ATTACHMENT A.

12283 2006-107

Preliminary Transfer & Waste Export Facility Recommendations

And

Estimated System Costs, Rate Impacts & Financial Policy Assumptions

Fourth Milestone Report

February 2006

Prepared by:
King County Solid Waste Division
in collaboration with the
Interjurisdictional Technical Staff Group
Metropolitan Solid Waste Management Advisory Committee
Solid Waste Advisory Committee
Private Waste Hauling Companies
Labor Representatives
and
King County Council Staff

Alternate Formats Available Upon Request

King County
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Solid Waste Division

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ACRONYMS USED

BNSF	Burlington Northern and Santa Fe Railway
CDL	Construction, Demolition, and Landclearing (waste)
CSWMP	2001 Comprehensive Solid Waste Management Plan
DBO	Design-Build-Operate (agreement)
DBOOT	Design-Build-Own-Operate-Transfer (agreement)
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FTS	Factoria Transfer Station
HTS	Houghton Transfer Station
ITSG	Interjurisdictional Technical Staff Group
KPG	KPG, Inc. – Consulting Civil Engineers and Architects
LOS	Level of Service
LRF	Landfill Reserve Fund
MMSW	Mixed Municipal Solid Waste
MSWMAC	Metropolitan Solid Waste Management Advisory Committee
PSCAA	Puget Sound Clear Air Agency
RCW	Revised Code of Washington
SEIS	Supplemental Environmental Impact Statement
SEPA	State Environmental Policy Act
SODO	South Downtown
SWAC	Solid Waste Advisory Committee
SWANA	Solid Waste Association of North America
SWD	Solid Waste Division
TS	Transfer Station
UP	Union Pacific Railroad
WTE	Waste to Energy
WUTC	Washington Utilities and Transportation Commission

PRELIMINARY TRANSFER AND WASTE EXPORT FACILITY RECOMMENDATIONS

Executive Summary

This is the fourth and final milestone report in the waste export system plan development process as required by Ordinance 14971. The next step in the planning process is preparation of a Waste Export System Plan. The Waste Export System Plan will guide King County as it prepares the solid waste system for the next twenty years during which time the Cedar Hills Regional Landfill will close, the transfer system will be upgraded and readied for waste export, an intermodal facility or facilities will be added to the system, and King County's waste will be exported to an out-of-county disposal site.

The previous three milestone reports established level of service criteria for evaluating the existing solid waste transfer system (Milestone Report 1), applied the criteria to five of the county's urban transfer stations (Milestone Report 2) and described alternatives for public and private ownership and operation of transfer and intermodal facilities (Milestone Report 3). These reports were developed through an extensive collaborative planning process between the King County Solid Waste Division (division), King County Council staff, the Solid Waste Advisory Committee (SWAC), the Metropolitan Solid Waste Management Advisory Committee (MSWMAC), commercial solid waste haulers, and the labor unions representing Solid Waste Division employees.

Milestone Reports 1 and 2 identified the need to renovate King County's transfer system. As early as 1977, the King County Comprehensive Solid Waste Management Plan (CSWMP) identified a need to update and modernize the transfer system. Since that time two new facilities (Vashon and Enumclaw) have been constructed to replace two closed rural landfills. In 2006, construction of a new transfer facility on the site of the First Northeast Transfer Station in Shoreline will begin. Milestone Report 2 confirmed that the five urban transfer stations evaluated in this planning process (Algona, Bow Lake, Factoria, Houghton and Renton) failed to meet the level of service standards that were established in Milestone Report 1 and will need to be upgraded or relocated. This finding was not surprising since these facilities were constructed more than 40 years ago. Milestone Report 3 discussed issues concerning public and private ownership and operation of solid waste facilities in King County. It cites legal (case law, state law), regulatory (state RCW, county code), and contractual (labor contracts) constraints within which the county operates.

This fourth report identifies packages for transfer and intermodal facilities, long haul transport, and out-of-county disposal. It also discusses public and/or private ownership and operation of the transfer and intermodal facilities, provides an analysis of the remaining capacity of the Cedar Hills Regional Landfill, and presents a sensitivity analysis of three alternative disposal scenarios: partial early waste export; full early waste export; and withdrawal of 200,000 tons from the solid waste system.

Transfer System

Existing stations require improvements to address current and future capacity, service, and operational needs. During the planning process six transfer system packages were identified for analysis. The table below summarizes the six system configurations. Each package requires two new facilities at new sites, one each in Northeast Lake Washington and South King County. Each package also involves rebuilding some existing stations on their current sites. Facilities are identified by function. They can be full service (serving both commercial and self-haul customers) or single purpose facilities (serving either commercial customers only or self-haul customers only). The table also shows the number of facilities for each package. Note that the "Total # of Facilities" column in the table includes the five facilities that were not analyzed in the previous milestone reports (Cedar Falls, Enumclaw, First Northeast, Skykomish and Vashon) in order to illustrate the size of the whole system. The table also identifies the sites recommended for closure in each package. The Final Waste Export System Plan will contain a transfer system package recommendation.

All packages can be constructed by 2015 (assuming siting and design begin in 2007). There is no significant difference in the costs of the six packages through 2028. After 2028, when debt will be paid off, operating costs become the basis for comparison between the packages. There are significant differences in operating costs among the packages (see Chapter 2, "The Longer Term Outlook"). All packages can be financed and constructed within the Executive's rate commitment of not increasing rates at Cedar Hills Landfill beyond inflation. Once the landfill closes and waste is exported, rates are expected to increase beyond the rate of inflation, as disposal costs are no longer within the control of the county.

Pkg.	Full Service Facilities	Self-Haul Only	Commercial Only	Closed Facilities	Total # of Facilities
1	New South County New Bow Lake New Factoria/Eastgate New NE Lake WA	None	None	Algona Renton Houghton	9
1A	New South County New Bow Lake New Factoria (no Eastgate) New NE Lake WA	None	None	Algona Renton Houghton	9
2	New South County New Bow Lake New Factoria/Eastgate	Houghton	New NE Lake WA	Algona Renton	10
2A	New South County New Factoria/Eastgate	Houghton Renton	New NE Lake WA New Bow Lake	Algona	11
3	New South County New Bow Lake New NE Lake WA	Renton Houghton Factoria (no Eastgate)	None	Algona	11
4	New Factoria/Eastgate	Algona Renton Houghton	New South County New Bow Lake New NE Lake WA	None	12

Public Private Options

This report summarizes the mix of public and private systems currently operating in Washington State and discusses the legal, regulatory and contractual context within which King County operates. State law mandates public oversight and authority for the planning and handling of solid waste. The ultimate mix of public and private facilities is not recommended in this report. A recommendation on whether transfer stations will be publicly and/or privately owned and/or operated will be included in the Final Waste Export System Plan.

Landfill Capacity

As a result of recycling efforts, operational efficiencies and garbage settlement at the Cedar Hills Regional Landfill, it is possible to operate the landfill until 2015, three years longer than previously projected. Disposal at the Cedar Hills Regional Landfill is the lowest cost disposal option for King County residents and businesses. This report identifies additional options for extending the life of the landfill beyond 2015 and postponing the higher cost of waste export. The options range from adding one to seven years of life to the landfill. All options to extend the life of Cedar Hills provide cost savings to the ratepayers of King County.

Extended landfill life also allows the county more time to make decisions about ownership and operation of an intermodal facility and for contracting for disposal services. However, decisions on upgrading the transfer system need to be made soon so that the siting and design process can begin no later than 2007. A modernized transfer system is not only necessary for waste export, but also necessary in order to operate efficiently.

Long Haul Transport

There are three options for transporting waste to a distant disposal site: truck, barge and rail. Preliminary analysis supports rail as the most cost effective long haul option. Further analysis closer to the time of waste export will be necessary to confirm this conclusion.

Intermodal

Once King County moves to waste export, an intermodal facility will become an integral component of the county's solid waste system. Sealed containers of solid waste will be trucked from transfer facilities to an intermodal facility where the containers will be loaded for transport to out-of-county disposal site(s).

Maintaining long term competition for waste services is key to keeping rates as low as possible once the county moves to waste export. This report discusses intermodal facility requirements, existing facilities, and options for public/private ownership and operation. Because of potential changes in the marketplace such as changes in long haul and disposal costs and fluctuating available intermodal capacity, it is prudent to defer the intermodal decision until the county is closer to moving to waste export.

Sensitivity Analysis

The sensitivity analysis of early waste export and withdrawal of solid waste from the system was not a requirement of Ordinance 14971 but is included here at the request of MSWMAC. The analysis considered partial early waste export of 200,000 tons of solid waste, early waste export of all tons generated in the King County solid waste system, and withdrawal of 200,000 tons of solid waste from the system. The analysis found that each of the three scenarios would result in increased costs to ratepayers. However, the revenue loss in the partial early export scenario could be partially offset by the resulting extension in the life of the landfill, deferring the higher costs of waste export. The division will conduct further analysis on the benefits and drawbacks of partial early export as part of the Final Waste Export System Plan.

Next Steps

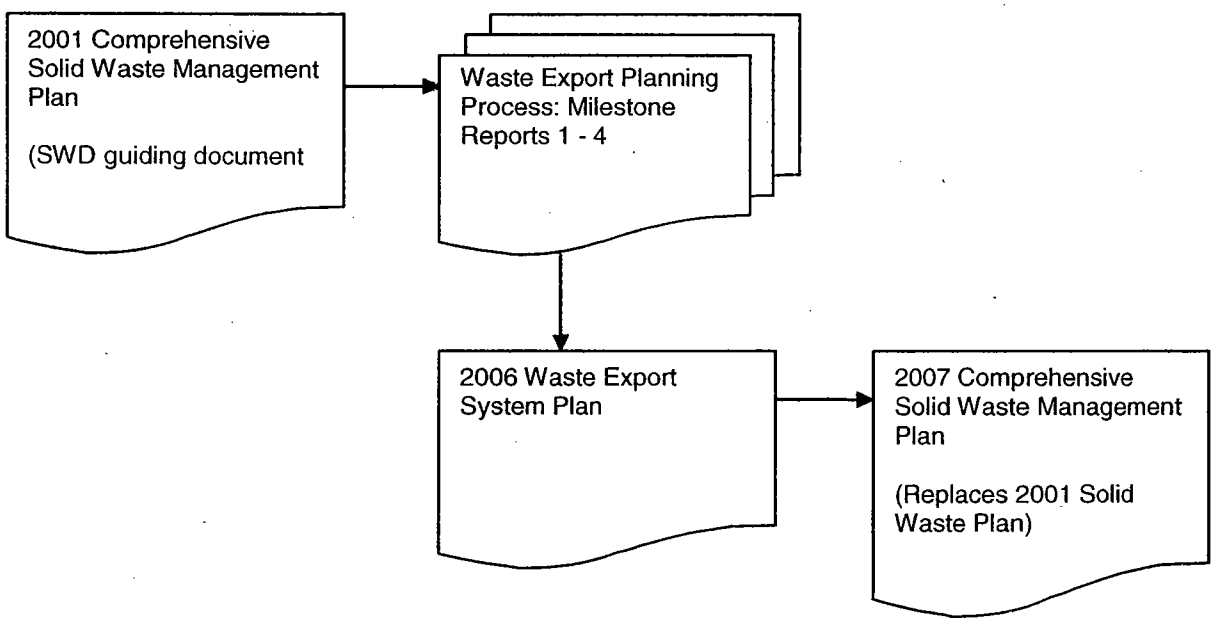
The division will continue the collaborative process in developing the Final Waste Export System Plan and the Comprehensive Solid Waste Management Plan. The Waste Export System Plan is scheduled to be transmitted to the King County Council by April 30, 2006, and will contain a recommendation on all aspects of the future solid waste export system except intermodal capacity. The ordinance also requires a third party independent review of Waste Export System Plan by an expert review panel procured by King County Council. In addition, the ordinance directs the Interjurisdictional Staff Group to prepare a report that addresses various solid waste governance and financial issues.

