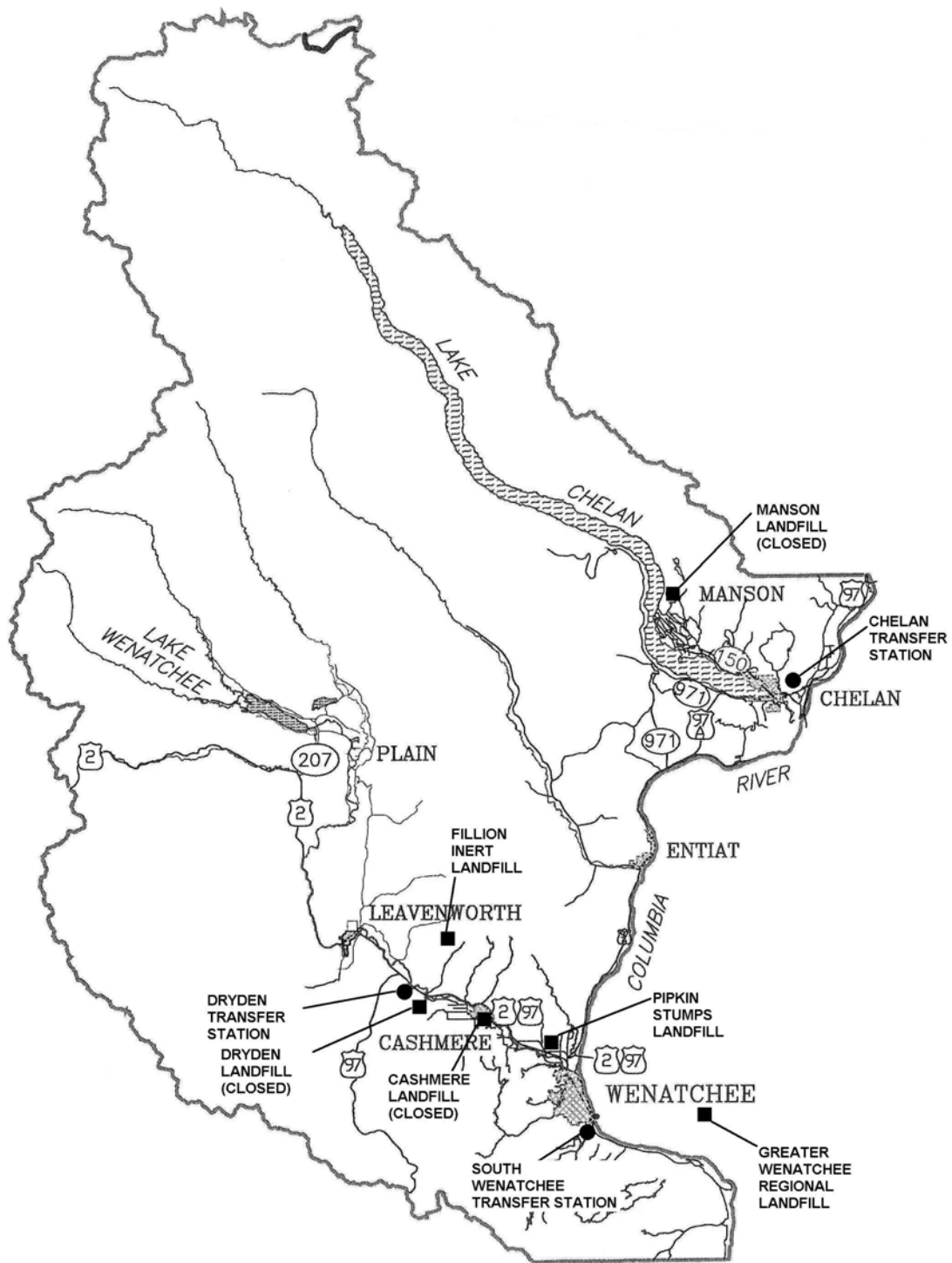
Table 2.10 shows the projected figures for the amounts of solid waste expected to be disposed and recycled for the duration of the planning period for this Plan.

The methodology used to project solid waste generation rates for the next 20 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.		
<u>Disposal Facility</u>	<u>Waste Generation Area</u>	<u>Population Served¹</u>
Chelan Transfer Station	Chelan, Manson area, Stehekin, northern parts of uninc. Chelan County, parts of Douglas and Okanogan Counties	9,576
Dryden Transfer Station	Leavenworth, Cashmere ² , and western portions of unincorporated Chelan County	16,726
South Wenatchee Transfer Station	Wenatchee, Entiat, Malaga area, southern parts of uninc. Chelan County, E. Wenatchee and other parts of Douglas Co.	40,314
Greater Wenatchee Regional Landfill	Portions of the county, and ultimate disposal site for all waste from Chelan County	66,616 (all)

1. The amount of population served by each facility is an estimate for Chelan County only based on year 2000 data (see Table 2.4).
2. Cashmere currently hauls directly to the Greater Wenatchee Regional Landfill.

Figure 2.3. Solid Waste Facilities



Year	Population	Tons Generated (at current rate of 1.54 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
2015	81,100	124,800	30%	81,000	37,500	6,360
2020	85,900	132,200	35%	79,200	46,300	6,730
2025	90,500	139,300	40%	76,500	55,700	7,090

Notes: The above figures assume the recycling/composting goal is met (25% in 2010, with continued increases after that, see Section 4.2.3 for more information), and that the diversion rate remains constant at 5.1% of the total amount of waste generated.

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 1.54 tons per person per year.
- the future recycling/composting goal will be met (25% by 2010, 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 (5.1% of the total amount of generated waste) as in 2003.

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 27% over the forecast period, from 87,600 tons in 2005 to 111,300 tons in 2025. This is based on a per capita waste disposal rate of 1.23 tons per person per year, or 6.7 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		Typical Composition by Waste Stream, % by Wt. ¹			
	Percent by Weight ¹	Tons of Material ²	Residential	Residential Self-Haul	Non-Res. Self-Haul	Commercial / Industrial
Paper	19.5%	16,300 T	24.3%	11.9%	7.2%	21.1%
Cardboard	4.4	3,680	2.6	4.3	2.9	5.7
Newspaper	2.3	1,920	4.8	2.2	0.1	1.1
Other Recyclable Paper	6.9	5,770	10.5	3.3	1.4	6.8
Compostable Paper	4.7	3,930	5.6	1.6	0.5	5.9
Non-Recyclable Paper	1.2	1,000	0.7	0.6	2.3	1.7
Plastic	14.4	12,030	12.7	8.9	5.8	18.5
PET Bottles	0.7	590	1.2	0.5	0.04	0.6
HDPE Bottles	0.7	590	1.2	0.7	0.04	0.5
Film and Bags	5.3	4,430	5.6	1.9	3.5	6.7
Other Plastics	7.7	6,440	4.7	5.8	2.2	10.7
Glass	4.4	3,680	4.3	3.3	0.3	5.3
Recyclable Bottles	2.5	2,090	4.2	2.6	0.2	1.7
Nonrecyclable Glass	1.9	1,590	0.1	0.7	0.1	3.6
Metals	10.6	8,860	8.9	14.4	9.8	10.2
Aluminum Cans	0.6	500	0.9	0.4	0.03	0.5
Tin Cans	1.1	920	1.8	0.9	0.03	0.8
Computers, Electronics	1.0	840	2.4	1.5	0.2	0.0
Other Metals	8.0	6,690	3.8	11.6	9.5	8.9
Organics	19.8	16,500	26.1	19.2	13.6	17.0
Food Waste	12.9	10,800	16.9	6.4	6.1	13.7
Yard Debris	7.0	5,850	9.2	12.8	7.5	3.3
Other	15.7	13,100	21.1	16.0	6.1	13.5
Disposable Diapers	2.5	2,090	4.9	1.4	0.02	1.7
Textiles	3.1	2,590	4.0	2.0	0.6	3.2
Tires, Rubber Products	0.3	250	0.1	0.8	0.02	0.3
Other Materials	9.8	8,190	12.1	11.8	5.7	8.3
Construction Debris	13.5	11,300	1.6	24.4	54.7	11.9
Wood Waste	9.8	8,190	1.1	17.2	35.5	9.3
Construction Debris	3.7	3,090	0.5	7.1	19.2	2.7
Special Wastes	2.1	1,760	1.1	2.0	2.5	2.5
Animal Excrement	0.6	500	0.7	0.8	0.01	0.4
Other Special Wastes	1.5	1,250	0.4	1.2	2.5	2.1
TOTAL TONS =		83,580				

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 2003 tonnage for Chelan County (83,575 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 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 has recently begun using 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 a statewide recycling and composting rate of 50% by 2007.
- there is a statewide goal to eliminate yard debris from landfills by 2012 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 as 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 50% recycling and composting by 2007. 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 (2003) statewide recycling rate is 38%. This rate includes residential, commercial, and industrial recycling. The rate is an improvement over the previous year (the 2002 recycling rate was 35%) but still falls short of the highest rate achieved (40% in 1995). Part of the challenge with the recycling rate is that the overall amount of waste generated in the state continues to increase, and this figure climbed from 6.5 pounds per person per day in 2002 to 7 pounds per person per day in 2003.

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 emerging issue that poses new challenges and opportunities for integrating several different issues having to do with 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 9).

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 2010, as measured by the per capita waste generation rate.

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. 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 retreaders
- 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 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. 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 and 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.” This is where waste reduction is presumed to be successful based on achieving a specific level of effort or on another 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 two cans. Residents in Chelan County, and in the Cities of Cashmere and Chelan, pay a “tiered rate” based on the number of cans they subscribe for. The rate structure could be reevaluated at opportune times and possibly re-structured to provide more incentive, and 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 of these 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), the regional waste exchange managed by the Seattle-King County Department of Public Health, 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. If the county provided space and forms for this, the initial cost would be about \$5,000 (primarily for promotion) and annual operating expenses would be about \$500.

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 a charity 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 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 used to conduct, 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 per event, plus an additional few hundred dollars for signs for the first event). 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 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 achieve the greatest amount of waste reduction for the amount spent.

An evaluation of the alternatives is presented in Table 3.1.

Alternative	Public Acceptability	Demand on Staff Time	Funding Availability	Cost-Effectiveness¹	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 the development of procurement policies

Procurement policies could help promote waste reduction by encouraging procurement of durable, reusable, repairable, and efficient goods. The state should also be urged to adopt additional procurement legislation for government agencies. See also Recommendation #R13 for a recommendation on procurement of recycled products.

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, but 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 25% recycling rate by 2010, 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.
- ensure that convenient recycling opportunities exist for all households, institutions, and businesses.
- reward individuals, organizations and businesses for recycling through public recognition and financial incentives.
- 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 35% in 2002, 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, and 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 16% (see Table 2.9). Increasing this rate would provide benefits to the environment and economy of the county as well as the rest of the world. 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 50% recycling, composting and waste reduction must be addressed in solid waste plans, but each county is expected to set their own goal based on local conditions and constraints. State planning guidelines (Ecology 1999) 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 that deserves mention here 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 option is discussed more thoroughly in Chapter 8 and in the *Facilities Study*.

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 WAC's (especially

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 the 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.

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), although federal law prevents any actual control over these activities. In Chelan County, monitoring commercial recycling activities is being accomplished by the Solid Waste Coordinator and others, who periodically collect information on services offered by the private sector and cities in order to help promote those. This monitoring should be continued and any problems detected should be reported to the SWAC.

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 more appropriate). For rural areas, the minimum service level recommended is drop-off or buy-back centers at all disposal facilities and other convenient locations.

There are several methods that can be used for developing criteria for urban or rural designations. Ecology's planning guidelines (Ecology 1999) 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 2002). 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 recent 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 (current as of early 2005), 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 they are currently improving their 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. Because of their higher demand, they are apparently willing to accept lower grades of paper and plastics, although this may change 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 cost-effectively moved to markets and forces the region to develop creative programs and/or focus their 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 13.6% 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 are receiving relatively high market prices currently.

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 9% of the materials recycled in Chelan County in 2003.

Large quantities of cardboard boxes are used by commercial industries, which makes this material a worthwhile targeted item for any recycling program. Cardboard is being recycled by Keyes Fiber and other Pacific Northwest paper mills. This material is often manufactured into new corrugated containers. Cardboard contributed about 45% of the materials recycled in Chelan County in 2003.

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 2.5% of the county's total waste stream, of which a little over half (55%) is clear glass. In Chelan County, almost 400 tons of glass were recycled in 2003, which comprises 2.6% of all materials recycled. Glass is relatively easy to identify and separate, so most recycling programs collect glass. 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 the colored glass bottles. The amount of additives required to turn glass from clear to brown or green is very small, and so there are strict requirements for keeping these materials separate from clear glass and from each other.

Developing local uses for glass are often the best strategy, to the extent that this is possible, and a good example of a local use is the city of Cashmere using crushed glass (mixed clear and colored) as bedding material in their utility trenches. The city also makes it available for contractors to use. Other alternatives include using glass as a filter medium in water processing operations, as a fill material for roads or for use in sandblasting.

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. In fact, most of the grades of metal have significant market value, especially aluminum cans and other non-ferrous metals.

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 required compacting the cans into bales or size reduction by shredding. Much of the aluminum collected by recycling programs is used by the aluminum industry. Alcoa in Malaga, Washington operates an aluminum processing plant that densifies the material and transports it to plants in Indiana and Tennessee. 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 which 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. In order 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 in Douglas County will take certain types of scrap metals. 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 scrapyards in Chelan County.

Chelan County has developed a metals collection yard at the Dryden Transfer Station 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. The Chelan County Solid Waste program has also coordinated an annual white goods collection event in recent years, and has been very successful with the public response. Sites used for this annual event include Wenatchee, Chelan, Entiat, Malaga and Dryden. In the past, various salvaging companies have offered to crush and haul the material to metal recyclers in the western part of the state, but recently this has been put out to bid because of the higher prices received for scrap metals. This event has been primarily funded with grants from the Washington State Department of Ecology, and will continue depending on future grant funds.

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), HDPE bottles (milk jugs) and LPDE. Dolco Packaging will accept #6 plastic (Styrofoam), which only the Chelan Recycle Center and Cashmere Middle School currently collect. Several locations (mailing and shipping services) also accept Styrofoam "peanuts" for reuse.

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.

The annual recycling survey shows 856 tons of "food waste and rendering" recycled from Chelan County in 2003, but likely most or all of this material was grease collected for recycling by rendering companies. Although important, grease is typically not viewed as part of the solid waste system.

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.

Other recycling markets: Other materials collected for recycling in Chelan County include computers, fluorescent light bulbs, textiles, car batteries, motor oil, and tires. 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 the 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.

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 are 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 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

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	Medium	Low	Medium
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 are:

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).

Material	Amount in the Waste Stream¹
Cardboard	3,680 TPY ²
Newspaper	1,920
Office paper/ other high-grade paper	5,770
Magazines/catalogs and phone books	
Mixed waste paper	
Glass	2,090
Aluminum cans	500
Ferrous/non-ferrous scrap	6,690
PET and HDPE plastics	1,180
Yard debris and brush	5,850
Used motor oil	NA ³
Automobile batteries	NA

- Notes:
1. “Amount in the waste stream” is from Table 2.11, based on 2003 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.

above list is based on existing conditions (collection programs and markets), and 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, and the list of designated materials 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. Hence, the minimum access needed for recycling services should instead be recycling opportunities for each of the designated materials located in each area of the county. For this purpose, 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). 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

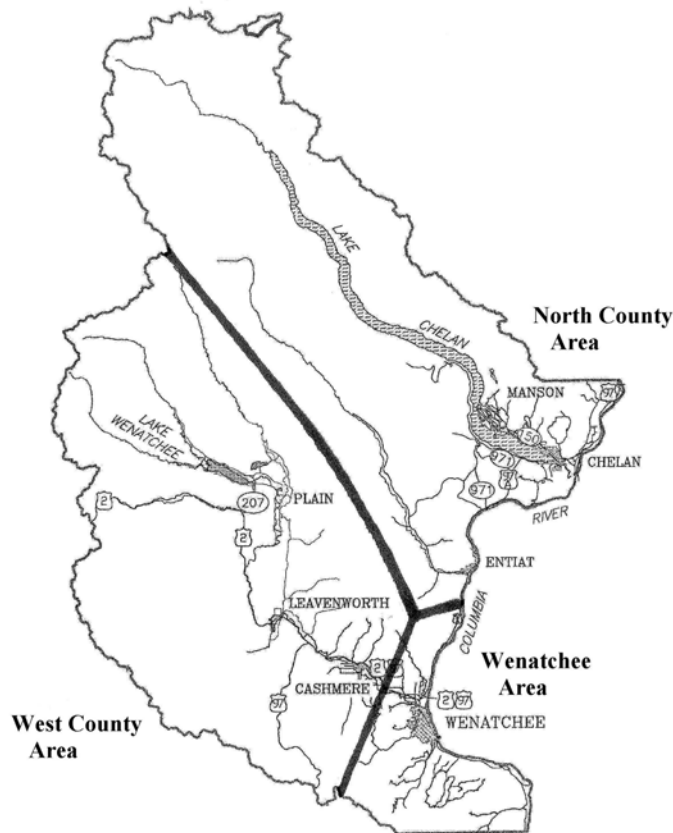


Table 4.4. Minimum Service Level by Area.				
Type of Customer and Source	Area			Current Service Gaps
	Chelan / Entiat (North County area)	Leavenworth / Cashmere (West County)	Wenatchee	
Single Family Homes within city limits	D	D	C	
Single Family, unincorporated	D	D	D	
Multi-Family	D	D	D	
Commercial, Industrial, Institutional	D, S	D, S	D, S	Need more special services.
Yard Debris and Brush	D	D	D	There is no opportunity to drop off yard debris in Wenatchee area.
Transfer Station Customers	D	D	D	Chelan Transfer Station does not accept ferrous scrap. The South Wenatchee Transfer Station accepts only aluminum cans, ferrous scrap and newspaper.

- 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 the 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 the SWC. The 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 the SWC has voted with a quorum of members, as stated in the by-laws, can the list be officially changed. If the SWC initiates the proposed revision to the service levels, their recommendation should be reviewed by the SWAC before proceeding. The minimum service levels should also be reviewed at least annually by the 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 UGA's from *Chelan County Comprehensive Plan* as urban areas for purposes of recycling services.

This Plan adopts the urban areas, including the urban growth boundaries (UGA's) 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 on page 4-9 is hereby adopted as the list of materials designated for recycling in Chelan County. The process for updating this list in the future is shown on page 4-10.

R3) Minimum service levels and service areas are adopted.

The minimum service levels shown in Table 4.4 and the service areas as shown in Figure 4.1 are appropriate for Chelan County and should serve as future guidance for program development and implementation.

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 urban areas as shown in the Comprehensive Plan, and any required revisions to solid waste services should be implemented within one year 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 one year 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.

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, plastic bottles (PET and opaque HDPE), and plastic bags. Quantities collected are listed in Table 4.6.

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. Four public drop-off sites are maintained by the recycling center, including sites in Manson and Entiat. Businesses in Chelan and Manson may request collection services for recyclables at no charge. Approximately 80% of all businesses and government offices in the area use this service. Paper from all of the schools in Chelan and Entiat is also collected by the recycling center at no charge.

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. 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.

Central Washington Recycling: Central Washington Recycling operates a drop-off/buy-back center behind the Sav-Mart in Wenatchee. Materials collected include newspaper, cardboard, plastic bottles, magazines/catalogues, clear glass, computer paper, aluminum cans and motor oil. Large customers include the North Chelan Recycling Center, Waste Management's curbside collection from Wenatchee and East Wenatchee, 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). A citizens group, Leavenworth Recycles, has arranged a drop-off site at the intersection of North Road and Chumstick Highway (at a county gravel pit). The site accepts cardboard, mixed paper, PET plastic, and aluminum cans, and the addition of glass and tin is being considered.

Recycling Centers in Chelan County	Cashmere Curbside	Dryden Transfer Station	N. Chelan Recycle Center	Chelan Safeway Drop-off	Manson Drop-off Site	Entiat Senior 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	Fees charged
Cardboard	Y	Y	Y	Y	Y	Y	Y	N	Y	Non-waxy only
Chipboard (food boxes)	Y	Y	Y	Y	Y	Y	Y	N	Y	Interior must be gray/brown
Clear Glass	Y	Y	Y	Y	Y	Y	Y	N	Y	Clean and rinse
Colored Glass	Y	N	Y	Y	Y	N	N	N	N	Clean and rinse
Magazines	Y	Y	Y	Y	Y	Y	Y	N	Y	Includes catalogs
Mixed Paper	N	Y	Y	Y	Y	Y	Y	N	Y	Sorting varies
Motor Oil ¹	N	Y	N	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	#2 HDPE plastic bottles, opaque color
Plastic Grocery Bags	N	N	Y	Y	Y	N	N	N	N	Most large grocery stores will take these
Plastic Pop Bottles	Y	Y	Y	Y	Y	Y	Y	N	Y	#1 PET clear/ colored plastic bottles
Styrofoam trays	N	N	N	N	N	N	N	N	N	Clean and rinse
Tin Cans	Y	Y	Y	Y	Y	Y	Y	N	Y	Remove labels, rinse
Yard Waste	y	Y	N ²	N	N	N	N	N	N	Open hours vary

Notes: 1. Used oil is taken by other sites, such as auto service garages, throughout the county (see Section 8.2.3 for more details).
 2. North Chelan County Recycle Project does not accept yard debris but grass clippings and brush can be taken to an adjacent site operated by the city of Chelan.

Material	Tons/year
Cardboard	482.5
Newspaper	179.1
Magazines	128.5
Mixed paper	67.5
Office paper	30.6
Aluminum cans	19.9
Tin cans	17.1
Glass bottles	170.0
PET plastic	12.6
HDPE plastic, clear	9.5
HDPE plastic, colored	6.9
Plastic bags	7.4
Annual total	1,131.6

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

Material	Tons/year
Newspaper/mixed paper	50
Cardboard	150
Magazines/catalogs	2
Computer paper	2
Clear glass	15
Aluminum cans	12
Used motor oil	1.5
PET plastic	1.5
HDPE plastic	3
Annual total	237

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

Waste Management of Greater Wenatchee: Waste Management collects newspaper, scrap metals and aluminum cans at the South Wenatchee Transfer Station. White goods or appliances 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, clear glass, magazines, mixed/office paper, newspaper, wood waste, 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 a small fee. The charge for white goods is \$10.00 per unit or \$10.00 per cubic yard, whichever is applicable to the material brought in. Refrigeration or air conditioning units are also charged a purging fee to remove any remaining refrigerant and compressor oil by a certified technician.

The Dryden Transfer Station has been one of the county collection sites during the *White Goods and Junk Metal Collection Event* held every spring in April since 1999 (the event has been held at other locations in the county since 1994). Generally, four sites are available for drop off of metal throughout the county, including Wenatchee, Dryden, Chelan, and Entiat. During this event in April, recyclable metal materials can be dropped off for free, but only during this one-time event per year. The only charges during this annual one-day event are the purging fee for refrigeration or air conditioning units.

Cashmere: The city of Cashmere operates a drop-off program at their recyclable materials processing facility on River Street. This facility accepts a variety of materials, which are processed then and then delivered primarily to Central Washington Recycling in Wenatchee.

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 and Goodwill.

Schuck's Auto Parts, Kwik Lube, and other businesses collect used motor oil for recycling. In the case of Schuck's, customers are required to sign a form attesting to the fact that no hazardous materials have been mixed with the oil before it will be accepted.

The Washington State Parks Department offers the public an opportunity to recycle aluminum cans at most parks located 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. Reynolds Aluminum collects aluminum at a buy-back center in Wenatchee.

Curbside collection programs: The cities of Cashmere and Wenatchee are the only two jurisdictions currently served by curbside recycling collections in Chelan County.

Cashmere: Cashmere's program began in 1990 and is now operated by the city, along with recycling centers at the middle school and at a city building on River Street. 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. In the summer residents can also sign up for yard waste collection for an additional fee. Brush is collected twice per year.

Cashmere purchased a truck specifically for general recycling purposes and it services approximately 1,000 homes. These materials are taken to the city's processing center, which

also handles the materials from the drop-off program at that location (see Table 4.8). Overall, the city estimates that 5,318 cubic yards of recyclable materials were diverted from disposal at the landfill in 2004, not including yard waste collections.

Material	Tons/year
Newspaper	122.4
Mixed paper	101.2
Cardboard	181.8
Magazines/catalogs	19.8
Glass	106.9
Aluminum cans	9.3
PET plastic	0.9
HDPE plastic	3.6
Annual total	545.9

Chelan: The city of Chelan implemented a curbside recycling program in April 1993 and discontinued it in 1999. The discontinuation of curbside pick-up 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.

Waste Management of Greater Wenatchee: Waste Management offers curbside collection of recyclables to their customers in the unincorporated areas of Chelan County for an additional fee of \$6.80 per month. The curbside collection program currently uses a three-bin approach, collecting newspapers in one, mixed waste paper in another, and clear glass, plastic bottles, and cans in the third one. This program collects an average of 2.4 tons per month (29 tons per year) from 140 customers.

Wenatchee: The city of Wenatchee initiated curbside pick-up of recyclable products in 1995 through their contract with Waste Management. That agreement was renewed through a twenty-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. Currently yard waste collection is not available in Wenatchee.

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. Currently materials are taken to Central Washington Recycling, however Waste Management has the option to select where recyclable material is taken. The city receives a share of the revenues from the sale of the recyclables. Currently (as of late 2005) about 55 tons per month are collected through this program.

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 sufficient quantity. There are also several shredding companies that operate in Chelan County, and most of the paper they collect is recycled.

Leavenworth: The city of Leavenworth conducts a cardboard collection route for businesses in the downtown area. The fee for this service is \$5.00 per month, and is included as part of the waste collection rate and so is mandatory. This route is conducted five days per week and there is a 90% participation rate for it.

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. Currently (as of October 2004) about 140 businesses receive this service. The commercial collections also help prevent excessive amounts of materials (especially cardboard) being brought to the drop-off sites.

Waste Management: Waste Management of Greater Wenatchee currently provides commercial collection of cardboard to businesses in Wenatchee's downtown core. Currently (in 2005), 126 businesses contract for this service, and the cardboard is delivered to Central Washington Recycling. Customers are charged by Waste Management \$45.00 per month for weekly container rental, pick-up, and recycling compared to \$58.23 per pick-up of solid waste in an eight yard dumpster. Waste Management also began offering a mixed paper collection service in 2005.

Clipper Recycling Company: The Keyes Fiber Corporation has formed a subsidiary, called Clipper Recycling Company, to handle the recycling aspects of their operation. Their need is for 800 to 900 tons of recyclable material per month and they are currently collecting about half of that from sources in Chelan County and neighboring areas. They collect cardboard from local businesses, mostly apple warehouses such as Stemilt, Orondo Fruit, and Manson Fruit, and also collect from other businesses such as grocery stores as far away as Chelan. Newspaper is purchased from recycling processors in the Pacific Northwest and Canada. They purchase cardboard from various businesses, many of whom are their customers for the molded fiber trays that are made from the recycled materials, and they are currently not handling any recyclable materials from the public.

Keyes Fiber also buys back pallets from their customers, which saves them money and they are able to offer a higher price to the customer for the used pallets. Keyes Fiber is also recycling plastic film and bags from their customers and their own operations. For the plastic film, they accumulate truckloads and then take it to a recycling facility in the Seattle area (Marathon Recovery).

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, and 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, but 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 their service area. The city of Chelan recycles their cardboard and other paper through this program, and they also recycle the confidential documents that are shredded.

The Chelan County Courthouse facilities have recycling opportunities for office paper and cardboard recycling through the regional jail's inmate worker program. 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. Inmate workers collect and stockpile the recyclable materials from numerous offices on a weekly schedule, and then haul the materials to Central Washington Recycling. In 1999, an average seven cubic yards of material was routinely recycled per week from county offices. Calculations revealed that Chelan County saved \$1,400 for the year in disposal costs.

Processing of recyclable materials: Most of the processing of recyclables in Chelan County is conducted by Central Washington Recycling. A limited amount of processing is also conducted at the collection centers in Chelan and Cashmere, and by Clipper Recycling Company (Keyes Fiber Company), including sorting to remove contaminants and baling or crushing materials to reduce transportation costs. Both of these collection centers also crush glass, and in Cashmere it is crushed to prepare it for local applications.

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 Alcoa and other buyers. Glass is crushed and sold, frequently to Owens Corning and Fibres International. Corrugated paper (cardboard) is baled and sold to various mills in Oregon and Washington. The newspaper they collect 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 (primarily to Smurfit in Oregon) for further processing. Contaminants are removed from high-grade paper, then the paper is put into corrugated bins and sold to companies located out of 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. Provided 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. For yard debris, there is a lack of opportunity to recycle (compost) this material in the Wenatchee service area (this will be discussed more fully in the next chapter). For the transfer stations, there is a lack of opportunity to recycle ferrous metal scrap at the Chelan transfer station (non-ferrous scrap can sometimes be handled by other facilities nearby), and the South Wenatchee Transfer Station accepts only a few of the designated materials. For commercial, industrial, and institutional waste generators, the designated materials can currently be recycled but more recycling services for special materials would be helpful.

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 both at this intermediate solid waste handling facility (which is an important factor) and provide an additional opportunity for Wenatchee (which is the primary population center in the county). Drop-off centers are typically an important back-up for curbside recycling programs, providing an opportunity for residents and businesses to continue to recycle if they have missed their pick-up date or have other problems. Hence, 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. Due to the National Park Service's inability to continue paying the entire cost of solid waste disposal in the valley, 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, such as current federal regulations and laws prevent Chelan County from constructing a new solid waste facility on National Park Service land. The National Park Service will continue to manage the solid waste system in Stehekin until a new solution is resolved.

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 other problems.

Leavenworth: A growing population outside of the city limits for Leavenworth currently lacks adequate recycling opportunities. The Dryden Transfer Station, which provides a wide range of recycling options, is not too far from Leavenworth, but the residents and businesses in the Leavenworth area could benefit from closer options. In addition to the drop-off site provided by Leavenworth Recycles and some services provided by the city of Leavenworth (for city resident and businesses only), additional recycling opportunities would increase the amount of recycling in that area. Various recycling options have been explored by a citizen's group, Leavenworth Recycles, and through the Solid Waste Facilities Study (see Appendix C). The Solid Waste Facilities Study (GS 2006) recommends a phased-in approach for a materials recovery facility (MRF) for the Leavenworth area, and other drop-off and collection options could help address the service gap for this area. Leavenworth Recycles is looking into the possibilities for additional drop-off sites in Leavenworth, Lake Wenatchee, Peshatin, and

Dryden. Leavenworth Recycles is also targeting local businesses, festivals, and schools to educate, promote and establish a recycling ethic.

Special wastes: Recycling opportunities are currently lacking for several specific materials, especially sheetrock, wood, and other construction wastes.

Revenue-sharing agreements: A recent addition to 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 new provision was adopted to encourage further investments in recycling and to provide motivation for increased recycling, whereas 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 collection company and county, then submitted to the WUTC for approval. The county (or, in rare cases, the city, if the city has their own solid waste plan) must certify that the proposal is consistent with their solid waste management plan. The proposal must demonstrate how the retained revenues will be used to increase recycling. As of mid-2005, only a few of these agreements have been approved and then only in more populated areas with larger waste streams and larger amounts of recyclables (King, Pierce and Snohomish Counties).

Urban versus rural programs: RCW 70.95.090 requires that 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, two sites in Cashmere, 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, but 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 previously conducted in Auburn, Washington and was estimated to be diverting 31% of the residential waste stream at the height of this 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.

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. Low-cost programs might rely on reused 55-gallon drums and pallets to keep costs at a minimum (with some sacrifice in efficiency and capacity). High-end programs use specially designed collection containers that can cost approximately \$7,000 each and baling systems which can cost upwards of \$50,000.

Sites in the county could be located on public land to reduce costs, if such a site is available at a convenient location. Staffing creates an additional expense, but 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 would not be helping to pay for the program.

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 the

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 are the processing costs, but this approach also has the disadvantage of higher collection costs due to the requirement for collection vehicles with separated compartments and potentially lower participation due to the greater amount of effort involved for the participant. There is a second level of sorting with the source separated method when the driver of the recycling vehicle sorts materials as those are placed in the containers on the truck, but this step also helps to screen for garbage and other problems.

Curbside recycling has continued in the incorporated cities of Wenatchee and Cashmere. Cashmere operates the entire collection system for garbage and recycling (and yard debris on a seasonal basis). The city is very proud of their successful program and the level of community involvement in reducing solid waste.

Waste Management provides single-family residential pick-up of recyclables as part of their 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 decided to stop curbside recycling due to the costs associated with the program and evaluations that showed that 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 they 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 their budget without hindering the volume of recyclable materials received.

Diversion potential for curbside recycling: Curbside collection programs typically have a participation rate of 50% or more of all households. A typical average of 20 pounds per household is collected each month. Wenatchee's records show that an average 55 tons per month (665 tons per year) are collected through the curbside recycling program in Wenatchee.

Technical feasibility for curbside recycling: Curbside collection programs are technically more complex than most other collection programs. 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 in order 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 is between \$4 and \$6 per household per month. In Wenatchee, 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.

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 the tenants place garbage. The design of these complexes makes the use of individual curbside recycling containers for each tenant difficult or

	Curbside	Drop-Off
Advantages	High diversion potential (15% of service area's waste stream)	Low cost (\$0.30-0.50 per household)
	Convenient	Easy to administer
	High public acceptability	
Disadvantages	Higher cost (\$2.00 to \$6.00 per household)	Contamination may bring lower price for materials (need to monitor drop-off areas)
	Low participation due to one garbage service level in Wenatchee-urban area.	Moderate diversion potential

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-gal “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. Although multi-family programs collect less than single-family curbside collection, multi-family collection programs in the Puget Sound region have reported collecting between 20- and 30 pounds per month per unit (Biocycle, August 1991). Eastern and Central Washington programs typically collect less than Puget Sound region programs, due primarily to the fact that newspapers are smaller, and fewer materials are collected.

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: Private firms in Seattle are paid \$60 per ton of collected material (Biocycle, August 1991). Costs may 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.

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 due to 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 cardboard, newspaper and mixed waste paper to businesses in Wenatchee and other areas of Chelan County. As of 2005, 126 businesses had contracted for the cardboard 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 either weekly or monthly; charges for weekly service are \$45.00 per month or for once-monthly pickup is \$15.00 per month.

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, and the greater participation is probably due to the fact that this service is offered for no cost. About 30 to 40% of the overall volume collected by the North Chelan County Recycling Project is from businesses.

When the price for cardboard is good, individuals often drive up and down the alleys in Wenatchee to collect cardboard from dumpsters. Since these individuals are not offering their services for a fee, they are not subject to the recently-adopted 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 drop-boxes or recycling centers: 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 recyclers: Businesses can contract with a private recycler 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 Clipper Recycling and 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 in the program.

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 that only generate 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 small businesses could be 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 the 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 the container) can be conducted. This makes the collections faster and less strenuous to the driver, thus providing very substantial benefits due to 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

Program	Diversion Potential	Technical Feasibility	Cost-Effectiveness	Conclusions
Encourage businesses to use drop-off sites	Low	Medium	High	Don't pursue
Contract with private recycler	High. Cardboard and high-grade paper are a large percent of the waste stream.	High	High	Don't pursue
Establish a city-franchise system	High	Medium. More difficult to administer. Businesses may resent gvt. involvement.	Medium	Don't pursue
Recycling program for small businesses	Medium	Medium. More difficult to coordinate and administer.	Medium	Don't pursue

	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 recent 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.