BACKGROUND

This report is the fourth in a series of four milestone reports to evaluate the existing regional solid waste system in King County and prepare for the future of solid waste transfer and disposal. The purpose of this report is to present options for the transfer system and for the move to waste export, the long-haul transport of solid waste to an out-of-county landfill for disposal, once the Cedar Hills Regional Landfill reaches capacity and closes. This report includes an analysis of the remaining capacity of Cedar Hills as well as estimated system costs, rate impacts, and financial policy assumptions. Subsequent to approval of this report, a Waste Export System Plan will be developed and transmitted to the Metropolitan King County Council by April 30, 2006.

Development of the Waste Export System Plan and the milestone reports has been guided by current county policy contained in the adopted 2001 Comprehensive Solid Waste Management Plan (CSWMP). The Waste Export System Plan will inform the next update of the CSWMP, which was initiated in December 2005 and is anticipated to be completed in 2007, as illustrated in Figure 1-1.

Figure 1-1. Plan Process



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CHAPTER 1. INTRODUCTION

Chapter Synopsis

This chapter describes the ordinance, the preceding milestone reports and the process that have led to this final milestone report. Also included is a description of the current planning policies that guide the Solid Waste Division in designing the future solid waste system. The chapter closes with a listing of the baseline planning assumptions that were used in analyzing possible configurations of the future system and in estimating costs and rate impacts.

Background

Ordinance 14971, which was adopted by the Metropolitan King County Council on July 26, 2004, outlined the process and timeline for development of the Waste Export System Plan. Ordinance 15218, adopted by the council on June 20, 2005, amended the deadline for that plan. The Waste Export System Plan is now scheduled to be transmitted to the council by April 30, 2006 and will include recommendations on the transfer system, intermodal facility(ies), waste export, and the remaining capacity of the Cedar Hills Regional Landfill.

In addition to the Waste Export System Plan, four milestone reports were required by the ordinances. Three of the milestone reports have been approved by the Regional Policy Committee, acting as the Solid Waste Interlocal Forum, and the King County Council. The first three milestone reports were:

1. Transfer System Level of Service Evaluation Criteria and Standards
2. Analysis of Transfer System Needs and Capacity
3. Public/Private Options for Ownership/Operation of Transfer and Intermodal Facilities

Ordinance 14971 envisioned a collaborative process for development of the milestone reports and Waste Export System Plan. This approach, described in the next section, has involved staff from the cities that are members of the county's solid waste system, Solid Waste Division staff, King County Council central staff, the King County Solid Waste Advisory Committee, the waste management industry, and labor. Each milestone report was developed using this collaborative approach, resulting in a more robust work product.

Collaborative Process

Ordinance 14971 established a cities advisory committee – the Metropolitan Solid Waste Management Advisory Committee or MSWMAC – and formalized staff group meetings by establishing the Interjurisdictional Technical Staff Group (ITSG) to advise and assist MSWMAC in its first year of operation.

To date, 17 cities have appointed representatives and alternates to MSWMAC. The member cities are Algona, Auburn, Bellevue, Bothell, Burien, Covington, Federal Way, Kirkland, Lake Forest Park, Mercer Island, Newcastle, Redmond, Renton, SeaTac, Shoreline, Tukwila and Woodinville. Some cities appointed elected officials as their representatives. These cities were Algona, Auburn, Burien, Covington, Federal Way, Kirkland, Lake Forest Park, and Newcastle. The remaining members appointed staff to the committee.

ITSG comprises Solid Waste Division staff, King County Council central staff, and staff from Auburn, Bellevue, Federal Way, Kirkland, Redmond, Renton, SeaTac, Tukwila and Woodinville. While the Solid Waste Division only staffs MSWMAC, it is a participating member of ITSG.

MSWMAC has been meeting monthly since January 2005. ITSG meetings have been as frequent as weekly. While the first milestone report was approved by the King County Council prior to the first meeting of MSWMAC, MSWMAC and the county approved the second, third and fourth milestone reports by motion.

In addition to ITSG and MSWMAC, the Solid Waste Division has been working with the King County Solid Waste Advisory Committee (SWAC) on the Waste Export System Plan. SWAC members represent King County citizens, the waste management industry, manufacturers located in King County, recycling businesses, local elected officials, labor, and marketing. SWAC, which meets monthly, provided input into the development of each of the milestone reports and approved them. See Appendix A, Responsiveness Summary, for a summary of comments and responses.

The division has met with the waste management companies (Rabanco/Allied, Waste Management, and Waste Connections) individually and in joint sessions. The companies have provided comments on each of the reports. Additionally, two of the waste management companies (Rabanco/Allied and Waste Management) have representatives who are active members on SWAC.

The division has invited business representatives from each union local that represents Solid Waste Division employees to briefings. To date, representatives from Local 17 and Teamsters Locals 117 and 174 have attended these briefings. Teamsters Locals 117 and 174 have representatives who are active members on SWAC.

The Solid Waste Division also sought the input of neighboring jurisdictions (City of Seattle and Snohomish County) in developing the milestone reports.

The Solid Waste Division appreciates the time and attention everyone involved in the Waste Export System Plan process has devoted to planning the future of the solid waste system and believes the result of the collaborative process will be a system that will continue to provide rate payers with quality services at reasonable rates well into the future.

Policy Framework, Purpose, and Goals

The King County Solid Waste Division manages waste disposal for approximately 1 million tons of garbage per year. This represents the waste generated by more than 1.2 million residents and companies that employ 637,000 people in King County. The division is guided by the 2001 King County Comprehensive Solid Waste Management Plan (CSWMP), which was adopted by the Department of Ecology, King County Council, and the cities. This plan directs the division to export the county's solid waste to one or more landfills outside of the county once the Cedar Hills Regional Landfill reaches permitted capacity and closes. The adopted CSWMP rejected alternatives to waste export, including development of a new landfill in King County or incinerating the county's waste. At the same time, council directed that the division begin planning for waste export.

Planning policies related to waste export direct the division to, among other things:

- Evaluate the division's current transfer stations,
- Plan a future transfer station system,
- Investigate disposal options outside of King County,
- Evaluate rail, barge, and truck hauling options for waste export,
- Review public/private ownership options,
- Analyze financing, staffing, and rate impacts,
- Define facility siting processes,
- Establish means of involving interested parties in the planning process, and
- Develop a Waste Export System Plan to document the planning process and explain recommendations for a future system.

The Waste Export System Plan will guide King County's solid waste handling system for the future. The system will:

- Keep garbage rates low and stable,
- Make existing facilities as efficient as possible, and
- Ensure that facilities keep pace with growth in customer base.

Baseline Assumptions

The planning assumptions below were used to inform the analysis of system configuration, estimated costs, and rate impacts called for in Ordinance 14971. A number of other issues were also identified by ITSG and MSWMAC for consideration in developing Milestone Report #4. A list of those issues is included as Appendix B. Discussion of these issues has been incorporated into the appropriate sections of the report.

Waste Stream Assumptions

- The division will develop annual tonnage forecasts for disposal and recycling streams through the 20 year planning horizon based on forecasts of population growth, annexations, regional economy and recycling rates. The forecast is an assumption (See Forecast, Appendix C).

- The private sector currently has and will continue to have primary responsibility for capital investment and operating expenses related to waste reduction and recycling and construction, demolition and landclearing (CDL) waste.
- All mixed municipal solid waste (MMSW) generated in King County outside the boundaries of the cities of Seattle and Milton currently is disposed at the Cedar Hills Regional Landfill, and will continue to be until it reaches capacity.

Landfill Capacity Assumptions

- A new solid waste landfill will not be sited by King County.
- If waste continues to be disposed at Cedar Hills Regional Landfill at the current rate and using current practices, then it will reach permitted capacity in 2015.

Transport Assumptions

- Transportation costs of compacted waste are lower than transportation costs of uncompacted waste.
- For the purposes of the analyses for Milestone Report #4, the average payload of compacted waste will be 27 tons per intermodal container. The average payload for uncompacted waste will be 18 tons per container.

Transfer Assumptions

- Based on analysis already completed in the first two milestone reports and in the Northeast Lake Washington Feasibility Study (April 2004), new transfer capacity is needed for the Northeast Lake Washington area.
- Based on analysis already completed in the first two milestone reports, new transfer capacity is needed for South King County.
- Efficient solid waste handling requires transfer of waste from collection trucks or self-haul vehicles before it is transported to a disposal facility.

Financial Assumptions

- The Waste Export System Plan will be developed based on the assumption of a federated system with 37 interlocal agreements in place through 2028. Per Milestone Report #3, a sensitivity analysis will be performed and 'will include a comprehensive assessment and analysis so that the future size and configuration of the solid waste system can be developed' (see Appendix D for current financial policies).

Additional Analysis

The analysis based on these assumptions also serves as a baseline for comparing other options and analyses that MSWMAC has recommended be included in Milestone Report #4. These other options include:

a) Partial or full waste export before the Cedar Hills Regional Landfill reaches its permitted capacity,

b) The potential to extend the useful life of the Cedar Hills Regional Landfill through operational, policy, or permit changes, and
c) A sensitivity analysis that illustrates the effects of reduced tonnage on system size, configuration, costs, and rates.

Analysis of the above options is presented in Chapter 7.

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CHAPTER 2. TRANSFER STATIONS

Chapter Synopsis

As concluded in Milestone Report 2, the existing transfer station system does not meet level of service criteria in several areas. Upgrades to the system are needed to meet future solid waste handling needs including eventual waste export. This chapter describes King County's current transfer station system by geographic location, and by customer characteristics. It then describes options for the system by geographic area and finally presents six transfer station *system* configurations, referred to as packages, with various combinations of full service, commercial only, and self-haul only facilities. The details of each package include information regarding redirected tonnage, operating costs, construction costs, capital project schedules, and financing/debt service assumptions. The costs for each package are presented as well as the impacts to projected disposal rates.