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 the glass from the mix, and Pierce County has recently implemented a new approach where the glass will be collected separately (through drop-off sites) from the commingled materials picked up curbside.

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, 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 also 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: The 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 types of rates are discussed in greater detail in Chapter 6.

Implement commercial waste generator incentives: Commercial, industrial and institutional waste generators generally already have rate incentives to recycle, since their charges are usually based on the volume of waste disposed. In some cases, these incentives are not adequate to overcome a lack of attention or concerns about costs and other issues. Additional incentives could be provided in a variety of ways, including diversion credits.

Diversion credits could be given to those businesses that recycle. Currently, there are no requirements for haulers to pass back any part of the recycling-derived income to the waste generator. In some cases, a hauler may not be able to easily do this even if they wished to do so, because WUTC rules require that the proceeds from the sales of recyclable materials be used to defray collection costs. Local jurisdictions could, however, implement a financial incentive program (diversion credit) to the waste generator. Diversion credits would be issued to waste generators for the number of tons of source-separated recyclables collected by the hauler. The diversion credit represents a credit for every unit of waste diverted from the landfill. Credits could be redeemed for special rate adjustments.

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. This

same approach can be used in the certificate (franchise) areas through a service level ordinance and approval of rates by the WUTC (see Chapter 6).

Mandatory participation: Another alternative for mandatory programs is to pass an ordinance that requires all residents and/or businesses to recycle, or that establishes a disposal ban for specific materials. A disposal ban is viewed by some as being more flexible, since 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 be convenient and effective recycling programs and/or other alternatives available.

Seattle recently implemented a disposal ban that became effective January 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 prohibiting 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 both 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 their 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, Governor Locke signed Executive Order 04-06, which sets 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.

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 page 4-13):

R4) Coordinate education efforts with waste reduction programs.

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

- broad education efforts such as producing and distributing written materials; presenting information to community groups.
- using radio/newspaper advertising, press releases and articles; and
- supporting a school-age education program.

Table 4.12. 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.	Pursue
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	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	Don't 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.	Don't pursue
Market development (several approaches)	High	Low. Developing new markets is difficult.	High	Pursue

R5) Provide information to assist local businesses with recycling.

The number of businesses that are recycling should be periodically reviewed to determine if additional steps are needed.

R6) Continue curbside programs in Cashmere and Wenatchee.

The city of Cashmere and the city Wenatchee will continue their curbside recycling programs. Variable can rates should be used to encourage participation in these recycling programs.

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

Drop-off sites in Leavenworth, Entiat, Manson, Wenatchee, and Plain should be improved and maintained. Chelan and Cashmere should continue their drop box recycling systems. Public information should be provided on the locations and the proper methods for preparing material for collection. A yard waste drop box should be considered for urban areas if a composting facility is nearby. Recycling should be encouraged at special events.

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.

Require 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, local or otherwise, is especially needed for colored 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.

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 25% by 2010. The progress towards meeting that goal should be assessed annually and increased efforts considered if progress appears to be falling short.

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 one-third and one-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 one-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, these 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 one-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 criteria 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.

Alternative	Economic Feasibility¹	Technical Feasibility	Public Acceptability	Conclusions
Dump and Pick Operations	High	Medium	Medium	Don't pursue
Mechanized Waste Processing	Low	Medium	Medium	Don't pursue

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 4-13, 4-34, and 4-35 for Recommendations #R1 – R14):

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 the 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 the Chelan County, such as the composting system installed at the Dryden Transfer Station and studies conducted ten years ago, but as of yet there has been no large-scale composting program implemented in the county. Direct land application of organic materials has also been practiced, such as Tree Top's fruit processing sludge and the city of Wenatchee's biosolids (which are sent out of county). Overall, these approaches are working well, but there are some problems with capacity, seasonal availability and costs. A central facility or more comprehensive program could potentially solve these problems.

A survey of 20 key stakeholders in Chelan County was conducted in October 2004 in preparation for the update of this Plan. In that survey, composting of organic materials was by far the most often mentioned issue that needed to be addressed. Composting organics was mentioned by 13 of the 20 people surveyed, and by comparison the next most common issue was only mentioned five times.

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 Scope of this Chapter

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 prunings 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. Currently there are five biosolids composting facilities that are permitted under Ch. 173-350 WAC, including Chelan County’s composting facility at the Dryden Transfer Station.

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 25% recycling/composting rate by 2010. 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 "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, and
- 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 Composting Facility: The Dryden Transfer Station accepts tree trimmings, brush and untreated lumber at a reduced disposal rate. Those materials are stockpiled temporarily and then ground up approximately every three to six months using a grinder that is jointly owned by the County and the Public Utility District #1 of Chelan County (PUD). The resulting chips are made available to the public to use as mulch or are mixed with biosolids from Leavenworth and composted.

In 2003, a composting operation was installed at the Dryden Transfer Station. Composting is conducted on an asphalt pad constructed just for this purpose, and any liquids draining from the pad (including rainwater that falls in that area) are directed to a special holding pond and

eliminated by evaporation and by being pumped out twice per year. Yard waste and biosolids are 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”). The city of Leavenworth is the primary source of the biosolids used in this process, but as capacity allows the Dryden site has also accepted biosolids from Stevens Pass and other sources. Finished compost is sold at the site for \$10 per cubic yard, and to date demand has kept up with supply. In 2004, 420 cubic yards of screened compost was produced.

Cashmere’s program: 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 yard waste collection using a separate garbage can that is picked up twice-monthly. A special collection route for brush and yard waste is also conducted twice per year. Collected materials are stockpiled at a city-owned and operated site, and then are processed annually using the grinder that is jointly owned by the County and PUD. 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 their own. The site is open to the public during non-winter months, for Friday afternoons and Saturday and Sunday mornings, when materials can be dropped off for a fee (\$10.00 per pickup truck load). Dumping tags must be bought at the Cashmere City Hall prior to using the disposal site.

The processed material is given away free or spread out at the site of collection. There is currently a surplus of this material and the City needs to find a new site or a new method of utilizing it. The Health District views this as an exempt activity as long as the material isn’t stockpiled for more than one season, but demand in the Cashmere area apparently isn’t strong enough to keep with the supply.

Leavenworth’s program: The city of Leavenworth allows citizens to put out brush twice per year, in the spring and fall, for a month each season. Approximately 25% of the households participate in this collection. There is no charge for the extra material at that time, whereas normally there would be an extra charge for any additional volumes of waste above the two-can limit. This waste is not composted currently, but is mixed with garbage collected at the same time and disposed at the Dryden Transfer Station.

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.

The city of Chelan operates a brush drop-off site next to the North Chelan Recycling Project and the North Chelan Transfer Station. Brush can be dropped for no charge at this site, and it is chipped and given away. There have been some problems with trash being dropped off at the site, since it is unattended, but otherwise the site is functioning well and the city is able to give away all of the chipped material. This site appears to be able to give away all of the generated material in a timely fashion. If any surpluses do occur, a local vineyard is willing to accept all of the chipped material that the city is able to bring to them.

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, but they must still meet operating and performance standards. Holden Village uses a system designed specifically for them, 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 their dining hall mixed with sawdust (from their own carpentry work) and yard debris. Sleeping Lady uses two in-vessel composters made by Green Mountain Technology to compost their food waste plus a small amount of shredded paper (to absorb excess liquids). Both Holden Village and Sleeping Lady use the finished compost in gardens and landscaping at their locations.

Biosolids programs: The city of Wenatchee brings their biosolids to a site near Malaga (the “Malaga site” is about ten 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 for \$6,000 per year. Specially-constructed holding ponds (drying beds) are used to dry the biosolids, and then those are shipped to Colfax, Washington to be land-applied. The City is partway through a five-year contract for the biosolids application program.

The city of Cashmere uses a lagoon that only needs to have the biosolids removed every ten 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 city also has the responsibility for some of the industrial sludge generated locally, and they have been giving that away for soil improvement purposes.

The city of Chelan generates biosolids on a regular basis and has been land-applying them at Boulder Park (in Mansfield). Their 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 per year, which was previously dried and bagged. The City upgraded their wastewater treatment plant in 2005 and may now ship biosolids to Dryden (for composting), to Boulder Park (for land application), or to the old Manson Landfill (for land application and re-vegetation purposes).

The Peshatin treatment plant, operated by the Chelan County PUD, dries their biosolids in bags and then de-bags it and trucks it to Boulder Park. The Peshatin plant produces about 25 to 30 wet tons per year, but this amount may increase soon due to phosphorous removal requirements that will create additional solids. The PUD is also responsible for the system in Dryden, which is similar to a large-scale septic system. The only solids produced by this plant are due to pumping of the septic tank, and this septage is disposed by the private company doing the pumping. The Dryden system may need to be upgraded in the near future.

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

Private programs: In the process of converting apples and other fruits to juice and other products, Tree Top generates several organic waste streams, including:

- a mixture of peels, cores and a pulpy fruit residue (pomace) from their Wenatchee plant, which is currently being sold as cattle feed (although the sales revenues only offset part of the transportation cost),
- additional pomace from their Cashmere plant, which is also being sold as cattle feed.
- wastewater processing sludge from their Wenatchee plant, part of which is being dried and then sold for land application and part of which can't be dried and beneficially used, and
- a slurry from the Wenatchee plant, which is in need of an improved management method.

Starbucks offers free coffee grounds to people who use them in their gardens or home composting activities.

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 generated in Chelan County, including amounts that are currently being composted or land-applied. The data shown in this table was collected from SWAC members, projected based on statewide waste composition figures (GS 2003), or taken from the *Chelan County Yard Waste Co-Composting Feasibility Study* (E&A 1995) in the case of the biosolids and agricultural waste figures. The data from the co-composting study is now over ten years old, and so it is likely that these quantities have changed since the data was originally gathered.

Material	Amount (tons per year)	Generated at Specific Location?	Seasonal? (yes/no)	Possible Processing Method
Yard Waste (grass clippings and brush)	5,850	No	Yes	Composting and shredding (for brush)
Biosolids	13,660 (wet tons)	Yes, but several locations	No	Composting, land application, soil blending*
Food Processing Wastes:	Wet tons/yr:		Partly	
Peels and cores	10,155	Wenatchee		Cattle feed, composting
Pomace	37,000	Cashmere		Cattle feed
Sludge	375+	Wenatchee		Land application
Slurry	68+	Wenatchee		Compost, soil blending
Wood (clean construction and other wood)	8,190	No	No	Shredding, composting
Fruit Warehouse (spoiled fruit)	4,000	Primarily in Wenatchee area	Yes	Composting, land application
Orchard Waste	Varies	No	No	Composting, grinding
Food Waste (residential and commercial sources)	10,800	No	No	Composting
Compostable Paper	3,930	No	No	Composting
Total	120,800			

* to be permissible for soil blending purposes, biosolids must meet the “exceptional quality” standards.

The yard waste shown in the Table 5.1 is not being collected separately currently, and so a collection system would need to be created if this were to be diverted to a composting facility. The amount of brush requiring disposal, however, is increasing due to fuel reduction programs designed to reduce the potential for forest fires. An increasing amount of woody material will also become available when the burn ban for residential and land clearing wastes goes into effect as of December 31, 2006 for the urban growth areas in and around Cashmere, Chelan, Entiat, Leavenworth, and Manson. The city of

Wenatchee and the surrounding urban growth area for it are already covered by a burn ban. Agricultural wastes, such as spoiled fruit and tree prunings, are traditionally handled on the farms where these are generated. Wood, food waste, and compostable paper are also not being separated from other wastes currently 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 the spent grains from a microbrewery that is being built in Cashmere and spoiled fruit from warehouses in Wenatchee (although strictly speaking, these sources are probably defined as “industrial” wastes, and hence not included in the above figure for residential/commercial food waste). 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 created when large quantities of fruit are disposed there.

Most of the local biosolids are generated on a sporadic basis or, in the case of those cities using lagoons (such as Cashmere), are only generated every few years. There is also some concern that the city of Wenatchee’s biosolids may be too thoroughly digested to be of use in a composting system, and this question should be tested before planning to use their biosolids in a composting operation.

For the food processing waste (the quantities shown in Table 5-1 are from the Tree Top plant in Cashmere), the wastes shown as going to cattle feed are currently being handled adequately but could become available for a compost facility if the cost was competitive or the facility more convenient. Close to half of the sludge from the Tree Top plant is being dried and then sold for land application to local farm and orchards. Part of this material, however, cannot be dried cost-effectively during the cold season and so cannot be sold for that purpose. Tree Top has some interest in composting this material, but would need significant quantities of bulking agents (typically wood chips or other coarse material) to mix with the wet sludge to compost it.

The previous studies conducted for Chelan County (E&A 1995 and EMCON 1996) projected a shortage of bulking materials for composting, but as noted above, the fuel reduction programs and burn bans are expected to increase the amount of woody materials that need to be disposed of in new ways. The city of Cashmere and the PUD both currently have an excess of woody materials.

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. Activities that do not require a permit include:

1. on-site production of mushroom substrate

2. vermicomposting (composting with worms), using Types 1, 2 and 3 feedstocks generated on-site.
3. less than 40 cubic yards per year of Type 1 and 2 feedstocks generated and composted on-site.
4. less than 10 cubic yards of food waste per year generated and composted on-site, with composting conducted inside of a container,
5. agricultural composting if raw materials are generated on-site and the finished product is used on-site.
6. agricultural composting, less than 1,000 cubic yards per year, materials may be generated off-site but all of the finished product must be used on-site.
7. agricultural composting at dairies according to a nutrient management plan, and finished product is sold for use off-site.
8. between 40 and 250 cubic yards per year of Type 1 and 2 feedstocks generated and composted on-site.
9. between 40 and 1,000 cubic yards per year of agricultural wastes composted according to a “farm plan” and finished product is sold for use off-site.
10. vermicomposting of Type 1 and 2 feedstocks generated off-site.

For the last four shown in the above list to be exempt from permitting, the local health department and Ecology must be notified of the activity, testing of the finished product must be conducted, and an annual report must be filed.

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. Leavenworth’s biosolids are sometimes disposed in the East Wenatchee Landfill instead of being composted or beneficially used due to a lack of feasible options. 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 illegally 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 their East Wenatchee Landfill. While they are not currently interested in composting the material at the landfill, they could divert organics from the incoming waste stream and deliver that

material to a composting facility. Waste Management might also be able to conduct separate collection routes for yard debris in some areas and bring that material to a 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 facilities 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 (in other words, 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 biosolids, spoiled fruit or woody material. The facility would need to have temporary storage areas for both wet and dry materials, in order to hold some materials prior to processing and/or prior to collecting other materials for mixing. A temporary storage area for wet materials might also be used as a drying bed.

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 their 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 method(s) 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 clearer definition of the design of the facility, but other processing facilities of approximately the same size can be used as an example. The study previously conducted for Chelan County (E&A 1995) estimated that the cost of composting 5,000 tons per year of organic materials would range from \$22 to \$34 per ton (1995 dollars), depending on whether land cost were included or not. This cost would decrease as tonnages increased due to economies of scale.

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). Hence, 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 of these 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 the city of Wenatchee 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. Douglas County operates such a program, working with the Chelan County Master Gardeners to offer a Master Composter Program. The mission of this volunteer program is to serve as networkers, educators, researchers, facilitators, consultants and motivators to home composters. To become a Douglas County Master Composter, a person must take forty hours of formal classroom instruction, attend three field trips, and develop and implement a forty-hour public outreach plan. Upon completion of the program, the volunteer will receive a Douglas County Master Composter Certificate and become a member of the Douglas County Master Composters.

Chelan County has worked with the Master Gardeners previously but could operate a more extensive program with them to conduct activities such as increased public outreach. A successful outreach program could be expected to divert up to 500 tons per year of yard debris. Training sessions could be conducted at a cost of \$500 to \$1,000 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, since 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 sludges, 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 that 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, 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 per 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.

Based on similar programs throughout the state of Washington, it is estimated that curbside yard debris collection programs would cost residents an additional \$6 to \$10 per household per month.

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 \$30 per ton. Administration and public education costs would add another \$8,000 per year. For the anticipated results, this would be the equivalent of approximately \$34 per ton.

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.

Based on cost information from similar programs, it is estimated that the cost of mobile collection is \$500 per site per day. This does not include costs of promotion and administration which could be another \$100 per site per event. Using these costs, operating four sites, twice a month for six months of the year, would cost \$28,800.

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 addresses 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. At some facilities, such as in Chelan, yard debris (brush) can be dropped for free, although in this case there are also no funds being collected to cover operating expenses or future needs.

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: (1) compost, (2) mulch, and (3) 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, however, so converting some wood to hog fuel should be an option at any future processing facility.

The primary markets 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 for \$140 to \$180 per ton. 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.

Based on the prices currently being paid for other types of composts and manures, it appears that the price for compost produced at the Dryden facility could potentially be increased. A higher price may help make the composting operation there profitable, but some additional promotion may be necessary to market the compost at a higher price.

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

Table 5.2. Evaluation of Organics Management Alternatives.

Alternative	Diversion Potential	Technical Feasibility	Political Feasibility	Cost-Effectiveness¹	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

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 4-13):

O1) Develop a central processing facility for organic materials.

It is recommended that the County pursue the development of an organics processing facility at the Malaga site or another location. This facility could include composting as well as other processing methods to handle a variety of organic materials (yard debris, brush/tree prunings, biosolids, fruit waste, and other materials).

O2) Develop a second smaller facility in Chelan.

A central processing facility in Malaga may be too far from the Chelan area, and a smaller processing facility in Chelan may be able to reduce transportation costs while also providing a distribution point for the finished material and tapping into additional market potential.

O3) Hire an additional staff person to implement these recommendations.

Developing one or more new facilities will require significant staff time, which would best be handled by an additional, temporary staff person. In the long term, additional staff time will also be required to manage the contract for the facility and to assist with promoting deliveries of raw materials and marketing of finished products.

O4) Expand and maintain Dryden compost site.

Should one or more other processing facilities be developed, the Dryden composting system should continue to operate. This site can provide a processing location for the west county area (for Leavenworth's biosolids and other materials), while continuing to provide a distribution point to market the finished compost. Per the recommendations of the Facilities Study, the paved area used for composting should be expanded and other improvements in storage and handling made.

O5) 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.

O6) 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.

O7) Continue to support composting education efforts conducted by WSU Cooperative Service.

Chelan County has provided assistance to the Master Gardeners and others to help promote the use of compost and backyard composting, and these efforts should be continued.

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

The first of the major steps that needs to be taken to implement the above recommendations would be to hire a part-time staff person. The estimated additional staffing needs are 0.5 FTE (fulltime 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 \$35,000 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 these additional activities.

Any options for a final site should be reviewed with the SWAC before proceeding. Once the final site has been determined, the basic approach for the 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 can then be specified in the RFP itself. A minimum amount of improvements (leveling and grading the site, water supply, other utilities) might be necessary at the Malaga or another site to encourage private proposals and to allow a private operator to begin work more quickly, but the 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.

Once the Malaga site is established, or at least is well on the way to becoming operational, 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 bush site to conduct composting would be about \$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.

In light of the other recommendations made in this Plan, in particular the need for other additional facilities (such as the moderate risk waste facility), the effort to establish a central composting site should begin in 2008 (assuming the budget for additional staffing is approved in 2007).

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:

- review and update collection and disposal contracts and franchises as appropriate.
- use waste collection rates or other incentives that encourage waste reduction and recycling.
- consider the costs and benefits of developing solid waste collection districts and establishing mandatory collection.

6.2.3 Existing Solid Waste Collection Activities and Regulations

Three of the cities in Chelan County conduct garbage collection within their city limits: Cashmere, Chelan, and Leavenworth. The other two cities either contract with Waste Management (in the case of Wenatchee) or do not exercise control over garbage collection in their city (Entiat). The National Park Service provides for garbage collection for the Stehekin area, but garbage collection services for other areas of the county that are outside of city limits are provided by a “certificated” hauler. 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.

Cashmere: The city of Cashmere provides garbage collection services to residential and commercial customers in the city limits. The cost for curbside recycling is included in the cost for garbage collection. Tiered rates for garbage service are used to provide incentive for participation in the recycling program (see Table 6.1), and rates were recently increased to provide additional incentive.

For customers who need service in excess of one 32-gallon can per week, the city of Cashmere provides “tipper cans” that are 68 and 95 gallons in size, or dumpsters up to two cubic yards. The city of Cashmere delivers the collected garbage directly to the East Wenatchee Landfill.

Table 6.1. Collection Rates in Chelan County.							
Area	Residential Collection Rates ¹				Commercial Collection Rates ²		
	Mini-can (20 gal)	1 can (32 gal)	2 cans	Recycling	1 yard/wk	2 yards/wk	4 yards/wk
Municipal Programs:							
Cashmere	\$9.00	\$12.00	\$26.00 (one 68 gal can)	Included in base fee	\$68.00 (two 95-gal cans)	\$180.00	\$280.00
Chelan	\$7.20 (6 gal)	\$10.30	\$13.60	NA	\$46.35	\$92.70	\$185.40
Leavenworth	NA	NA	\$16.00	NA	\$41.00 per 1.5 yard dumpster picked once/week		
Private Haulers:							
WM, Certificate Area ³	\$6.10	\$7.90	\$11.50	\$6.80	\$52.23	\$81.37	\$140.94
WM, Wenatchee	\$17.27 for unlimited collection			Included	\$51.13	\$87.92	\$148.29
Zippy Disposal	\$9.75	\$11.60	\$14.85	NA	\$47.20	\$72.80	\$124.00

Notes: All rates shown are monthly costs.

- 1) Residential collection rates refer to monthly charges for weekly pickup. Charges for Cashmere and Wenatchee include recycling. In other areas served by Waste Management, recycling services are optional (at the customer’s request) and at an additional charge.
- 2) Commercial collection rates vary significantly depending on the size of the container and frequency of service. A few rates are shown in the above table to illustrate the range of rates associated with different waste volumes (all of these rates are based on one pickup per week at the volume shown, for four weeks per month where rates are based on a charge per pickup). Additional charges may apply for container rental, recycling services, access problems, overflow conditions, temporary services and other factors.
- 3) Waste Management’s Certificate Area includes Entiat. Residential rates shown are based on the customer providing their own garbage containers.

Population densities (people per square mile) shown here are based on the 2002 populations shown in Chapter 2 and land area as of the year 2002:

	<u>2002 Population</u>	<u>Land Area, sq. mi.</u>	<u>Density</u>
Cashmere	3,045	1.8	1,690
Chelan	3,535	5.4	660
Entiat	990	1.3	760
Leavenworth	2,095	1.1	1,900
Wenatchee	28,270	7.1	3,980
Unincorporated	<u>29,665</u>	<u>2,904.7</u>	<u>10.2</u>
Totals	67,600	2,921.4	23.1

Chelan: The city of Chelan provides garbage collection services to the residential and commercial customers within their city limits. Curbside recycling was provided at one point but then discontinued in 1999. Recycling collection service is still provided to commercial customers by the North Chelan Recycling Project at no additional charge to the businesses, although the City does provide financial support to the Recycling Project and the cost for this service is built into the waste collection rates. Charges for residential customers use tiered rates, although not as steeply inclined as Cashmere's rates (i.e., Chelan's rates do not provide as much of an incentive for recycling). Chelan's "mini-can" rate is actually a minimum charge designed primarily for off-season vacation homes.

Garbage collected by the city of Chelan is taken to the North Chelan Transfer Station.

Leavenworth: The city of Leavenworth provides garbage collection services to the residential and commercial customers within their city limits. Cardboard is also collected from commercial customers in the city for an additional fee of \$5.00. Charges for residential customers do not use tiered rates, and the basic charge (\$16.00 per month) is intended to cover up to 2 cans per week (additional cans may be set out for an additional charge of \$3.00 per can per pickup). 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.

Methow Valley Sanitation Service: Methow Valley Sanitation's certificate (franchise) area is primarily in Okanogan County but includes a small area of Chelan County. Their area in Chelan County is only the northeastern 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 their services are not discussed in other parts of this plan.

Methow Valley Sanitation operates under WUTC Certificate #G-146, and their contact information is PO Box 656, Twisp, WA, 98856, and they 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) 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 #G-191, their contact information is PO Box 2638, Chelan, WA, 98816, and their phone number is 509-682-2493.

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 and Entiat. Services are provided in Wenatchee through a contract with that city, but in Entiat the services are provided as part of the certificated area (i.e., same rates and conditions as the unincorporated areas). The contract with Wenatchee runs through December 31, 2020, and that contract specifies that all single-family residences be provided

with a 96-gallon toter 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 three color-coded, stackable bins for designated recyclable materials. The garbage collection contract for Wenatchee also allows the residents to take up to four loads (one cubic yard or less) per year to the South Wenatchee Transfer Station at no additional charge (applies to owner-occupied residences only).

Garbage collected by Waste Management is taken to the Dryden Transfer Station (for waste collected in the Leavenworth area), to their own transfer station (the South Wenatchee Transfer Station) or directly to the East Wenatchee Landfill.

Waste Management operates under WUTC Certificate #G-237. This certificate covers all of their franchise areas in Washington, but 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 they can be reached at 509-662-4591.

Zippy Disposal: Zippy Disposal Service, Inc. is a WUTC certificated hauler that serves the northern unincorporated areas of Chelan County for residential and commercial customers. Garbage collected by Zippy Disposal in Chelan County is taken to the Chelan Transfer Station.

Zippy Disposal operates under WUTC Certificate #G-121. Their service area under this certificate includes areas of Okanogan and Douglas Counties. Waste collected in Okanogan County is brought to the Bridgeport Transfer Station but waste from Douglas County is brought to the Chelan Transfer Station and then transferred to the Greater Wenatchee Regional Landfill. Their contact information is PO Box 1717, Chelan, WA 98816, and they can be reached at 509-682-5464.

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.

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. Their authority (Ch. 81.77 RCW and Ch. 480-70 WAC) is limited to private collection companies and does not extend to municipal collection systems (Cashmere, Chelan, and Leavenworth) or to private companies operating under contract to a city (such as Waste Management's garbage collections in Wenatchee). For private haulers under their jurisdiction, WUTC requires reports, fixes rates, and regulates service areas and safety practices.

A new state regulation, RCW 46.61.655, applies to people that are self-hauling their garbage (and other materials). This regulation requires that loads be secured, and increases the fines for loads that are not secured.

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.

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

Future service demands: State planning guidelines (Ecology 1999) require that the collection needs for the next six years be addressed by this Plan. Significant population growth will occur throughout Chelan County in the next 20 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 1.4% annually for the next five to ten years. A 1.4% annual growth is the equivalent of an 8% increase over a six-year period. All of the 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, but there are some shortfalls in recycling and yard debris services (see Table 4.4).

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).

Public education: Waste Management already has a tiered service level for county residents, but it could be better publicized. A new law was passed in 2001 (WAC 480-70-361(7)) that requires solid waste collection companies to inform customers at least once per year about solid waste and recycling services that are available. Waste Management has not complied with this requirement, although they do regularly include information on customers' bills about special events. Zippy Disposal does regularly send out the required information, and also includes notices about special events (such as the annual metals collection) on customers' bills.

6.2.5 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 very 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 their 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, with the possible exception of Entiat. The city of Entiat could consider setting their own rate structure or require other services if the city feels that there is a need for this.

Other cities that currently operate their own collection systems (Cashmere, 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 does choose to look at privatizing their 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, since 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 and yard debris 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 \$16.00 per month for residential garbage collection that allows up to two cans per week 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 toter for no extra charge. 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. Furthermore, the large containers used for garbage collection in Wenatchee provide no incentive for people to recycle, conduct backyard composting, or take other steps to reduce the amount of waste they generate.

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 6.2. 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	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	

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.

Mandatory garbage collection: Another alternative to meet collection needs for Chelan County is mandatory garbage collection services in the rural areas. Currently about 55% of the county’s residents are in areas where collection fees are already mandatory (i.e., the four cities that provide or contract for garbage collection) and the remainder of the residents are in areas that are largely rural and 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, Washington, have offered reduced collection frequency (once every two weeks or once-monthly) as an option to their residents. The city of Olympia, Washington, took this approach a step farther a few years ago and now provides every-other-week collection to all of their 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.

6.2.6 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, hence 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.

Alternative	Economic Feasibility	Technical Feasibility	Public Acceptability	Political Feasibility	Conclusion
Attaching the cost of recycling to garbage fees in the uninc. areas	High	High	Low	Low	Don't pursue
Service for commercial recycling in Chelan	High	Medium	Medium	Low	Don't pursue
Converting to tiered rates in Leavenworth and Wenatchee	Medium	Medium	Medium	Low	Pursue
Mandatory garbage collection	Medium	Medium	Very Low	Very Low	Don't pursue
Disposal ban(s)	High	Medium	Very Low	Very Low	Don't pursue
Co-collection of garbage and recyclables	Low	Low	High	High	Don't pursue
Reduced collection frequency	High	High	Medium	Medium	Don't pursue

6.2.7 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.

It is critically important that waste collection systems and rates 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) Municipal and private haulers should use local transfer stations.

The system of transfer stations in Chelan County was developed with the capacity to serve local needs and the use of those stations is necessary to comply with financial and regulatory requirements.

6.2.8 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Solid Waste Collection

Those cities without tiered rates should develop and propose a plan to change to a system of rates that promotes resource conservation within one year of the adoption of this Plan.

The three transfer stations are hereby designated as the disposal sites for the areas served by each station (see Table 2.9 for a description of the service areas for each transfer station).

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 18 to 30 tons. In this chapter, the term “self-haul” means garbage brought in by residents driving cars and pickup 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 three 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. It provides the widest range of solid waste and recycling services.

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

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 a pre-engineered metal building that is about 50 feet by 50 feet, with three walls constructed of corrugated metal paneling. Vehicles back through the open east side of the building into the four unloading stalls. Customers unload their garbage directly into a transfer trailer. A backhoe is used to

Transfer Station and Type of Material	Cost
Chelan Transfer Station:	
Garbage, per cubic yard, loose	\$15.97
Garbage, per cubic yard, compacted	\$24.61
Minimum charge	\$10.64
Dryden Transfer Station:	
Garbage, per cubic yard, loose	\$15.94
Garbage, per cubic yard, compacted	\$24.57
Minimum charge	\$10.61
South Wenatchee Transfer Station:	
Garbage, per cubic yard, loose	\$11.53
Garbage, per cubic yard, compacted	\$17.23
Minimum charge	\$8.28

Transfer Station	2001	2002	2003	2004	2005
Chelan Transfer Station:					
Compacted yards	16,337	17,131	18,889	20,268	19,309
Loose yards	11,787	10,865	11,650	19,465	19,333
Dryden Transfer Station:					
Compacted yards	13,307	17,054	15,675	16,301	20,721
Loose yards	11,837	11,073	12,404	17,409	16,160
South Wenatchee Transfer Station:					
Total yards				171,490	171,308

redistribute or compact waste in the trailer, and payloads of 20 to 23 tons are typically achieved. 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.

This facility is owned by Chelan County and operated by a private company, North Central Recycling and Recovery. There appears to be a growing concern about the capacity of this facility. One of the haulers reports having to wait up to 40 minutes to unload at times, due to occasional large numbers of self-haulers and the time it takes some of those customers to unload. North Central Recycling and Recovery has also expressed concern about being able to keep up with the flow of waste currently being received at the busiest times of the year (summer months). Only one trip per day is made to the landfill in winter, but in summer the facility averages four trips per day due to higher volumes of waste.

There is no recycling at the Chelan Transfer Station, but recyclable materials can be dropped off at the North Chelan County Recycling Project, a processing facility located on a 4-acre parcel adjacent to the transfer station. See Chapter 4 for more details on the Recycling Project. Brush can be delivered to another site that is also adjacent to the transfer station and recycling center, where it is chipped and sometimes recycled as landscaping material, but it is not composted. Moderate risk waste is not accepted at the Chelan Transfer Station, although the nearby bus barn accepts waste oil.

The service area for this transfer station includes Chelan and the surrounding unincorporated areas, the Manson area, and Stehekin. Some of the waste from the Entiat area is probably brought to this transfer station, but most of the waste from the Entiat area goes south to the South Wenatchee Transfer Station or directly to the landfill. 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. The Chelan County population served by this transfer station is estimated to be about 9,580 (year 2000 figure, see Table 2.9).

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 hydraulic unit located in the basement of the transfer building powers the trailer's "walking floor" that moves the waste towards the front 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. Axle scales in the trailer tunnel are used to prevent overweight trailers, and the system currently in place generally results in about the maximum load (88,000 pounds for the garbage and vehicle) allowed by road weight limits.

A subcontractor to Waste Management drives the full trailers to the East Wenatchee Landfill. The disposal charges at the landfill are based on the total volume of the truck (90 cubic yards) and a rate of \$12.08 per yard, for a cost of \$1,087.20 for each load. Alternatively, the County could be charged \$50 per ton under the current contract with Waste Management. For a

vehicle weight of 44,000 pounds and a payload weight of 44,000 pounds (for a total weight equal to the maximum road weight limit of 88,000 pounds), the per-yard charge is equivalent to \$49.42 per ton. It would be to the County's advantage to be charged by weight only if the load weight was 43,488 pounds or less.

There is a metal collection site at the Dryden Transfer Station that is open year-round. Customers pay a fee to discard white goods (large appliances) in the scrap metals area. A mobile trailer for recyclables (a Dempster "AlleyCat") is parked on the east side of the transfer building, which is a convenient location for customers unloading waste into the pit. The trailer has five removable bins on each side, and is used to collect aluminum cans, mixed paper, clear glass, and PET bottles. The County pulls the trailer to Michelsen's Packaging in Wenatchee to recycle the collected materials every one to two months. Additional cardboard and newspaper recycling roll-off containers are located below the transfer station, north of the main building, on the "island" between the inbound and outbound roads.

Just south of the transfer building, there are two tanks for used antifreeze and one tank for used oil. Two spill containment pallets are used to collect car batteries there. Two modular hazardous waste storage containers are located east of the transfer building. These containers are used on an "emergency basis" for people who need to immediately dispose of moderate risk wastes (MRW), and are also used for MRW found accidentally disposed with solid wastes. This MRW is stored in these containers and are occasionally shipped to a licensed disposal site.

Separate loads of clean yard debris and woody materials are accepted for a reduced rate at the Dryden Transfer Station (\$10.00 per cubic yard instead of \$15.94 per yard). After being ground, the wood and yard debris is combined with biosolids (sewage sludge) from the Leavenworth wastewater treatment plant to make up a compost mixture. The mixture is piled on an asphalt pad in windrows to compost. Runoff (leachate and rainwater that falls on the asphalt composting pad) drains into a holding pond east of the transfer building.

The service area for this transfer station includes Cashmere and Leavenworth and the surrounding unincorporated areas, and the Dryden and Peshatin areas. Little or no waste is brought to this transfer station from out-of-county sources. The Chelan County population served by this transfer station is estimated to be about 16,700 (year 2000 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 are accepted for recycling at this facility – aluminum cans, newspaper, and scrap metal. 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.

As of late 2005, Waste Management was expecting to install a scale at the South Wenatchee Transfer Station. As part of that project, traffic would likely be re-routed. Options for additional recycling or yard waste drop-off containers were also being examined.

The service area for this transfer station includes Wenatchee and Entiat and the surrounding unincorporated areas, and the Malaga area. Some of the waste from the Entiat area is probably brought to the Chelan Transfer Station. 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 40,300 (year 2000 figure, see Table 2.9).

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, 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. Those customers (and others in the area) also benefit from the recycling and related services offered by the transfer stations. Service gaps identified for the transfer stations in previous chapters of this Plan include:

- the Chelan Transfer Station (or adjacent facilities) does not accept ferrous scrap or white goods for recycling.
- the South Wenatchee Transfer Station accepts only a limited range of recyclable materials, and an opportunity to divert yard debris is lacking in the Wenatchee area.

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.

Since the city of Cashmere is delivering their garbage directly to the Greater Wenatchee Regional Landfill, they are not paying their share of the overhead expenses that are collected through a surcharge on the tipping fee at the Dryden Transfer Station.

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 study being conducted in conjunction with this Plan is examining the possibility of a new transfer station in the Entiat area and is looking at upgrades and other options for the existing transfer stations. The Solid Waste Facilities Study (GS 2006) makes several recommendations for existing and new transfer stations (see Table 7.3). For Dryden, these recommendations include a scale (to weigh both incoming and outgoing loads) and a number of minor improvements. A scale and a small improvement to the recycling capabilities are also recommended for the Chelan Transfer Station. An expansion of the Chelan Transfer Station was one of the options examined by

Table 7.3. Transfer Station Recommendations from Solid Waste Facilities Study.		
Alternative	Cost	Conclusion
Dryden Transfer Station:		
Repair damaged pit floor	\$50,000	Should conduct repairs as soon as possible
Improve layout	Minimal	Can be done as part of other modifications
Stormwater drainage	\$2,000	Should be done as funds are available
Install gutters	\$5,000	Should be done soon, will pay for itself
Move oil, antifreeze tanks	NA ¹	Can be done as part of other modifications
Install scale	\$262,000	Scale should be installed
Expand compost site	\$10,000	Should be done soon
Add storage area for compost to top of old landfill	\$1,800	Needs further study
Improve metal recycling areas	\$20,000	Can be done as part of other modifications
Chelan Transfer Station:		
Install scale	\$183,500	Should be done
Expand transfer station	\$473,500	Non-facility options should be explored first
Add metal recycling	Minimal	Should be done soon
South Wenatchee Transfer Station:		
Add 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. This study recommends against pursuing this facility unless costs can be reduced.
Site with compactor and ramp-accessible dropbox	\$399,600	
Site with compactor and ground-level dropbox	\$369,200	

the Facilities Study, but this appeared prohibitively expensive and so the study recommends pursuing other options first. Improvements were also recommended for the South Wenatchee Transfer Station, and Waste Management staff have recently indicated that they are already moving forward with these improvements. These improvements are important for providing adequate service levels at this transfer station, especially given the large volumes of waste handled there, and if Waste Management is unable to implement these upgrades then it may be necessary to explore the possibility of constructing a new transfer station in that area.

The idea of a new transfer station in the Entiat area was also examined by the Facilities Study but this appears to be prohibitively expensive at this time. This idea should be evaluated periodically in the future, however, either every five years (as conditions change) or if triggered by other factors. As the population in the Entiat area grows, for instance, the cost-effectiveness of a transfer station could improve. This idea could also be re-visited if a specific site is found, if that site provides advantages that reduce the cost of a transfer station.

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) The recommendations made by the Facilities Study should be adopted as part of this Plan.

The *Chelan County Solid Waste Facilities Study* (see Attachment C) provides a number of recommendations and other important information. Rather than repeat that information here, the Facilities Study and its recommendations are hereby incorporated by reference.

7.2.7 Implementation Schedule/Costs and Monitoring/Evaluation Methods for the Waste Transfer System

The recommendations for the transfer stations include a number of minor improvements (repairing the floor and installation of gutters at the Dryden Transfer Station, adding metal recycling at the Chelan Transfer Station, etc.) that should be done soon. Installation of the scales at the Chelan and Dryden Transfer Stations should begin with a final design in 2006 and installation in 2007.

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 1970's, and again in the mid-1980's 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 (GWRLF), although this may change with the proposed landfill expansion (see next section). 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) 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. The city of Cashmere, however, transports their waste directly to the GWRLF in the city’s garbage collection vehicles.

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.

Waste export needs and opportunities: There may be alternative disposal sites that could receive Chelan County’s waste, and the economics of these options should be explored. The current rate for disposal at the GWRLF is about \$50 per ton, and many 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 ton ²
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, Oregon) has further reduced the disposal costs at these regional landfills by creating significant economies of scale. All of 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. All three of these 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 each year. At the current disposal rate of 2.28 million tons per year, this landfill has an expected life of 115 years, with additional acreage available for expansions. 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, Washington, 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 85 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 their investment and a reasonable profit margin while operating the facility, and the public agency avoids the need to finance 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 means 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 one week 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.

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 at GWRLF: This option presumes that Waste Management would continue to provide disposal services for Chelan County, presumably under a new contract. Construction of an inter-modal facility at GWRLF may be a less efficient alternative than construction of a new facility in Wenatchee, since waste would need to be transported through Wenatchee to GWRLF and then brought back again, but this approach could provide a substantial advantage for siting purposes.

With either 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-modal facility, but the waste may need to be emptied from those trailers and compacted into other trailers for shipment to a regional landfill.

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, hence 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 to help capture the cost of the investments or mitigate other impacts.

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 significantly different depending on the reason for exploring options for changes in the current waste export system. If the reason is to check on the potential for cost savings, then this should be done soon after this Plan is approved, in 2007 or 2008.

If the reason is that the existing disposal facility (GWRLF) is no longer available or about to become unavailable (if for example, Waste Management is not granted the landfill expansion they are currently pursuing), then the schedule for implementation of a different waste export system would be dictated by the landfill closure schedule. If the landfill expansion permit is not granted, 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).

The basic steps for the implementation of a long-term or permanent waste export system include:

- determine the lead agency.

- 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 in 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 are two inert waste landfills in Chelan County.

Inert waste landfills: Only one of these accepts wastes from the general public, and the other is only for wastes generated by the operator. 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. This site handled 6,250 cubic yards of waste in 2004.

Pipkin Stumps Landfill: This site is owned by Brian Stumps and operated by Pipkin Construction Company. This site may be reaching capacity and closing soon, although Pipkin Construction also operates an inert landfill in Douglas County and can make more use of that site. This site handled 1,210 cubic yards in 2004.

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 2024, and at the Manson Landfill it is through 2026. These periods could be extended if groundwater and gas monitoring results show ongoing contamination or methane generation problems.

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 installation has been completed. Dryden Landfill is owned by Chelan County and covers approximately 5 acres. Chelan County Public Works operated 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. There have been no 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.

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 to service the area previously served by 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 and the closure plan describes in detail how this problem will be addressed. A closure/post closure plan for this site is anticipated to be approved by the Department of Ecology (Ecology) and the CDHD in 2006.

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.

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. The current solid waste disposal permit is effective through 2010, but at the current waste flows the landfill will reach capacity sometime in 2007.

Waste Management recently filed applications to expand the GWRLF. This application includes:

- an expansion of the disposal area by adding over 92 acres to the west and north of the landfill and by increasing the height to approximately 300 feet above grade.
- development of accessory facilities, including offices, maintenance shop, scalehouse, and a materials recovery facility.
- development of facilities to support collection services, including an office, maintenance building, storage building, employee parking, truck parking, truck wash and fueling station.

At the time this chapter was written, the application was still undergoing review by various agencies. If approved, the landfill should have another 50 years of capacity at the current (2005) filling rate. If the expansion is not approved, Chelan County and others will need to immediately begin working on implementing a waste export system, first using temporary measures and then developing more permanent measures.

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. Ecology may have grant funds available for an inventory of old dumps.

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.

The new 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 disposal needs of the county are being satisfied by the

current waste export system. Siting and operating a new local landfill would be a lengthy, expensive, and politically-charged process. On the other hand, there may be a need or reason to have such a landfill in the future, and identifying potential sites now for that purpose may help expedite a future landfill siting 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.

Potential sites for landfills 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), and municipal solid waste wastes.

L2) Inventory old dumpsites 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 need for cleanup activities could also be assessed as time and funding allows.

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 2007.

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 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 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 and the city of Spokane jointly operate an 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, the State Environmental Policy Act, and other policies and regulations. Factors that should be considered include the potential impacts on human health and environmental quality, as well as a technical comparison with other existing or potential disposal methods. Most importantly, the consideration of a proposed incineration project should be carried out with full public disclosure, with adequate public notice and with ample opportunity for citizen input.

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 which 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 (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* (Parametrix 1991). Table 8-1 shows the recommendations from that plan and their status. That plan has not been updated since it was developed because, unlike solid waste plans such as this one, the counties are not required to periodically update the MRW plans. Hence, in order to provide an updated examination of MRW, this chapter of the Plan addresses this waste stream and is intended to replace the 1991 MRW plan.

Table 8-1. Status of Recommendations from the 1991 MRW Plan.	
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	Ongoing
Examine feasibility of permanent and mobile collection facilities	Ongoing
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	Ongoing
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-Douglas SWAC	Ongoing (through the Chelan SWAC)
Prepare a revised draft MRW plan by June 1995	Completed in 2006
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

8.2.2 Goals for Moderate Risk Wastes

The goals established by the *1991 Moderate Risk Waste Management Plan*, which are modified slightly in 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 and service stations in Chelan County, including the following:

Midas Auto Service (Wenatchee)

Schuck's Auto Supply (Wenatchee)

In the case of Schuck's, customers are required to sign a form attesting to the fact that no hazardous materials have been mixed with the oil before it will be accepted. Used oil is also collected at the Dryden Transfer Station, Central Washington Recycling, the bus garage in Chelan, and at Entiat City Hall.

Antifreeze is collected at the Dryden Transfer Station, Midas Auto Service, Cascade Quick Lube (for a charge of \$1.00 per gallon), and few other locations. Antifreeze and oil is also collected at the annual household hazardous waste collection event (see discussion below and Table 8.2).

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.

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.

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 (www.co.chelan.wa.us/pw/pw6k.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 several years. These events collect hazardous wastes from households at no charge (although a \$3.00 donation is requested). The results of the collection events for 2004 are shown in Table 8.2.

These events are held at multiple locations throughout the county to make participation as convenient as possible. For instance, events were held in 2004 at the County shop in Wenatchee, Peshastin Elementary School, at Fire Station #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 events is significant. Disposal costs for the events in 2002, 2003 and 2004 were \$62,186.31, \$60,430.44 and \$53,905.90, respectively. These events also depend on publicity, labor (in addition to the labor provided by the disposal contractor), and equipment donated by the city of Wenatchee and others. Funding for these costs is provided primarily by CPG funds administered by Ecology.

There are also collection programs for specific types of MRW:

Propane tanks can be exchanged for new tanks at many locations.

Computers, if still functional, will be accepted by a few of the local charities.

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), which is non-profit organization supported by more 300 manufacturers. In 2004, RBRC collected 4.4 million pounds of batteries in the U.S. and Canada. RBRC also began collecting cell phones as of April 2004, and collected 48,000

Table 8.2. Quantities Collected through the 2004 MRW Events.		
Waste Type	HHW	CESQG
Aerosols	1,091	
Antifreeze	1,107	165
Asbestos	239	
Bases	213	533
Batteries;		
Alkaline	234	8
Automotive		54
Ni-Cd	37	44
Electronics;		
CRTs		21,976
Fertilizers, Ammonium Nitrate	1,162	
Flammable Liquids	10,625	1,260
Flammable Toxic Liquids		1,177
Flammable Butane, Propane, etc.	295	
Flammable Solids	5,459	
Fluorescent Light Tubes	30	956
Latex Paint	11,370	163
Mercury		6
Oil Based Paint	25,414	875
Oil, Non-Contaminated	2,212	514
Oil, Contaminated	4,555	
Organic Peroxides	105	
Oxidizers	86	2
PCBs	33	
Pesticides, Liquid	5,018	6
Pesticides, Solid	1,700	
Petroleum Gases	32	

Notes: all of the above figures are in pounds.

cell phones in 2004. Locations in Chelan County include nine businesses in Wenatchee (Radio Shack, Tool Mart, Office Depot, Home Depot, Lowes Hardware, and several cell phone companies), and one location in Chelan (Pro-Sat).

Conditionally exempt small quantity generator wastes (CESQG): Small Quantity Generators (SQGs) are defined as companies that generate only small amounts of hazardous wastes (Ch. 173-303-070 WAC). SQG wastes are hazardous wastes that are generated by businesses in quantities 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 that are 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 not only educates the business industry about Chelan County’s availability for assistance, but also informs them of the annual disposal event.

A Conditionally Exempt Small Quantity Generator waste collection event is conducted each year. Chelan County uses a mass mailing to inform businesses of the opportunity to register for the disposal event. Businesses are provided some guidance of their status, as to whether they are a small, medium or large quantity generator. If the business is an SQG, they 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 coordination of this collection with the household hazardous waste collection event. In 2003, eight CESQGs participated in the collection events, bringing in 4,535 pounds of waste and paying \$2,614.90.

Agricultural wastes: Waste pesticides are collected by a special program administered by the Washington State Department of Agriculture (WSDA), using funds from the Model Toxics Control Account. WSDA conducts eight to twenty regional collection events across the state each year. Participation is free, but the program does require participants to pre-register and 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.

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, Washington).

As of early 2005, WSDA’s program has collected and disposed of 1.6 million pounds (820 tons) of pesticides from over 5,000 customers since the program began in 1988 (WSDA 2005). This is an average of 323 pounds per customer.

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 the county staff receive 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 Thirteenth Annual Status Report (Ecology 2004b) for the year 2003. As shown in that report, there were 16 million pounds of HHW, 11.7 million pounds of used oil, and over 1.3 million pounds of CESQG collected through the various programs in Washington in 2003. Table 8.3 shows the historical trend for these materials and Table 8.4 shows the top six wastes collected in 2003.

Year	HHW	Used Oil	CESQG	Total MRW
1998	9.6	9.2	0.5	19.3
1999	9.9	9.3	0.64	20.4
2000	10.5	8.3	1.1	19.8
2001	15.6	11.3	1.0	27.9
2002	13.5	9.2	1.4	24.1
2003	16.0	11.7	1.3	29.0

Note: All figures are in millions of pounds per year.

Waste Type	Total Pounds
Oil, Non-Contaminated *	12,056,418
Oil-Based Paint	4,806,257
Latex Paint	4,241,293
Lead Acid Batteries *	2,390,580
Flammable Liquids *	1,702,373
Latex Paint, contaminated	1,092,040
Subtotal for Top Six Wastes	26,288,961, or 91% of all MRW
Other Wastes	2,831,436
Total for 2003	29,120,397

* Does not include amounts collected privately and through hazardous waste programs.

The Thirteenth Annual Status Report states that all but eight counties (Chelan, Clallam, Douglas, Ferry, Garfield, Grant, Skamania, and Wahkiakum) have permanent HHW facilities. That report also 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 8.4% in 2003, but in the counties without permanent facilities the average participation rate was only 2.1%.

County	Number of Households	HHW Participants	Participation Rate	Cost / Participant	Pounds / Participant	HHW Collected, lbs
Chelan *	31,429	735	2.3%	\$94.43	87.8	64,519
Clallam *	31,976	795	2.5%	\$73.96	71.5	56,832
Douglas *	13,517	389	2.9%	\$70.65	116.3	45,244
Grant *	30,418	540	1.8%	\$91.50	95.8	51,748
Okanogan	19,733	334	1.7%	\$218.86	206.0	68,819
Skagit	44,946	2,632	5.9%	\$47.58	179.8	473,289
Snohomish	251,998	16,072	6.4%	\$34.18	102.1	1,641,252
Statewide Totals	2,578,860	208,791	8.4%	NA	84.8	18,153,309

* 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 the Department of 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 February 10, 2003. These standards primarily address MRW facilities (construction, record keeping and reports, etc.).

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. The most recent changes became effective January 1, 2005, and the highlights of those revisions include:

- mercury-containing equipment can now be managed as a universal waste.
- requires that recyclers and used oil processors develop a closure plan and meet financial responsibility requirements.
- several other details were addressed as well, which in many cases help update the rules and make them consistent with other changes (such as changes in federal regulations, the international fire code, and the North American Industry Classification System).

On January 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, Governor Gregoire signed a law that established a system to recycle electronic wastes, including computers, monitors and televisions. This system will be available at no charge to consumers, and will be financed by manufacturers of the electronic equipment.

Beyond Waste plan: One of the five key initiatives of the state's Beyond Waste plan is "reducing small-volume hazardous waste materials and wastes." 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. Ecology estimates that as much as 144 million pounds of MRW is disposed in the solid waste stream. The discussion shown in the Beyond Waste plans concludes that, while local programs provide several important benefits, it is unlikely that the current system can manage all of the MRW.

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* is to update the MRW plans and programs for Chelan County. Although updates to the MRW plan are not strictly required by state law, it is worthwhile to update the existing plan in the interests of human health and environmental quality.

Automotive wastes: Convenient opportunities for recycling waste oil are present in all parts of Chelan County. Opportunities for recycling antifreeze are lacking in the north county service area, except for the annual HHW collection events. Opportunities to recycle car batteries are present throughout the county.

Opportunities to recycle or properly dispose of oil filters are nonexistent for the general public, and it is unknown what the commercial generators might be doing with their oil filters. Based on results from other areas, the amount of oil filters being improperly disposed by commercial generators could be as high as 80% (GS 2002). It is also possible, although there is no hard evidence to support this, that the commercial generators of oil filters have received conflicting or confusing information. 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 possibly missing the point that this is true only if the filters are properly recycled.

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.

Conditionally exempt small quantity generator wastes: Few CESQGs are currently participating in the annual MRW collection events. In 2003, only eight companies participated in the MRW collection events, although other businesses and institutions could also be using the private collection services offered by hazardous waste disposal companies.

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 the 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 January 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 California in 2003. Since many of the 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. Establish an antifreeze collection site in Chelan and/or Entiat.
3. Survey businesses that are potentially large generators of oil filters and other automotive wastes, in order to determine if a problem exists with their handling/disposal methods.

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 in the Wenatchee or another area. Based on the designs and other information shown in the Facilities Study (see Appendix C), the construction of a permanent MRW facility could cost from \$370,000 to \$640,000. These costs could probably be reduced by using a phased-in approach or by co-locating the MRW Facility with an existing waste transfer or public works facility. 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 \$100,000 per 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. Information from the Department of Ecology (Ecology 2000) shows that fixed facilities are much more effective than annual collection events, and are less expensive in terms of cost per participant and cost per pound of collected material.

2. Use satellite facilities to provide more convenient disposal sites for most common materials. A drawback of the permanent facility above, aside from the initial cost, is that such a facility would need to be in a central area (presumably the Wenatchee area) and 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 relatively inexpensive (\$35,000 for a storage unit, plus operating and disposal expenses), and the wastes from these sites could be transferred to the permanent facility.
3. Mobile collections, such as monthly collection events in different areas (on a rotating basis). These could be effective, but costs could be prohibitive unless the range of materials collected were limited.
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 all of the 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, 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 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. The Department of Ecology may be able to provide technical assistance for this effort. The County could also consider working with industry trade associations and other groups to target specific materials.
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 may be necessary or desirable 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, 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, but 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.

The idea of developing a permanent facility should be pursued. Chelan County should be the lead agency on this, with the capital costs of the facility financed through grant and other funds. The operating costs should be financed by grants and user fees for 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.

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.

8.2.9 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Moderate Risk Wastes

The development of a permanent MRW facility should occur in 2006 – 2007, beginning with an identification of possible sites and funding sources.

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	Pursue
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	Pursue
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	Pursue
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.

The second recommendation above is to simply continue an existing activity. This activity will need to be evaluated periodically, and will also need to be evaluated and likely modified somewhat when the permanent facility is constructed.

The third recommendation above is primarily an ongoing activity for the County, but may require additional effort by the state. This effort should begin as soon as feasible but within two years of the adoption of this Plan.

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 towards 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 \$19.79 per cubic yard. Over the past three years, the GWRLF has accepted an average of 824 cubic yards of asbestos wastes from Chelan County sources (623.07 cubic yards in 2002, 1,391.25 in 2003, and 456.45 in 2004). 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 several 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 no local inspectors that can survey demolition projects to certify that the debris is free of asbestos, thus creating higher costs for demolition projects because inspectors have to travel to the area. This situation may lead to more illegal dumping of demolition debris, which is already a problem. A recent case of illegal dumping of asbestos pipe wrap is considered to be an isolated incident, however.

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 to 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.

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.

Alternative	Regulatory Compliance	Capacity	Sustain-ability	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	Pursue

9.2.6 Recommendations 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.

S2) Increase public education for residential generators of asbestos.

Residential generators of asbestos-containing wastes need to be better educated as to proper handling methods and approved disposal practices.

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. The second recommendation requires additional staff time and so cannot be implemented until additional staff is hired in 2007.

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 waste: contaminated with blood, excretions, exudates, or secretions from humans or animals who 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. 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) regulates 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 three to four billion injections administered outside of traditional health care settings (Waste Age 2004). Approximately two-thirds, or about two 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.

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:

S3) Increase education for 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 in 2007.

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 ten 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

Year	Chelan County			City of Chelan		City of Entiat, Total Permits
	SFR Only	Mobile Homes	Total	SFR Only	Total	
2004	246	75	799	29	95	32
2003	219	80	NA	14	99	29
2002	181	57	745	13	87	25
2001	174	85	767	15	103	24
2000	166	88	805	13	106	25
1999	NA	NA	783	NA	NA	28
1998	175	93	756	NA	NA	50
1997	171	114	819	23	80	61
1996	198	148	811	13	72	31
1995	198	144	837	NA	NA	39
1994	230	186	NA	NA	NA	NA

Notes: *Figures are from the planning departments of Chelan County and the cities shown, and this information was collected in September 2005.*

SFR = Single-Family Residences.

NA = Not Available.

Regional Landfill (GWRLF) for disposal. Very little of it is currently recycled or reused in Chelan County, and then only through the sporadic efforts of construction companies or individuals. Material handled on-site is sometimes burned or buried, although these are not approved practices, but clean (untreated) wood scraps are sometimes legitimately diverted to firewood. Finally, a portion of the C&D waste also ends up at illegal dumps.

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 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

web page (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 are being taken on the state and local level. The High Performance Green Building Bill was signed in to law by 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.

Currently, a portion of the C&D wastes is ending up at illegal dumps throughout the county. Greater control or more convenient recycling and disposal opportunities for this material would help prevent it from being illegally dumped.

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 are built in the Chelan area, in Wenatchee and in other areas. On a national level, it is estimated that half again 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 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, sheetrock, cardboard and other materials. 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 80’s 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 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 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 9.4. Evaluation of Alternatives for C&D Wastes.					
Alternative	Regulatory Compliance	Capacity	Sustain-ability	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

9.4.6 Recommendations for C&D Waste

The recommendations for C&D wastes are:

S4) A central processing facility and/or salvage operation should be developed.

There needs to be an opportunity to recycle and reuse building materials.

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 longer 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 is hired in 2007. As an ongoing activity, the second recommendation should 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) by Douglas County, 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, although if contamination levels aren't too high then on-site encapsulation is also a possibility. 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. 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.

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 9.5. Evaluation of Alternatives for Agriculturally-Contaminated Soils (ACS).					
Alternative	Regulatory Compliance	Capacity	Sustain-ability	Cost-Effectiveness	Conclusions
On-site disposal	Medium	High	High	High	Don't pursue
Daily cover at GWRLF	High	Medium	Medium	Medium	Don't 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 wastes 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 had generated industrial wastes in the past.

Alcoa: This company used to handle their waste using an on-site industrial solid waste landfill, but now their wastes are handled as solid waste and taken to the GWRLF.

Longview Fibre: Any wastes generated by this paper mill near Leavenworth, besides a small amount of regular trash, would be organic and so should be addressed in Chapter 5 of this Plan.

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, spare(s), 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. Les Schwab also accepts tires for a fee of \$2.00 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, Oregon 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 recently 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 will expire in 2010. 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 amendments also directed Ecology to conduct a study of unauthorized tire piles and to clean up a tire dump near Goldendale.

The *Study of Unauthorized Tire Piles* (G-Logics 2005) identified 54 sites in Washington with significant and unauthorized accumulations of scrap tires. One site, the Goldendale Tire Shredders site, contains more than two-thirds of the total number of tires. Altogether, the 54 sites contain the equivalent of 3.0 million passenger tires. The cost for cleaning up these tires is estimated to be \$7,135,000. One of the sites identified in this study is in Chelan County (the Fairview Canyon site), which is estimated to contain the equivalent of 24,160 tires. Removal and proper disposal of these tires is projected to cost \$55,750.

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 recent 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.

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: Potential recycling options could be researched and developed, with the goal of linking up the supply of tires to a local demand for the end-product. Few tire recycling operations function on such a local scale, although one possibility might be the idea of shredding the tires to produce a landscape mulch. Any private enterprise encouraged to set up in the county would need to be financially self-sufficient. The amount of tires generated in the area may not prove to be adequate for such an operation, and tires may need to be brought in from neighboring counties.

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.

Alternative	Regulatory Compliance	Capacity	Sustain-ability	Cost-Effectiveness	Conclusions
Designate local site	Low	Medium	Low	Low	Pursue
Request help in cleaning up tire piles	High	High	Medium	Low	Don't 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 local recycling options	High	High	Medium	Medium	Don't 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.

S8) Investigate engineering and other alternative applications for tires.

The use of chipped tires in roadways should be investigated. The efforts of other counties to develop this and other applications should be monitored and the potential use of those methods in Chelan County considered as appropriate.

S9) Conduct further research into designating a local site for tire disposal.

A local disposal site might be the least expensive method for disposal of tires, but the significant conditions and requirements that must be met could also make this a fairly expensive option.

9.7.7 Implementation Schedule/Costs and Monitoring/Evaluation Methods for Tires

The first two recommendations require additional staff time and so cannot be implemented until additional staff is hired in 2007. The third recommendation is an ongoing activity.

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 that the institutional framework defines and delineates the roles and responsibilities of the municipalities, counties, state, and private sector.
- Ensure that the responsibilities and authorities vested in implementing agencies allow them to function efficiently.
- Ensure that funding mechanisms and authorities are sufficient to support adequate management and implementation of the solid waste system.
- Ensure that sufficient monitoring and regulatory procedures are in place to adequately manage solid waste.

- Ensure that agencies responsible for planning, management, implementation and enforcement are adequately staffed and funded.
- Ensure that permitting requirements are modified or established, where necessary, to provide a suitable framework for monitoring various waste streams.
- Ensure that citizen groups can participate in planning and implementation activities.

The recommendations shown in the previous solid waste management plan for Chelan County (CC 1994) also provide direction for the goals and objectives for the current process:

- Provide adequate staffing for solid waste programs.
- Improve interagency coordination and oversight.
- Assure adequate Health District staffing and training as necessary.
- As new regulations for solid waste monitoring and enforcement are developed, additional Health District staff resources may be required.
- 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, to enhance the solid waste management system.
- Provide adequate revenue to fund 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 the 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 superseded 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.

The State has also been conducting an aggressive anti-litter campaign over the past few years. The theme of this campaign, "litter and it will hurt," is being used in conjunction the promotion of a toll-free phone number (1-866-LITTER-1) that can be used to report people that litter and related problems.

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.

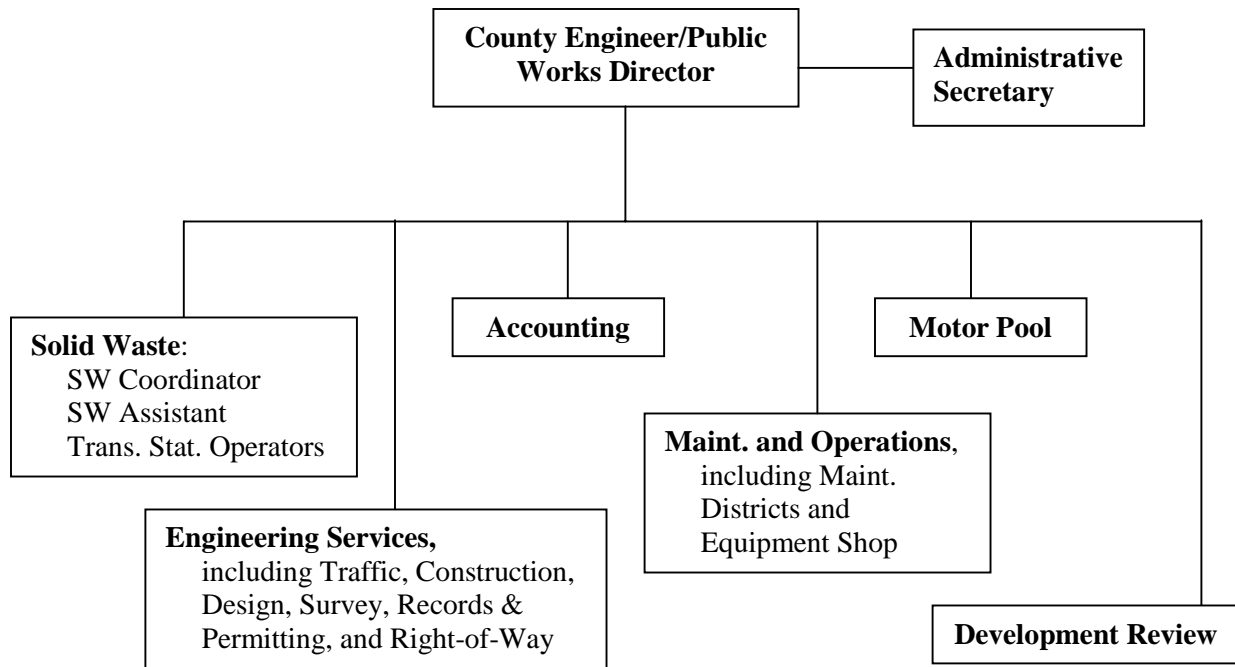
Chelan County Public Works Department: The Public Works Department is the agency primarily responsible for solid waste management activities for Chelan County. The Chelan County Public Works Department operates a solid waste transfer station and contracts with a private company for the operation of a second transfer station. The Public Works Department also conducts the annual Household Hazardous Waste Collection event and annual white goods collection event. Staffing consists of a Solid Waste Coordinator (0.8 full-time equivalents), Solid Waste Assistant (0.2 FTE), full and part-time transfer station attendants (1.2 FTE), and assistance as needed from the Public Works Director, Assistant Director, 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. 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 (for the Chelan Transfer Station, there is a \$2.00 surcharge on each yard handled). 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. 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 that contain policies on solid waste management. 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 city of Wenatchee contracts with Waste Management for garbage collection services and collects the fee for this service through their utility billings. The next three largest cities (Cashmere, 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:

- intercounty compliance and enforcement problems.
- illegal dumping, especially near Entiat 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 could be instituted or increased for some activities.

Table 10.1. Chelan County Solid Waste Budget.

Solid Waste Fund	<u>2005</u> ¹	<u>2006</u> ¹
<u>Revenues</u>		
Tipping Fees, Dryden Transfer Station	526,241	599,616
Surcharge, Chelan Transfer Station	58,562	68,446
Compost Contributions	7,862	5,500
Grants	44,527	43,538
Sales of Salvaged Materials and Misc.	3,334	2,905
Miscellaneous Revenues	40	0
<u>Expenses</u>		
Salaries and Benefits	128,360	140,134
Supplies	10,538	12,257
Services and Charges	485,619	508,656
Interlocal Agreement	44,100	44,100
Payments to Other Funds	33,830	34,420
Taxes and Assessments	13,961	0
Beginning Fund Balance	189,524	113,642
Total Revenues	640,526	720,005
Total Expenses	716,408	739,567
Ending Fund Balance	113,642	94,080
Solid Waste Planning Fund		
<u>Revenues</u>		
Grants (Ecology)	125,767	114,746
Interlocal Funds	100,000	100,000
Sales	6,275	7,480
Wood Grinder	16,845	28,420
Investment Interest	1,500	0
<u>Expenses</u>		
Salaries and Benefits	82,438	44,608
Supplies	1,447	915
Services and Charges	149,596	147,504
Taxes and Assessments	102	0
Payments to Other Funds	7,828	9,278
Capital	18,615	21,000
Beginning Fund Balance	233,574	223,935
Total Revenues	250,387	250,646
Total Expenses	260,026	223,305
Ending Fund Balance	223,935	251,276

Notes:

All figures are in dollars.

1. Figures for 2005 and 2006 are budgeted amounts, not actual revenues and expenditures.

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 Health District staffing and expenses. This effort has been relatively stable for the past several years, but changes created by this Plan or by other factors 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 new waste reduction, recycling, composting and disposal programs. New solid waste programs could require funds for initial capital investments, as well as staff, supplies, equipment and associated implementation costs. As discussed in Chapter 5, additional staffing will be needed to implement some of the recommendations in this Plan. Additional solid waste facilities may also increase the permitting and monitoring activities of the Health District staff.

There are opportunities for regional efforts involving the neighboring counties (primarily Douglas, 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. The city of Cashmere uses surveillance cameras, coupled with the threat of fines, at their recycling center. 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 by 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, grants and other sources. This system is working well but additional funds will be 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 composting 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, grant funding, and/or private financing. Administration and enforcement expenses could be funded by assessments to collection systems, general funds, and private funding for private operations.

The more feasible funding options are discussed below.

Grants: The County and the cities have received grant monies in the past for various projects, and more grants from various sources could be sought in the future. The current grants are an especially important part of the funding for existing programs, but may also be critical for future projects that do not generate revenue (such as an MRW facility).

Service fees and tipping fee surcharges: Service fees and tipping fee surcharges are currently used in Chelan County for many programs. More could be done, however, such as instituting a charge for users of the city of Chelan's brush collection site. Service fees would also be an appropriate funding mechanism for capital improvements at existing facilities. In other cases, fees and services charges should be periodically evaluated to determine if the amount 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 may be relatively small.

Interlocal agreements: An interlocal agreement is already being used as a source of funding for Chelan County solid waste programs, and revisions to that agreement 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.

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 that are 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 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 administrative and regulatory alternatives is presented in Table 10.2.

Alternative	Public Acceptability	Funding Flexibility	Staff Availability	Cost-Effectiveness¹	Conclusion
Illegal dumping enforcement	High	Low	Low	Low	Continue as is currently done
Mandatory collection	Very Low	Low	Low	Medium	Don't pursue
Illegal dumping education	High	Low	Low	Medium	Pursue
Increased staffing	Medium	Low	Medium	Medium	Should pursue
Increased funding	Low	High	Medium	Medium	Should pursue
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) Support adequate Health District solid waste enforcement activities.

Enforcement is a key tool in preventing the negative impacts of illegal dumping and other improper solid waste management methods, but proper enforcement depends on adequate staffing and other resources.

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) Develop additional revenue sources to help fund solid waste programs.

Significant additional revenues will be needed in order to implement the recommendations proposed in this Plan. Appropriate sources should be used to provide the needed revenues (see additional details below).

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 will be needed for some of the 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. These funds should be identified in 2006 and implemented in 2007, along with hiring an additional staff person in 2007. 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 9	\$35,000	Increased interlocal fund payments by cities and county
Central processing site for organics (Recommendation #O1): Staff time Initial site preparation Site development and operation	\$35,000 \$25,000 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
Repair damaged pit floor at Dryden Transfer Station (#F1)	\$50,000	Existing county funds
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 Dryden Transfer Station (#F4)	\$262,000	Existing county funds/user fees
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 that 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. Each of 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 have 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 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 staffperson would cost about \$5,000 per year.

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 the students.
- 3) use a multi-media approach that engages a variety of senses.
- 4) guide the students to conclusions of their own.
- 5) encourage the 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 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.

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 since these can be accessed 24 hours a day.
- **Flyers** can be distributed at the transfer stations, county and other municipal buildings, libraries, and 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.