Transfer System Geographic Areas

For purposes of this report, geographic areas of King County are identified as Rural, South County, Central County, Northeast Lake Washington, and North County. The transfer and drop box facilities included in each geographic area are:

Rural
- Cedar Falls Drop Box
- Enumclaw Transfer Station
- Skykomish Drop Box
- Vashon Island Transfer Station

South County
- Algona Transfer Station

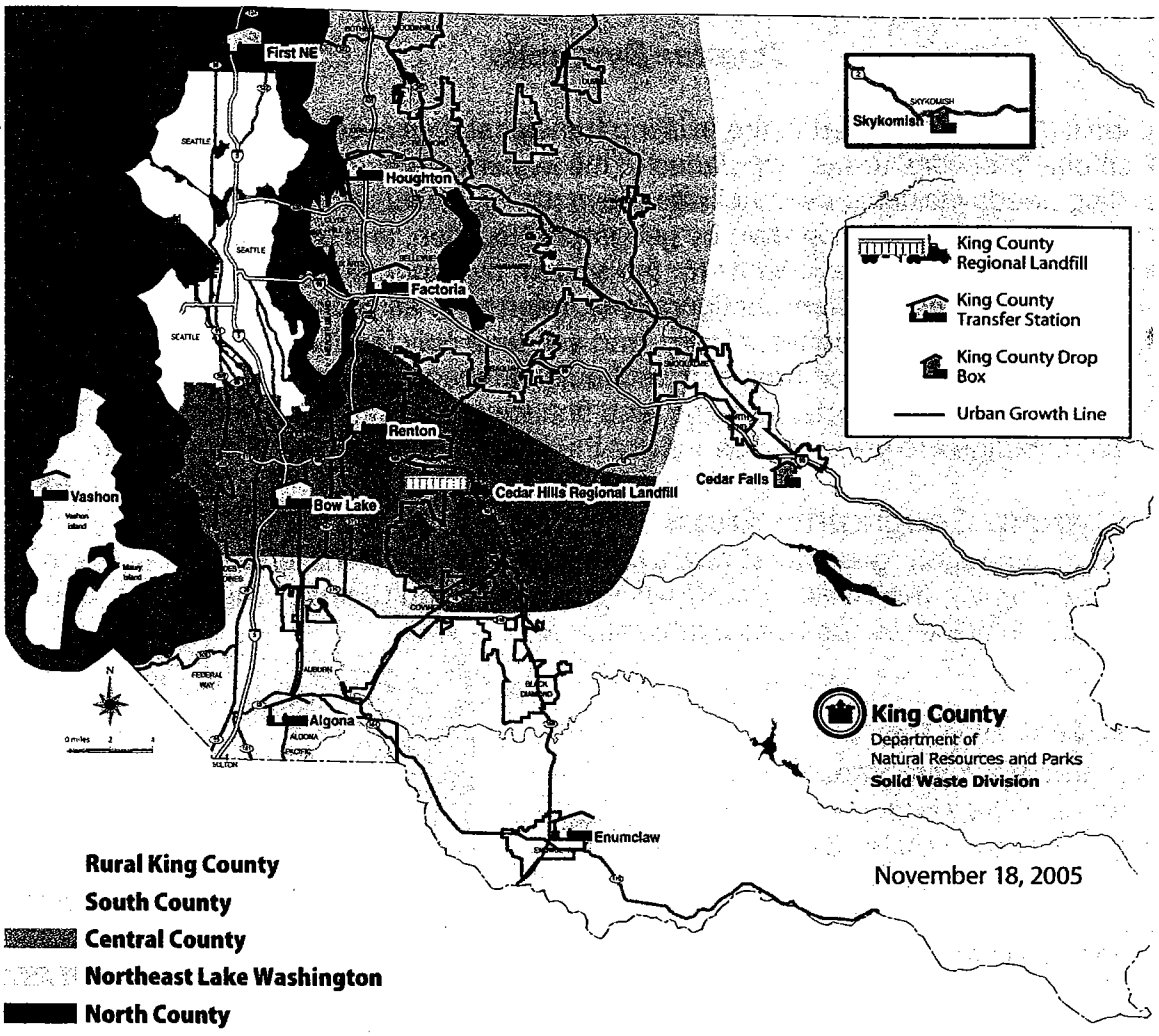
Central County
- Bow Lake Transfer Station
- Renton Transfer Station

Northeast Lake Washington
- Factoria Transfer Station
- Houghton Transfer Station

North County
- First Northeast Transfer Station

Figure 2-1 shows the locations of the county system's transfer and drop box facilities and the Cedar Hills Regional Landfill in their respective geographic area.

Figure 2-1. Locations of Solid Waste Facilities by Geographic Area



Each facility generally serves the urban or rural areas that surround it, but these areas are not rigidly defined. Solid waste systems are most cost-effective when transfer stations are distributed in such a way that collection trucks spend less time traveling from their garbage collection routes to disposal sites. When transfer stations are well located, costs for labor, fuel, and collection vehicle maintenance are reduced. Well-sited facilities mitigate environmental, infrastructure, and traffic issues.

Existing Solid Waste Transfer System

This section describes the county's existing solid waste transfer system, describes where improvements or additional capacity are needed, and presents four potential transfer station system improvement packages for the Northeast Lake Washington, Central and South King County areas.

Transfer facilities are designed to serve four main functions:

1. Provide geographically dispersed, convenient, and safe collection points around the county for mixed municipal solid waste (MMSW) from both commercial and self-haulers.
2. Provide collection points for recyclable materials and household hazardous waste from self-haulers.
3. Reduce traffic on the highways and at the landfill by allowing smaller loads to be consolidated into fewer, larger loads for transport.
4. Minimize collection costs by conveniently locating facilities closer to where the waste is generated.

The transfer system currently consists of eight transfer stations (six urban and two rural) serving both self-haul and commercial customers, and two rural drop boxes. The two rural transfer stations are relatively new and are equipped with compactors. All of the other transfer stations were sited, designed and built in the 1960's and 1970's, when garbage trucks were smaller, recycling was not yet part of the solid waste system and the population was much smaller. Most of the county's MMSW is processed through these facilities before being transported for disposal at Cedar Hills Regional Landfill.

Previous milestone reports provided an evaluation of a portion of the existing transfer system. The stations were assessed using 19 criteria that addressed the following categories:

- Level of service to users
- Station capacity to handle solid waste and recyclables,
- Local and regional effects of the facility, and
- Cost.

The results of the assessment of criteria 1-16 were presented in the second milestone report and are included here as well (see Table 2-1). Criterion 17, Local and Regional Considerations, was transmitted as an addendum to Report 2. Criteria 18 and 19, cost and rate impacts, are part of this analysis and are presented at the end of this chapter.

The ultimate goal of assessing the existing stations was to allow the county to determine when:

1) A transfer station needs to be upgraded in place
2) A station needs to be relocated to a more appropriate location
3) Additional transfer stations need to be built to adequately serve the region's growing population.

Assessment of the transfer stations yielded a yes/no finding (i.e., the station does or does not meet the standard set for the criterion) as reflected in Table 2-1.

Three of the division's eight transfer stations were not evaluated because they are either relatively new or are in the process of being rebuilt. These three stations meet, or will meet,

all the standards established for evaluation of the older transfer stations. Enumclaw and Vashon transfer stations in the Rural area meet the criteria and the First NE station in the North area is scheduled to be rebuilt beginning in 2006.

Table 2-1. Level of Service Criteria Applied to Existing Transfer Stations

		Algona	Bow Lake	Factoria	Houghton	Renton
1. Estimated time to a transfer facility within the service area for 90% of users.	< 30 min=yes	YES	YES	YES	YES	YES
2. Time on site meets standard for 90% of trips						
a. commercial vehicles	< 16 min=yes	NO	YES	NO	NO	NO
b. business self haulers	< 30 min=yes	YES	NO*	NO*	NO*	YES
c. residential self haulers	< 30 min=yes	YES	NO*	YES	YES	YES
		* Meets criterion weekdays, but not weekend days				
3. Facility hours meet user demand	YES/NO	YES	YES	YES	YES	YES
4. Recycling services ...meet policies in SW Comp Plan						
a. business self haulers	YES/NO	NO	NO	NO	NO	NO
b. residential self haulers	YES/NO	NO	NO	NO	NO	NO
5. Vehicle capacity						
a. meets current needs	YES/NO	NO	YES	NO	NO	YES
b. meets 20 year forecast needs	YES/NO	NO	NO	NO	NO	NO
6. Average daily handling capacity (tons)						
a. meets current needs	YES/NO	NO	NO	YES	NO	YES
b. meets 20 year forecast needs	YES/NO	NO	NO	NO	NO	YES
7. Space for 3 days' storage						
a. meets current needs	YES/NO	NO	NO	NO	NO	NO
b. meets 20 year forecast needs	YES/NO	NO	NO	NO	NO	NO
8. Space exists for station expansion						
a. inside the property line	YES/NO	NO	YES	YES	YES	YES
b. on available adjacent lands through expansion	YES/NO	YES	YES	YES	NO	NO
9. Minimum roof clearance of 25 feet	YES/NO	YES	YES	NO	NO	YES
10. Meets facility safety goals	YES/NO	NO*	NO*	NO*	NO*	NO*
		* The presence of these physical challenges does not mean that the stations operate in an unsafe manner. It does mean that it takes extra effort by staff and management, which reduces system efficiency, to ensure the facilities are operated safely.				
11. Ability to compact waste	YES/NO	NO	NO	NO	NO	NO

		Algona	Bow Lake	Factoria	Houghton	Renton
12. a. Meets goals for structural integrity	YES/NO	YES	YES	YES	YES	YES
b. Meets FEMA immediate occupancy standards	YES/NO	YES	NO	NO	NO	YES
13. Meets applicable local noise ordinance levels	YES/NO	YES	YES	YES	YES	YES
14. Meets PSCAA standards for odors	YES/NO	YES	YES	YES	NO*	YES

** One complaint on Houghton was verified within the previous 2 years. No citation was issued.*

15. Meets goals for traffic on local streets						
a. Meets LOS standard	YES/NO	YES	NO	YES	YES	YES
b. Traffic does not extend onto local streets 95% of time	YES/NO	NO*	NO*	NO*	YES	YES

** Meets criterion weekdays, but not weekend days. Yes or No rating based on evaluating all days w/in study period.*

16. 100 foot buffer between active area & nearest residence	YES/NO	YES	YES	YES*	NO	YES

** Meets 100 ft from residence criterion, but business within 100 ft.*

17. Transfer station is compatible with surrounding land use.*	YES/NO	YES	YES	NO**	NO***	YES

**See Appendix H for details of Criterion 17.*
** *FTS is a 30+ year old facility suffering from deferred maintenance. It is visible on the approach to adjacent businesses. This is a close call as the neighborhood is primarily commercial/industrial. Meets criterion weekdays, but not weekend days. Yes or no rating based on evaluating all days within study periods.*
****HTS is a 30+ year old facility suffering from deferred maintenance. It is in a residential/recreational area and clearly visible from the road. One verifiable odor complaint was received in the last two years. Transfer station parking is located within 100 feet of nearest residence.*

Although the evaluation concluded that the existing stations do not meet many of the standards, through mitigation efforts at the operational level, the facilities do meet all local and state health and safety requirements.

As reflected in Table 2-1, the current system of stations is efficiently distributed throughout King County with adequate service hours that meet the needs of our customers. However, most stations require improvements to address current capacity, service, and operational needs. Structural changes to improve emergency response, and future operational efficiency as well as meet desired safety goals are also necessary.

Transfer System Customer Characteristics

Planning for waste export requires a thorough examination of the transfer stations and their readiness to export more than one million tons of municipal waste to a disposal facility other than the Cedar Hills Regional Landfill. Consideration of transfer station improvements must also take into account the types of customers that use the current system.

Customer Types

Different customer types use transfer stations in different ways and have different service needs. These differences are largely distinguished by the type of vehicle a customer uses. A station that serves both self-haul and commercial customers (known as a full service facility) has very different operational requirements than a station that serves only one customer type. This report defines the customer types as follows:

Commercial
Commercial customers use packer and drop box vehicles that have automated unloading capability and deliver an average of 5 tons each per vehicle. They are haulers that have a certificate granted by the Washington Utilities and Transportation Commission (WUTC) for the purpose of serving residential and business collection routes. Commercial customers use transfer stations most heavily on weekdays, as shown in Figure 2-2.