Alternative	Public Acceptability	Funding Flexibility	Staff Availability	Cost-Effectiveness¹	Conclusion
Americorps volunteer	High	High	Medium	High	Pursue
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 videos, slide shows, radio/newspaper advertising.
- 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.

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.

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 that are 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 numbered 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 3-11):				
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	Low	New staff time	New funds
WR3) Develop procurement policies for durable, reusable, repairable, and efficient goods.	Cities, County	Low	New staff time	Existing funds
Chapter 4, Recycling (see pages 4-13, 4-34, 4-35, and 4-38):				
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 ¹	NA ¹
R3) Adopt minimum service levels.	County	High	NA ¹	NA ¹
R4) Coordinate education efforts with waste reduction programs.	County	Medium	New staff	New funds
R5) Provide information to assist local businesses.	County	Medium	New staff	New funds
R6) Continue curbside programs in Cashmere and Wenatchee.	Cities	High	Existing	User fees
R7) Expand drop-box system in urban and rural designated areas.	County	High	New staff	New funds
R8) Encourage multi-family dwelling owners to contract with private recycler.	Cities	High	Existing staff time	Existing funds
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 to track recycling.	County	Medium	New staff	New funds
R12) Continually investigate and encourage local, cost-effective markets.	Ecology, County, Cities, Private Firms	Medium	New staff	Grants and private funds
R13) Support government procurement policies.	County, Cities	Medium	Existing	Existing

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 4, Recycling, continued:				
R14) Encourage private companies to adopt procurement policies that promote the use of recycled materials.	County	Medium	New staff	New funds
R15) Any proposals for recycling through mixed waste processing should be evaluated.	Ecology, Health District, County, Cities	Low	NA	NA
Chapter 5, Organics (see pages 5-16 and 5-17):				
O1) Develop a central processing site for organic materials.	County, City of Wenatchee	High	25K for initial site preparations	County/private Grants, service fees
O2) Develop a second, smaller processing site in Chelan.	County, Chelan	Medium	New staff	
O3) Hire an additional, temporary staff person to implement these recommendations.	County or City of Wenatchee	High	\$35,000	Grants
O4) Expand Dryden compost site (per Facilities Study).	County	High	Existing	Existing
O5) Monitor septage disposal systems, consider development of future programs if necessary.	County, Health District, SWAC	Medium	Existing staff time	Existing
O6) Explore options and partnerships for land application of all types of organic materials.	County, Cities, State, Industry, WSU	High	New staff	County/CPG
O7) Continue to support composting education efforts conducted by WSU Cooperative Service.	County	Medium	Existing staff time	Existing
Chapter 6, Solid Waste Collection (see page 6-10):				
WC1) All areas of Chelan County should use collection systems and rates that encourage resource conservation.	County, Cities, Haulers	High	New and existing staff	Municipal funds and service fees
WC2) Municipal and private haulers should use local transfer stations.	County, Cities, Haulers	Medium	NA	NA
Chapter 7, Transfer and Disposal System (see pages 7-7, 7-13, 7-14, and 7-18):				
T1) The recommendations made by the Facilities Study for the transfer stations should be adopted as part of this Plan.	County, Haulers	Medium to high	Varies	Varies, but primarily user fees

Table 11.1. Implementation Summary for Recommendations, continued.				
Recommended Activity	Lead Agency	Priority	Cost	Funding Source
Chapter 7, Transfer and Disposal System, continued:				
WI1) Consider higher rates for out-of-county wastes.	County	Low	NA	NA
WE1) Explore options for waste export.	County	High	Existing	Existing
L1) Identify potential sites for landfills.	Health District	Low	New staff time	Grants
L2) Inventory old dumpsites in Chelan County.	County, Cities, Health District	Low	New staff time	New funds
Chapter 8, Moderate Risk Wastes (see pages 8-12 and 8-13):				
MRW1) Develop a permanent MRW facility.	County	High	\$300K or more	Grants
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	High	Existing	Existing
Chapter 9, Special Wastes (see pages 9-4, 9-7, 9-12, 9-13, 9-15, and 9-20):				
S1) Continue asbestos disposal using approved and permitted methods.	County, Disposal Facilities, Health District	High	Existing	Existing
S2) Increase public education for residential generators of asbestos-containing wastes.	County	Medium	New staff time	Grants
S3) Increase education for proper disposal methods of biomedical wastes.	Haulers, Health District	Medium	New and existing	Grants, existing funds
S4) A central processing facility and/or salvage operation for construction and demolition wastes should be developed.	County, private companies	Medium	New staff time	Grants
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

Table 11.1. Implementation Summary for Recommendations, continued.				
Recommended Activity	Lead Agency	Priority	Cost	Funding Source
Chapter 9, Special Wastes, continued:				
S8) Investigate engineering and other alternative alternatives for tires.	County	Low	New staff	Grants
S9) Conduct further research into a local disposal site for tires.	County	Medium	Existing	Existing
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 time	Varies
A2) Continue to improve interagency coordination and oversight.	County, Cities, others	Medium	Existing	Existing
A3) Support adequate Health District solid waste activities.	Health District	Medium	Existing	Existing
A4) Evaluate whether facilities and programs will be managed publicly or privately.	County	Medium	Existing	Existing
A5) Develop ordinances, as needed, to enhance the solid waste management system.	County	Medium	Existing	Existing
A6) Develop additional revenue sources to help fund solid waste programs.	County	Medium	Existing	Need new funding sources
A7) Continue to apply for grant money for the funding of solid waste programs.	County	High	Existing	Existing
PE1) Continue and expand educational efforts to promote waste diversion methods.	County	Medium	New staff	Americorps or other program
PE2) Encourage waste haulers and municipalities to conduct annual (at a minimum) publicity for waste collection and recycling.	Haulers, Cities	High	Existing	User fees
Facilities Study (see Appendix C):				
<u>Dryden Transfer Station</u>				
F1) Repair damaged pit floor.	County	High	\$50,000	County/user fees
F2) Improve stormwater drainage.	County	Medium	\$2,000	County/user fees
F3) Install gutters.	County	High	\$5,000	County/user fees
F4) Install scale.	County	Medium	\$262,000	County/user fees
F5) Expand compost site.	County	High	\$10,000	County/user fees
F6) Add storage area for compost on top of old landfill.	County	Medium	\$1,800	County/user fees

Table 11.1. Implementation Summary for Recommendations, continued.				
Recommended Activity	Lead Agency	Priority	Cost	Funding Source
Facilities Study, continued:				
<u>Chelan Transfer Station</u>				
F7) Install scale.	County	Medium	\$183,500	County/user fees
F8) Add metal recycling.	County	High	Minimal	County/user fees
F9) Expand facility.	County	High	Up to \$473,500	County/user fees
<u>South Wenatchee Transfer Station</u>				
F10) Add recycling opportunities.	Waste Management	High	NA ¹	User fees
F11) Add queuing space for traffic.	Waste Management	Medium	NA ¹	User fees
F12) Expand facility.	Waste Management	High	NA ¹	User fees
<u>Entiat Transfer Station</u>				
F13) Periodically review need to construct new facility.	County, City of Entiat	Medium	NA	NA
<u>Moderate Risk Waste Facility</u>				
F14) Pursue development of an MRW Facility.	County	High	\$300K	Grants, other funds
<u>Leavenworth Recycling Facility</u>				
F15) Use phased-in approach for Leavenworth recycling facility.	County, citizens group, Leavenworth	Medium	Up to \$2,000,000	Grants, other funds

Notes: 1. NA = Cost data is not available for Recommendations #F10, F11 and F12.

Table 11.2. Implementation Timeline for Recommendations.										
Recommended Activity	2006	2007	2008	2009	2010	2011	2016	2021	2026	Comments
Chapter 3, Waste Reduction (see page 3-11):										
WR1) Expand waste reduction programs in governmental offices.	Ongoing									
WR2) Encourage waste reduction programs for commercial and industrial businesses.	Ongoing									
WR3) Develop procurement policies for durable, reusable, repairable, and efficient goods.		X								
Chapter 4, Recycling (see pages 4-13, 4-34, 4-35, and 4-38):										Implementation of these three recommendations occurs with the adoption of this Plan.
R1) Adopt UGA’s from Comprehensive Plan as urban boundaries for solid waste services.	X									
R2) Adopt list of designated recyclable materials.	X									
R3) Adopt minimum service levels.	X									
R4) Coordinate education efforts with waste reduction programs.	Ongoing									
R5) Provide information to assist local businesses.	Ongoing									
R6) Continue curbside programs in Cashmere and Wenatchee.	Ongoing									
R7) Expand drop-box system in urban and rural designated areas.		X	X	X	X					Contingent on additional staffing
R8) Encourage multi-family dwelling owners to contract with private recycler.		X	X	X	X					Contingent on additional staffing
R9) Encourage municipal permitting agencies to recommend that builders incorporate recycling collection areas into their building plans for multi-family and commercial buildings.		X								Contingent on additional staffing
R10) Continue and expand recycling programs in governmental offices.		X	X	X						Contingent on additional staffing

Table 11.2. Implementation Timeline for Recommendations, continued.										
Recommended Activity	2006	2007	2008	2009	2010	2011	2016	2021	2026	Comments
Chapter 4, Recycling, continued:										
R11) Develop a monitoring/reporting system to track recycling in county.		X	X							Contingent on additional staffing
R12) Continually investigate and encourage local, cost-effective markets.	Ongoing									
R13) Support government procurement policies.		X	X	X						Contingent on additional staffing
R14) Encourage private companies to adopt procurement policies that promote the use of recycled materials.			X	X						
R15) Any proposals for recycling through mixed waste processing should be evaluated.	Ongoing									Conducted on an as-needed basis
Chapter 5, Organics (see pages 5-16 and 5-17):										
O1) Develop a central processing site for organic materials.		X	X	X						2007: refine approach, 2008: improve site, 2009: operation begins
O2) Develop a second, smaller site in Chelan.		X								Contingent on additional staffing
O3) Hire an additional temporary staff person to implement these recommendations.		X								
O4) Expand Dryden compost site.		X								
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.	Ongoing									
O7) Continue to support composting education efforts conducted by WSU Cooperative Service.	Ongoing									

Table 11.2. Implementation Timeline for Recommendations, continued.										
Recommended Activity	2006	2007	2008	2009	2010	2011	2016	2021	2026	Comments
Chapter 6, Solid Waste Collection (see p. 6-10):										
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.	X	X	X	X	X	X	X	X	X	Compliance to begin when Plan is adopted
Chapter 7, Transfer and Disposal System (see pages 7-7, 7-13, 7-14, and 7-18):										
T1) The recommendations made by the Facilities Study for the transfer stations should be adopted as part of this Plan.	X									
WI1) Consider higher rates for out-of-county wastes.	Periodic reviews as needed.									
WE1) Explore options for waste export.	X									
L1) Identify potential sites for landfills.		X								
L2) Inventory old dumpsites in Chelan County.		X	X	X						
Chapter 8, Moderate Risk Wastes (see pages 8-12 and 8-13):										
MRW1) Develop a permanent MRW facility.		X								
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, 9-7, 9-12, 9-13, 9-15, and 9-20):										
S1) Continue asbestos disposal using approved and permitted methods.	Ongoing									
S2) Increase public education for residential generators of asbestos-containing wastes.		X	X	X	X	X	X	X	X	Begin in 2007, continue for planning period

Table 11.2. Implementation Timeline for Recommendations, continued.										
Recommended Activity	2006	2007	2008	2009	2010	2011	2016	2021	2026	Comments
Chapter 9, Special Wastes, continued:										
S3) Increase education for proper disposal methods of biomedical wastes.		X	X	X	X	X	X	X	X	Begin in 2007, continue for planning period
S4) A central processing facility and/or salvage operation for construction and demolition wastes should be developed.		X								
S5) Distribute more information about potentially dangerous demolition materials.		X	X	X	X	X	X	X	X	Begin in 2007, continue for planning period
S6) Continue current practices for agriculturally-contaminated soils and evaluate options on a case-by-case basis.	Ongoing									
S7) Encourage proper disposal of tires.		X	X	X	X	X	X	X	X	Begin in 2007
S8) Investigate engineering and other alternative alternatives for tires.		X	X	X	X	X	X	X	X	Begin in 2007, continue for planning period
S9) Conduct further research into local 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									Plus additional staff in 2007
A2) Continue to improve interagency coordination and oversight.	Ongoing									
A3) Support adequate Health District solid waste activities.	Ongoing									
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) Develop additional revenue sources to help fund solid waste programs.		X	X							

Table 11.2. Implementation Timeline for Recommendations, continued.										
Recommended Activity	2006	2007	2008	2009	2010	2011	2016	2021	2026	Comments
Chapter 10, Administration and Public Education, continued:										
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 conduct annual publicity.						Ongoing				
Facilities Study (see Appendix C):										
<u>Dryden Transfer Station</u>										
F1) Repair damaged pit floor.	X									
F2) Improve stormwater drainage.		X								
F3) Install gutters.	X									
F4) Install scale.	X	X								2006: final design, 2007: installation
F5) Expand compost site.	X									
F6) Add storage area for compost on top of old landfill.		X								
<u>Chelan Transfer Station</u>										
F7) Install scale.	X	X								2006: final design, 2007: installation
F8) Add metal recycling.	X									
F9) Expand facility.			X							
<u>South Wenatchee Transfer Station</u>										
F10) Add recycling opportunities.	X									
F11) Add queuing space for traffic.		X								
F12) Expand facility.			X							

Table 11.2. Implementation Timeline for Recommendations, continued.										
Recommended Activity	2006	2007	2008	2009	2010	2011	2016	2021	2026	Comments
Facilities Study, continued:										
<u>Entiat Transfer Station</u>										
F13) Periodically review need to construct new facility.					X		X	X	X	
<u>Moderate Risk Waste Facility</u>										
F14) Pursue development of an MRW Facility.	X	X								
<u>Leavenworth Recycling Facility</u>										
F15) Use phased-in approach for Leavenworth recycling facility.	X	X	X	X	X					

**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 stream”).

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

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

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. County Responsibilities

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. City Responsibilities

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 *Kurt H. Hennings D.C.* 9-30-93
Mayor Date

City of Chelan *James C. Stewart* 10-6-93
Mayor Date

City of Entiat *John W. Heston* 10-6-93
Mayor Date

City of Leavenworth *Mal Weyer* 9-14-93
Mayor Date

City of Wenatchee *Jim Lynch* Oct 6, 1993
Mayor Date

Chelan County Board of Commissioners

Broad W. Myers 10-11-93
Chairman Date

ATTEST:
EVELYN L. ARNOLD
AUDITOR &
CLERK OF THE BOARD

Thomas A. Brew 10 Oct 93
Commissioner Date

BY
Claudia Metz
Deputy Auditor
Clerk of the Board

John S. Bell 10-11-93
Commissioner Date

APPENDIX B

SUMMARY OF RECOMMENDATIONS FROM 1994 PLAN

APPENDIX B SUMMARY OF RECOMMENDATIONS FROM 1994 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	Current Status
3-1. Continue and expand educational efforts to promote waste reduction	Ongoing
3-2. Develop a backyard composting education program	Done
3-3. Provide a financial incentive for waste reduction	County residents have, some Cities have.
3-4. Expand waste reduction programs in governmental offices	Done to the extent described in Plan
3-5. Develop a waste reduction program for commercial businesses	Not completed
3-6. Develop procurement policies	Not completed
3-7. Monitor waste reduction programs	Not completed
Recycling and Composting	
4-1. Coordinate education efforts with waste reduction programs	Ongoing
4-2. Encourage local businesses to establish a recycling program	Done
4-3. Evaluate curbside recycling vs. an expanded drop box system in Wenatchee area, and continue curbside programs in Cashmere and Chelan	Done
4-4. Expand drop-box systems in urban and rural designated areas	Ongoing
4-5. Encourage multi-family dwelling owners to contract with private recycler	Not completed
4-6. Encourage municipal permitting agencies to recommend that builders incorporate recycling collection areas into their building plans	Not completed
4-7. Implement yard debris collection and processing system	Partially completed
4-8. Continue and expand recycling program in governmental offices	Ongoing
4-9. Develop a monitoring/reporting system	Not completed
4-10. Continually investigate local, cost-effective markets	Not completed
4-11. Develop government procurement policies	Not completed
4-12. Work with local manufacturers to promote recycling	Not completed
Solid Waste Processing Technologies	
5-1. Continue and expand current recyclables processing system	Ongoing
Collection	
6-1. Continue current collection practices	Done
6-2. Consider the costs and benefits of developing solid waste collection districts and establishing mandatory collection	Ongoing
6-3. Evaluate refuse collection rates and modify them as needed to create greater incentives for reducing waste and recycling	Ongoing
6-4. Give WUTC authority over the collection of source-separated recyclables in the unincorporated areas.	Done
Transfer and Import/Export of Waste	
7-1. Conduct an expanded feasibility analysis to compare the costs and benefits of long hauling waste	Not completed
7-2. Analyze whether additional transfer stations would be needed if the solid waste management system changes	Done
7-3. Analyze minimum recyclable requirements to be set up at each transfer facility	Done
Landfills	
8-1. Continue current disposal practices.	Done
8-2. Conduct expanded analysis examining the costs and benefits of long-hauling waste out of the region	Not completed

Table B-1. Status of Recommendations from the 1994 Plan, continued.	
Special Wastes	Current Status
9.2-1. Evaluate the feasibility of updating the 1984 Chelan-Douglas County Biosolids Management Plan	Done
9.2-2. Continue beneficial use of biosolids by land application	Done
9.2-3. Encourage the use of agricultural and other land for land application of biosolids	Done
9.2-4. Encourage the development of programs to co-compost with sludge	Done
9.2-5. Use remaining biosolids as landfill cover materials as applicable	Done
9.3-1. Evaluate with SWAC and SWC the need for a Septage Management Plan	Not completed
9.4-1. Require that a letter of intent for the disposal location and amount of demolition debris be submitted with permit applications	Not completed
9.4-2. Require operators of existing unpermitted demolition waste sites to apply for permits	Done
9.4-3. If sufficient expansion of capacity is not gained by the method noted above, pursue siting one or more demolition landfills	Done
9.5-1. Continue existing practices while exploring opportunities to recycle and/or compost wood waste	Ongoing
9.6-1. Continue existing practices for industrial waste	Done
9.7-1. Explore entering into a contract with a tire recycler(s) for recycling-disposing of tires	Not completed
9.7-2. Examine the possibility of coordinating with one of the large companies that is sending tires to be recycled	Not completed
9.7-3. Provide information to the public and businesses of the preferred tire disposal option once developed	Done
9.8-1. Monitor current conditions and develop biomedical waste management plan and monitoring system if necessary	Done
9.8-2. Expand Ecology's Education Program for Home Generators of Biomedical Waste	No longer applicable
9.9-1. Support private efforts to increase on-site remediation of PCS	Done
9.9-2. For PCS that is not practical to remediate on-site, encourage use as landfill cover as applicable	Done
9.10-1. Continue asbestos disposal using approved and permitted methods	Done
9.11-1. County should encourage GWRLF to continue existing practice of accepting purged white good for recycling	Done
9.11-2. Sponsor special collection days approximately once a year during which the cost is significantly reduced	Done
9.11-3. Evaluate the feasibility of permanent white goods recycling sites	Done
Administration and Enforcement	
10.5-1. Provide adequate staffing for solid waste programs, as necessary	Not completed
10.5-2. Improve interagency coordination and oversight	Ongoing
10.5-3. Provide adequate Health district staffing and training as necessary	Ongoing
10.5-4. Determine whether new programs will be managed publicly or privately on a case-by-case basis	Ongoing
10.5-5. Develop new ordinances, as needed to enhance the solid waste management system	Ongoing
Financing and Funding	
10.5-6. Develop additional revenue to help fund solid waste programs, if necessary	Ongoing
10.5-7. Continue to apply for grant money for the funding of solid waste programs	Ongoing

APPENDIX C
SOLID WASTE FACILITIES STUDY

CHELAN COUNTY SOLID WASTE FACILITIES STUDY



Dryden Transfer Station, December 2004

MARCH 2006

SOLID WASTE FACILITIES STUDY

FINAL REPORT

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March 2006

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EXECUTIVE SUMMARY

INTRODUCTION

The Chelan County Solid Waste Facilities Study examines the needs associated with solid waste facilities in Chelan County, in particular for:

- the waste transfer system, including the three existing transfer stations (Dryden, Chelan, and South Wenatchee) and a possible new facility in the Entiat area.
- a facility to accept and dispose of hazardous wastes from households and businesses.
- a recycling facility in the Leavenworth area.

This study was conducted as part of the update of the Chelan County Solid Waste Management Plan, and more details about other solid waste facilities and programs in Chelan County can be found in that document.

CONCLUSIONS AND RECOMMENDATIONS

The alternatives that were examined for this study are based on problems that were noted or reported for the solid waste facilities in Chelan County. Table E-1 shows the costs and conclusions for each of these alternatives. The alternatives are shown in Table E-1 in the same order as they are discussed in the full report. The costs shown in Table E-1 are for construction and other capital expenses, and information on operating costs is shown in the full report.

As shown in Table E-1, it is recommended that several of the alternatives be pursued. The recommended alternatives include various improvements at the existing transfer stations and the construction of a new facility (an “MRW Facility”) to collect hazardous wastes, or what is often called moderate risk wastes. Alternatives that are not being recommended at this time include a new transfer station in the Entiat area and a recycling processing facility in Leavenworth. The transfer station is not being recommended because the costs are relatively high compared to the amount of waste collected, and a phased-in approach is being recommended for the Leavenworth facility to first build up to larger recycling volumes, but these conclusions should be reconsidered if methods could be found to reduce the capital expenses of these alternatives.

NEXT STEPS

The next step is for Chelan County and others to decide which of the alternatives merit action and can be funded. Implementing some of these options will require pursuing grant funds or negotiating with others, activities that will take time to conduct. Some of the options below merit immediate action; others are longer range by virtue of their cost or the difficulty in implementing the alternative.

Table E-1. Alternatives and Conclusions.		
Alternative	Cost	Conclusion
Dryden Transfer Station:		
Repair damaged pit floor	\$50,000	Repairs should be conducted as soon as possible
Improve layout	Minimal	Can be done as part of other modifications
Improve stormwater drainage	\$2,000	Should be done as funds are available
Install gutters	\$5,000	Should be done soon, will pay for itself
Move oil, antifreeze tanks	NA ¹	Can be done as part of other modifications
Install scale	\$262,000	Scale should be installed
Expand compost site	\$10,000	Should be done soon
Add storage area for compost to top of old landfill	\$1,800	Needs further study
Improve metal recycling areas	\$20,000	Can be done as part of other modifications
Chelan Transfer Station:		
Install scale	\$191,000	Should be done soon
Expand transfer station	\$473,500	Adjacent land should be bought if possible, and non-facility options should also be explored
Add metal recycling	Minimal	Should be done soon
South Wenatchee Transfer Station:		
Add recycling opportunities	NA ²	Should be done soon
Add queuing space for traffic	NA ²	Should be done soon
Expand facility	NA ²	Should be done soon
Proposed Entiat Transfer Station:		
Site with two dropboxes	\$345,200	These options are relatively expensive in terms of cost per cubic yard disposed due to the small volumes of waste in the Entiat area. This study recommends against pursuing this facility until volumes increase and/or costs can be reduced.
Site with compactor and ramp-accessible dropbox	\$399,600	
Site with compactor and ground-level dropbox	\$369,200	
MRW Facility:		
Fully-enclosed building	\$758,200	The second option for the MRW Facility, a structure with only a roof and partial walls, should be pursued, and other means also sought to further reduce the initial cost of this facility.
Building with partial walls	\$489,000	
Recycling Options for Leavenworth Area:		
Drop-off program	NA ³	The Leavenworth area needs greater access to recycling services for both residential and commercial customers, but the cost of a processing facility cannot be justified for the volumes of materials from that area.
Joint program with Cashmere	NA ³	
Recyclables processing facility	\$1,988,200	

- Notes:
1. NA = Not Available.
 2. Cost estimates were not developed for alternatives at private transfer station.
 3. Only costs for the facility-based option were developed as part of this study, in part because too many uncertainties exist still as to exactly what the other options would include.

SECTION I EXISTING SYSTEM

A. SCOPE AND OBJECTIVES OF THIS STUDY

This report examines the current solid waste facilities in Chelan County and assesses the needs (service gaps) associated with those. Alternatives are discussed for existing and new facilities in Section 2, and Section 3 of this report provides recommendations for the County's consideration.

The study did not include searching for potential sites for proposed new facilities, but rather focused on developing a concept for each new facility that could be used in a site identification process.

This study was conducted as part of the update of the Solid Waste Management Plan for Chelan County. This study was conducted by the environmental consulting firm Green Solutions, with assistance from EnviroMech and URS Corporation.

B. WASTE TRANSFER AND DISPOSAL SYSTEM

Chelan County's solid waste system includes three transfer stations and various public and private recycling programs. The waste collected at these transfer stations is brought to the East Wenatchee Landfill in Douglas County, which is owned and operated by Waste Management.

A transfer station is a facility that accepts many smaller loads of solid waste from a variety of customers, and consolidates those into fewer, larger loads. The large loads are usually placed in a transfer trailer that hauls a net payload ranging from 18 to 30 tons. The three transfer stations operating in Chelan County are:

Dryden Transfer Station – constructed in 1987 when a landfill at the site was closed, the Dryden Transfer Station is owned and operated by the County. It provides the widest range of solid waste and recycling services of any transfer station in Chelan County, and includes a composting facility.

Chelan Transfer Station – this station is owned by Chelan County and operated by a private company, North Central Recycling and Recovery.

South Wenatchee Transfer Station – this station is owned and operated by Waste Management Inc., the largest solid waste hauling company in the United States.

In this study, the term “self-haul” is used to identify garbage that is brought in by residents driving cars and pickup trucks, and also by small businesses and contractors using various types of trucks and trailers. “Moderate risk waste” (MRW) refers to small quantities of hazardous wastes such as paints, pesticides, herbicides, acids, caustics, and poisons. MRW is typically

defined to include wastes from residential sources (household hazardous waste) and from businesses that are small-quantity generators (SQGs), although some MRW facilities also accept waste from businesses that are large-quantity generators.

1. Evaluation of Existing Transfer Stations

a. Dryden Transfer Station

Waste Transfer: The main building at the Dryden Transfer Station is a pre-engineered metal building, about 60 feet by 60 feet, with three walls constructed of corrugated metal paneling. Vehicles back up through the open east side of the building into one of three unloading stalls. Customers unload their garbage into a pit that is about 20 feet wide and varies in depth from about 6 feet at the south end to 3 feet at the north end. A CAT D4 bulldozer pushes the garbage up the sloping pit floor to a loading chute at the north end of the pit. 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 hydraulic unit located in the basement of the transfer building powers the trailer's "walking floor" that moves the waste towards the front of the trailer. A fixed-base knuckleboom crane is used to redistribute and tamp waste in the trailer as it is being loaded, and it can also be used to remove undesirable items that may be inadvertently loaded into the trailer. Axle scales in the trailer tunnel are used to prevent overweight trailers, and the system currently in place generally results in close to the maximum possible load weight (88,000 pounds for the garbage and vehicle) allowed by road weight limits. An IT28 integrated tool carrier is used for miscellaneous waste handling and other chores around the site.

A subcontractor to Waste Management drives the full trailers to the East Wenatchee Landfill. The disposal charges at the landfill are based on the total volume of the truck (90 cubic yards) and a rate of \$12.08 per yard, for a cost of \$1,087.20 for each load. Alternatively, the County could instead be charged \$50 per ton under the current contract with Waste Management. For a vehicle weight of 44,000 pounds and a payload weight of 44,000 pounds (for a total weight equal to the maximum road weight limit of 88,000 pounds), the per-yard charge is equivalent to \$49.42 per ton. It would be to the County's advantage to be charged by weight only if the load weight was 43,488 pounds or less.

Recycling: As customers enter the site and proceed towards the transfer building, a large area for receiving scrap metals can be seen on the right hand side of the road. Customers pay a fee to discard white goods (large appliances) in the scrap metals area. Next on the right are piles of brush waiting to be chipped for compost feedstock. A mobile trailer (a Dempster "AlleyCat") for recyclables is parked on the east side of the transfer building, which is a convenient location for customers unloading waste into the pit. The trailer has five removable bins on each side, and is used to collect aluminum cans, mixed paper, clear glass, and PET bottles. Once every one to two months, the County pulls the trailer to Michelsen's Packaging in Wenatchee to recycle the collected materials.

Additional cardboard and newspaper recycling dropboxes are located below the transfer station, north of the main building, on the "island" between the inbound and outbound roads.

Moderate Risk Waste (MRW): Just south of the transfer building and to the left of the entrance, there are two tanks for used antifreeze, one tank for used oil, and two spill containment pallets for car batteries. Two modular hazardous waste storage containers are located east of the transfer building. These containers are used on an “emergency basis” for people who need to immediately dispose of MRW, and are also used for MRW found mistakenly mixed with the solid wastes brought to the transfer station. MRW is temporarily stored in these containers until shipped to a licensed disposal site.

Yard Waste and Composting: Yard waste and brush is collected separately (stockpiled) and periodically ground up to provide part of the compost feedstock. After grinding, the yard waste is combined with biosolids (sewage sludge) from the Leavenworth wastewater treatment plant to make up the compost mixture. The mixture is piled in windrows on an asphalt-paved pad for composting. The piles are aerated by occasionally turning them with a compost turner. It is reported that odors are not a problem, and are generally not noticeable except when the piles are being turned. Runoff (leachate and rainwater that falls on the asphalt composting pad) drains into a holding pond east of the transfer building.

b. Chelan Transfer Station

Waste Transfer: The transfer building is a pre-engineered metal building, about 50 feet by 50 feet, with three walls constructed of corrugated metal paneling. Vehicles back up through the open east side of the building into one of the four stalls to unload. Customers at this facility unload their garbage directly into the top of a transfer trailer. A backhoe is used to redistribute and compact waste in the trailer. Payloads of 20 to 23 tons are typically achieved, but the actual load weights vary depending on the density of the waste that is placed in the trailer. With a vehicle weight of about 38,000 pounds and a road weight limit of 96,000 pounds, the payloads could be as high as 29 tons.

The Chelan Transfer Station is currently without running water, but a 15,000-gallon tank next to the transfer building is filled as needed. There are also some concerns about the capacity of this facility. One of the haulers reports having to wait up to 40 minutes to unload at times, due primarily to large numbers of self-haulers and the time it takes some of those customers to unload. The operator of the facility (North Central Recycling and Recovery) has also expressed concern about being able to keep up with the flow of waste currently being received at the busiest times of the year (summer months). Only one trip per day is made in the winter months to the landfill, but in summer the facility averages four trips per day due to higher volumes of waste.

Recycling: Recyclable materials can be dropped off at the North Chelan County Recycling Project, a processing facility located on a four-acre parcel adjacent to the transfer station. This facility sorts and bales about 1,150 tons per year of newspapers, mixed paper, cardboard, magazines, clear and colored glass, aluminum cans, tin cans, and PET and HDPE bottles. Chapter 4 of the Solid Waste Management Plan provides more details on the Recycling Project.

Moderate Risk Waste: Moderate risk waste is not accepted at the Chelan Transfer Station, although a nearby bus barn accepts waste oil.

Yard Waste: Brush can be delivered to a site adjacent to the transfer station and recycling center, where it is chipped and sometimes recycled as landscaping material, but it is not composted.

c. South Wenatchee Transfer Station

Waste Transfer: The transfer building is a three-sided metal building located in Wenatchee about eight miles from the East Wenatchee Landfill. There are four unloading stalls, one of which is reserved for garbage collection trucks. Vehicles back up through the west side of the building 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.

Recycling: Recycling opportunities are limited at this facility, as only three materials are accepted for recycling – aluminum cans, newspaper, and scrap metal. A scrap metals trailer is located next to a tipping wall near the site entrance, south of the transfer building.

Moderate Risk Waste: There are no provisions to accept MRW at this facility.

Yard Waste: There are no provisions to accept yard debris, brush, tree limbs, or other materials for composting at this site.

2. Planned Modifications to Existing Transfer Stations

The one change that is planned at this time for the Chelan Transfer Station is to connect it to the municipal water system.

For the Dryden Transfer Station, the one significant capital investment that is currently planned is a “boundary adjustment” for the property line near the compost operation. This area could be paved to expand the area used for composting.

For the South Wenatchee Transfer Station, Waste Management staff have recently reported that they are planning to install a scale, re-route incoming traffic and expand the recycling capabilities at the station.

3. Service Gaps for the Existing Transfer System

Service gaps for the existing transfer system include lack of certain recycling opportunities (see Section D2, below), lack of scales at the transfer stations, and other minor design and operational problems as discussed in the next section. There is also a possible need for a new transfer station in the Entiat area. The residents and businesses in Entiat have farther to travel (about 24 miles one-way) to a transfer station than other incorporated areas of the county.

C. MODERATE RISK WASTE DISPOSAL SYSTEM

Moderate risk wastes (MRW) are wastes that require special handling and disposal due to specific characteristics, such as toxicity or flammability. As defined by state regulations (Chapter 173-350-100 WAC), MRW includes household hazardous waste (HHW) and wastes from “conditionally exempt small quantity generators” (CESQG). HHW includes wastes that would be classified as hazardous except that the small quantities generated by residential sources falls below regulatory thresholds. A CESQG is a business that also generates small quantities of hazardous wastes, and so falls below the regulatory threshold as long as they continue to generate and accumulate limited quantities and meet certain other conditions (see WAC 173-303-070 (8)(b)). Examples of MRW include used oil, antifreeze, herbicides, weed killers, pesticides, acids, bases, oil-based and latex paints, paint strippers, and solvents.

The County conducts an annual collection event that usually accepts MRW at four locations throughout Chelan County. Residents who must dispose of MRW at other times of the year can have their wastes stored in the two prefabricated hazardous materials storage units at the Dryden Transfer Station, although they are encouraged to hold wastes until the annual collection event if possible.

The two primary state regulations governing MRW facilities are:

- WAC 173-350 *Solid Waste Handling Standards*, Section 360 *Moderate Risk Waste Handling* (3/13/2003); and
- *Moderate Risk Waste Fixed Facility Guidelines* (Dept. of Ecology Publication No. 92-13, revised 1993 and 1995).

Other codes that affect the design, construction, and operation of an MRW facility are the International Building Code, International Plumbing Code, International Mechanical Code, and International Fire Code. Most jurisdictions in Washington State have adopted these codes to replace their U.S. counterparts (the Uniform Building, Plumbing, Mechanical, and Fire Codes).

D. RECYCLING SYSTEM

1. Existing Recycling System

The Draft Solid Waste Management Plan describes existing recycling programs in Chelan County and proposes minimum service levels for recycling according to three service areas. The three service areas are the Wenatchee area (Wenatchee and areas to the south), the west county area (Cashmere to Leavenworth), and the north county area (Entiat to Chelan). An adequate recycling opportunity is considered to be available if people have access to a full-service drop-off recycling center or can subscribe to collection services within each of these areas. Recycling service gaps identified in the Draft Solid Waste Management Plan that are applicable to the facilities being examined in this study are shown in the next section.

2. Service Gaps for the Existing Recycling System

The Draft Solid Waste Management Plan has identified a gap in recycling opportunities at two of the transfer stations: the Chelan Transfer Station does not accept ferrous scrap, and South Wenatchee Transfer Station does not accept several of the “designated recyclable materials.”

E. FUTURE NEEDS

The population of Chelan County is expected to grow significantly over the next 20 years. The projected figures (see Table 1) show greater than 50% growth from the year 2000 to 2025.