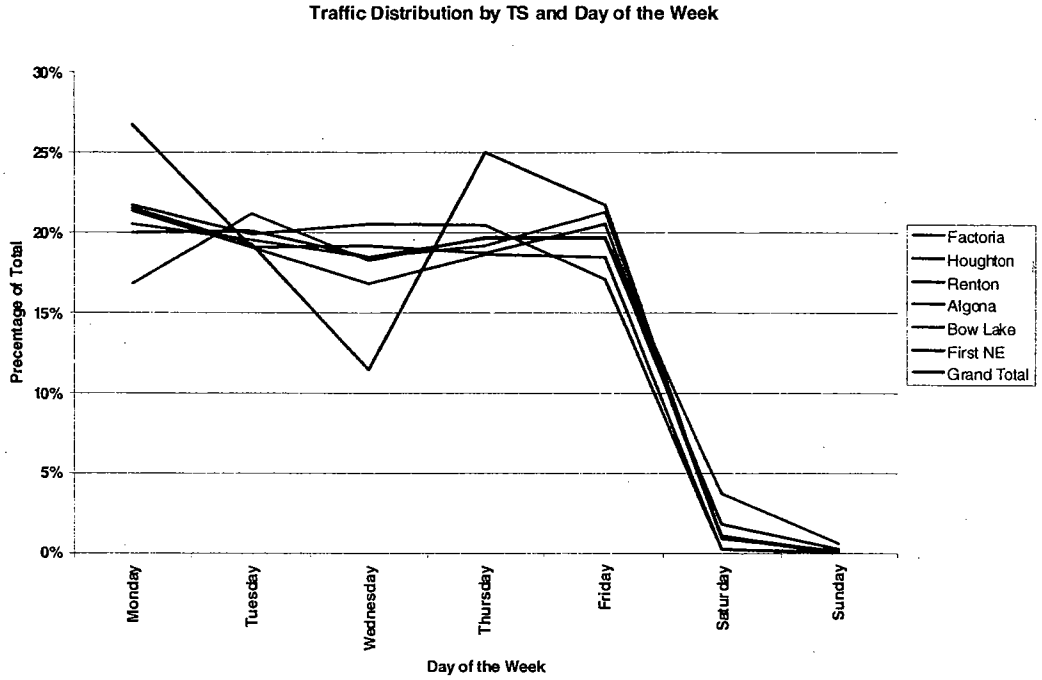
Self-haul
Self-haul customers fall into two categories, business and residential.

1) Business self-haul: Business self-haulers generally bring more than a ton of waste to the transfer station and may use vehicles that are unloaded manually or automatically. An example of the first group would be a small landscaping business that uses a pick up truck and must unload the yard debris by hand. An example of the second group would be a school district that uses an automated truck to dump its load. Both are self-haulers, but with very different impacts to the transfer station during unloading because their method of unloading varies. This distinction is important because a business self-hauler with an automated truck has service requirements more similar to commercial customers than residential self-haulers. Business self-haulers that use automatically unloading vehicles could use commercial only transfer stations without impacting operations at those facilities. Business self-haulers use transfer stations primarily on weekdays.

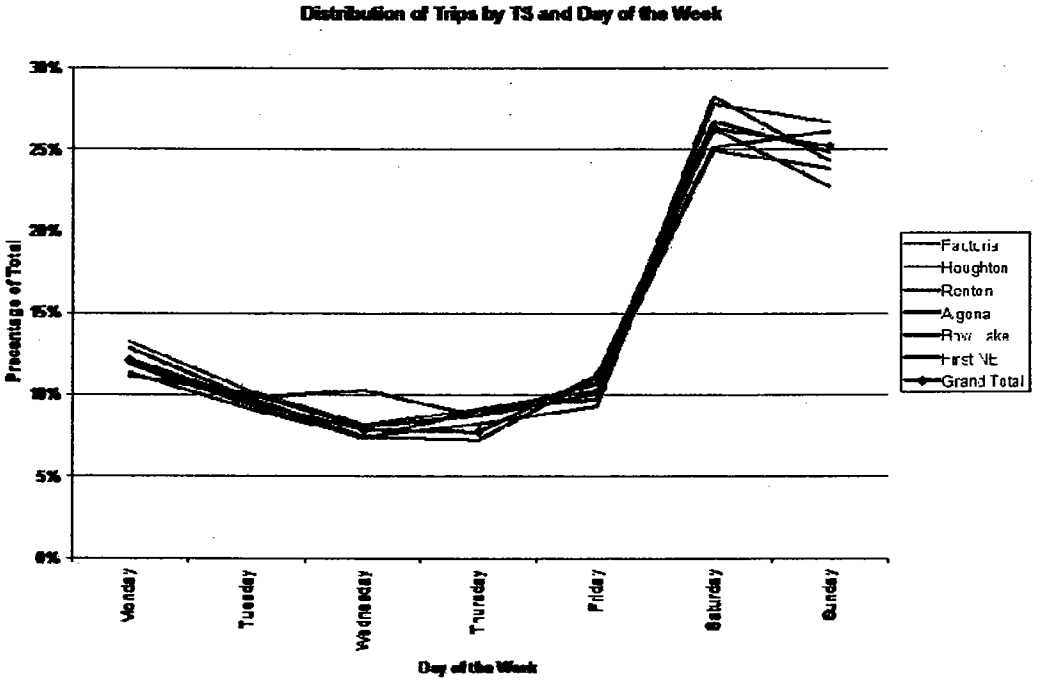
2) Residential self-haul: Residential self-haulers use vehicles that require manual unloading and generally bring less than a ton of waste to the transfer station in each load. Most self-haul traffic comes to transfer stations on weekends, as shown in Figure 2-2.

Figure 2-2. Traffic by Day of the Week and Customer Type

Commercial Traffic



Self-haul Traffic



Based on 2005 data, Table 2-2 shows the percentage of tonnage received by type of customer at each of the transfer station facilities in the South County, Central County, and Northeast Lake Washington areas:

Table 2-2. Tonnage by Customer Type

Facility	Commercial Tonnage	Business Self-Haul Tonnage	Residential Self-Haul Tonnage
Algona	76%	1.0%	23%
Bow Lake	85%	2.0%	13%
Factoria	80%	0.4%	20%
Houghton	79%	1.0%	20%
Renton	77%	1.0%	22%

Note that these numbers reflect only data from garbage customers. Recycling customers also add traffic to a facility. Despite delivering only about 20% of the system tonnage, self-haulers comprise approximately 80% of the vehicle traffic. Self-haulers can take twice as long as commercial customers per transaction (enter, unload, pay, and exit a facility) on average.

Waste Compaction

None of the existing transfer station facilities in the Northeast Lake Washington, Central or South King County areas are equipped with compactors. Based on the assumption that compacting waste increases disposal efficiencies and reduces transportation costs, analysis was done on the feasibility of installing compactors at these facilities.

The result of this analysis was a determination that although all stations have the physical space to install waste compactors, the Algona, Factoria, and Renton sites are too constrained to allow trailer maneuvering necessary to receive the compacted waste from the compactor equipment. Houghton has adequate vehicle maneuvering capacity. However, installation of compactors at any of the existing stations except Bow Lake would reduce station vehicle capacity by approximately seventy-five percent. This is because the number of available stalls for vehicles to unload their waste would be reduced from 16 to 4. This would significantly affect the station's ability to process tonnage. Finally, the retrofit costs involved with installing a compactor at Bow Lake site would be so significant that it would be more cost effective to rebuild the facility.

The relevant details of the compactor analysis are in Appendix E.

Transfer Station Improvement Options

The first step of the analysis was to define potential ways to serve each of the three geographic areas where existing transfer stations require improvements. The range of possibilities include: new stations, station closures; designation of stations as single purpose, either self-haul only or commercial only; or full service facilities (commercial and self-haul combined). After the options were identified, the next step was to develop potential packages of facility configurations for the three geographic areas.

South County-Algona Transfer Station

South King County is currently served by the Algona Transfer Station. Report Two concluded that this facility cannot be expanded or upgraded due to physical constraints of the site. Options for improvement in South County include:

1. Close the Algona Transfer Station and build a new station at a new site that provides both self-haul and commercial service.
2. Retain the Algona Transfer Station as an uncompacted self-haul service only facility and build a new station at a new site for commercial customers.

Central County- Bow Lake and Renton Transfer Stations

Central King County is currently served by the Bow Lake and Renton Transfer Stations. Report Two concluded that Bow Lake cannot be retained effectively as-is but can be rebuilt on-site. The division is currently in the process of securing additional land adjacent to the Bow Lake facility that would make the needed improvements possible.

Report Two concluded that Renton does not have space for expansion on adjacent property. Options for improvement in Central County include:

<u>Bow Lake</u>

1. Replace the facility with a new station at the current site and provide both commercial and self-haul service at that site.
2. Replace the facility with a new station at the current site and provide commercial service only

<u>Renton</u>

1. Close the facility.
2. Retain as an uncompacted self-haul only service facility.

Northeast Lake Washington- Houghton and Factoria Transfer Stations

The Northeast Lake Washington area is currently served by the Houghton and Factoria Transfer Stations. Report Two concluded that Houghton does not have space for expansion, but Factoria could be rebuilt at the Eastgate site. The division purchased the Eastgate site for that purpose after a formal siting process that included evaluation of alternative sites and preparation of an EIS. Options for improvement in the Northeast Lake Washington area include:

1. Close Houghton, build a new station at a new site for both commercial and self-haul customers, and build a new station on the combined Factoria/Eastgate property for commercial and self-haul customers.
2. Retain Houghton as an uncompacted self-haul only service facility, build a new station at a new site for commercial customers only, and build a new station on the combined Factoria/Eastgate property to provide both commercial and self-haul service.
3. Retain Factoria and Houghton as uncompacted, self-haul only facilities and build one new station at a new site that provides all commercial service for the entire geographic area as well as self-haul service. This option does not develop the Eastgate property and assumes the property will be sold.
4. Close Houghton, build a new station at a new site for both commercial and self-haul customers, and build a new station on the existing Factoria property for commercial and self-haul customers.

Intermodal Co-location

At the time of waste export, waste will be transported from transfer stations to an intermodal facility(ies) where it will be sent to an out-of-county disposal facility. (See chapter six for a discussion of intermodal facilities.) The option of co-locating a transfer station with an intermodal facility combines two activities:

1. Transfer of waste from smaller loads into larger export-ready containers, presumably compacting the loads.
2. Loading these containers onto rail cars, barges, or chassis trailers for long-haul transport to a disposal facility.

A co-located or direct-to-intermodal facility provides both transfer service to the nearby geographic area generating the waste and also intermodal service for the region, receiving containerized wastes and shipping them to remote disposal locations. The intermediate short-haul from one transfer station to an intermodal facility would be eliminated. However, a co-located facility would not eliminate the need for other transfer stations in the county's system.

Two site requirements for a co-located transfer station and intermodal facility are:

1) The site needs to be large enough parcel to allow for both transfer and intermodal operations and

2) The site needs to accommodate the selected long-haul transport mode, whether rail, barge or truck.

Until a specific site is identified that meets both of these requirements, it is not possible to analyze the impacts of co-locating a transfer station and intermodal facility.

In 2003, King County purchased the Fisher Mill site on Harbor Island as a potential site for a future intermodal facility. This site is not being evaluated further at this time. During the

siting process, the Fisher Mill site will be evaluated together with other sites that have not yet been identified.

Appendix F describes a transfer station siting process that has been used by King County in the past and is a potential model for siting future facilities. This process could be adapted for siting a co-located transfer station and intermodal facility.

Analysis of Potential Transfer Station Packages

Transfer station options must be viewed in the context of a system. Decisions in one area affect the entire region. Options for each geographic area were combined into system-wide packages for analysis.