The figures in Table 1 address permanent population, however, and do not address the seasonal increases in population associated with tourists, seasonal residents and farm workers. Solid waste facilities, like other utilities (water, wastewater, etc.), must be designed to handle the periods of maximum flow. Seasonal changes in population are harder to predict than changes in permanent population, but the amount and nature of developments in the area around the City of Chelan indicate that this area might suffer the largest impact due to seasonal changes. In that area, it may not be possible to accommodate seasonal increases through operational changes such as longer open hours. Furthermore, the design of the Chelan Transfer Station (where waste loads are tipped directly into an open-top trailer) creates a bottleneck as the trailer fills up. This facility may require expansion or significant improvements in the next ten years.

Census County Division (CCD)	<u>2000</u>¹	<u>2025</u>²	<u>Percent Change</u>
Cashmere CCD	10,824	17,092	57.9%
Chelan CCD	6,222	9,579	54.0%
Entiat CCD	2,130	3,117	46.3%
Leavenworth CCD	5,902	8,453	43.2%
Malaga CCD	3,506	4,706	34.2%
Manson CCD	3,248	4,578	40.9%
Stehekin CCD	106	218	105.6%
Wenatchee CCD	<u>34,678</u>	<u>54,061</u>	<u>55.9%</u>
County Total	66,616	101,859	52.9%

- Notes:
1. 2000 population figures by Census County Division (CCD) are from the Census Bureau’s web page.
 2. Population projections for 2025 are from the 2000 Chelan County Comprehensive Plan (as amended in December 2002).

SECTION II ALTERNATIVES AND OPTIONS

A. INTRODUCTION

This section of the Facility Study examines alternatives for several elements of Chelan County's solid waste system:

- modifications to the existing transfer stations,
- construction of a new transfer station near Entiat,
- construction of a fixed facility to handle MRW, and
- development of non-facility and facility-based options for an expanded recycling program in the Leavenworth area.

The cost estimates in this report are preliminary. They are based on the facility concepts and not on actual engineering design drawings and specifications. The estimates are based largely on recent experience at similar facilities elsewhere and on budget-level quotes from equipment vendors. Each has four major components:

1. Site preparation: this includes earthwork, grading, stormwater control, connection to nearby utilities (electricity and water), and an allowance for a septic system.
2. Building and paving: because site-specific conditions and details of the building are as yet undefined, the cost estimate relies on rule-of-thumb unit costs (unit costs per square foot for buildings, cubic yard of reinforced concrete, etc.) and typical dimensions.
3. Equipment: equipment costs can vary significantly depending on capacity, horsepower, operating features, and other factors. Where shown in the following cost estimates, these costs are presented only as a guideline.
4. Contingencies and fees: this factor is an allowance to cover the following items: contingencies (items whose specific details and costs are presently unknown, but that will be addressed in the final design); the engineer's design fee; the contractor's costs to meet the General Conditions and General Requirements portions of the construction contract; and the contractor's cost to mobilize to and from the site.

The cost estimates were developed in mid-2005. It should be noted that construction costs, especially for concrete, steel and oil-based (e.g. plastic) items, have increased more rapidly than the general rate of inflation, and these costs may need to be adjusted for projects that occur a few years later. The cost estimates for this report also have an "allowance" in cases where the cost could be much higher or lower depending on the quality and type of items specified in the final design. Because these facilities have not yet been designed, the budgeted allowance is based on medium quality and quantity. For example, a \$5,000 landscaping allowance might include a few

trees, some shrubs, bark dust, and a hose valve, while a \$10,000 allowance might cover a larger area and include larger trees and a sprinkler system.

Each facility layout in this report is a conceptual-level design only, and represents a possible configuration of buildings, roads, and equipment that would have the functional features as described in the text. Other configurations and designs are possible, and costs could be greatly affected by design and material choices. These cost estimates are intended to help the County in choosing among alternatives and for preliminary use in planning and budgeting.

B. WASTE TRANSFER SYSTEM

1. Needs and Alternatives for Existing Transfer Stations

a. Dryden Transfer Station

The following problems and issues were noted at the Dryden Transfer Station during site visits and interviews.

Damaged Pit Floor

Problem: The concrete floor of the pit is severely worn, with rebar exposed in several places.

Potential Solution: The floor should be repaired immediately. This includes cleaning, chipping back to a suitable surface, adding rebar as needed, and using a bonding agent to attach new concrete to bring the surface up to the original elevation. High strength (6,000 psi) concrete would provide a durable wearing surface for this application. Alternatively, a sacrificial layer of asphalt (about 3 to 6 inches deep) could also be spread on top of repaired normal strength concrete to provide a working surface. Asphalt is less expensive than concrete, can be replaced quickly, and is ready for use immediately after placement, but asphalt is also less durable than concrete and will require more frequent replacement.

Once the floor has been repaired, there are two methods of prolonging its life. First, the amount of wear can be reduced by always leaving a “pad” of garbage on the floor, except when it is cleaned out at the end of the day. Second, operators at other stations have found that grabbing a used mattress with the bucket (or claw) of a loader and using it to “squeeze” the floor is an effective way to remove garbage with minimal damage to the floor surface.

Conditions at the Transfer Building

Problem: The layout of the transfer building parking area is awkward for customers to maneuver and back their vehicles into the building. There is a significant potential for accidents, and the condition is made worse by the presence of two moderate risk waste storage units in the area.

Potential Solution: Relocate one or both of the MRW storage units.

Problem: Storm drainage is a problem in the driveway just south of the transfer building. Poor sloping of the pavement causes ponding of rainwater and snowmelt.

Potential Solution: Install a catch basin in the driveway and a French drain in the area adjacent to the antifreeze and oil tanks. Construction of this solution is probably less disruptive to traffic and less costly than repaving the driveway area to allow drainage to other areas.

Problem: The transfer station building is lacking gutters, and some of rain falling off of the roof is dropping into the transfer station pit and adding to the expense of treating leachate from that area. This rainwater is also potentially adding to the drainage problem noted above.

Potential Solution: Install gutters and connect those to the existing drainage system.

Problem: The used oil and antifreeze tanks and the car battery pallets are located just south of the transfer building. It is inconvenient and dangerous to stop and unload these wastes at this location.

Potential Solution: Consider relocating the tanks and battery pallet to another area, possibly to where the AlleyCat trailer or one of the MRW storage units currently sit.

Lack of Weighing Capability

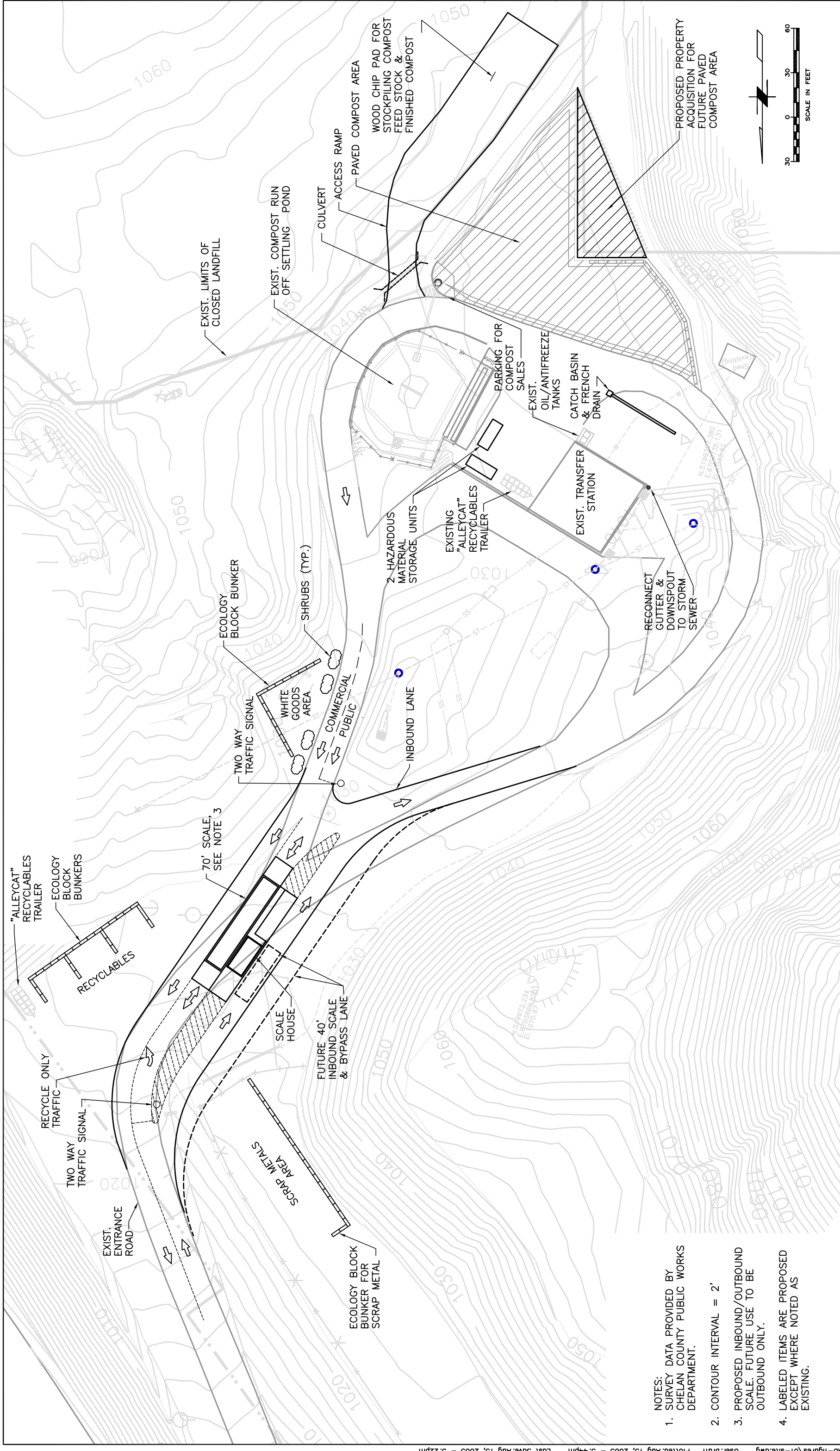
Problem: The Dryden station currently has no scale to weigh customers' vehicles. Payloads must be visually estimated by volume, a method that is inherently less accurate than weighing. This also means that the County does not have an accurate record of changes in its waste tonnages over the years. The East Wenatchee Landfill has recently installed scales, whereas in the past they have charged by volume, which makes it even more important to charge transfer station customers appropriately.

Potential Solution: Installation of a scale at the transfer station would allow payloads to be weighed and customers charged accordingly. Given the relatively light volume of traffic at this site, a single scale could serve both inbound and outbound traffic (but provisions should be made to retain space for a second scale if needed in the future). The scale would have a concrete deck that ranges from 40 feet to 70 feet in length, depending on the type of vehicles expected. A 40-foot scale could handle cars, pickups, and most roll-off trucks and dump trucks. A 70-foot scale could handle tractor-trailer combinations and self-tipping (dump) trailers. A 70-foot scale could also weigh outbound (loaded) transfer trailers, providing a correlation between weight and volume of the waste being tipped and landfilled. Alternatively, the transfer trailer could be weighed on the State's highway scales when requested by the County, allowing installation of a less expensive 40-foot scale at Dryden. Another cost-saving option would be to purchase a used scale, which is often available from gravel pits and similar uses.

An aboveground scale is recommended. An in-ground (pit) scale can be a maintenance problem because the pit becomes clogged with garbage, debris, and ice, thus rendering the scale inoperable. Although called “aboveground,” these scales are actually set so that the top of the scale deck is flush with the road, and these scales are called this simply because the pit below it is not as deep as other types of scales. In either case, electronic load cells that support the scale deck register vehicle weights. Scale vendors can supply a software program, designed specifically for transfer stations, that records pertinent data such as weight, vehicle type, vehicle owner (account), and type(s) of waste. The program also calculates the fee per vehicle based on how much of each type of waste is delivered. The scale house computer can download the stored data via modem to a central computer to facilitate monthly billing of commercial customers with accounts and to facilitate long-term record keeping of solid waste volumes.

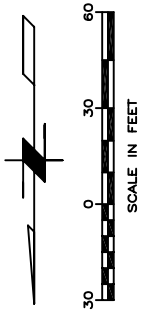
Drawing 1 shows a possible location for the new scale, on the entrance road just before the fork. The area is relatively flat, but would still require some grading since the scale itself and at least ten feet of roadway on each end of the scale must be horizontal and flat. A portion of the existing roadway would need to be widened to accommodate the scale deck, scale house and entrance/queuing lanes. The fork in the road would be relocated and realigned to allow more room for vehicles to pull off the scale and return to the existing roadway. As can be seen in the drawing, only one scale is proposed at the present time, but space is allowed for a second scale on the other side of the scale house if deemed necessary at a later date. The use of a single scale reduces capital expenses, but will also create some traffic delays during busy periods, which generally occur only on weekends. Both inbound and outbound vehicles would use the same road to cross the scale, which will require additional road widening between the scale and the transfer building. Because of the potential for traffic accidents, traffic lights will be required on both ends of the scale to regulate vehicle movement.

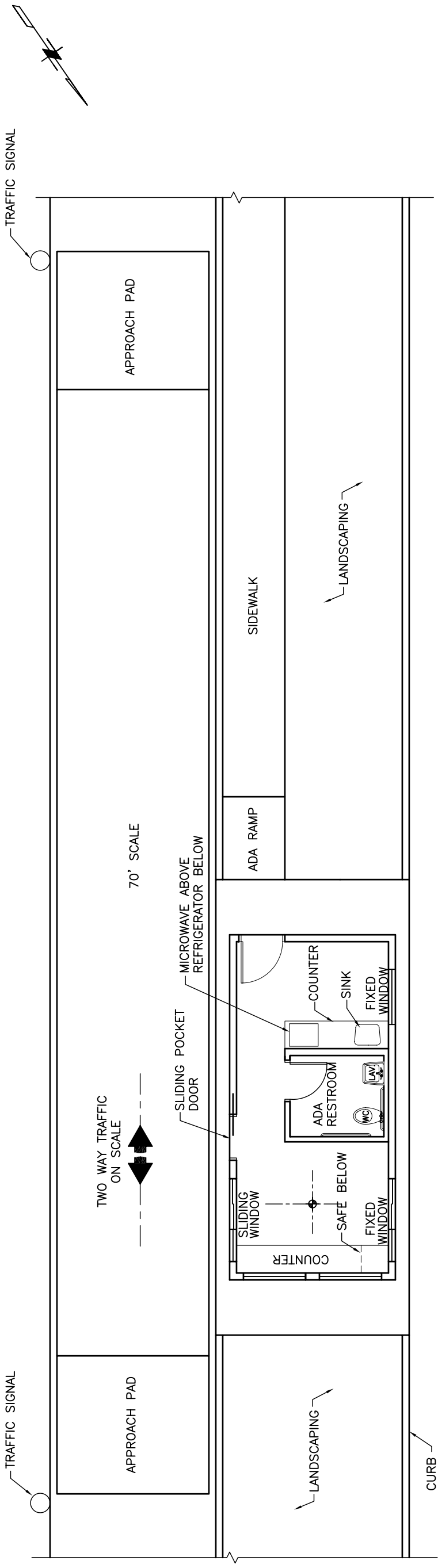
Typical scale installations include a scale house to shelter the scale attendant, cash register, safe (for cash receipts), and computerized scale equipment. Because a scale attendant may not be able to leave the scale house during the entire eight-hour shift, accommodations generally include a restroom and kitchenette (sink, microwave, and outlets for coffeepot or hot plate). Drawing 2 shows a typical scale and scale house configuration. Because the traffic volumes at the Dryden Transfer Station are relatively low, the County may wish to have the station worker serve double-duty as the scale attendant, weighing vehicles and collecting fees from customers, at least during the slower periods. A second employee may only be required on the busiest days, and thus the County could postpone hiring a full-time scale attendant. It is recommended that some mechanism (video camera, service station-type bell alarm, an intercom, etc.) be used to alert the station worker that a new vehicle has arrived at the scale and needs attention. Alternatively, some type of self-service system may be possible for inbound traffic, which many facilities already use for garbage haulers, and then the employee would only need to go to the scale house for outbound self-haul vehicles. A video camera aimed at the tipping floor would allow the employee to monitor unloading activities while he/she is at the scale house. To avoid traffic problems, transfer trailers would be weighed only during periods of low customer traffic, or at the end of the day.



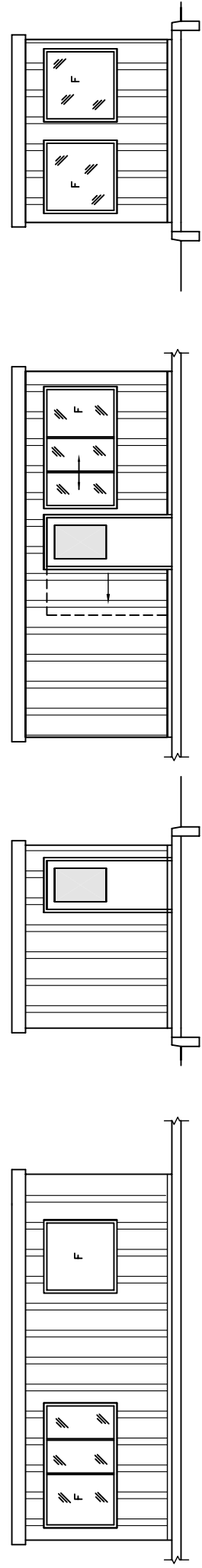
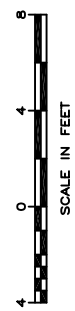
- NOTES:
1. SURVEY DATA PROVIDED BY CHELAN COUNTY PUBLIC WORKS DEPARTMENT.
 2. CONTOUR INTERVAL = 2'
 3. PROPOSED INBOUND/OUTBOUND SCALE. FUTURE USE TO BE OUTBOUND ONLY.
 4. LABELED ITEMS ARE PROPOSED EXCEPT WHERE NOTED AS EXISTING.

No. DATE BY REVISION		JOB No. 25695834 SCALE: AS NOTED		DESIGNED: TJC DRAWN BY: PCF CHECKED BY:		PROJ. ENGINEER: APPROVED BY: DATE: APR. 2005		WARNING IF BAR DOES NOT MEASURE 1" AT FULL SIZE, THEN SCALES ON TO SCALE.		URS		CHELAN COUNTY		Chelan County Facilities Study DRYDEN TRANSFER STATION CONCEPTUAL SCALE & OTHER IMPROVEMENTS PLAN		DRAWING NUMBER: 1 CAD FILE NUMBER: 01 - SITE SHEET: REV. OF D	
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ENLARGED PLAN
1/4"=1'-0"



No. DATE BY REVISION		JOB No. 25695834 SCALE: AS NOTED		DESIGNED: TJC DRAWN BY: CHECKED BY:		PROJ. ENGINEER: APPROVED BY: DATE: MAR. 2005		WARNING IF BAR DOES NOT MEASURE 1" AT FULL SIZE, THEN SCALES ON DRAWING NOT TO SCALE.		URS		CHELAN COUNTY		Chelan County Facilities Study DRYDEN TRANSFER STATION CONCEPTUAL SCALE HOUSE PLAN & ELEVATIONS		DRAWING NUMBER: 2 CAD FILE NUMBER: 02-sh SHEET: OF C	
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The approximate cost of installing a scale as described above would be about \$262,000 (see Table 2). Operating costs would consist primarily of a part-time employee and scale maintenance, at an additional cost of about \$20,500 per year.

Composting Improvements

Problem: Chelan County desires to increase the amount of composting that occurs in the county, as there appears to be an adequate supply of raw materials (green waste and biosolids) and adequate demand for the finished product (compost).

Potential Solutions: At Dryden, there will be room to expand the paved pad used for composting by about 25% if the County assumes ownership of a small triangular piece of flat land next to the existing compost area. If the County assumes ownership of this land, the area could be paved and made part of the composting pad. Paving this area would cost about \$10,000, but this additional space could increase the capacity of the composting operation by 50% to 100%. Due to the triangular shape of the composting pad, the additional area would allow more effective use of the existing pad, and the additional windrow that could be placed on the expanded pad would be equal to the combined length of two of the existing windrows. The small additional amount of paved area would still fall within the capacity of the settling pond to handle runoff (leachate and contaminated stormwater) from the composting pad.

Another method to increase the efficiency of the composting operation is to stockpile the yard waste, brush, and/or the ground up yard waste in closer proximity to the composting pad. It may be possible to create a temporary holding area for these materials on top of the closed landfill. To protect the landfill cap (which is comprised of two feet of clay plus six inches of topsoil), a pad of chipped wood (8 inches or more) should be laid down to provide a surface that can be driven on. Chipped materials for compost feedstock, or even finish compost, could then be stored on this pad. A short access ramp from the northeast corner of the composting pad to the storage pad would be necessary, and a culvert would have to be installed to allow stormwater runoff from the closed landfill to continue downhill under the new access ramp. Due to the quality of this road (unpaved) and the need to prevent damage to the landfill cap, it would be best to prohibit the public from driving up to this area. Hence, yard waste and brush could continue to be collected at the present location (adjacent to the inbound traffic lane), and when this material is ground up it could be blown into a dump truck that would then bring it to the new storage area on top of the landfill. There could be space provided on or near the base of the ramp for a customer purchasing compost to park their vehicle, and a wheel loader could retrieve compost from the stockpile and load the vehicle.

The cost for creating a storage pad on top of the closed landfill would be about \$2,700 (\$1,800 for materials plus design fees and other contingencies). This cost, however, is preliminary and may not include all of the expenses associated with the use of the landfill surface. The existing cover on the landfill may need to be re-designed to protect the structural integrity of the landfill, and a proposal for any modifications to the existing condition or usage of the landfill would need to be reviewed and approved by the Health District and Department of Ecology. The landfill closure plan would also need to be modified and approved.

Table 2. Cost of Potential Improvements for Dryden Transfer Station.			
	Quantity	Unit¹	Cost
Scale			
Site preparation (grading, power, phone, water, sewer)	1	LS	\$10,000
Paving (4" asphalt and 8" base, for 0.25 acre)	1,210	SY	\$18,150
Landscaping (allowance)	1	LS	\$5,000
Site concrete (slab, ramp and platform)	30	CY	\$9,000
Scale foundation	40	CY	\$18,000
Signage and striping (allowance)	1	LS	\$5,000
Misc. signs and bollards (allowance)	1	LS	\$5,000
70 foot scale and traffic signals	1	LS	\$50,000
Scale computer, software, accessories, intercom, video	1	LS	\$25,000
Electrical for scale	1	LS	\$10,000
Scale house	300	SF	\$19,500
Subtotal			\$174,650
Design fee ² , 10%			\$17,470
General conditions/contractor mobilization, 15%			\$26,200
Design contingency, 25%			\$43,660
Subtotal, scale only			\$262,000
	Quantity	Unit¹	Cost
Other Improvements			
Repair pit floor	1	LS	\$50,000
Catch basin and French drain	1	LS	\$2,000
Install gutters	1	LS	\$5,000
Expand compost site	1	LS	\$10,000
Wood chip pad on landfill for storing compost and feedstock	300	CY	\$1,800
Ecology block bunkers in three areas, plus grading and related work	1	LS	\$20,000
Subtotal			\$88,800
Design fee ² , 10%			\$8,880
General conditions/contractor mobilization, 15%			\$13,320
Design contingency, 25%			\$22,200
Subtotal, other improvements only			\$133,200
Grand Total, All Improvements			\$395,200

Notes: 1. Units: LS = Lump Sum, CY = Cubic Yard, SF = Square Foot, SY = Square Yard.
2. Design fee and other costs do not include permit fees.

Appearance and Functionality of Recycling Areas

Problem: At present, the scrap metals area is not used as effectively as it could be. Some concern has also been expressed about the appearance of the white goods area.

Potential Solutions: “Ecology blocks” (interlocking concrete blocks typically 2 feet by 2 feet by 6 feet long) can be stacked to create large bunkers for the scrap metals and white goods areas, and for other recyclable materials that are suitable for uncovered outdoor storage. A block bunker makes it easier to handle materials and allows storage of more material in a smaller area. A loader can push loose materials and even white goods up against the ecology block walls, making more floor space available for other recyclers to unload. The walls of the bunker also improve the appearance of the area because they hide a portion of each pile from view. Drawing 1 shows storage bunkers of various sizes in three areas that could be used to store scrap metal, white goods, and recyclables such as glass and brush.

An ecology block wall would help contain the piles in the scrap metals area, which will allow more efficient space utilization and a more tidy appearance. The block wall can also act as a short retaining wall, and placed so that the toe of the hill is cut off to the depth of a few feet to make the area wider. Another improvement for this area would be to provide bins (one to two cubic yards in size) for the small metal parts (including screws, nuts, and bolts). Dumping these small parts on the ground may eventually require a tedious and costly effort to clean up the soil and retrieve the small bits of metal.

For the white goods area, it is recommended that a two-sided bunker be constructed of ecology blocks. A loader can then stack appliances against the blocks and prevent the pile from spreading. A chain link fence with plastic slats could be used to partially obscure the view of these areas, but it might make it more difficult for customers to locate the area where they can deposit these recyclables. A row of low-growing shrubs along the road may be preferable. While they would provide some visual screening, shrubs would allow customers to easily locate the white goods area. Furthermore, shrubs may be more durable in this application than a fence.

One of the AlleyCat trailers could be relocated to an area closer to the entrance to collect recyclables (see Drawing 1), especially if the scale is installed (to provide easier access for recycling-only customers).

b. Chelan Transfer Station

The following problems and issues have been noted at the Chelan Transfer Station.

Lack of Weighing Capability

Problem: Like the Dryden Transfer Station, the Chelan Transfer Station has no scale, and customer payloads are visually estimated by volume. The East Wenatchee Landfill has begun charging for waste disposal by weight and if the County’s two transfer stations do not follow suit then their customers may not be charged appropriately.

Potential Solution: Installation of a scale would allow payloads to be weighed and customers to be charged accordingly. A single scale should be able to serve both inbound and outbound traffic without causing additional delays since the bottleneck for the traffic flow at this site is at the tipping area. Furthermore, there is not enough space available for two scales at this facility. The single scale would have a concrete deck and would be 40 feet in length. A 40-foot scale should be adequate to handle the normal traffic at this site (cars, pickups, trailers, roll-off trucks, garbage trucks and most dump trucks). A larger scale (a 70-foot scale or longer) could handle tractor-trailer combinations and longer trailers, but the current configuration of this transfer station doesn't accommodate that size of vehicle at the tipping floor anyway. An aboveground scale is recommended, because an in-ground (pit) scale can be a maintenance problem when the pit becomes clogged with garbage or ice.

After examining the site, it was concluded that a scale placed as close as possible to the tipping floor would avoid the need for an additional employee (see Drawing 3). Inbound traffic would simply take a ticket from an automated printer, and then the driver would give this to the attendant on the way out when they would be weighed a second time and pay for the waste. As with Dryden, traffic signals would control inbound and outbound vehicles. A small shed would provide a weatherproof enclosure for the scale computer, cash register, and receipt printer.

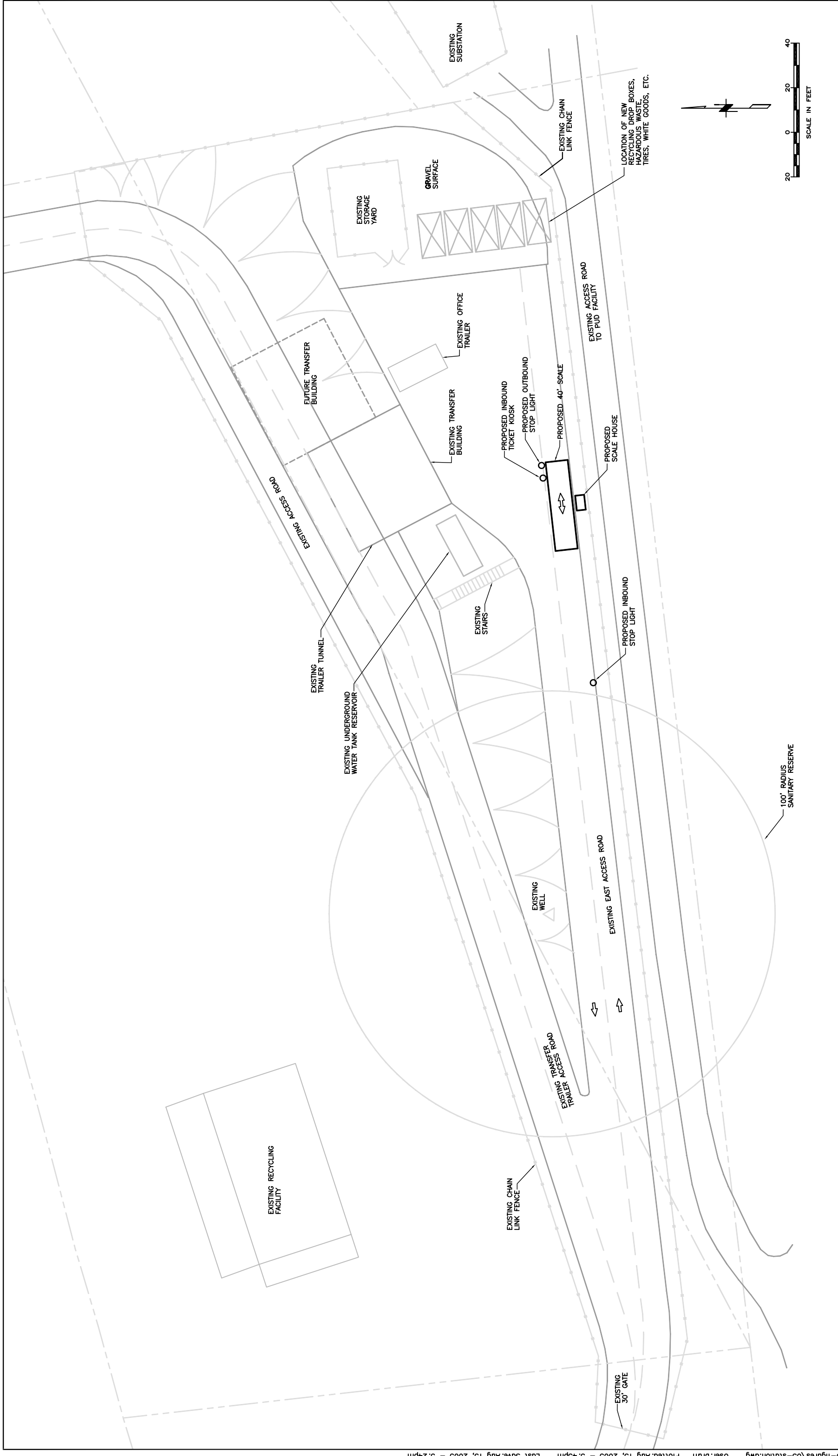
Construction costs for a scale at Chelan Transfer Station would be about \$183,500 (see Table 3), and operating costs would be \$500 to \$1,000 per year for maintenance of the scale and associated equipment.

Lack of Capacity

Problem: It is difficult to keep up with customer flows at times during the summer due to seasonal population increases. In the long term, increased levels of permanent residents could make this a year-round problem.

Potential Solution: The original plans for the Chelan Transfer Station envisioned that in the future, a second transfer building could be constructed northeast of the current transfer building. A second trailer tunnel would be installed so that two trailers could be loaded simultaneously, or in quick succession. Such a layout would also allow separation of garbage trucks from self-hauler vehicles. This allows the former to unload quickly, an important cost consideration. It is also safer for the general public to unload at some distance away from garbage trucks.

The side slope adjacent to the east corner of the existing building is relatively steep, and a retaining wall with tiebacks would be required to support a new tipping floor. Because the construction season in Chelan County is limited to the warmer months of the year, when garbage production and station traffic is also at its highest, it is likely that construction of a second transfer building would interfere with operation of the existing facility, even if carefully coordinated. Construction vehicles would need to use the same roadway that customers use to access the transfer building, and space to maneuver vehicles is already at a premium.



No. DATE BY REVISION		JOB No. 26595834 SCALE: AS NOTED		DESIGNED: TJC DRAWN BY: BJR CHECKED BY:		PROJ. ENGINEER: APPROVED BY: DATE: JUNE 2005		WARNING IF BAR DOES NOT MEASURE 1" AT FULL SIZE, THEN SCALES ON DRAWING NOT TO SCALE.				CHELAN COUNTY CHELAN TRANSFER STATION SITE		DRAWING NUMBER: 3 CAD FILE NUMBER: 03-Station SHEET: OF REV. C	
										Chelan County Facilities Study					

Table 3. Cost of Potential Improvements for Chelan Transfer Station.			
	Quantity	Unit¹	Cost
Scale			
Site preparation (re-grading, pit excavation, power)	1	LS	\$10,000
Paving (4" asphalt and 8" base, for 200 feet of roadway and area in front of building)	1,422	SY	\$21,330
Concrete (ramp for scale approach)	10	CY	\$3,000
Scale foundation	40	CY	\$18,000
Misc. signs and bollards (allowance)	1	LS	\$5,000
40 foot scale and traffic signals	1	LS	\$40,000
Scale computer, software, and accessories	1	LS	\$20,000
Electrical for scale	1	LS	\$5,000
Scale house and cash register	1	LS	\$5,000
Subtotal			\$127,300
Design fee ² , 10%			\$12,730
General conditions/contractor mobilization, 15%			\$19,100
Design contingency, 25%			\$31,830
Subtotal, scale installation			\$191,000
Transfer Station Expansion			
Additional transfer building, with retaining wall, bridge slab, etc.	2,350	SF	\$305,500
Design fee ² , 15%			\$45,830
General conditions/contractor mobilization, 15%			\$45,830
Design contingency, 25%			\$76,380
Subtotal, transfer station expansion			\$473,500
Grand Total, All Improvements			\$664,500

Notes: 1. Units: LS = Lump Sum, CY = Cubic Yard, SF = Square Foot, SY = Square Yard.
2. Design fee and other costs do not include permit fees.

To make use of a second transfer building, an additional laborer would be required. When contemplating adding a second building, the County should also consider:

- 1) anticipated growth in population and waste quantities;
- 2) interference with the existing operation of the facility;
- 3) capital (construction) costs; and
- 4) operating costs (labor and utilities).

As shown in Table 3, the projected capital cost for adding a second building at the Chelan Transfer Station is about \$473,500. Additional operating costs would likely include an additional full-time staff and various other expenses, or about \$50,000 to \$80,000 per year (not including transportation and disposal costs).

Additional Solutions: The capacity of the Chelan Transfer Station could effectively be increased by increasing the open hours of the facility. The facility is currently open only in the afternoons for four hours Tuesdays through Fridays, and is not open on Sundays and Mondays. Expanding the open hours would help spread out the self-haul traffic, which is the traffic that generally takes longer to unload and thus causes delays.

Another potential solution would be to purchase additional land adjacent to the transfer station. The price for purchasing additional land is not shown in the cost figures, but is highly recommended. If the County were able to acquire additional property adjacent to the Chelan site, it would be possible to improve traffic flow and increase waste handling capacity through various options, including:

- separate ingress and egress lanes for garbage trucks and the general public, so that garbage trucks could unload more quickly.
- if the second building is constructed as discussed above, separate ingress and egress lanes for the two buildings would lead to improved traffic flows.
- with additional land, it might be possible to construct the second building on the west side instead of the east side of the existing building, at a significantly lower cost.
- in any case, a future scale could be located in a better place and designed to operate more efficiently.
- additional space could provide improved capabilities for recycling scrap metal (see below) and other services.

Limited Metal Recycling

Problem: The Chelan Transfer Station lacks scrap metal and white goods (large metal appliances) recycling capability. The North Chelan County Recycling Project next door also does not collect these materials.

Potential Solution: A dropbox could be used to collect scrap metals, and this could be parked on the pavement near the transfer building. White goods could be temporarily placed on the ground and then lifted into the box with a backhoe or other equipment, or a dropbox that opens on one end could also be used. Refrigerators and other items that contain Freon could also be placed on the ground to the side until an adequate number (about a dozen) is accumulated, and then the Freon removed by a licensed contractor before being placed in the dropbox for recycling.

c. South Wenatchee Transfer Station

The South Wenatchee Transfer Station is a very busy facility that lacks adequate capacity for the volume of materials handled and also lacks essential services. The specific problems and issues that have been noted at the South Wenatchee Transfer Station are discussed below.

Limited Recycling Opportunities

Problem: At the present time, only three materials are accepted for recycling at the South Wenatchee Transfer Station – aluminum cans, newspaper, and scrap metal.

Potential Solution: There appears to be sufficient room in the parking lot to locate dropboxes for at least three additional materials – cardboard, tinned steel cans, and mixed waste paper. There may be room to locate a larger dropbox on the lower level or near the scrap metals container. Placement of the containers should be considered carefully to allow customers to unload recyclables safely and to avoid encroaching on the vehicle queuing space, which is already rather limited.

Limited Queuing Space

Problem: The paved area in front of the transfer station is used to back vehicles up to the pit to unload, and to queue vehicles waiting to unload. The area is limited and there is the potential for collisions due to the tight maneuvering space. It has been reported that during busy periods, vehicles must queue out on the main road, which obstructs traffic.

Potential Solutions: It may be possible to widen the public road in front of the station or to purchase adjacent property to allow off-road queuing of incoming vehicles.

Limited Unloading Capacity

Problem: The number of stalls for unloading vehicles is inadequate during busy periods, which causes the line of waiting vehicles to extend out onto the public roadway. This is inconvenient and poses a traffic hazard. Unfortunately, it is not feasible to provide more tipping stalls within the existing building.

Potential Solutions: To increase unloading capacity during busy periods, a low-side dropbox could be located in the parking lot to receive relatively small items such as bags and boxes of waste from cars and pickups. This solution would have the added safety advantage of having the general public unload in an area remote from large commercial vehicles. Although the dropbox would need to be hauled up to the building and emptied periodically, the amount of double-handling is relatively minor. Alternatively, the building could be expanded to add more unloading stalls, and this would also entail reconfiguration of the site and traffic patterns.

2. New Transfer Station in Entiat Area

The area between Wenatchee and Chelan is presently under-served with respect to waste transfer facilities. Residents in this part of Chelan County do not have a convenient location to drop off bulky garbage, and curbside collection of trash is available but difficult or expensive to use for bulky objects, construction debris, etc. These difficulties may be contributing to illegal dumping of problem materials.

This section discusses possible alternatives for small-volume transfer facilities.

a. Design Options for Entiat Transfer Station

A small transfer facility could improve the level of service in this part of Chelan County. With a population of about 3,100 people in and around Entiat, it is estimated that this area generates about 10 tons per day of trash (based on a waste disposal rate of 1.23 tons per person per year, or 6.7 pounds per person per day, as discussed in Chapter 2 of the Draft Solid Waste Management Plan). For a transfer facility that doesn't accept waste from garbage collection trucks, just self-haul customers, the amount of waste that would be handled is more difficult to predict. Looking at the amount of waste received at the Dryden Transfer Station (excluding the waste from garbage collection trucks) and prorating that amount based on population, leads to an estimate of 2,700 cubic yards per year of self-haul waste that would be received at a transfer station in the Entiat area.

The most basic requirements for an Entiat transfer station are that the site be able to receive solid waste and some recyclables, and be attended (i.e. have a staff person to collect fees and supervise waste and recyclables drop-off). Other jurisdictions have found that unattended sites are prone to vandalism, dumping without paying, and dumping of materials not approved for the site (such as hazardous waste). Litter (and the cost of cleaning it up) and pests (birds, insects, and rodents) are also problems with unattended sites. Hence, an attended station is considered to be preferable, and this approach allows the collection of tipping fees to help offset the higher capital and operating costs.

Three options for a transfer station were developed:

- 1) a "z-wall" with two dropboxes;
- 2) a compactor plus a ramp-accessible dropbox; and
- 3) a compactor plus a ground-level dropbox.

Each of the three options discussed below include the following basic features:

- a container for normal solid waste (either a dropbox or a compactor);
- a container for bulky waste (furniture, appliances, etc.);
- an AlleyCat trailer with 10 bins for a variety of recyclables;
- bunkers for yard waste, scrap metal and/or appliances;

- a small building to shelter the attendant, with restroom and kitchen facilities;
- paved driving surfaces;
- queuing space for incoming traffic; and
- landscaping and fencing.

Because the size and shape of the parcel of land that could be used for this facility is currently unknown, queuing space for inbound vehicles is not shown in the drawings for these three options. Queuing space will vary depending on the shape of the property, prevailing street access, and the location of the site entrance and exit. Queuing space could add another ½-acre to the parcels shown in Drawings 4 through 6.

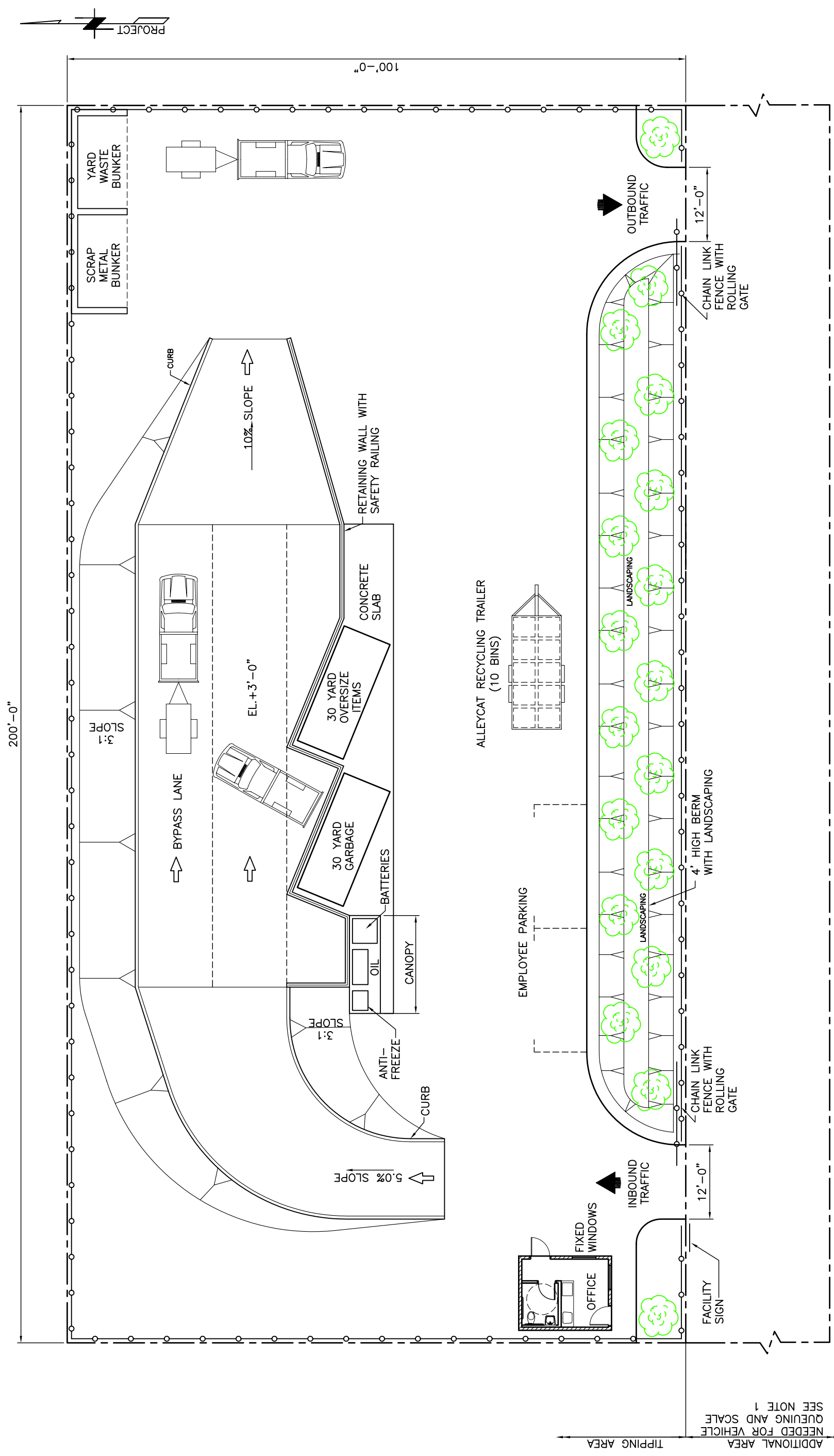
Option 1 - Z-Wall with Two Dropboxes: In this alternative, vehicles drive up a ramp to an unloading area that forms a z-shaped wall (see Drawing 4). Customers drop their waste into either of two 30 cubic yard dropboxes. To reduce the steepness and length of the ramp, the unloading area only needs to be three to four feet above the ground that the dropboxes rest on. The side of a six-foot high dropbox then acts as a two to three foot high wall that decreases the likelihood that a customer will fall into the container, which is a serious problem at many transfer stations. For the same reason, safety regulations also require a guardrail or safety chain at 42 inches above the loading area floor. If the site is large enough to accommodate longer ramps, the top of the dropbox could be set level with the unloading area, and this would make unloading of heavy items somewhat easier.

The attendant would cover the dropboxes at night with a tarp to prevent entry by birds and rodents, to keep out rain, and prevent wind-blown litter. A 30-yard dropbox will probably hold the volume of waste from two to four days of operation, and the second dropbox could be used while the first one is hauled to the landfill (and during busy periods when additional unloading area is needed).

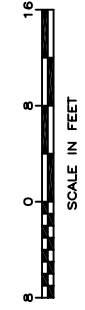
Vehicles leaving the unloading area would then proceed down a ramp to ground level, and could unload recyclables at the AlleyCat trailer or yard waste and metals in bunkers. The bunkers, constructed by stacking interlocking concrete “ecology” blocks (about 2 feet wide and high by five or six feet long), provide efficient storage of loose materials in a relatively compact area.

A limited amount of landscaping is included in the cost estimate to screen the site from the neighbors’ view and to improve its aesthetics. A security fence should be used to prevent illegal dumping and vandalism.

Option 2 - Compactor plus Ramp-Accessible Dropbox: A stationary compactor is often used by businesses such as grocery stores and hotels to store large amounts of waste in a relatively small space. A 30 cubic yard compactor can store 60 to 80 cubic yards of loose waste and should be adequate for about a week’s worth of garbage in the Entiat area. Being fully enclosed, the compactor does not need to be tarped to exclude rain and pests and contain odors and litter. A



NOTE:
 1. A 40ft SCALE WILL REQUIRE APPROX. 1/2 ACRE OF ADDITIONAL LAND FOR ROADWAYS IN AND OUT OF THE TIPPING AREA. ACTUAL CONFIGURATION WILL DEPEND ON THE LOCATION OF SITE ENTRANCE AND EXIT.



OPTION-1
 Z-WALL PLAN
 1/8"=1'-0"

No.	DATE	BY	REVISION
C	8/15/05	BJR	FOR CLIENT REVIEW
B	7/2/05	BJR	FOR REVIEW
A	4/27/05	PCF	FOR REVIEW

JOB No.	25695834	DESIGNED:	TJC	PROJ. ENGINEER:	
SCALE:	AS NOTED	DRAWN BY:	PCF	APPROVED BY:	
		CHECKED BY:		DATE:	ARP.2005

WARNING	
0	1/2
IF BAR DOES NOT MEASURE 1" AT FULL SIZE, THEN SCALES ON DRAWING NOT TO SCALE.	

CHELAN COUNTY		Chelan County Facilities Study	
URS		ENTIAT TRANSFER STATION	
		OPTION 1	

DRAWING NUMBER:	4
CAD FILE NUMBER:	04-opt1
SHEET:	OF
REV.	C



compactor would, however, require at least a 240 volt electrical service to run the compactor motor.

About once per week, the entire compactor (hydraulic ram and garbage container) would be hauled to either the landfill or another transfer station to be emptied. To avoid the cost of another waste container (a dropbox or another compactor), the compactor should be hauled when the station is not open to the public. This should not be a great inconvenience to customers, as it is envisioned that the station would only be open four to five days per week, or possibly only open for four to six hours on some of these days.

A raised unloading area with up and down ramps would still be required for unloading bulking waste (see Drawing 5). The attendant's building, landscaping, fencing, and recyclables areas would all be the same as in Option 1.

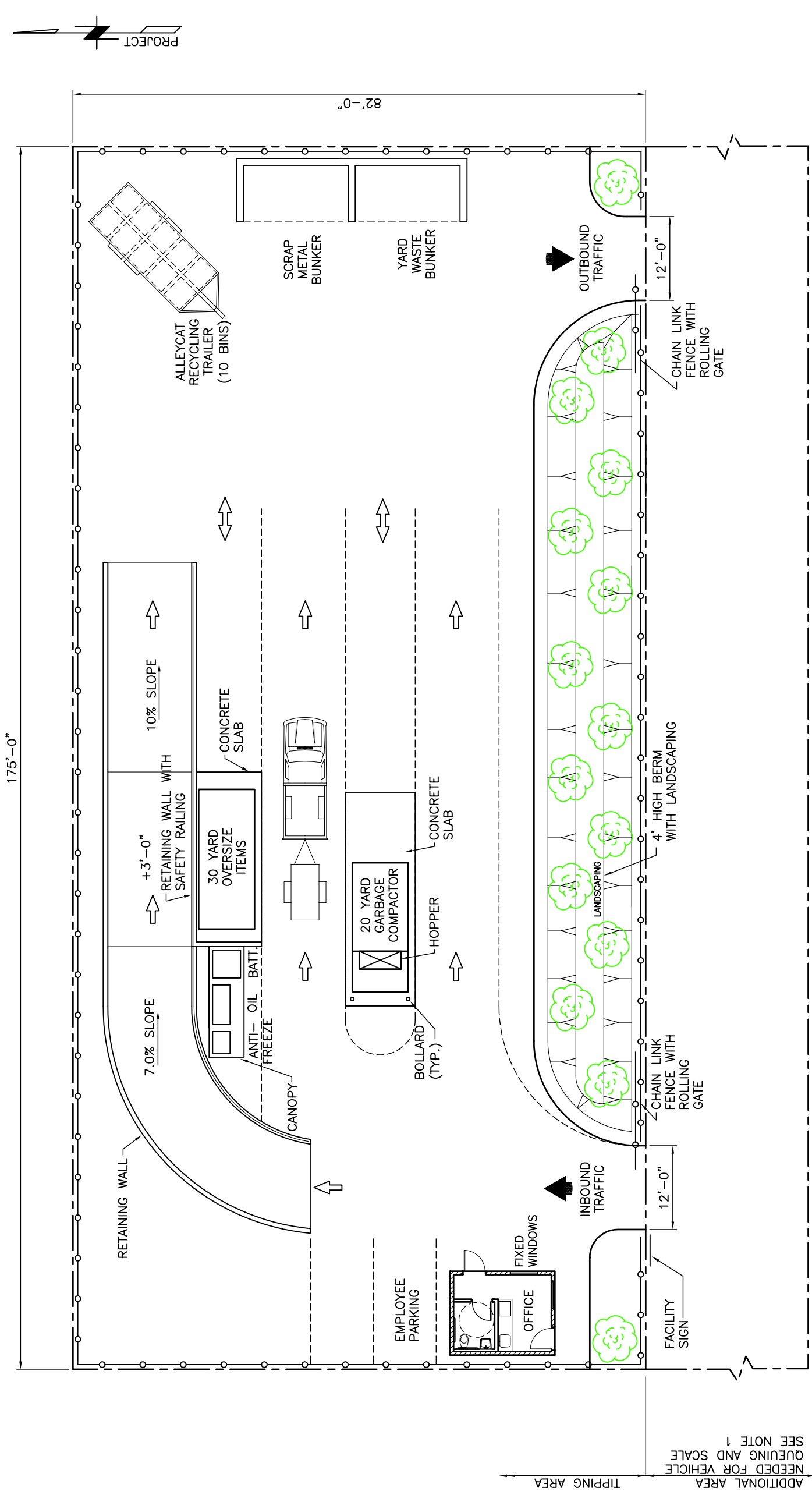
Option 3 – Compactor plus Ground-Level Dropbox: Bulky waste such as furniture could be placed in a ground-level dropbox through swinging doors at one end of a 30-cubic yard container (see Drawing 6) or over a low side-wall dropbox. These methods are more difficult for customers and may require the attendant to assist. The dropbox would not be loaded as efficiently as in the other options, but the cost of constructing and paving the elevated unloading area and two ramps would be avoided. The attendant's building, landscaping, fencing, and recyclables areas would all be the same as in the other two options.

There are numerous combinations of the above features that could be considered, depending on the available budget and the size and topography of a potential site.

b. Other Considerations for Entiat Transfer Station

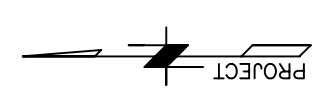
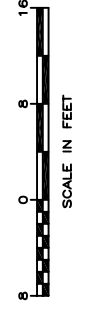
Provisions to handle bulky wastes increase the cost and the amount of space required at a transfer facility. While capital and operating expenses can be reduced by not accepting bulky wastes, it should be noted that there are few convenient options for citizens in the Entiat area to properly dispose of bulky waste. Because of that, bulky waste is frequently found dumped in ditches, ravines and fields. The cost of cleaning up this type of illegal dumping should be considered when evaluating the cost for handling bulky wastes.

Customers at this site could be charged by volume or by weight for disposing garbage. It is not anticipated that a vehicle scale would be warranted because of the relatively low tonnages projected for an Entiat facility, but a two-way vehicle scale to weigh customer payloads could be added to any of these options. Of course, this would require more room, for both the scale and queuing space for vehicles. If a scale were included at this facility, it would be less expensive to install at the time of initial construction (thus avoiding the additional expense for site preparation and other tasks), and this option would add approximately \$100,000 to the capital cost plus a small amount to the annual operating expense (for scale maintenance). Two separate scales (an inbound and outbound scale) would definitely not be cost-effective at this site. For charges based on volume, the attendant would visually examine the load and assess a fee. Flat fees could also



NOTE:
 1. A 40ft SCALE WILL REQUIRE APPROX. 1/2 ACRE OF ADDITIONAL LAND FOR ROADWAYS IN AND OUT OF THE TIPPING AREA. ACTUAL CONFIGURATION WILL DEPEND ON THE LOCATION OF SITE ENTRANCE AND EXIT.

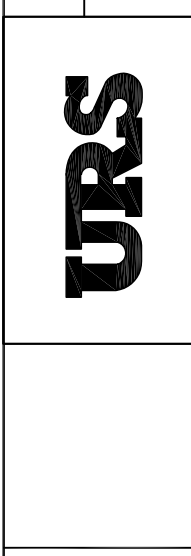
OPTION-2
 COMPACTOR/RAMP ACCESSIBLE DROP BOX - PLAN
 1/8"=1'-0"



No.	DATE	BY	REVISION
C	8/15/05	BJR	FOR CLIENT REVIEW
B	7/2/05	BJR	FOR REVIEW
A	4/27/05	PCF	FOR REVIEW

JOB No.	25695834	DESIGNED:	TJC	PROJ. ENGINEER:	
SCALE:	AS NOTED	DRAWN BY:	PCF	APPROVED BY:	
		CHECKED BY:		DATE:	ARP.2005

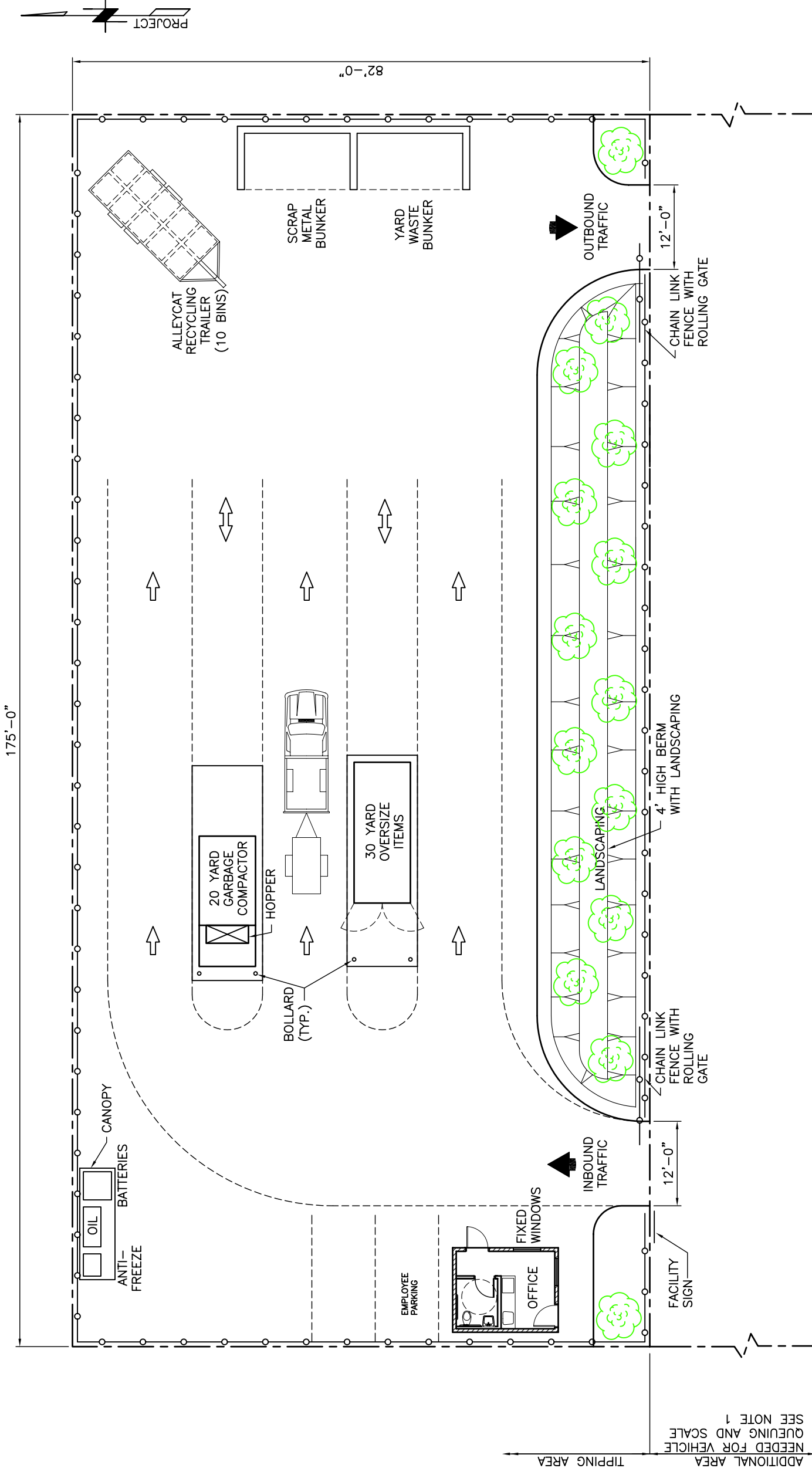
WARNING
 1/2"
 IF BAR DOES NOT MEASURE 1" AT FULL SIZE, THEN SCALES ON DRAWING NOT TO SCALE.



CHELAN COUNTY

Chelan County Facilities Study
 ENTIAT TRANSFER STATION
 OPTION 2

DRAWING NUMBER:	5
CAD FILE NUMBER:	05-Opt2
SHEET:	OF
REV.	C



NOTE:
 1. A 40ft SCALE WILL REQUIRE APPROX. 1/2 ACRE OF ADDITIONAL LAND FOR ROADWAYS IN AND OUT OF THE TIPPING AREA. ACTUAL CONFIGURATION WILL DEPEND ON THE LOCATION OF SITE ENTRANCE AND EXIT.



OPTION-3
 COMPACTOR/DROP BOX - PLAN
 1/8"=1'-0"



175'-0"

82'-0"

No. DATE BY REVISION		URS	CHELAN COUNTY	Chelan County Facilities Study ENTIAT TRANSFER STATION OPTION 3	DRAWING NUMBER: 6	
C 8/15/05 BJR FOR CLIENT REVIEW	B 7/2/05 BJR FOR REVIEW					CAD FILE NUMBER: 06-OPT3
A 4/27/05 PCF FOR REVIEW	SHEET: OF					REV. OF C
JOB No. 25695834	SCALE: AS NOTED	DESIGNED: TJC	DRAWN BY: PCF	PROJECT ENGINEER: TJC	APPROVED BY: PCF	
		WARNING 1/2" IF BAR DOES NOT MEASURE 1" AT FULL SIZE, THEN SCALES ON DRAWING NOT TO SCALE.		DATE: ARP.2005		

be assessed for various bulky items (such as \$7 for a couch, \$5 for an armchair, etc.), scrap metals, and yard waste.

Finding a suitable site for a new transfer facility to serve the Entiat area is beyond the scope of this study. Since the transfer facility alternatives described above have relatively modest site requirements, however, it should not be too difficult to locate one or more suitable parcels for further consideration. The basic requirements for a suitable site are:

- relatively convenient location for customers in the desired service area;
- reasonable access (i.e., proximity to a major thoroughfare or highway);
- parcel shape would ideally be approximately rectangular;
- parcel size would need to about ½ acre or larger;
- zoning would need to allow a solid waste facility (or allow for the possibility of a variance);
- no or few environmentally-sensitive neighbors (school, hospital, etc.) or other politically-sensitive neighbors; and
- be available at an affordable price.

Other desirable characteristics include:

- reasonable topography, with only a gentle slope of about 20 feet from side to side;
- proximity to water, electrical, and telephone utilities;
- proximity to a public sewer, or soils that allow for a septic system; and
- no major environmental cleanup or other site development issues.

Limited budgets generally pose a greater constraint on the size and features of a proposed transfer station than the physical limitations of the available sites (at least in rural or suburban areas). In Chelan County, however, flat land is often difficult to find and expensive to procure. Thus, the logical procedure for Chelan County to proceed with this is to determine the project budget (one that is likely to receive political approval), while also looking for available parcels of land where a facility could be constructed for that budget. The estimated capital costs for the Entiat transfer facility options are shown in Table 4, but these costs could be increased by high land costs or undesirable characteristics (such as the need for extensive site development or a higher expense for installing utilities).

Table 5 shows the capital and operating costs expressed on an annual basis and in terms of the volume of waste. The figures shown in this table use a standard amortization period for the entire construction cost, although actual amortization periods would vary for specific pieces of equipment. Amortization periods could be as long as 20 years for some parts of the construction costs, but the ten years used in Table 5 provides a more conservative analysis. Transportation costs are higher for Option 1 because Options 2 and 3 include a compactor with substantially heavier payloads than possible with only the dropboxes included in Option 1. The transportation

Table 4. Preliminary Cost Estimates for Entiat Transfer Station Options.						
Transfer Facility	Option 1		Option 2		Option 3	
	Quantity	Cost	Quantity	Cost	Quantity	Cost
Land	0.5 acre	\$25,000	0.5 acre	\$25,000	0.5 acre	\$25,000
Site preparation (grading, utilities)	LS	\$50,000	LS	\$50,000	LS	\$50,000
Stormwater drainage and retention (allowance)	LS	\$15,000	LS	\$15,000	LS	\$15,000
Septic system (allowance)	LS	\$10,000	LS	\$10,000	LS	\$10,000
Concrete retaining walls	NA	\$0	35 CY	\$15,750	NA	\$0
Electrical power (allowance)	LS	\$10,000	LS	\$10,000	LS	\$10,000
Paving, 4" asphalt concrete and 8" base, for 0.25 acre	1,210 SY	\$18,150	1,210 SY	\$18,150	1,210 SY	\$18,150
Fences and gates (allowance)	400 LF	\$14,000	400 LF	\$14,000	400 LF	\$14,000
Landscaping (allowance)	LS	\$10,000	LS	\$10,000	LS	\$10,000
Misc. site concrete (allowance)	20 CY	\$6,000	20 CY	\$6,000	20 CY	\$6,000
Attendant's office (including utilities)	200 SF	\$15,000	200 SF	\$15,000	200 SF	\$15,000
Misc. signs and bollards (allowance)	LS	\$10,000	LS	\$10,000	LS	\$10,000
Ecology blocks for bunkers	LS	\$3,000	LS	\$3,000	LS	\$3,000
Ramp and platform (allowance)	15 CY	\$4,500	15 CY	\$4,500	NA	\$0
Information kiosk	1	\$5,000	1	\$5,000	1	\$5,000
Dropboxes	2	\$17,000	1	\$8,500	1	\$8,500
Stationary compactor, 20 CY, 5 HP	NA	\$0	1	\$24,000	1	\$24,000
Electrical for compactor	NA	\$0	LS	\$5,000	LS	\$5,000
Oil and antifreeze tanks, battery pallet	LS	\$2,500	LS	\$2,500	LS	\$2,500
AlleyCat Trailer	1	\$15,000	1	\$15,000	1	\$15,000
Subtotals		\$230,150		\$266,400		\$246,150
Design fee and contingency ² , 35%		\$80,550		\$93,240		\$86,150
General conditions/contractor mobilization, 15%		\$34,520		\$39,960		\$36,920
Total by Option		\$345,200		\$399,600		\$369,200
Optional Scale 40-foot scale, including additional land (0.5 acre), site preparation, concrete foundation, ramps, traffic signals, computer, software, other accessories						\$100,000

Notes: 1. Units: LS = Lump Sum, SY = Square Yard, LF = Linear Feet, CY = Cubic Yard, SF = Square Foot, NA = Not Applicable.
 2. Design fee and other costs do not include permit fees.

Table 5. Annual Costs for Entiat Transfer Station Options.			
	Option 1	Option 2	Option 3
Capital Expense			
Construction Costs	\$360,200	\$414,600	\$384,200
Amortization period, years	10	10	10
Interest rate	6%	6%	6%
Annual expense	\$46,900	\$54,290	\$50,160
Annual Operating Expenses			
Attendant, part-time	\$20,000	\$20,000	\$20,000
Transportation charges ¹	\$5,400	\$3,240	\$3,420
Disposal costs ²	\$32,620	\$32,620	\$32,620
Miscellaneous (utilities, supplies, maintenance, etc.)	\$1,500	\$1,500	\$1,500
Annual operating expense	\$59,520	\$57,360	\$57,540
Total Annual Expenses	\$106,420	\$111,650	\$107,700
Total Waste Volumes	2,700 CY	2,700 CY	2,700 CY
Cost per Yard	\$39.41	\$41.35	\$39.89

- Notes:
1. Transportation charges assumes \$60 per round trip to empty waste containers.
 2. Disposal costs are based on Waste Management's current rate for the Dryden Transfer Station, \$12.08 per cubic yard, although the compactor in Options 2 and 3 would be actually charged by weight.

cost for Option 3 is slightly higher than Option 2 because it is assumed that the top-loaded dropbox in Option 2 can be filled more effectively than the ground-level dropbox in Option 3. The figures shown in Table 5 do not include the optional scale shown at the bottom of Table 4.

C. MRW FACILITY

1. Introduction

Many Washington counties have determined that the use of a fixed facility for the collection of moderate risk waste (MRW) is more effective than annual collection events. According to the Thirteenth Annual Status Report (Department of Ecology, December 2004), only eight counties do not have fixed facilities. In addition to Chelan County, this includes the counties of Clallam, Douglas, Ferry, Garfield, Grant, Skamania, and Wahkiakum. All other counties, and the City of Seattle, operate fixed MRW collection facilities, and some also have collection events and/or satellite facilities as part of their system too. About half (sixteen) of the fixed facilities accept CESQG (conditionally exempt small quantity generator) wastes.

2. Facility Description

As part of this Facility Study, the cost and other details were examined for a fixed MRW Facility in Chelan County. This analysis is based on a conceptual-level design for such a facility, since finding an actual site was beyond the scope of this project, with an emphasis on providing a cost-effective design that meets the minimum requirements for such a facility. Two options for the facility design are discussed below and shown in the drawings. The first option for the MRW Facility is a pre-engineered metal building that is divided into four main areas: a covered waste drop-off area, an enclosed area for processing and bulking wastes, a storage area for MRW in drums, and personnel areas (see Drawing 7). The second option is a less expensive design that does not provide a fully-enclosed facility (see Drawing 8).