In the following pages, six transfer station packages are described. The packages were developed through an iterative process with the Solid Waste Advisory Committee, the Metropolitan Solid Waste Management Committee, the Interjurisdictional Technical Staff Group, the commercial haulers and labor unions representing Solid Waste Division staff. Package 1A data is incomplete and cannot be fully compared to the other packages at this time. See Package 1A description on page 2-15. All other packages share the following:

- They can be financed while still meeting the Executive's rate commitment that per ton *disposal rates at Cedar Hills* will not be increased by more than the rate of inflation (base year 1999 – the last time rates were changed). *Note: once waste export begins, the county will have less control over disposal costs.*
- Construction can be accomplished by 2015 assuming that work begins no later than 2007. See Appendix G for construction timelines.
- They are technically feasible.
- Two new sites are required, one in the Northeast Lake Washington area and one in South King County.
- Station closures or conversions would not occur under any package until replacement facilities are open.
- The impact of the transfer station packages on both collection costs (garbage collection by private haulers) and short haul costs (cost of transporting waste between transfer stations and disposal or intermodal facility(ies)) as well as the potential impact on customer rates will vary depending on the location of the selected new sites.
- They directly address the five urban transfer stations that are covered in Reports 1 and 2. The First Northeast facility and the four rural facilities are excluded from this analysis. Proposed operations will remain the same at the First Northeast facility (soon to be reconstructed) and current operations at the four rural facilities will not change.
- All new facilities proposed across these four packages include the installation of one or more compactors.
- Additional studies will be necessary to ensure that level of service criteria will be met at all new facilities, and at existing sites such as Factoria and Bow Lake. The division recognizes that traffic is a particular concern at all sites in King County, and will perform studies and work with stakeholders to mitigate for traffic as necessary.

It is important to note that not all impacts of the various alternatives presented here can be fully quantified at this stage, largely because of the unknown locations of new facilities. As noted previously, Appendix F includes a generic siting process that King County has used in the past to site transfer stations and that may serve as a model for siting future facilities.

The packages described in the following pages are summarized in Table 2-3, listing each facility by type (self-haul only, commercial-haul only, or full service) and listing facilities that would be closed in the geographic areas of Northeast Lake Washington, Central, and South King County areas. The resulting total number of system facilities includes the three transfer and two drop box facilities in the North and rural King County areas.

Table 2-3. Package Summary

Pkg.	Full Service Facilities	Self-Haul Only	Commercial Only	Closed Facilities	Total # of Facilities
1	New South County New Bow Lake New Factoria/Eastgate New NE Lake WA	None	None	Algona Renton Houghton	9
1A	New South County New Bow Lake New Factoria (no Eastgate) New NE Lake WA	None	None	Algona Renton Houghton	9
2	New South County New Bow Lake New Factoria/Eastgate	Houghton	New NE Lake WA	Algona Renton	10
2A	New South County New Factoria/Eastgate	Houghton Renton	New NE Lake WA New Bow Lake	Algona	11
3	New South County New Bow Lake New NE Lake WA*	Renton Houghton Factoria (no Eastgate)	None	Algona	11
4	New Factoria/Eastgate	Algona Renton Houghton	New South County New Bow Lake New NE Lake WA	None	12

Self-haul Only Facilities

Several of the packages include proposals for using existing transfer stations (Algona, Factoria, Houghton, and Renton) as self-haul only facilities with minimal or no additional capital investment. Installation of compactors at self-haul only stations was not included in these packages. Analysis concluded that retrofitting existing transfer stations with compactors not only would reduce capacity by 75%, but is not technically feasible due to site constraints (see Appendix E). To minimize capital costs as well as to avoid reductions in traffic capacity, only two of these projects involve new capital expenses: a new roof at Factoria and a new retaining wall at Algona.

Although self-haul and commercial customer traffic at the transfer stations peak at different times, many of the deficiencies identified in Table 2-1 "Level of Service Criteria Applied to Existing Transfer Stations" are directly attributable to conflicts arising from commercial and self-haul customers queuing entering, dumping and exiting the constrained spaces of the existing facilities at the same time. Self-haul only facilities do not have the same requirements as full service facilities. The criteria in Table 2-1 were reapplied to the existing facilities proposed to be self-haul only in a new table that appears in Appendix H.

Transfer System Package Descriptions

Package 1

Full Service Facilities	Self-Haul Only	Commercial Only	Closed Facilities
New South County (new location) New Bow Lake (existing site) New Factoria/Eastgate (existing site) New NE Lake WA (new location)	None	None	Algona Renton Houghton

Package 1 would provide for the construction of four new full service transfer facilities and the closure of three existing facilities. The total number of transfer facilities in the King County system would be reduced by one – from a total of 10 to nine. This package is different from the other three packages in that it is the only one that does not recommend either self-haul only or commercial only facilities. It would provide for two transfer stations in the Northeast Lake Washington area in order to accommodate its projected population growth.

Two of the new full service facilities would be reconstructed at their current locations (Bow Lake and Factoria/Eastgate). Factoria/Eastgate can be constructed with no disruptions to self-haul or commercial customers. Bow Lake construction would not disrupt service for commercial customers. Self-haul customers would need to be temporarily rerouted to Renton and Algona. The remaining two facilities, South King County and Northeast Lake Washington, would require siting at a new, as yet undetermined location within each geographic area. Until all four facilities are fully constructed, the Algona, Renton, and Houghton stations would remain open as full service facilities.

Package 1 provides for a system where all waste is compacted, resulting in the lowest waste export cost. In addition, Package 1 is the only package that meets the level of service criteria detailed in Reports 1 and 2, and recommends closure of two facilities that are overstressed and have significant local impacts (Algona and Houghton, see Appendix H).

Package 1A

Full Service Facilities	Self-Haul Only	Commercial Only	Closed
New South County (new location) New Bow Lake (existing site) New Factoria (existing site) New NE Lake WA (new location)	None	None	Algona Renton Houghton

Package 1A would provide for the construction of four new full service transfer facilities and the closure of three existing facilities. The total number of transfer facilities in the King County system would be reduced by one – from a total of 10 to nine. Like Package 1, this package does not recommend either self-haul only or commercial only facilities. It would provide for two transfer stations in the Northeast Lake Washington area in order to accommodate its projected population growth.

Redevelopment of the existing Factoria site would have significant impacts to environmentally sensitive areas. The 1993 Factoria Transfer Station EIS identified significant, unavoidable adverse impacts. Costs cannot be determined for this package because it is unknown whether or not these impacts can be mitigated. Until mitigation measures are identified, it is not certain what level of service could be achieved at the Factoria site. Tonnage and vehicle capacity cannot be determined without more specific information. It is also not possible to determine the costs associated with reconstruction of the site until mitigation measures are known. Operating costs are assumed to be the same at Factoria and Eastgate. Discussion is ongoing with the host city regarding the feasibility of this package with respect to the Factoria site.

Two of the new full service facilities would be reconstructed at their current locations (Bow Lake and Factoria). Factoria construction would disrupt self-haul and commercial customers requiring they be rerouted to Renton and Houghton. Bow Lake construction would not disrupt service for commercial customers. Self-haul customers would need to be temporarily rerouted to Renton and Algona. The remaining two facilities, South King County and Northeast Lake Washington, would require siting at a new, as yet undetermined location within each geographic area. Until all four facilities are fully constructed, the Algona, Renton, and Houghton stations would remain open as full service facilities.

The major distinction of Package 1A is that a facility would not be built at the Eastgate site. The reconstructed Factoria site would serve both commercial and self-haul customers. Like package 1, it recommends closure of two facilities that are overstressed and have significant local impacts (Algona and Houghton).

Package 2

Full Service Facilities	Self-Haul Only	Commercial Only	Closed
New South County (new location) New Bow Lake (existing site) New Factoria/Eastgate (existing site)	Houghton (existing site)	New NE Lake WA (new location)	Algona Renton

Package 2 would provide for the construction of three new full service transfer facilities and one new commercial only facility. It would also keep Houghton open as a self-haul only facility and close Algona and Renton. This package would provide for three transfer stations in the Northeast Lake Washington area – one full service, one commercial only and one self-haul only. The total number of transfer facilities in the King County system would remain at 10.

With the exception of Houghton, Package 2 facilities would meet all level of service criteria identified in Table 2-1. Houghton would not meet the following criteria: vehicle capacity, space for three days storage, ability to meet recycling services policy goals, and the requirement for a 100 foot buffer and compatibility with surrounding land use. While some safety goals would not be met, eliminating commercial traffic would reduce the most serious of the safety concerns. (See Appendix H.)

Two of the new full service facilities would be reconstructed at their current locations (Bow Lake and Factoria/Eastgate). Factoria/Eastgate can be constructed with no disruptions to self-haul or commercial customers. Bow Lake construction would not disrupt service for commercial customers. Self-haul customers would need to be temporarily rerouted to Renton and Algona. The remaining two facilities, South King County (full-service) and Northeast Lake Washington (commercial only), would require siting at a new, as yet undetermined, location within each geographic area. Until all four facilities are fully constructed the Algona, Renton, and Houghton stations would remain open as full service facilities.

Package 2A

Full Service Facilities	Self-Haul Only	Commercial Only	Closed
New South County (new location) New Factoria/Eastgate (existing site)	Houghton (existing site) Renton (existing site)	New NE Lake WA (new location) New Bow Lake (existing site)	Algona

Package 2A provides for the construction of two new full service transfer facilities and two new commercial only facilities. It also keeps Houghton and Renton open as self-haul only facilities and closes Algona. This package provides for three transfer stations in the Northeast Lake Washington area – one full service, one commercial only and one self-haul only. The total number of transfer facilities in the King County system would increase by one to 11.

With the exception of Houghton and Renton, Package 2A facilities meet all level of service criteria identified in Table 2-1. Houghton would not meet the vehicle capacity criterion and the requirement for a 100 foot buffer and compatibility with surrounding land use. Houghton and Renton would not meet the following criteria: space for three days storage and ability to meet recycling services policy goals. While some safety goals would not be met, eliminating commercial traffic would reduce the most serious of the safety concerns. (See Appendix H.)

Two of the new facilities would be reconstructed at their current locations (Bow Lake and Factoria/Eastgate). Factoria/Eastgate can be constructed with no disruptions to self-haul or commercial customers. Bow Lake construction would not disrupt service for commercial customers. Self-haul customers would need to be rerouted to Renton and Algona. The remaining two facilities, South King County (full-service) and Northeast Lake Washington (commercial only), will require siting at a new, as yet undetermined, location within each geographic area. Until all four facilities are fully constructed the Algona, Renton, and Houghton stations will remain open as full service facilities.

Package 3

Full Service Facilities	Self-Haul Only	Commercial Only	Closed
New South County (new location) New Bow Lake (existing site) New NE Lake WA* (new location)	Renton (existing site) Houghton (existing site) Factoria (no Eastgate) (existing site)	None	Algona

*This station would process all commercial tonnage for Northeast Lake Washington

Package 3 would provide for the construction of three new full service transfer facilities. It would also keep Factoria, Houghton, and Renton open as self-haul only facilities and close Algona. Package 3 would provide for three transfer stations in the Northeast Lake Washington area: one mega full service and two self-haul only stations. The mega facility would be built to handle all of the commercial tonnage that now goes to both Factoria and Houghton. The total number of transfer facilities in the King County system would increase by one to 11.

With the exception of Factoria, Houghton and Renton, Package 3 facilities would meet all level of service criteria identified in Table 2-1. Factoria, Houghton and Renton would still not meet the following criteria: space for three days' storage and ability to meet recycling services policy goals. In all cases, eliminating commercial traffic would reduce the most serious of the safety concerns, though some safety goals would not be met. In all cases, the self-haul stations would not have the ability to compact waste. Factoria would still not meet the following criteria: vehicle capacity, compatibility with surrounding land use, and goals for traffic on local streets. In addition, the Factoria facility would require a new roof to meet seismic standards. Houghton would still not meet the following criteria: 100 foot buffer, vehicle capacity, and compatibility with surrounding land use (See Appendix H).