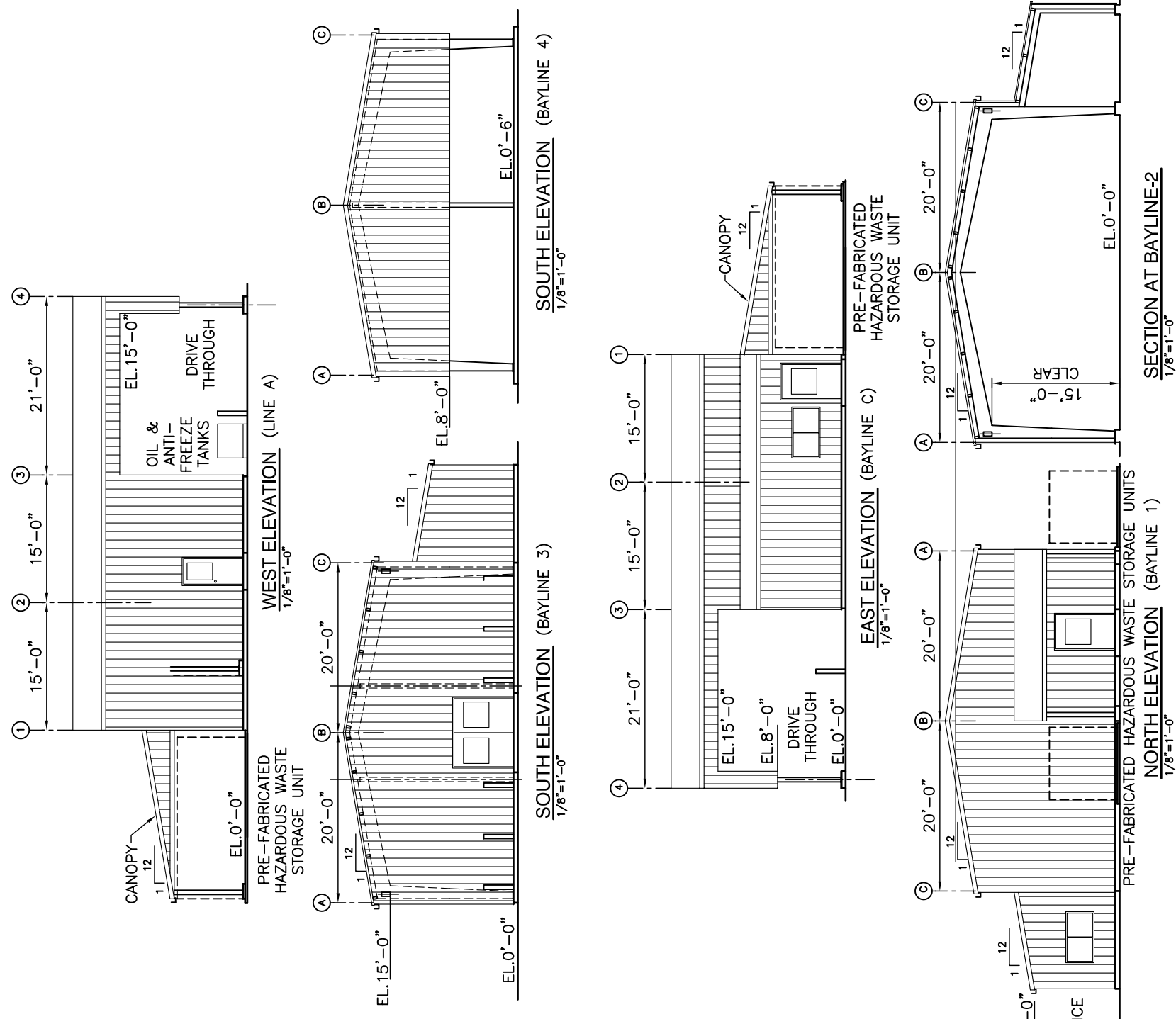
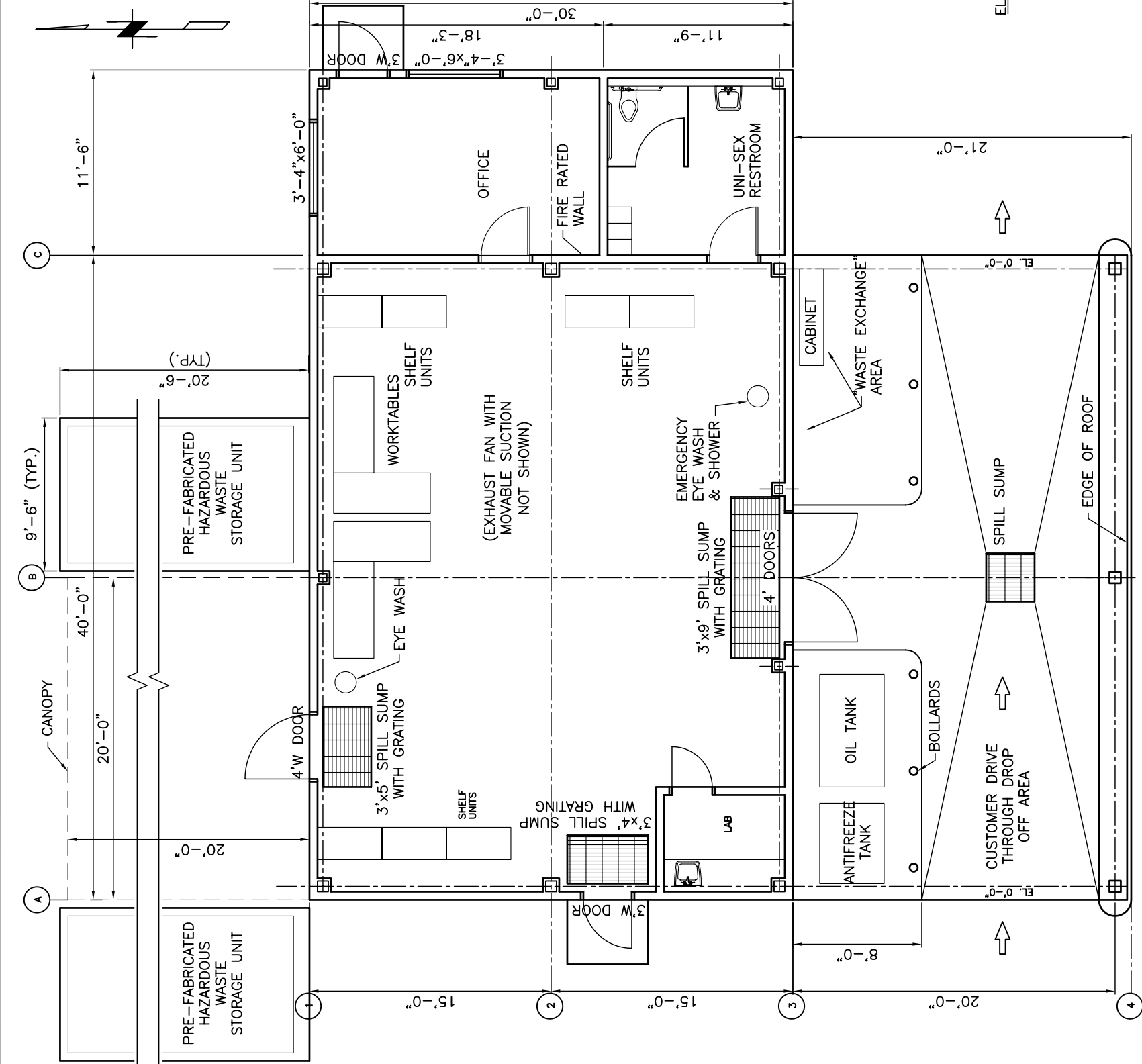
a. MRW Facility Design, Option 1

In this design, customers would drive under a canopy to unload their MRW onto rolling carts. The drop-off area should have double-walled storage tanks for used motor oil and anti-freeze, as well as spill-containment pallets for car batteries. There should also be space provided for a waste exchange where customers can pick up partially-used containers of various products such as paints and solvents. The reusable materials and the car batteries will need to be inside of a secure area to prevent vandalism and theft. Kittitas County, for instance, has had to lock up car batteries because these were being stolen and the acid used for drug manufacturing.

Customers would not be allowed inside the processing area, which would occupy the interior of the MRW building. The MRW Facility staff would push the rolling carts with waste from the canopied area into the processing area and then segregate the MRW into compatible categories. The MRW would then be poured into larger drums of the same material, or “lab-packed” as small containers inside of a larger protective drum. The processing area needs mechanical ventilation to remove toxic fumes and explosive vapors, as well as an emergency eyewash and a combination eyewash/shower. There should be work tables and storage shelves for temporary storage of wastes.

The MRW Facility should have grated spill containment sumps per WAC regulations. Because the proposed fire protection system uses dry chemical instead of water, the sumps can be much smaller for a significant savings in construction costs. Electrical features include explosion-proof wiring, motors and grounding per code. For the WAC-required explosive gas monitoring system, a portable combustible gas (methane) detector can be used. An optional small laboratory has been included in the conceptual layout, but it may not be necessary to construct one.

After being bulked into 55-gallon drums, MRW will be stored in one of two pre-fabricated, code-approved storage units (already owned by Chelan County) located behind the MRW Facility. The storage units must meet the concealed construction requirements of WAC 296-150F, *Factory-built housing and commercial structures*. Drums on pallets will be accessible by forklift. The storage units must be ventilated and plumbed with a fire sprinkler system.



No.	DATE	BY	REVISION
C	8/15/05	BJR	FOR CLIENT REVIEW
B	7/2/05	BJR	FOR REVIEW
A	4/27/05	PCF	FOR REVIEW

JOB No.	DESIGNED:	PROJ. ENGINEER:	WARNING
25695834	TJC		IF BAR DOES NOT MEASURE 1" AT FULL SIZE, THEN SCALES ON TO SCALE.
SCALE:	DRAWN BY:	APPROVED BY:	
AS NOTED			
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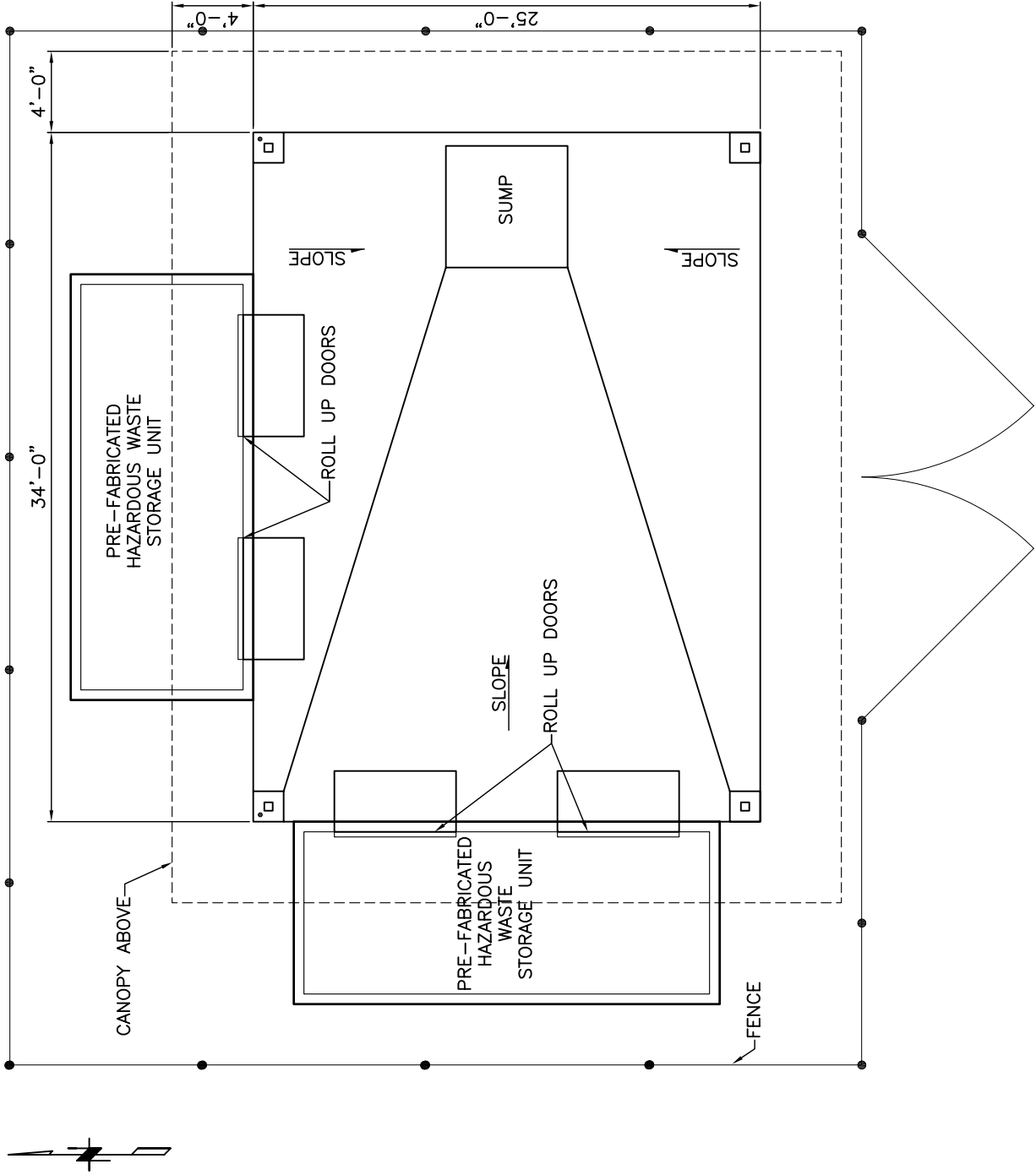
CHELAN COUNTY

Chelan County Facilities Study

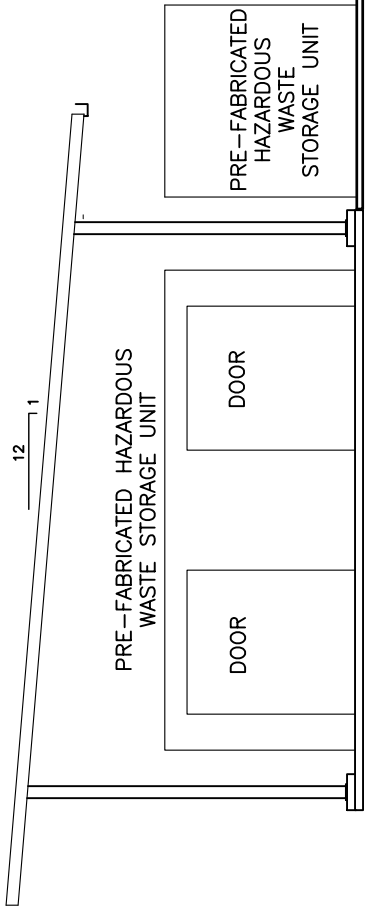
OPTION 1 - MODERATE RISK WASTE FACILITY

PLAN AND ELEVATIONS

DRAWING NUMBER:	7
CAD FILE NUMBER:	07-MRWF1
SHEET:	REV. OF
	C



MODERATE RISK WASTE STORAGE BUILDING PLAN
1/4"=1'-0"



EAST ELEVATION
1/4"=1'-0"

CHELAN COUNTY CHELAN COUNTY FACILITIES STUDY OPTION 2 - MODERATE RISK WASTE FACILITY BUILDING PLAN AND ELEVATION		URS 111 SW Columbia, Suite 1500 Portland, Oregon 97201-5814 (tel) 503-222-7200 (fax) 503-222-4292 www.urscorp.com		DRAWING NUMBER: 8
No. DATE BY REVISION		CAD FILE NUMBER: 08-mrwf2		SHEET: OF B
B 8/15/05 BJR FOR CLIENT REVIEW	PROJ. ENGINEER: TJC	WARNING 0 1/2 IF BAR DOES NOT MEASURE 1" AT FULL SIZE, THEN SCALES ON DRAWING NOT TO SCALE.	CHELAN COUNTY	
A 7/2/05 BJR FOR REVIEW	DESIGNED BY: TJC	APPROVED BY: BJR	MODERATE RISK WASTE STORAGE BUILDING PLAN	
SCALE: AS NOTED	JOB No. 25695834	CHECKED BY: BJR	DATE: JULY 2005	

An office and restroom are located behind an appropriately rated firewall to avoid the higher cost of electrical equipment needed for hazardous locations. The fire-protection system will be a dry chemical type for the waste processing area and the storage unit. Portable fire extinguishers will be used in the other areas.

b. Option 2, Alternative MRW Facility Design

Drawing 8 shows a simpler, less expensive MRW Facility, where wastes can be sorted on tables or on carts beneath a canopy. The wastes would be consolidated (bulked) into drums on pallets. The pallets would then be moved to the storage unit using a pallet jack (small hydraulic lift with wheels) or a forklift. The concrete surface under the canopy should be sloped to a spill containment sump. A four-foot high concrete block wall with sealed surface provides spill containment and additional weather protection. A chain-link fence atop the block wall secures the area. The floor should be sealed with a liquid-proof, chemical resistant sealant.

Two pre-fabricated hazardous waste storage units (such as those currently located at the Dryden facility) can be used to store waste-filled drums awaiting shipping. The units can also store wastes in smaller containers as they are delivered, prior to their sorting and bulking into drums. The storage units have integral (built-in) spill containment and ventilation.

c. Other Options for the MRW Facility Design

The options outlined here address the minimum requirements for a fully-functional facility. It might be possible, however, to transition into a full facility by constructing it in phases (such as Kittitas County is doing), by using an existing building or site, or by other means.

Kittitas County is constructing their MRW facility in phases. They began with a small existing building (used for storage of equipment and supplies), a concrete pad that is 50 feet by 60 feet, a few pre-fabricated hazardous waste storage units (\$8,000 each), some smaller storage units on wheels, and various drums, outdoor storage accessories, and other portable equipment such as an eye wash station (\$1,000). Wastes are accepted by appointment only, which works well for them since their offices are adjacent to the site. Wastes were initially handled out in the open on the concrete pad, but they have since added a roof over the concrete pad (\$50,000). Fencing has also been added to provide additional security, and a permanent safety shower/eye wash station has also been added. The facility has no lighting, and so it is only operational during daylight hours.

In the second quarter of 2005, the Kittitas County site serviced 601 customers and they are currently shipping out about 2,000 pounds per month of hazardous wastes. The existing facility is approaching capacity at the current level of usage, and Kittitas County is considering expanding it in the near future. On their “wish list” for future improvements is an office area for the MRW site (currently they need to go back to their regular offices to handle paperwork and related activities). Kittitas County also recently opened a second facility in Cle Elum, which is reportedly already approaching maximum capacity.

Another option that should be considered is for the MRW facility to serve as a resource center for information and products that could help people handle hazardous waste properly. Products that could be provided (or sold) include bags that are specially designed for asbestos disposal, oil changing kits (to help do-it-yourselfers collect and dispose of the oil properly), and similar products.

3. Staffing

Workers who have had suitable training in identifying and handling hazardous materials must staff the MRW Facility. State (WISHA) and federal (OSHA) regulations require that two staff be present while wastes are being handled. Depending on the open hours and the amount of MRW received, these positions will probably be part-time. Incoming volumes of MRW may be higher in spring and summer months, and additional staff may be needed at those times (although this may be difficult to arrange due to the need for proper training of the MRW Facility staff). If the MRW Facility were co-located at a solid waste handling facility, the MRW Facility might be able to be open for more hours and/or the employees could assist with other activities at that facility. The ideal location for the MRW Facility, however, would be a central location in the Wenatchee area. The only opportunity for co-location in that area is the South Wenatchee Transfer Station, which is operated by Waste Management and which then presumes that they would operate the MRW Facility as well, but these types of facilities are generally publicly operated.

4. Costs

The capital cost estimates for the MRW Facility options described above are shown in Table 6. As previously mentioned in this report, these estimates are preliminary. The estimates are based on the facility concepts and not on actual engineering design drawings and specifications. In addition, the cost estimates for the MRW Facility are not based on a specific site, and so cannot address the particular needs or benefits of using a particular site. Operating costs for either option are estimated to be about \$42,000 per year for staffing (assuming two part-time employees or 1.0 FTE total) and related supplies, plus disposal costs for the wastes that are collected.

D. RECYCLING OPTIONS FOR LEAVENWORTH AREA

Recycling programs in Chelan County are addressed in greater detail in the Draft Solid Waste Management Plan, but recycling options for the Leavenworth area are addressed here because one of the options is a facility-based alternative.

Some recycling services are available in or near Leavenworth, but residents of that area are interested in having more access to recycling and increasing the volumes collected. The current services include a comprehensive drop-off program at the Dryden Transfer Station (four miles away), and the City of Leavenworth collects cardboard from businesses in the commercial sector of the city. Residents in the unincorporated areas around Leavenworth can sign up for curbside recycling through the garbage collection services provided by Waste Management, although the

Table 6. Preliminary Cost Estimates for MRW Facility Options.				
	Option 1		Option 2	
	Quantity	Cost	Quantity	Cost
Land	0.5 acre	\$100,000	0.5 acre	\$100,000
Site preparation (grading, utilities)	LS	\$50,000	LS	\$50,000
Septic system or sewer connection (allowance)	LS	\$10,000	LS	\$10,000
Fences and gates (allowance)	LS	\$10,000	LS	\$10,000
Paving, 4" asphalt and 8" base, for 0.5 acre	2,420 SY	\$36,300	2,420 SY	\$36,300
Landscaping (allowance)	LS	\$10,000	LS	\$10,000
8" structural backfill and compaction	100 CY	\$1,500	60 CY	\$900
Metal building (including doors and insulation)	2,800 SF	\$98,000	1,400 SF	\$28,000
Concrete foundation	50 CY	\$30,000	10 CY	\$6,000
8" concrete slab, including drive-through and storage areas	70 CY	\$21,000	60 CY	\$18,000
Building fire suppression system (dry chemical)	1,200 SF	\$18,000	NA	\$0
Portable fire extinguishers	NA	\$0	LS	\$1,000
Electrical (explosion-proof for Option 1)	2,345 SF	\$16,415	1,400 SF	\$2,800
HVAC	2,345 SF	\$4,690	NA	\$0
Tenant improvements	1,545 SF	\$38,625	NA	\$0
Chain link fencing for building	NA	\$0	200 LF	\$7,000
Concrete floor sealer (allowance)	2,345 SF	\$23,450	850 SF	\$8,500
Relocate hazwaste storage units from Dryden Transfer Station	2	\$2,000	2	\$2,000
Bollards, signage and striping	LS	\$10,000	LS	\$10,000
Forklift	1	\$22,000	1	\$22,000
Misc. equipment and supplies	LS	\$3,500	LS	\$3,500
Subtotals		\$505,480		\$326,000
Design fee and contingency ² , 35%		\$176,920		\$114,100
General conditions/contractor mobilization, 15%		\$75,820		\$48,900
Total by Option		\$758,200		\$489,000

Notes: 1. Units: LS = Lump Sum, SY = Square Yard, LF = Linear Feet, CY = Cubic Yard, SF = Square Foot, NA = Not Applicable.
 2. Design fee and other costs do not include permit fees.

subscription rate for garbage collection in that area is relatively low and the additional cost for recycling is \$6.80 per month.

For the past few years, a non-profit citizens group (Leavenworth Recycles) has been working on ideas for more recycling in the Leavenworth area. The three major options for recycling that they have been considering for the Leavenworth area are:

Option 1: a drop-off site;

Option 2: a partnership with Cashmere to allow the use of its processing center; and

Option 3: a recyclables processing facility.

Each option is described in more detail below.

1. Description of Leavenworth Area Recycling Options

a. Drop-Off Program

This low-cost option involves placing donated containers (“dropboxes”) to receive recyclables at a no-rent site without an attendant. The configuration under consideration consists of:

- a 30 cubic yard dropbox for newspaper (or mixed paper, depending on the market);
- a 30 cubic yard dropbox with an internal partition to separate aluminum cans and another material; and
- one or two 8 cubic yard boxes with wide slots for cardboard.

The Chelan County Solid Waste Department has already offered to provide two 30 cubic yard boxes, and the City of Leavenworth has recently offered to donate an eight cubic yard box for the cardboard. Depending on the site and its surroundings, the dropboxes may be placed on either a graveled or a paved surface. It is unlikely that the facility will have an attendant, posing concerns about litter and illicit dumping of non-recyclable materials. Oversight and litter patrol by volunteers, however, should mitigate some of these concerns.

The site’s location should strike a balance between convenience, accessibility, proximity to the generators of recyclables, and compatible neighbors. If possible, there should be sufficient ambient light so that electric lights are not required.

Potential sites that have been discussed include the parking lots of retail establishments, such as the Safeway store on the east side of town and the State Department of Transportation property along Highway 2. The Leavenworth Recycles group is actively pursuing other sites and partners for a drop-off facility.

As currently envisioned, Waste Management would empty the boxes and haul the materials to Central Washington Recycling, (a division of Michelsen’s Packaging) in Wenatchee. Revenues

from the sale of the materials would be given to Leavenworth Recycles to help pay for transportation costs.

b. Combined Effort with Cashmere or Others

This option assumes that recyclable materials would be hauled to Cashmere's processing center (or another site) instead of to Central Washington Recycling. This would utilize Cashmere's existing equipment and avoid much of the capital cost involved with Option 3, and it may possibly allow a wider variety of materials to be recycled than with Option 1.

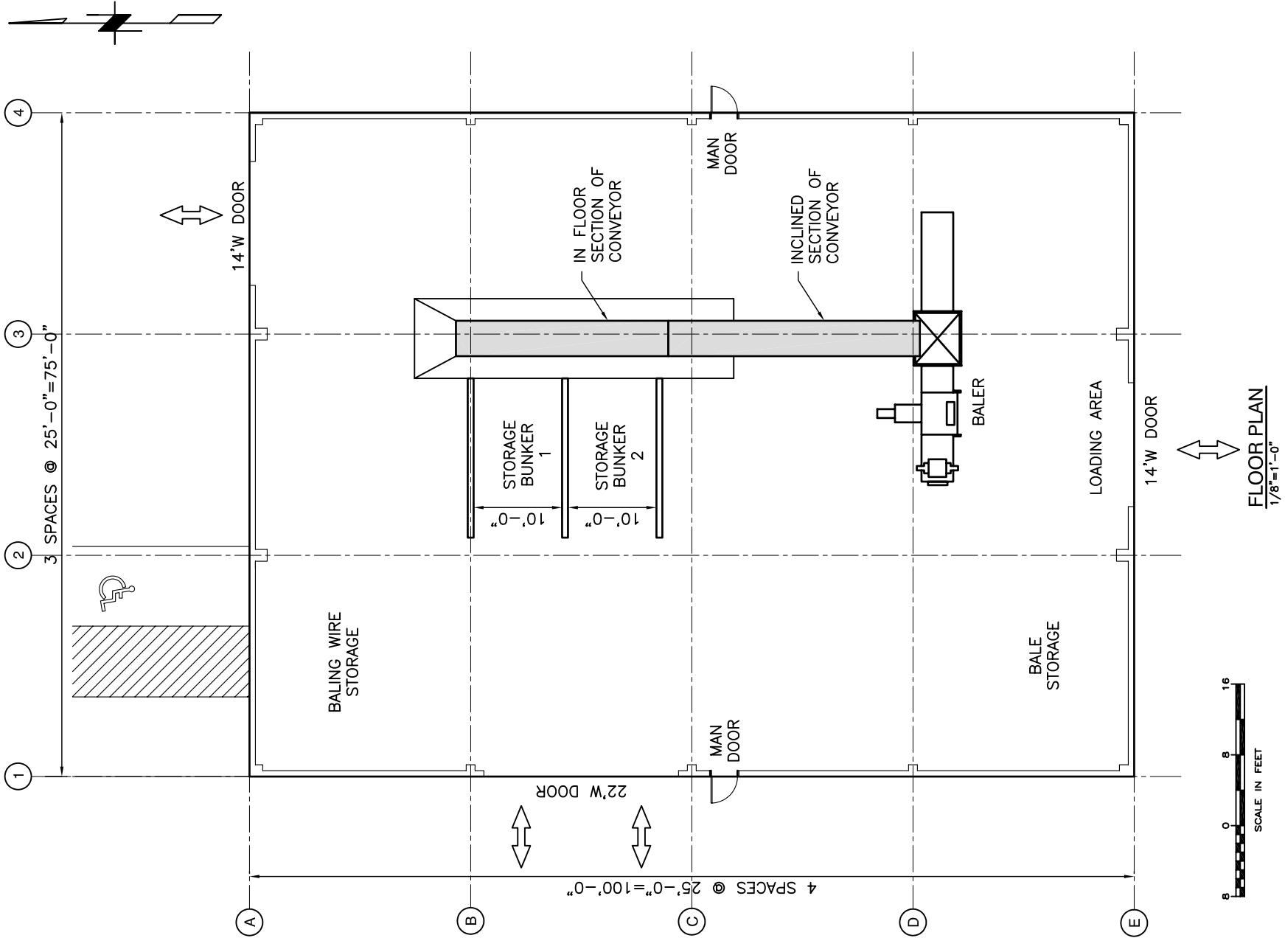
The details of this approach would need to be worked out through negotiations with the City of Cashmere. Their initial response is that they are willing to assist but the revenue-sharing aspects may be problematic. If the materials are brought to them, then they might be able to share part of the revenues, but if they assist with collections then they would probably not be able to share revenues. This option cannot be evaluated further until additional details are worked out through discussions between Leavenworth Recycles, the City of Cashmere, and possibly others.

c. Recyclables Processing Facility

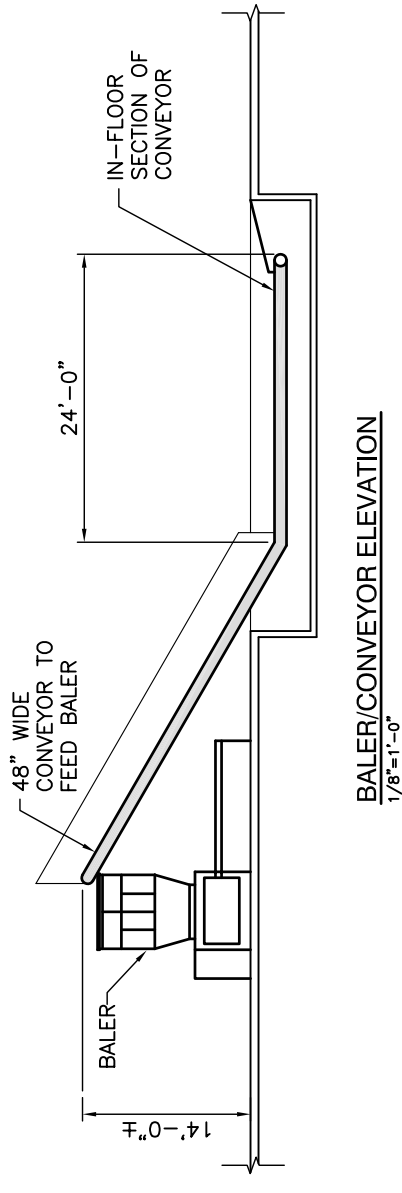
This option involves constructing a new facility to process recyclable materials. Some materials may be dropped off there, and others may be collected elsewhere and delivered to the facility. The major elements of the facility would be some combination of the following, depending on the types and quantities of materials expected to be processed:

- processing building: including receiving areas for rain-sensitive materials such as newspaper and cardboard; storage areas for bales of the same materials; and baling equipment.
- worker facilities: including restrooms, office, lunchroom, storage room for supplies.
- drop-off areas: various sizes of dropboxes and other containers, depending on the type of material.
- outdoor storage areas: bunkers constructed of concrete "ecology" blocks or other materials, or various sizes of dropboxes or other containers.
- grounds: including roads, parking, and landscaped areas.
- utilities: including water, sewer (or septic system), and electricity.

Drawing 9 illustrates a basic recyclables processing facility designed to receive source-separated materials. Dropboxes are emptied onto the tipping floor and a rubber-tire loader pushes them onto the in-floor section of a conveyor. The conveyor lifts them up an incline and drops them into the top of a baler, which compresses them and ties them into a tight bale with baling wire. This basic facility has a limited range of materials that it can accept, although many balers can be used for a variety of materials (such as newspaper, cardboard, mixed waste paper, aluminum cans, tin cans, and plastic soda bottles, but not for glass or wood products).



FLOOR PLAN
1/8"=1'-0"



BALER/CONVEYOR ELEVATION
1/8"=1'-0"

NOTE:

1. RESTROOM, OFFICE, ROADWAYS AND PARKING NOT SHOWN.

No.	DATE	BY	REVISION
C	8/15/05	BJR	FOR CLIENT REVIEW
B	7/2/05	BJR	FOR REVIEW
A	4/27/05	PCF	FOR REVIEW

JOB No.	25695834
DESIGNED:	TJC
SCALE:	AS NOTED
PROJ. ENGINEER:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
DATE:	MAR.2005

WARNING
IF BAR DOES NOT MEASURE 1" AT FULL SIZE, THEN SCALES ON DRAWING NOT TO SCALE.

CHELAN COUNTY	
Chelan County Facilities Study	
LEAVENWORTH RECYCLABLES PROCESSING FACILITY PLAN AND SECTION	

DRAWING NUMBER:	9
CAD FILE NUMBER:	09-MRF
SHEET:	OF
REV.	C

The drawing does not show the entire site, but elements such as traffic circulation, landscaping, recyclables drop-off containers, or outdoor storage for baled materials would depend on the characteristics of a specific site (which has yet to be verified).

The next step in sophistication would be to add a “pick line,” where workers stand on one or both sides of an elevated conveyor and manually remove various recyclables as they pass by on the belt. This significantly increases equipment and labor costs.

The volumes needed to justify the operation of such a facility, and to bring the operating cost (on a per-ton basis) down to a reasonable level, will require one or more collection programs. Possible collection programs that could bring materials to this facility include the City of Leavenworth’s existing cardboard collection route, drop-off sites (or multi-bin trailers or containers) at various locations nearby (such as Plains and Coles Corner), and collection programs by others in the general area (such as Stevens Pass). The operators of the processing facility could also run a collection route to collect cardboard from businesses outside of the Leavenworth city limits, and to service smaller containers for other materials at local businesses, condominiums, and campsites (such as KOA).

2. Evaluation of Options

The issues and considerations associated with the two primary options (drop-off program and processing facility) are shown in Table 7.

3. Costs and Results

a. Drop-Off Program

The costs for a drop-off program are primarily the public education/promotion costs, the capital expense for collection containers, and the cost to transport materials to market. Revenues are largely restricted to sales of collected materials, although a non-profit could also benefit from donations. Grants and user fees are also possible revenue sources, although the latter is generally only available for special events and not for ongoing collections.

For a drop-off site in the Leavenworth area, the capital expense for at least three collection containers is being covered by Chelan County and the City of Leavenworth. For Waste Management to haul these containers to Michelsen’s Packaging in Wenatchee will cost approximately \$80 per trip.

Materials could also be hauled to Cashmere, but at this point it is unknown whether payments could be provided by Cashmere to offset the transportation cost (although the transportation cost would be lower). The City of Cashmere might also be able to transport the materials with city trucks at no cost, but if the city had to transport the materials then it is fairly certain that they could not provide payments.

Table 7: Evaluation of Leavenworth Area Recycling Options		
	Drop-Off Program	Recyclables Processing Facility
Administrative Issues		
Ownership of Equipment and Facilities	Ownership not an issue, Chelan County and Leavenworth can retain ownership of drop-off containers.	Ownership is a major consideration for a processing facility; either the citizens group needs to be financially responsible, or County or City needs to assume ownership and liabilities for facility and equipment.
Operations Management, including bookkeeping, etc.	Leavenworth Recycles will need to keep track of records for payments and expenses.	More extensive record-keeping will require paid staff or support from County or City.
Staffing	No staffing will be required, but volunteers will need to monitor and maintain sites.	A minimum of 1.0 FTE will be needed, plus volunteers.
Operations		
Collections	Collection only requires finding locations for drop-off containers and making arrangements for emptying those.	Curbside and/or commercial collection system(s) will be needed to supply facility with sufficient materials flow.
Marketing	Marketing will be handled by others.	Monitoring prices, finding new markets, and making transportation and other arrangements will require a significant amount of time.
Publicity and Promotion	A continuous and aggressive publicity campaign will be important to the program's success, but Leavenworth Recycles can do a lot to spread the word.	A continuous and aggressive publicity campaign will be important to the program's success. Leavenworth Recycles can do most of this but printing and distribution of brochures will be expensive.
Litter Cleanup	Drop-off containers will need to be monitored to remove contaminants (inside containers) and litter.	Litter and contaminant removal less of an issue with a fixed facility and curbside collections.
Financial		
Net Profit or Loss	Drop-off program could potentially operate at a profit by targeting a limited number of materials.	A fixed facility will likely require an annual subsidy or will need to limit the range of materials handled.
Liability for Accidents, Fires, Damages	Liability not much of an issue.	A fixed facility will require one or more types of insurance to cover possible accidents involving staff, volunteers, and equipment.

b. Recyclables Processing Facility

The cost of constructing and equipping a processing facility as described above is shown in Table 8. The cost of operating such a facility is a more difficult question to answer, since operating costs are highly variable and would be contingent on a number of factors, including day-to-day decisions made by the facility management. The approach for many of the relevant factors have not been decided yet or cannot be assumed based on the available information.

One possible approach to the question of operating costs is to look at similar facilities that are already operating, such as the North Chelan Recycling Project or the recycling facility in Twisp. The North Chelan Recycling Project (in the City of Chelan) serves as a drop-off center and also collects materials from nearby businesses and schools. Although it would be good to have an arrangement where the materials are delivered by others (thus shifting collection costs to the waste generator), it will probably be necessary for the Leavenworth facility to actively collect commercial materials too in order to generate adequate volumes (in other words, to operate in a manner similar to the North Chelan Recycling Project). The North Chelan Recycling Project also maintains multi-material drop-off bins near the local Safeway store, two sites in Entiat and one site in Manson. Additional details on the design and operation of the North Chelan Recycling Project can be found in Chapter 4 of the Solid Waste Management Plan.

The North Chelan Recycling Project collects about 1,200 tons per year (1,140 tons in 2003, slightly more in 2004). They do this from a service area of approximately 9,000 residents. The Leavenworth area has a smaller permanent population (roughly two-thirds as much) but gets significantly more tourism. With the higher tourism comes more “residential recyclables” but perhaps more importantly they also have more commercial activity as a result of the tourism and hence more cardboard and other materials.

The annual budget for the North Chelan Recycling Project is \$159,000. Their revenues are about \$100,000 per year, so there is an annual shortfall of about \$59,000 per year (for a net cost of about \$50 per ton). The City of Chelan and Chelan County make up this shortfall each year.

A recycling center in Twisp could also provide an interesting model for the Leavenworth site. That facility was constructed and is being operated through a joint agreement with Okanogan County, the City of Twisp and a non-profit organization, Methow Recycles. Startup expenses amounted to about \$175,000, which was slightly below the desired amount (hence, some improvements have yet to be made). Initial expenses were covered by a combination of grant funds and donations, and the annual operating expenses (\$24,000 to \$36,000) are derived almost entirely from material revenues (plus a small amount of donations). This facility continues to cover its operating expenses with material revenues by keeping costs to an absolute minimum through the use of volunteers and other methods, and by only collecting materials that provide a positive cash flow.

It is interesting to note that both the North Chelan Recycling Project and the Twisp facility were started using grant funds for the initial expenses, and both were also started and operated by non-profit groups (at least initially, the North Chelan Recycling Project is now staffed by city employees).

Table 8. Preliminary Cost Estimate for Leavenworth Recyclables Processing Facility.		
	Quantity	Cost
Land	2.5 acre	\$300,000
Site preparation (grading, utilities)	LS	\$50,000
Septic system or sewer connection (allowance)	LS	\$10,000
Fences and gates (allowance)	LS	\$20,000
Paving, 4" asphalt and 8" base, for 0.5 acre	4,840 SY	\$72,600
Landscaping (allowance)	LS	\$15,000
8" structural backfill and compaction	190 CY	\$2,850
Metal building (inc. doors and insulation)	7,500 SF	\$210,000
Concrete foundation	20 CY	\$12,000
8" concrete slab	190 CY	\$57,000
Concrete pit for conveyor (allowance)	40 CY	\$18,000
10' high steel push walls	100 LF	\$40,000
Building fire sprinkler system	7,500 SF	\$37,500
Electrical	7,500 SF	\$30,000
HVAC	7,500 SF	\$15,000
Staff facilities	150 SF	\$10,500
Bollards (allowance)	20	\$16,000
Signs and striping (allowance)	LS	\$5,000
Electrical power distribution (allowance)	LS	\$15,000
Ramp for loading dock (allowance)	20 CY	\$9,000
Baler	1	\$150,000
Conveyors	80 LF	\$160,000
Chute work	LS	\$10,000
Electrical for equipment	LS	\$30,000
Misc. equipment and supplies	LS	\$30,000
Subtotals		\$1,325,450
Design fee and contingency ² , 35%		\$463,910
General conditions/contractor mobilization, 15%		\$198,820
Total by Option		\$1,988,200

- Notes: 1. Units: LS = Lump Sum, SY = Square Yard, LF = Linear Feet, CY = Cubic Yard, SF = Square Foot, NA = Not Applicable.
2. Design fee and other costs do not include permit fees.

SECTION III CONCLUSIONS AND RECOMMENDATIONS

A. WASTE TRANSFER SYSTEM

Dryden Transfer Station:

Several of the alternatives and proposed solutions examined for the Dryden Transfer Station would be worthwhile to pursue, contingent on the availability of funding to accomplish these modifications. Specifically, the following recommendations should be considered:

1. Add a scale. This is the most costly alternative examined for the Dryden Transfer Station, but the use of the scale provides an important ability to equitably charge customers.
2. Conduct maintenance and repairs, including:
 - fixing the floor of the pit should be treated as a top priority and this repair should be conducted soon to avoid additional damage to the floor and equipment.
 - re-installing gutters is another repair that should be done soon, and in the long run this will probably pay for itself through lower amounts of water that need to be collected and treated from the tipping floor area.
 - fixing the drainage problem south of the transfer building would be good for both functional and aesthetic reasons, but is not as high of a priority as other repairs at Dryden Transfer Station.
 - moving the oil tank, antifreeze tanks, car battery pallets and the hazardous waste storage units should be given serious consideration, but should be viewed in light of other changes that might be made at the transfer station.
3. Compost facility upgrades. Adding the additional piece of land from the boundary adjustment and then paving that area to expand the size of the composting pad should be viewed as a high priority because it will result in significant improvements in the ability to use the composting pad for a relatively low cost.

The idea of storing raw and finished materials on top of the closed landfill seems worthwhile to pursue, but will require more study and revisions to the landfill closure plan.

4. Installing ecology block bunkers and other improvements in the appearance and functionality of the recycling areas. These improvements can be conducted at a relatively low cost and should be pursued, but if a scale will be installed then these should be done at that time as part of a package of modifications that addresses how traffic flows from one area to another.

Chelan Transfer Station:

Each of the three main alternatives examined for the Chelan Transfer Station could help make this site more useful, but two require a substantial investment:

1. Add a scale. As with Dryden, this option is costly but important for the ability to equitably charge customers.
2. Expand the transfer station. This study concludes that an expansion of this station will probably be necessary soon due to the growth in that area's population and commercial activities, but the cost of this option (at almost \$0.5 million) dictates careful planning. Other, non-facility options should be considered as interim solutions before moving forward with an expansion. Non-facility options could include more open hours and higher disposal rates. If adjacent land is available, it should be purchased.
3. Install metal recycling capabilities. A container to collect white goods and scrap metals for recycling should be installed at the Chelan Transfer Station or next door at the North Chelan Recycling Project.

South Wenatchee Transfer Station:

There are three improvements that should be considered for this private facility:

1. The facility should be expanded or additional capacity added by using dropboxes.
2. Reduce off-site queuing and traffic problems by reconfiguring traffic flow on-site. This may require adding more unloading stalls.
3. Increase the recycling capabilities. The Solid Waste Management Plan designates several materials as recyclable, but this facility only collects a few of those. Additional recycling containers should be located at this facility, near the tipping area, on the lower level or at an adjacent property, for this facility to be in compliance with the minimum requirements of the Solid Waste Management Plan.

Entiat Transfer Station:

The expense of siting, constructing and operating a new facility to handle the relatively small amounts of waste generated in the Entiat area will result in a higher cost per ton for garbage disposal than in other parts of the County. The cost for a new facility in the Entiat area is estimated at about \$40 per cubic yard, which does not compare favorably to the rates for handling garbage at nearby sites (the current cost ranges from \$11.53 to \$15.97 at the three existing transfer stations). This is to be expected, since it is always more expensive to handle the small loads brought in by self-haulers (cars and pickups) compared to garbage trucks, and that is all that this facility is designed to handle. While a new facility is not recommended at this time, the need for a new site should be periodically re-evaluated, especially since the population in the Entiat area appears to be growing more quickly than in other parts of the County.

B. MRW FACILITY

This study concludes that an MRW Facility should be built, and that this facility should be centrally located in or near Wenatchee. A permanent facility can operate more effectively and efficiently than annual collection events, and thus provide more of a service to the community in controlling potential hazards associated with the chemicals that are collected. Collection events generally gather less MRW over the course of a year than would a permanent facility. The cost of a collection event is higher on a per pound (or gallon) basis than for a permanent facility. Once built, MRW facilities can typically be operated for roughly the same annual cost as collection events, but because the permanent facility will attract more waste this approach is actually more cost-effective once the initial costs are paid. Grant funds, land or building donations, and/or a phased-in approach should be used to reduce the initial capital cost of the facility.

C. RECYCLING OPTIONS FOR LEAVENWORTH AREA

The Leavenworth area (including Lake Wenatchee, Plain, the Upper Valley, Peshastin and Stevens Pass) needs greater access to recycling and yard waste services. The nearby Dryden Transfer Station provides these services, but one of the critical keys to success for a recycling program is convenience. The ideal level of convenience is curbside recycling for residential customers and an expanded commercial collection program that collects more than just cardboard. For a drop-off program, convenience means one or more central locations, 24/7 availability, and a wide range of materials. The City of Leavenworth and Chelan County should work with the citizens group, Leavenworth Recycles, to implement one or more drop-off locations that meet these criteria. Whether this involves transporting the collected recyclables to Central Washington Recycling in Wenatchee, the City of Cashmere's processing center, or elsewhere will need to be worked out, but in any case no one should expect this to be a highly profitable venture. The best that might be possible is that the value of the recyclable materials might cover the collection costs, but the other, less tangible benefits still make this a worthwhile endeavor.

The actual cost of a fully-functional recycling processing facility is expensive relative to the volumes of materials potentially collected in the Leavenworth area. If the initial expense is spread over a ten-year period and assuming 1,000 tons per year (which would not be possible without also a significant amount of collections and other operating costs), then the capital cost alone is the equivalent of \$150 to \$200 per ton recycled. If the initial cost can be reduced through donations of land and building, the purchase of used equipment, and by other means, with at least part of the initial expense covered by grants, then the County and City of Leavenworth should support the concept and assist with it to the extent possible. Such a facility could have collateral benefits for the local economy and for the solid waste system in Chelan County, but these benefits need to be realized at a reasonable cost. For the immediate future, drop-off sites and collection programs should be used as much as possible and those materials transferred to other processing facilities to build volumes and demonstrate the need for a local processing facility. If a processing facility is pursued, a phased-in approach should be used.

D. LAND ACQUISITION

This study did not include searching for potential sites for proposed new facilities, but it would be advantageous for the County to begin the process of identifying and acquiring parcels of land suitable for siting solid waste facilities immediately. Information collected during the course of this study indicates that suitable land is becoming scarce and expensive, and a suitable parcel may not be available in a desirable location at a later date.

The land acquisition process would begin by identifying the areas where land use zoning would or could allow a transfer station, MRW facility or recycling facility. The County could then identify undeveloped parcels of land that have the appropriate zoning (or might possibly be rezoned). The facility concepts developed in this study could be used to determine whether a parcel is adequately sized for the facility. Other factors such as convenience, access, possible environmental impacts, proximity to population centers (present or future), amount of onsite development, and competing site uses could then be used to compare various parcels. Depending on timing, political considerations, and anticipated land cost, the County could also consider various mechanisms for acquiring the land, including Requests for Proposals, working with real estate brokers and governmental agencies.

APPENDIX D
WUTC COST ASSESSMENT QUESTIONNAIRE

APPENDIX D WUTC COST ASSESSMENT QUESTIONNAIRE

INTRODUCTION

By state law (RCW 70.95.090), solid waste management plans are required to include:

“an assessment of the plan’s impact on the costs of solid waste collection. The assessment shall be prepared in conformance with guidelines established by the Utilities and Transportation Commission (WUTC or Commission). The Commission shall cooperate with the Washington state association of counties and the association of Washington cities in establishing such guidelines.”

The following cost assessment has been prepared in accordance with the guidelines prepared by the WUTC (WUTC 1997). The purpose of this cost assessment is not only to allow an assessment of the impact of proposed activities on current garbage collection and disposal rates, but to allow projections of future rate impacts as well. The WUTC needs this information to review the plan’s impacts to the franchised waste haulers that it regulates. For these haulers, WUTC is responsible for setting collection rates and approving proposed rate changes. Hence, WUTC will review the following cost assessment to determine if it provides adequate information for rate-setting purposes, and will advise Chelan County as to the probable collection rate impacts of proposed programs. Consistent with this purpose, the cost assessment focuses primarily on those programs (implemented or recommended) with potential rate impacts.

COST ASSESSMENT QUESTIONNAIRE

Please provide the information requested below:

PLAN PREPARED FOR THE COUNTY OF: Chelan

PLAN PREPARED FOR THE CITY OF: _____

PREPARED BY: Rick Hlavka, Green Solutions

CONTACT TELEPHONE: 360-897-9533 DATE: Jan. 5, 2006

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 **2006**.

YR.3 shall refer to **2008**.

YR.6 shall refer to **2011**.

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 72,130 YR.3 74,060 YR.6 77,000

- 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 72,130 YR.3 74,060 YR.6 77,000

1.2 References and Assumptions

Population estimates are interpolated from figures shown in Table 2.5 of the Plan using straight-line method.

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 23,330 YR.3 26,230 YR.6 30,830

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 82,080 YR.3 82,000 YR.6 81,700

2.3 References and Assumptions

Figures shown above assume that the total amount of waste generated will increase in proportion to population growth and that future recycling/composting goals (21% in 2006, 23% in 2008 and 26% in 2011) will be met (see Table 2.10). The tonnage disposed has been adjusted by the amount of waste diverted (5.1%), which does not count as recycling.

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.

<u>IMPLEMENTED</u>	<u>PROPOSED</u>
<u>Paper reduction practices</u>	<u>Expand waste reduction in</u> <u>gvt. offices</u>
<u>Material exchange practices</u>	<u>Expand waste reduction in</u> <u>the private sector</u>
<u>Backyard composting</u>	<u>Develop procurement policies</u>

3.1.2 What are the costs, capital costs and operating costs for waste reduction programs implemented and proposed?

IMPLEMENTED

YR.1 NA YR.3 NA YR.6 NA

PROPOSED

YR.1 NA YR.3 NA YR.6 NA

3.1.3 Please describe the funding mechanism(s) that will pay the cost of the programs in 3.1.2.

IMPLEMENTED

YR.1 NA YR.3 NA YR.6 NA

PROPOSED

YR.1 NA YR.3 NA YR.6 NA

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.

IMPLEMENTED

<u>PROGRAM</u>	<u>COST</u>	<u>FUNDING</u>
Various public and private recycling programs are currently implemented, see Chapter 4 for further details.	NA	NA

PROPOSED

<u>PROGRAM</u>	<u>COST</u>	<u>FUNDING</u>
Establish urban-rural boundaries	NA	NA
Establish list of designated materials	NA	NA
Minimum service levels	NA	NA
Encourage multi-family to recycle	NA	NA
Permitting agencies to encourage C&D recycling	NA	NA
Add staff to conduct the following:	\$35,000	Grants
Coordinate education with waste reduction		
Provide info to assist businesses w/recycling		
Expand drop-box system		
Expand recycling in government offices		
Develop a monitoring/reporting system		
Investigate recycling markets		
Encourage private sector to adopt procurement policies		

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.

WUTC Regulated Hauler Name	<u>Stehekin Maintenance and Machinery</u>		
G-permit #191	<u>YR. 1</u>	<u>YR. 3</u>	<u>YR. 6</u>
RESIDENTIAL			
- # of Customers	0	0	0
COMMERCIAL			
- # of Customers	1	1	1
- Tonnage Collected	NA	NA	NA

3.3.1 Regulated Haulers, continued

WUTC Regulated Hauler Name G-permit #237	Waste Management of Greater Wenatchee		
	<u>YR. 1</u>	<u>YR. 3</u>	<u>YR. 6</u>
RESIDENTIAL			
- # of Customers	6,219	6,566	7,122
- Yardage Collected	104,000	109,800	119,100
COMMERCIAL			
- # of Customers	697	736	798
- Yardage Collected	89,950	94,860	102,900

WUTC Regulated Hauler Name G-permit #121	Zippy Disposal		
	<u>YR. 1</u>	<u>YR. 3</u>	<u>YR. 6</u>
RESIDENTIAL			
- # of Customers	1,227	1,291	1,393
- Tonnage Collected	3,710	3,903	4,212
COMMERCIAL			
- # of Customers	404	425	459
- Tonnage Collected	5,565	5,854	6,317
DOP BOXES			
- Tonnage Collected	9,338	9,824	10,601

3.3.2 Other (non-regulated) Solid Waste Collection Programs Fill in the table below for other solid waste collection entities in your jurisdiction.

Hauler Name	<u>City of Cashmere</u>	<u>YR. 1</u>	<u>YR. 3</u>	<u>YR. 6</u>
- # of Customers		947	989	1,056
- Yardage Collected		4,524	4,725	5,044

Hauler Name	<u>City of Chelan</u>	<u>YR. 1</u>	<u>YR. 3</u>	<u>YR. 6</u>
- # of Customers		1,685	1,773	1,915
- Yardage Collected		10,490	11,040	11,930

Hauler Name	<u>City of Leavenworth</u>	<u>YR. 1</u>	<u>YR. 3</u>	<u>YR. 6</u>
- # of Customers		850	910	1,007
- Yardage Collected		4,894	5,238	5,800

3.4 Energy Recovery & Incineration (ER&I) Programs

NA, no such facilities

3.5 Land Disposal Program

NA, no such facilities

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 \$241,612 YR.3 \$303,127 YR.6 \$350,908

Funding Source

Grants, tipping fees and Interlocal Agreement payments

3.6.2 Which cost components are included in these estimates?

Salaries and benefits, supplies, and payments to other funds (see Table 10.1).

3.6.3 Please describe the funding mechanism(s) that will recover the cost of each component.

Existing funding sources will continue to be used.

3.7 Other Programs

NA, no such programs

3.8 References and Assumptions

For 3.1.2, there are no specific costs for existing or proposed waste reduction programs because these costs are combined with recycling, staffing and other costs. The additional cost of new waste reduction activities are included with the staff costs shown for recycling (section 3.2.1).

For 3.2.1, only new programs are shown under proposed programs (i.e., existing/ongoing efforts are not shown).

For 3.3.1, number of customers and waste volumes have been projected based on population increases projected for the appropriate areas.

For 3.3.1, Methow Sanitation has a piece of certificated territory in Chelan County but it is in a mountainous area where there are no customers. Stehekin Maintenance and Machinery also operates in Chelan County, but does so only under contract with the National Park Service.

For 3.6.1, administrative expenses are increased by 5% per year, plus additional staffing (at a cost of \$35,000) in 2007.

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.

4.1 Funding Mechanisms (Summary by Facility)

The following tables provide information on funding sources for programs and activities.

Facility Name	Type of Facility	Tip Fee per Yard	Transfer Cost	Transfer Station Location	Final Disposal Location	Total Yards Disposed (2005)	Total Revenue Generated (Tip Fee x Tons)
Chelan Transfer Station	Transfer Station	See Table 7.1	Proprietary	North side, City of Chelan	Greater Wenatchee Regional Landfill	See Table 7.2	\$783,900
Dryden Transfer Station	Transfer Station	See Table 7.1	\$500,000 (transfer and disposal)	Dryden Area	GWRLF	See Table 7.2	\$766,700
South Wenatchee Transfer Station	Transfer Station	See Table 7.1	Proprietary	South of Wenatchee	GWRLF	See Table 7.2	Unknown

Tip Fee by Facility	Surcharge	City Tax	County Tax	Trans. and Disposal Cost	Operational Cost	Admn. Cost	Closure Costs
Chelan Transfer Station	\$2.00	0	0	Proprietary	Proprietary	NA	0
Dryden Transfer Station	\$2.00	0	0	\$500,000	\$145,000	NA	0
South Wenatchee Transfer Station	0	0	0	Unknown	Unknown	Unknown	0

Name of Program	Bond Name	Total Bond Debt	Bond Rate	Bond Due Date	Grant Name	Grant Amount	Tip Fee	Taxes	Other	Surcharge
Chelan Transfer Station	NA	0	NA	NA	NA	NA	100%	0	0	NA
Dryden Transfer Station	NA	0	NA	NA	CPG	NA	100%	0	\$11,196	NA
South Wenatchee TS	NA	Unknown	NA	NA	NA	NA	100%	0	0	NA

Table 4.1.4 Tip Fee Forecast						
Tip Fee per Ton	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Chelan Transfer Station; Loose Garbage	\$15.97	\$16.37	\$16.78	\$17.20	\$17.63	\$18.07
Compacted Garbage	\$24.61	\$25.23	\$25.86	\$26.50	\$27.16	\$27.84
Dryden Transfer Station; Loose Garbage	\$15.94	\$16.34	\$16.75	\$17.17	\$17.59	\$18.03
Compacted Garbage	\$24.57	\$25.18	\$25.81	\$26.46	\$27.12	\$27.80
South Wenatchee TS; Loose Garbage	\$11.53	\$11.82	\$12.11	\$12.42	\$12.73	\$13.05
Compacted Garbage	\$17.23	\$17.66	\$18.10	\$18.55	\$19.02	\$19.49

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 collection 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 %	Coll. Tax, %	Rates, Service Fees	Other %	Total
Waste Reduction		50				50	100%
Recycling		5			95	50	100%
Collection					100		100%
ER&I							NA
Transfer					100		100%
Land Disposal					100		100%
Administration		20				80	100%
Other							NA

Table 4.2.2 Funding Mechanism by Percentage – Year Three							
Component	Tip Fee %	Grant %	Bond %	Coll. Tax, %	Rates, Service Fees	Other %	Total
Waste Reduction		50				50	100%
Recycling		5			95	50	100%
Collection					100		100%
ER&I							NA
Transfer					100		100%
Land Disposal					100		100%
Administration		20				80	100%
Other							NA

Table 4.2.3 Funding Mechanism by Percentage – Year Six							
Component	Tip Fee %	Grant %	Bond %	Coll. Tax, %	Rates, Service Fees	Other %	Total
Waste Reduction		50				50	100%
Recycling		5			95	50	100%
Collection					100		100%
ER&I							NA
Transfer					100		100%
Land Disposal					100		100%
Administration		20				80	100%
Other							NA

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 (page 10-6) of the Plan for information on the County's budget.

For Table 4.1.4, tipping fees are assumed to increase 2.5% per year.

4.4 Surplus Funds

Please provide information about any surplus or saved funds that may support your operations.

Chelan County maintains a fund balance in the two enterprise funds to guard against extraordinary or unexpected expenses, but these should not be viewed as surplus funds.

APPENDIX E
SEPA CHECKLIST

APPENDIX E SEPA CHECKLIST

INTRODUCTION

Ecology guidelines (Ecology 1999) require that the potential impacts of this *Solid Waste Management Plan* (Plan) be evaluated according to the State Environmental Policy Act (SEPA) process. This checklist has been prepared to fulfill that requirement.

The SEPA checklist prepared for this Plan is a “non-project proposal” that is intended to address the new programs recommended by the Plan. As a non-project SEPA checklist, it is unable to fully address the potential impacts of facilities mentioned in this Plan (such as the MRW facility and the central compost facility). Any new facilities may need to undergo their own SEPA review process.

ENVIRONMENTAL CHECKLIST

A. BACKGROUND INFORMATION

1. Name of proposed project, if applicable:

Chelan County Solid Waste Management Plan Update.

2. Name of applicant:

Chelan County.

3. Address and phone number of applicant and contact person:

Applicant:

**Brenda Harn
Solid Waste Coordinator
Chelan County Public Works Dept.
316 Washington Street, Suite 402
Wenatchee, WA 98801-2876
Phone: 509-667-6415
Fax: 509-667-6250**

Contact Person:

**Rick Hlavka
Consultant
Green Solutions
PO Box 680
South Prairie, WA 98385
Phone: 360-897-9533
Fax: 360-897-2348**

4. Date checklist prepared:

January 4, 2006

5. Agency requesting checklist:

Chelan County Public Works Department.

6. Proposed project timing or schedule (*including phasing, if applicable*):

This checklist is for a non-project proposal intended to update Chelan County's long-range plan for solid waste management and disposal. The proposed Solid Waste Management Plan is required to undergo public review and comment, which is anticipated to begin in April 2006. A final copy of the Solid Waste Management Plan is expected to be adopted by December 2006.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Ecology's guidelines require solid waste management plans to be reviewed every 5 years and, if necessary, updated.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Does not apply.

9. Do you know of pending applications for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

NA

10. List any government approvals or permits that will be needed for your proposals, if known:

State Law (RCW 70.95.094) and guidelines issued by the Department of Ecology (Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions, December 1999) require the five cities to adopt the plan (or else they must develop their own plans), require a public review period (for a minimum of 30 days), require that the plan and a Cost Assessment Questionnaire be reviewed and approved by the Washington Utilities and Transportation Commission, and require Ecology to examine and approve of the preliminary draft and final plan. The Board of County Commissioners must also adopt the final draft of the plan, at about the same time that the cities are requested to adopt it.

11. Give a 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 which ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.

Chelan County is required by state law to maintain a “coordinated, comprehensive solid waste management plan” in a “current and applicable condition.” The existing plan, adopted in 1994, needs to be updated. The proposed new plan addresses changes that have occurred in the past ten years.

In addition to updating the discussion of current facilities and programs, the proposed solid waste management plan contains a number of recommendations. Most of these recommendations represent refinements to existing policies and programs, based on the goal of decreasing reliance on landfills (by increasing waste reduction, recycling and composting) and reducing environmental impacts caused by existing activities. The recommendations proposed in the solid waste management plan can be viewed in the plan (see the Executive Summary or Chapter 11 for a concise listing).

12. Location of the proposal. Please give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any. If a proposal should occur over a range of area, please provide the range or boundaries of the site(s). Please provide a legal description, site plan, vicinity map, and topographic map if possible. 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. *(Indicate if maps or plans have been submitted as part of a permit application.)*

The Solid Waste Management Plan addresses activities and programs that occur throughout Chelan County. A few facilities or activities outside of the county are also involved (such as the use of a landfill in Douglas County).

B. ENVIRONMENTAL ELEMENTS

1. Earth

- a. General description of the site (*circle one*): flat, rolling, hilly, steep, slopes, mountainous, other (*describe*): **Not applicable – non-project proposal.**
- b. What is the steepest slope on the site (*approximate % slope*)? **Not applicable – non-project proposal.**
- c. What general types of soils are found on the site (*i.e. clay, sand, gravel, peat, muck*)? If you know the classification of agricultural soils, please specify and note any prime farmland. **Not applicable – non-project proposal.**
- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe: **Not applicable – non-project proposal.**
- e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill: **Not applicable – non-project proposal.**
- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. **Not applicable – non-project proposal.**
- g. About what percent of the site will be covered with impervious surfaces after project construction (*for example, asphalt or buildings*)? **Not applicable – non-project proposal.**
- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: **Not applicable – non-project proposal.**

2. Air

- a. What types of emissions to the air would result from the proposal (*i.e. dust, automobile, odors, industrial wood smoke*) during construction, and when the project is completed? If any, generally describe and give approximate quantities if known. **Not applicable – non-project proposal.**
- b. Are there any off-site sources of emissions or odor which may affect your proposal? If so, generally describe. **Not applicable – non-project proposal.**
- c. What are the proposed measures to reduce or control emissions or other impacts, if any: **Not applicable – non-project proposal.**

3. Water

- a. Surface:
 - 1) Is there any surface water on or in the immediate vicinity of the site (*including year-round and seasonal stream, saltwater, lakes, ponds, associated wetlands*)? If yes, describe type, provide names, and, if known, state what stream or river it flows into. **Not applicable – non-project proposal.**

- 2) Will the project require any work over or adjacent to (*within 200 feet*) the described waters? If yes, please describe and attach available plans. **Not applicable – non-project proposal.**
 - 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the are of the site that would be affected. Indicate the source of fill material. **Not applicable – non-project proposal.**
 - 4) Will surface water withdrawals or diversions be required by the proposal? Give general description, purpose, and approximate quantities if known. **Not applicable – non-project proposal.**
 - 5) Does the proposal lie with a 100-year flood plain? Note location on the site plan, if any. **Not applicable – non-project proposal.**
 - 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 – non-project proposal.**
- b. Ground:
- 1) Will ground water be withdrawn or recharged? Give general description, purpose, and approximate quantities if known. **Not applicable – non-project proposal.**
 - 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 – non-project proposal.**
- c. Water runoff (*including storm water*):
- 1) Describe the source of runoff and storm water and method of collection and disposal, if any (*including quantities, if known*). Where will this water flow? Will this water flow into other waters? If so, please describe. **Not applicable – non-project proposal.**
 - 2) Could waste materials enter ground or surface waters? If so, generally describe. **Not applicable – non-project proposal.**
- d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any: **Not applicable – non-project proposal.**
- 4. Plants**
- a. Check "X" or circle "O" types of vegetation found on the site: **Not applicable – non-project proposal.**
 - b. What kind and amount of vegetation will be removed or altered? **Not applicable – non-project proposal.**

- c. List threatened or endangered species known to be on or near the site. **Not applicable – non-project proposal.**
- d. List proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: **Not applicable – non-project proposal.**

5. Animals

- a. Circle "O" any birds and animals which have been observed on or known to be on or near the site: **Not applicable – non-project proposal.**
- b. List any threatened or endangered species known to be on or near the site: **Not applicable – non-project proposal.**
- c. Is the site part of a migration route? If so, explain. **Not applicable – non-project proposal.**
- d. Proposed measures to preserve or enhance wildlife, if any: **N/A.**

6. Energy and Natural Resources

- a. What kinds of energy (*electric, natural gas, oil, wood stove, solar*) will be used to meet the completed project's needs? Describe whether it will be used for heating, manufacturing, etc. **N/A.**
- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. **N/A.**
- c. What kinds of energy conservation features are included in the plans of this proposal? **N/A.**
- d. What are the proposed measures to reduce or control energy impacts, if any? **N/A.**

7. Environmental Health

- a. Are there any environmental health hazards, exposure to toxic chemicals, including risk of fire and explosion, spill, or hazardous waste, that occur as a result of this proposal? If so, describe. **N/A.**
- b. Describe special emergency services that might be required. **N/A.**
- c. What are the proposed measures to reduce or control environmental health hazards, if any? **N/A.**

8. Land and Shoreline Use

- a. What is the current use of the site and adjacent properties? **N/A.**
- b. Has the site been used for agricultural purposes? If so, describe. **N/A.**
- c. Describe any structures on the site. **N/A.**

- d. Will any structures be demolished? If so, what. **N/A.**
- e. What is the current zoning classification of the site? **N/A.**
- f. What is the current comprehensive plan designation of the site? **N/A.**
- g. If applicable, what is the current shoreline master program environment designation of the site? **N/A.**
- h. Has any part of the site been classified as an “environmentally sensitive” area? If so, specify. **N/A.**
- i. What are proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any? **N/A.**
- j. Approximately how many people would reside or work in the completed project? **N/A.**
- k. Approximately how many people would the completed project displace? **N/A.**
- l. What are proposed measures to avoid or reduce displacement or other impacts, if any? **N/A.**

9. Housing

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. **N/A.**
- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. **N/A.**
- c. What are proposed measures to reduce or control housing impacts, if any? **N/A.**

10. Noise

- a. What types of noise exist in the area which may affect your project (*for example: traffic, equipment, operation, other*)? **N/A.**
- b. 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*)? **N/A.**
- c. What are the proposed measures to reduce or control noise impacts, if any? **N/A.**

11. Aesthetics

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? **N/A.**
- b. What views in the immediate vicinity would be altered or obstructed? **N/A.**

- c. What are the proposed measures to reduce or control aesthetic impacts, if any?
N/A.

12. Light and Glare

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur? N/A.
- b. Could light or glare from the finished project be a safety hazard or interfere with views? N/A.
- c. What existing off-site sources of light or glare may affect your proposal? N/A.
- d. What are the proposed measures to reduce or control light and glare impacts, if any? N/A.

13. Recreation

- a. What designated and informal recreational opportunities are in the immediate vicinity? N/A.
- b. Would the proposed project displace any existing recreational uses? If so, describe. N/A.
- c. What are the proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any? N/A.

14. Historic and Cultural Preservation

- a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe. N/A.
- b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on the site. N/A.
- c. What are the proposed measures to reduce or control impacts, if any? N/A.

15. Transportation

- a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any. N/A.
- b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop? N/A.
- c. How many parking spaces would the completed project have? How many would the project eliminate? N/A.

- d. Will the proposal require any new roads or streets, or improvements to any existing roads or streets, not including driveways? If so, generally describe (*indicate whether public or private*): **N/A.**
- e. Will the project use or occur in the immediate vicinity of water, rail, or air transportation? If so, generally describe. **N/A.**
- f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur. **N/A.**
- g. What are proposed measures to reduce or control transportation impacts, if any? **N/A.**

16. Public Services

- a. Would the project result in an increased need for public services (*for example: fire protection, police protection, health care, schools, other*)? If so, generally describe. **N/A.**
- b. What are proposed measures to reduce or control direct impacts on public services, if any? **N/A.**

17. Utilities

- a. Circle "O" utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other (*describe*). **N/A.**
- b. Describe the utilities which are proposed for the project, the utility providing the service, and the general construction activities of the site or in the immediate vicinity which might be needed. **N/A.**

C. SIGNATURE

The above answers are true to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Date Submitted: _____

D. SUPPLEMENT SHEET FOR NONPROJECT ACTIONS

(DO NOT 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 effect the item at a greater intensity or at a rate then 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 or noise?

Implementation of the proposed recommendations should help reduce the amount of water and air discharges, while increasing the proper handling of any solid or toxic wastes that are generated in the county. There should not be a significant increase or reduction in noise as a result of the recommendations.

2. How would the proposal be likely to affect plants, animals, fish or marine life?

Any impacts to plants, animals, fish and marine life will only be incidental and should be beneficial. Activities such as reducing illegal dumping should help reduce impacts to plant and animal life. Encouraging composting of yard wastes should also be beneficial to plant life (assuming proper application of the compost), although probably only in urban environments.

Proposed measures to protect or conserve plants, animals, fish or marine life?

Not applicable.

3. How would the proposal be likely to deplete energy or natural resources?

The proposed recommendations should help reduce energy demands and help to conserve natural resources, by increasing waste reduction and other activities. Increased recycling not only leads to conservation of natural resources but also reduces energy demands. In general, using recycled materials in place of virgin materials requires significantly less energy in the manufacturing process.

Proposed measures to protect or conserve energy and natural resources are:

Not applicable.

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 farm lands?

These areas should be unaffected by the recommendations in the solid waste management plan.

Proposed measures to protect such resources or to avoid or reduce impacts are:

Not applicable.

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?

No direct impacts to land use or shoreline use are anticipated to result from the proposed recommendations.

Proposed measures to avoid or reduce shoreline and land use impacts are:

Not applicable.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

The proposed recommendations should lead to minor reductions in transportation requirements and public services. Transportation of solid waste out of the county should be lessened by increased waste reduction and recycling.

Proposed measures to reduce or respond to such demand(s) are:

Not applicable.

7. Identify, if possible, whether the proposal may conflict with local, state or federal laws or requirements for the protection of the environment.

No such conflicts are likely. The intent of updating the solid waste management plan is to comply with various laws and requirements (especially on the state level) regarding environmental protection and other factors.

**DETERMINATION OF NONSIGNIFICANCE
FOR
CHELAN COUNTY SOLID WASTE MANAGEMENT PLAN**

Description of Proposal: Solid Waste Management Plan to provide a guide for solid waste activities within Chelan County.

Proponent: Chelan County Public Works Department

Location: Chelan County

Lead Agency: Chelan County
Department of Building / Fire Safety and Planning
316 Washington Street, Suite 301
Wenatchee, WA 98801

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030 (2)(c). The decision was made after review of a completed environmental checklist, Solid Waste Management Plan and other information on file with the lead agency. This information is available to the public upon request.

■ This DNS is issued under 197-11-340(2); the lead agency will not act on this proposal for 15 days from the date below. **Comments must be submitted by August 4, 2006.**

Responsible Official: Nathan Pate

Position/Title: Senior Planner
Chelan County
Department of Community Development

Phone: 509-667-6225

Address: 316 Washington Street, Suite 301,
Wenatchee, WA 98801

Date: 7-21-06

Signature: 

APPENDIX F

RESOLUTIONS OF ADOPTION

**APPENDIX F
RESOLUTIONS OF ADOPTION**

NOTICE:

After the Final Draft of this Plan has been adopted by the affected parties (the cities and Chelan County), this appendix will document the adoption process by showing resolutions of adoption.