The major distinction of Package 3 is that a facility would not be built at the Eastgate site. Instead, a new Northeast Lake Washington "mega" facility would be built. This package assumes the sale of the Eastgate property currently owned by the Solid Waste Division as an offset to the capital cost of this package. The construction of Bow Lake would not disrupt service for commercial customers. Self-haul customers would need to be temporarily rerouted to Renton and Algona. The remaining two facilities, South King County (full-service) and Northeast Lake Washington (mega full service), would require siting at a new, as yet undetermined, location within each geographic area. The Algona facility would remain open as a full service facility until construction of the South King County facility is complete.

Reducing the number of facilities serving commercial customers to only one in the Northeast Lake Washington area could significantly impact garbage collection costs for this area.

Siting a facility to serve the entire Northeast Lake Washington commercial capacity may be more difficult than siting two smaller facilities because the local impacts of increased traffic and extended hours of operation would be greater. Scheduling for this package would depend upon the siting and construction of the mega full service station at a new site. Only after this facility was completed could the other station upgrades begin.

Package 4

Full Service Facilities	Self-Haul Only	Commercial Only	Closed
New Factoria/Eastgate (existing site)	Algona (existing site) Renton (existing site) Houghton (existing site)	New South County (new location) New Bow Lake (existing site) New NE Lake WA (new location)	None

Package 4 would provide for the construction of one new full service facility and three new commercial only transfer facilities. It would also keep Algona, Houghton, and Renton open as self-haul only facilities. Package 4 would provide for three transfer stations in the Northeast Lake Washington area – one full service, one commercial only service and one self-haul only. The total number of transfer facilities in the King County system would increase by two for a total of 12.

With the exception of Algona, Houghton and Renton, Package 4 facilities would meet all level of service criteria identified in Table 2-1. In all three self-haul stations, eliminating commercial traffic would reduce the most serious of the safety concerns, though some safety goals would not be met. In all cases, the self-haul stations would not have the ability to compact waste. For all three self-haul stations, the following criteria would still not be met: space for three days' storage and ability to meet recycling policy goals. Algona would still not meet the following criteria: vehicle capacity and traffic goals on local streets. Houghton would still not meet the following criteria: 100 foot buffer and compatibility with surrounding land use. (See Appendix H.)

The major distinctions of Package 4 are in all but one instance, stations would be single purpose – either commercial only or self-haul only; there are no proposed station closures in this package; Bow Lake is designated as a commercial only facility; and Algona would be converted to a self-haul facility (as opposed to complete closure). The construction of Bow Lake would mean no service disruption for commercial customers; however, self-haul customers would need to be permanently directed to the Renton facility. Eastgate would be the only new full service station to be constructed. The South County and Northeast Lake Washington facilities would be commercial only. As in all packages, the Northeast Lake Washington and the South King County stations would require siting at a new, as yet undetermined location within each geographic area. The Algona, Houghton and Renton facilities would remain open as self-haul only facilities.

Cost Information

In order to evaluate costs, the division developed a model using the following inputs. See Appendix I.

- tonnage forecast by facility by year
- costs to site, design and construct facilities by facility type
- schedule for capital projects
- operating costs, short haul costs and configurations for different facility types
- financing/debt service assumptions (discount and interest rates)

Tonnage Forecast

The division developed an econometric model using various demographic and income data to forecast the future amount of waste to be disposed (referred to as the "baseline tonnage forecast and included in Appendix C). It was then necessary to allocate this baseline tonnage forecast among the facilities included in each of the packages.

Package 1:
This package includes the construction of four new full service facilities and the closure of the Renton, Houghton and Algona facilities. The baseline forecast was allocated as follows:

Source	Destination
Algona	new South County
Bow Lake	Bow Lake
Factoria	Factoria/Eastgate
Houghton	Northeast Lake Washington
Renton	Bow Lake

Package 1A:
Until mitigation measures are identified, the division cannot forecast the reallocation of tonnage that would be necessary under this package.

Package 2:
This package keeps self haul at Houghton, builds three new full service facilities, builds a commercial only facility at a new Northeast Lake Washington site, and closes both the Renton and Algona facilities. The baseline forecast was allocated as follows:

Source	Destination
Algona	new South County
Bow Lake	Bow Lake
Factoria	Factoria/Eastgate
Houghton's commercial	Northeast Lake Washington
Houghton's self-haul	stays at Houghton
Renton	Bow Lake

Package 2A:
This package keeps self haul service at Houghton and Renton, builds two new full service facilities, builds two new commercial only facilities, and closes the Algona facility. The baseline forecast was allocated as follows:

Source	Destination
Algona	new South County
Bow Lake's self-haul	Renton
Bow Lake's commercial	stays at Bow Lake
Factoria	Factoria/Eastgate
Houghton's commercial	Northeast Lake Washington
Houghton's self-haul	stays at Houghton
Renton's self-haul	stays at Renton
Renton's commercial	Bow Lake

Package 3:
This package includes the sale of the Eastgate property and building one "mega" full service facility located in the Northeast Lake Washington area that would address the areas currently served by Houghton and Factoria. It also includes a new facility at Bow Lake and at a new location in South County. Houghton, Renton and Factoria would be self haul only. In this case, the baseline forecast was reallocated as follows:

Source	Destination
Algona	new South County
Bow Lake	Bow Lake
Factoria's commercial	Mega Facility
Factoria's self-haul	stays at Factoria*
Houghton's commercial	Mega Facility
Houghton's self-haul	stays at Houghton*
Renton's commercial	Bow Lake
Renton's self-haul	stays at Renton

* Approximately 5% of the self haul tonnage generated at both facilities was assumed to go to the mega facility

Package 4:
This package includes: three commercial only facilities - Bow Lake, South County and Northeast Lake Washington; three self haul only facilities - Houghton, Renton, and Algona; and, one full service facility at Factoria/Eastgate. The baseline tonnage forecast was allocated as follows:

Source	Destination
Algona's self haul	stays at Algona
Algona's commercial	new South County
Bow Lake's self haul	Renton
Bow Lake commercial	stays at Bow Lake
Factoria	Factoria/Eastgate
Houghton's commercial	Northeast Lake Washington
Houghton's self-haul	stays at Houghton
Renton's commercial	Bow Lake
Renton's self-haul tonnage	stays at Renton

Costs to Site, Design and Construct Facilities by Facility Type

Capital costs used in the analysis were based on engineering estimates from Solid Waste Division engineers and consulting engineers from RW Beck and KPG Inc. Each independently developed cost estimates for full service and commercial only facilities. Estimates to construct new self haul facilities were not generated because none of the four packages proposes building one. Instead the various proposals use existing transfer stations as self haul only facilities. The analysis assumes no capital improvements for the existing self haul only facilities other than building a new roof at Factoria and a retaining wall at Algona. Houghton is currently budgeted to receive a new roof as well as safety and mitigation improvements.

The three groups of engineers based their estimates on their own engineering experience on past projects, an analysis of similar facilities regionally and nationally, a review of SWANA design criteria, property cost estimates from county property services, and their own property appraisal experiences. The most critical assumptions used in developing the cost estimates were facility type, square footage of proposed building and schedule for completion.

The assumptions for each are listed below.

Facility Type	Square Footage of Building	Schedule for Completion *	Size
Full Service	50,000	8.5 years	20 Acres
Commercial	30,000	6.5 years	10 Acres

* Includes siting, design and construction

The three groups of engineers then went through a reconciliation process to come up with the best cost estimates for new full service and commercial only facilities. The commercial only facilities cost less to site, design and construct than full service facilities. This is due mainly to reduced traffic levels characteristic of commercial only sites, and the smaller queuing space and therefore smaller piece of property that is required. These lower traffic levels at commercial sites may make siting such facilities easier than their full service counterparts. With a commercial only facility, traffic would be much lighter on the weekdays, with limited hours on weekends. Commercial only sites can also have smaller transfer buildings due to the need for fewer stalls to dump as waste is brought in fewer, larger loads.

Full service facilities have the longest timeline from design to completion since they have the greatest siting challenges. A full service facility needs more space and needs to be in a location that can absorb 400 to 600 vehicle trips per day. The site must be large enough to maintain separation between commercial and the passenger vehicles as well as the small trucks used by self haulers. This separation of different types of vehicles is important in the driving lanes, at the scalehouse, and especially on the tipping floor. Such a design element is vital for safety purposes and to ensure that the commercial haulers can get in and out of the station as efficiently and quickly as possible.

Schedule for Capital Projects

Each package of construction projects has its own set of tasks that have been scheduled out into the future. The work at each station has been divided into the five categories listed below, which are anticipated to be done sequentially over the duration of each buildout:

- Siting
- Land Acquisition
- Land Use Permitting including environmental review
- Design/Building Permits
- Construction / Equipment

All six packages can be completed by the time Cedar Hills is expected to reach its current permitted capacity in 2015. Anything that can be done to reduce the time it takes to site, permit and construct these facilities could save millions of dollars to the solid waste ratepayers.

For the packages that involve siting and building new transfer stations, the division plans to undertake these projects simultaneously wherever possible, in an effort to expedite their completion and save money. In particular, the plans for completing the new Northeast Lake Washington, South King County and Factoria/Eastgate projects assume parallel siting and construction schedules, as these efforts would not involve closing or interrupting any existing waste transfer operations.

It is currently expected that for each of the six packages all facilities could be complete and operational by 2015 if the siting process is begun by 2007.

Operating Costs by Facility Type

Operating costs for the packages need to be considered because there are tradeoffs between capital and operating costs for each one. In order to get a complete picture of the relative financial impacts of the packages, both capital and operating costs have to be considered over the course of the facilities' useful lives.

Staffing costs were used as a proxy for operating costs because personnel comprise the vast majority of these expenses. Staffing costs are also the main expenses that fluctuate with the type of facility, i.e. self haul, full service, commercial only. Commercial only facilities need less staff because all of its customers are experienced in the use of the facilities. Self haulers need far more direction and oversight from transfer station personnel to use the facility safely.

The analysis also considered the tonnage levels and operating hours for the different facilities, i.e. the number of shifts worked per week. For each package an assumption was made the current level of service would be provided for commercial haulers. Currently that is 24 hours per day at Bow Lake and 17 hours per day at Factoria.

Other facility operating costs, including utilities and site maintenance, do not vary significantly between facilities. These additional operating costs were not part of the

analysis since their inclusion would not serve the purpose of differentiating the packages from one another.

The staffing costs used in the analysis are based on current King County wage rates and contract provisions, inflated from 2005 levels for future years.

Financing/Debt Service Assumptions

The financial analysis of each package involved several steps:

1. Estimating the relevant capital costs and construction schedules – which in some cases extend out eight years into the future.

2. Projecting inflation-adjusted costs and determining the quantity and timing of any bond financing required.

3. Calculating the cost savings expected from the use of modern compactors, and converting those cost savings to a present value to reflect the full lifecycle of benefits available from the compactor. The reduction in transportation costs that can be achieved by these compactors can, in effect, offset the capital costs of a transfer station by 20% to 30%. In any case, under current market conditions, it is assumed that financing the new stations would involve sale of general obligation bonds with a 4.25% interest rate. For determining present values a discount rate of 5% is used.

4. Considering the bond amortization costs, as well as the cost savings from the compactors, into the financial planning model helps the division determine if and when rates need to be increased.

The financial analysis of the transfer station packages shows that any of the six alternatives could be financed and constructed within the structure of the current and future rate commitment that the division established, i.e. per ton tipping fees will not increase by more than the rate of inflation, using 1999 as a base year (the last time rates were changed).

The division recognizes that under all scenarios, transfer stations will continue to be utilized in processing solid waste in King County. It is also clear that the current system has been operating for roughly 50 years and no significant new capacity has been added since the mid 1970's. Operating this inefficient system requires additional effort by staff and management to ensure that facilities are operated safely.

Upgrading the transfer system will significantly improve current operations from a cost, risk and customer service perspective. It will also facilitate an efficient transition to waste export.

Cost Summary

Costs calculated through 2028, the term of the ILA's, are included in Table 2-4. As Table 2-4 shows, the cost differences through 2028 are minimal among the packages. There is a

trade-off between capital costs and operating costs depending on the types of facility (commercial only, self haul only, or full service) and the number of facilities in the system.

For instance, even though Package 1 has the fewest facilities, the capital costs are higher because all are new, full service facilities. Full service facilities require more land and larger buildings to serve all self-haul and commercial customers' disposal and recycling needs. While capital costs of Package 1 are the highest among the four packages, operating costs are lowest because there are fewer facilities and therefore lower staff and other operating costs. In addition, Package 1 provides a system where all waste is compacted resulting in the most cost-effective long haul disposal rates.

In contrast, even though Package 4 has the most facilities it has the lowest capital costs for several reasons. First, Package 4 retains three largely unimproved existing stations as self haul only facilities. The three facilities (Renton, Algona and Houghton) do not and will not meet the level of service criteria defined in Report 1. In addition, three of the new facilities are proposed to be commercial only. Commercial only facilities require less land and smaller buildings than full service facilities, which reduces capital costs. However, the operating costs of Package 4 are higher than Package 1 due to the higher number of facilities.

Total annual costs for Packages 2 and 3 fall between Packages 1 and 4 (see Table 2-4 below). But as noted earlier, cost is not the primary factor that differentiates these packages. Complete cost data is not available for Package 1A.

Table 2-4. Package Cost Information Through 2028

Pkg.	Total CIP Cost of Package [1] (2005 dollars)	Present Value of Net Capital Cost[2]	Average Annual Net Capital Cost (2006-2028)	Annual Operating Cost for Package (2005 dollars)	Sum of Annual Net Capital Cost and Staffing
1	$197,400,000	$120,500,000	$5,200,000	$4,300,000	$9,500,000
1A	No cost data – see package description*	No cost data – see package description*	No cost data – see package description*	$4,300,000	No cost data – see package description*
2	$181,300,000	$108,000,000	$4,700,000	$4,700,000	$9,400,000
2A	$169,900,000	$102,000,000	$4,500,000	$4,800,000	$9,300,000
3	$157,800,000	$ 88,900,000	$3,900,000	$5,200,000	$9,100,000
4	$154,900,000	$ 90,700,000	$3,900,000	$5,200,000	$9,100,000

(1) For the purposes of this analysis, minimal capital investments were added for self-haul only options, which will leave the stations largely as is at the time of waste export. The exceptions to this are the Factoria and Algona stations. A new roof would need to be added to Factoria and a retaining wall is needed at Algona. It is important to note that long-term use of these stations may require capital investments to address specific structural and site issues since the facilities will be at least 50 years old in 2015.
(2) Net capital cost = debt service - lifecycle savings generated by compaction

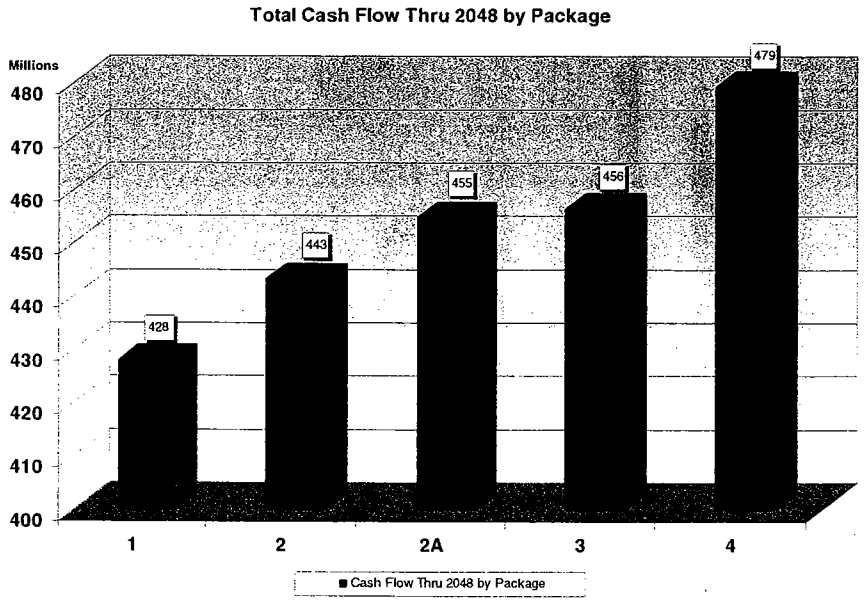
* *Redevelopment of the existing Factoria site would have significant adverse impacts to environmentally sensitive areas, as identified in the 1993 Factoria Transfer Station EIS. Until mitigation measures are identified, it is not possible to determine the costs associated with reconstruction of the site. Operating costs are assumed to be the same at Factoria and Eastgate. Discussion is ongoing with the host city regarding the feasibility of this package with respect to the Factoria site.*

The Longer Term Outlook

To help examine the financial implications of the five transfer station packages over the longer term, the cost for each was projected out to the year 2048 (Appendix J provides more detail on this analysis). It is likely that any facility built in the future will continue to operate through this time period.

The capital-plus-operating costs of the alternatives, under the assumption of a 3% rate of inflation, are summarized here. Note that labor costs are used as a proxy for operating costs. Figure 2-3 shows total capital and operating expenditures through 2048.

Figure 2-3. Total Cash Flow Through 2048 by Package

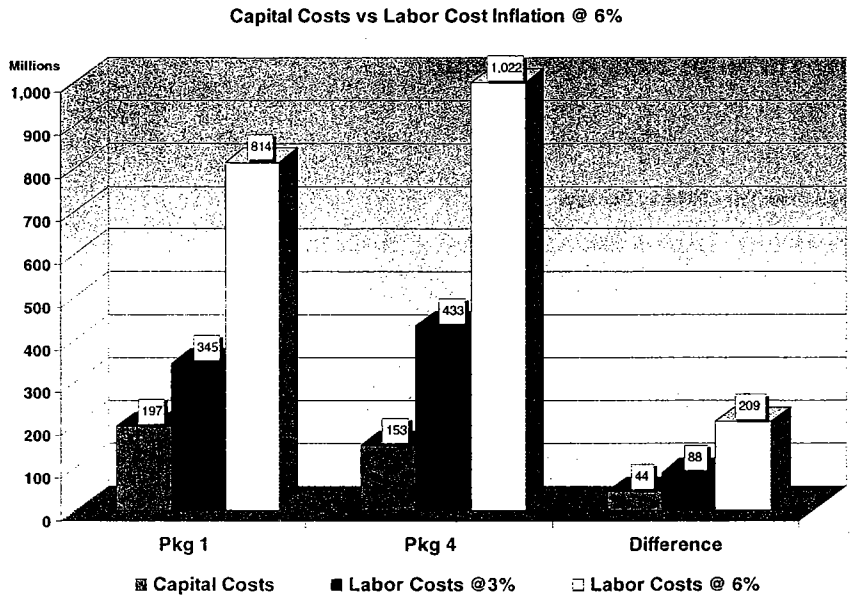


Package 1 has a greater initial capital investment than the others. This is offset over the long term by lower operating costs. On the other hand, Package 4 has four more facilities to staff since it has separate commercial and self-haul facilities. As a result, the operating costs of Package 4 are higher over the long term. Additionally, short and long haul costs in Package 4 are higher since about 16% of the waste stream (generated at self-haul only facilities) would not be compacted prior to export.

Since Packages 1 and 4 are respectively the most and least capital intensive it is interesting to compare how they respond to different rates of inflation. The following chart compares the operating costs for the two packages, with inflation at 3%, 5% and 6% over the years 2006 through 2048. Package 4 is most sensitive to inflation because of the higher staffing levels and transport costs.

Figure 2-4 shows the capital versus operating cost comparisons under the various rates of inflation. Package 1 requires about $44 million more in initial capital spending than Package 4, but even with only a 3% annual inflation in labor costs, this option "saves" $88 million compared to Package 4. Under a more severe inflation assumption the advantage of Package 1 increases to a projected $209 million.

Figure 2-4. Capital Costs Versus Operating Cost Inflation



Appendix J explores these issues in greater detail. The policy issue is a choice between the risk exposure from unknown variable costs over a longer term versus investing a known amount of additional capital up front.

Effect of Transfer System Packages on Disposal Rates

Some years ago the Executive made a commitment that the rate of increase in the Cedar Hills disposal fee would remain below the rate of inflation. In
Figure 2-5 the blue line represents the progress of inflation, starting in the year 2000. The red line shows the historical tipping fee through 2005, and current projections to the year 2022. The rate commitment ends with the closure of Cedar Hills reflected by the red line moving above the blue line after 2015.

The rate scenario depicted by the red line incorporates the costs of building and operating transfer station Package 1, which is the most costly of the alternatives. The rate increase shown for 2008, up to $96.00, would be the first adjustment since 1999. In addition to helping catch up with general cost increases it would also cover the increase in debt service

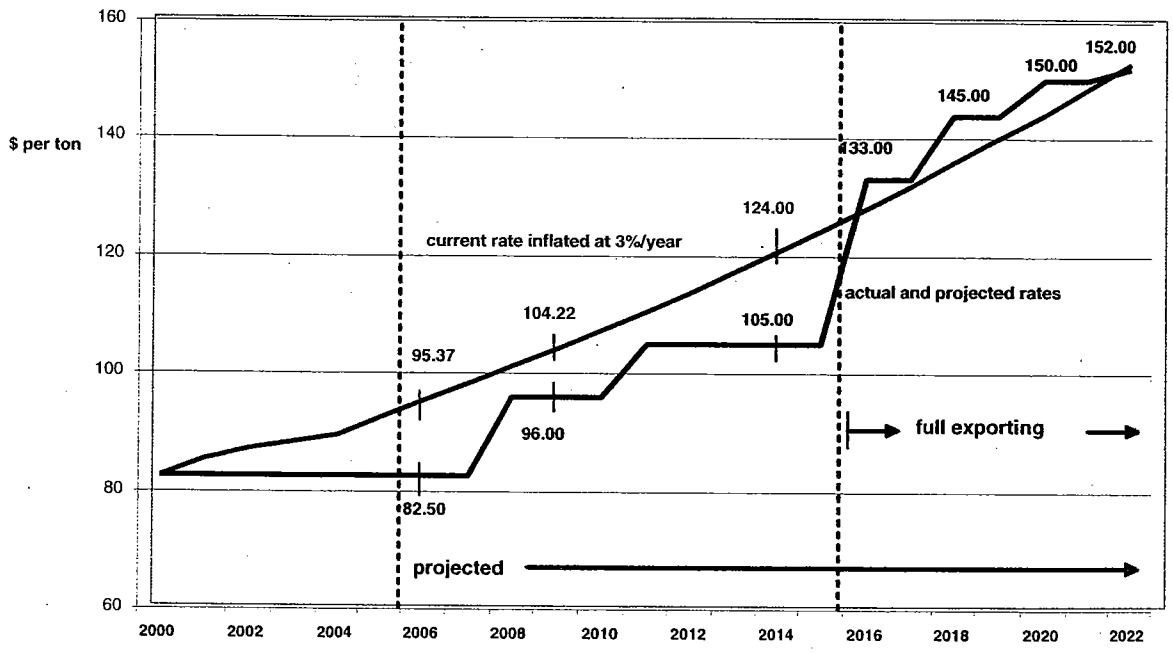
that would be part of implementing Package 1, assuming the use of 20-year bonds, issued at a rate of 4.5%.

Despite these new costs, the division expects the tipping fee to remain well within the inflation limit, even while projecting a five year flat rate of $105.00 starting in year 2011, which would partly be made possible through the cost savings generated by compactors in several of the new or remodeled transfer stations.

However, under current plans, total exporting will begin at the end of 2015, and the tipping fee that would be required to support this activity is currently projected to be outside the projected inflation ceiling.

Compared to the current situation, the post Cedar Hills environment may involve substantially less control over the division's costs, and the resulting rates it is able to set. In this context, the merit of investing to expand the capacity of the Cedar Hills Regional Landfill acquires an additional attractiveness.

Figure 2-5. Rate Commitment and Projections – Transfer Station Package 1



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CHAPTER 3. PUBLIC-PRIVATE OPTIONS

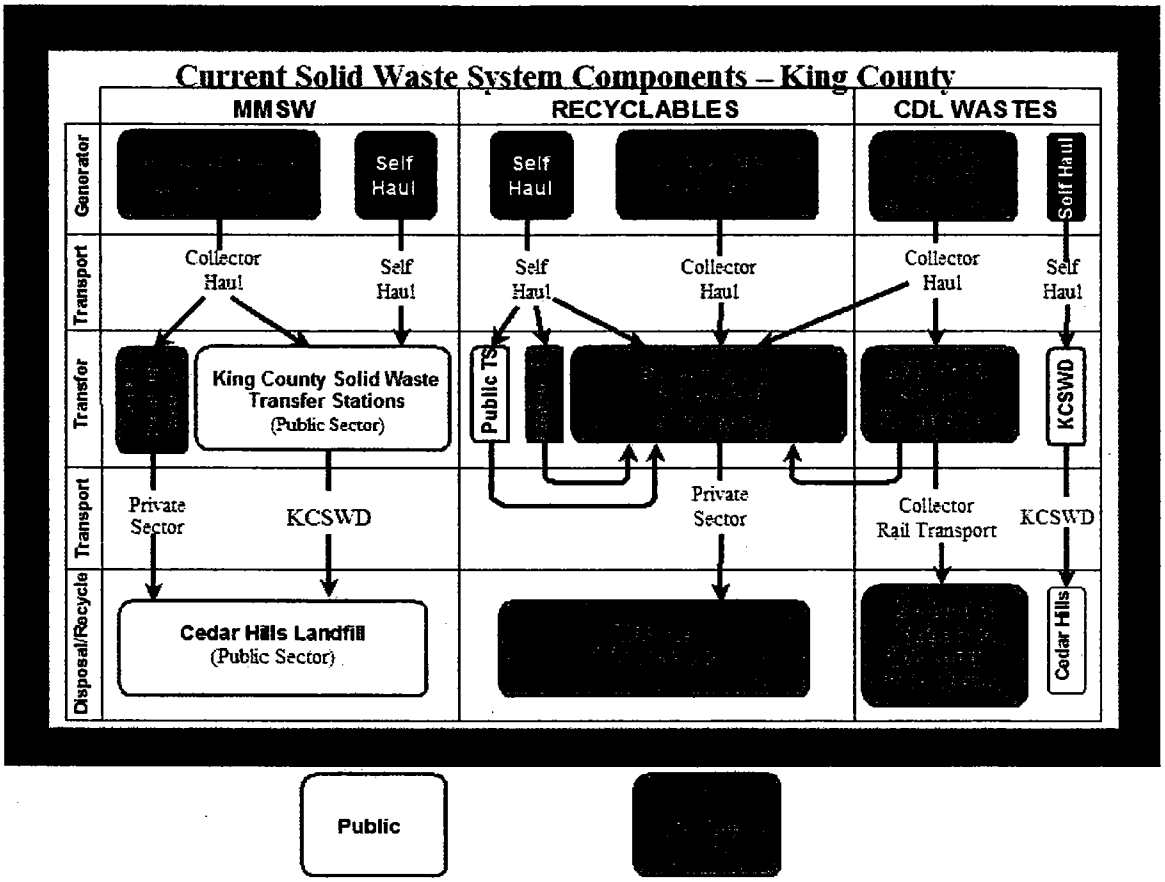
Chapter Synopsis

This chapter provides a summary of three public/private options for ownership/operation of transfer facilities. Presented in this chapter is a summary regarding the public-private mixes in solid waste systems of several other jurisdictions in Washington. This chapter presents several policy issues that will need to be considered when deciding upon the configuration of the future system. State law, case law and collective bargaining agreements frame the discussion policy makers will have in considering these options.

Background

The current solid waste system is a mixture of publicly and privately provided services (see Figure 3-1). Collection, processing, and final disposal of construction and demolition waste and recyclable materials are all privatized services. Through contracts with cities and Washington Utilities and Transportation Commission (WUTC) franchises, the private sector is also primarily responsible for waste collection. Through interlocal agreements between King County and 37 cities that expire in 2028, the Solid Waste Division is responsible for operation of the public transfer stations and the regional landfill, as well as the development of the state mandated comprehensive solid waste management plan that establishes policies for transfer, disposal, and waste reduction and recycling. Given that disposal services will be privately provided once King County moves to waste export, the only remaining system functions to consider for privatization will be transfer and intermodal services.

Figure 3-1. Current Solid Waste System Components



The county council has determined that after Cedar Hills Regional Landfill reaches permitted capacity and closes, the county will not build or operate another landfill. Therefore, disposal will become privatized at the time of waste export. This chapter examines the options for public and private ownership and operation of the solid waste system, which at the time of waste export will include transfer stations and at least one intermodal facility.

Three Options

The third milestone report identified three options for the ownership and operation of the transfer and intermodal facilities that will comprise King County's solid waste export system. These are:

1. Public-only,
2. Public-private partnership, and
3. Private-only.

Analysis of Options

Public-Only:
State law (RCW 70.95.020) mandates public oversight and authority for the planning and handling of solid waste. This precludes the possibility of a purely private solid waste system with no public sector involvement. Within the framework of state law, the public-only option has no legal, regulatory, or labor obstacles.

Public-Private Partnership:
Public-private solid waste systems can take a variety of forms. Table 3-1 summarizes the mixed systems currently operating in Washington State.

This option for the solid waste system must be procured by the public sector through contracts with the private sector. Contract agreements for services could include ownership or lease and operation of transfer and intermodal facilities. Depending on how the system is divided between the public and private sectors, labor issues may pose obstacles to this option. However, such obstacles may not be prohibitive. Per RCW 36.58.090:

> *Notwithstanding the provisions of any county charter or any law to the contrary, and in addition to any other authority provided by law, the legislative authority of a county may contract with one or more vendors for one or more of the design, construction, or operation of, or other service related to, the solid waste handling systems, plants, sites, or other facilities in accordance with the procedures set forth in this section.*

There is historical precedent for a mixture of public and private transfer stations in King County. Currently less than 1% of municipal solid waste in the King County system passes through private transfer stations. In the past, up to 40% of the county's municipal solid waste has passed through private transfer stations, and construction, demolition and landclearing waste is currently handled by the private sector through contracts with King County. In meetings held with representatives of Waste Management, Allied/Rabanco, and Waste Connections all agreed that they preferred either an all public or all private transfer system. A mixed transfer system was viewed by the haulers as not being the most efficient system.

There is an existing King County Council labor policy which says that when the county is contemplating contracting out work done by county employees, the employees will be given a chance to bid on providing the service. In addition, in contracts between King County and the Teamsters Locals 117P and 174, International Federation of Professional and Technical Employees Local 17A and International Union of Operating Engineers Local 302, the county has agreed that no jobs will be eliminated due to contracting out, and that work currently performed by members of the bargaining units will not be contracted out.

Private-Only:
A private-only system where the public sector is not involved in service delivery, rate setting or long term planning, is not allowed under current state law (RCW 70.95.020), or county policy. A privatized system would involve contracting out work that has historically been done by the public sector, and faces significant legal obstacles. Courts have found where public employees have customarily and historically performed a service, civil service

principles require that civil servants provide the service when new need arises, unless they are unable to provide the service.[1]

The issue is not whether employees are unionized or not -- it is whether they are civil service or private sector employees. Both public and private sector solid waste employees in King County are unionized and are represented by the Teamsters union. Even if it were less expensive, potential cost savings from the use of private entities was not found to be sufficient reason for civil servants not to provide the service. In a MWSMAC meeting attended by the haulers on December 19, 2005, all haulers agreed that if required to use the same standards for siting and construction of facilities as King County, there would be no significant difference in costs.

Washington State collective bargaining law, RCW 41.56. generally requires that an employer bargain over the contracting out of bargaining unit work. Whether the employer has to bargain over the decision to contract out is determined by a balancing test between the core entrepreneurial interest of the employer and the interest of the employees. Even where an employer is not required to bargain over the decision to contract out, the employer is still required to bargain with the union over the effects of contracting out.[2]

Privatization might be considered analogous to a scenario of going out of business, in which case contracting out could be permissible. To justify this action, the county would have to show cause for removing itself from the transfer business. Whether or not King County operates transfer stations, it still maintains planning authority for solid waste under state law and the interlocal agreements, and cannot be considered "out of the business."

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[1] Joint Crafts Council and Teamsters Union Local 117 v. King County, 76 Wn. App. 18; 881 P.2d 1059 (1994)
[2] International Longshoremen's and Warehousemen's Union, Local 9 v. Port of Seattle, Decision 1989 – PERB (1995)

Summary

The future solid waste system will continue to be a mix of public and private sector service provision. Once waste export is implemented, disposal will shift from the public to the private sector. Intermodal service, since it will be a new element in the King County solid waste system, could be provided by either the public or private sector. On the other hand, who provides waste transfer services is not black and white. The legal, policy and contractual issues described above present obstacles that may or may not be insurmountable. There is not clear guidance from the courts or state law on the permissibility of contracting out work that has traditionally been done by both the public and the private sectors, as is the case in King County.

The configuration of the future system is a decision that policy makers will need to make after assessing the risks and benefits of the alternatives. In summary, policy makers will need to consider:

- Case law interpreting the King County Charter and the King County Code relative to labor policy
- RCW 36.58.090 "Contracts with vendors for solid waste handling, plants, sites or facilities—Requirements—Vendor selection process"
- Civil service impediments to contracting out career service work
- Washington state collective bargaining law, RCW 41.56
- Contracting out clauses within King County labor agreements

The final Waste Export Plan will contain a recommendation on the preferred system configuration for moving to waste export, including a recommendation on the roles of the public and private sector.

Table 3-1. Public-Private Mixes in Solid Waste Systems in Washington State

Agency	Planning	Collection	Transfer Stations, # and Ownership	Transfer Station Operation	Short-Haul (TS to Intermodal)	Intermodal Ownership/ Operation	Long-Haul	Disposal	Local Backup Landfill
King County	Public	Private and Public (City of Enumclaw and Town of Skykomish)	8 Public (plus 2 rural drop box locations)	Public	Public (to landfill)	NA	NA	Public Landfill	No
City of Seattle	Public	Private	2 Public 2 Private	Public for Public Private for Private	Public from Public Private from Private	Private-Private	Rail	Private Landfill	No
Snohomish County	Public	Private and Public	3 Public	Public	Public	Private-Private	Rail	Private Landfill	No
Clark County	Public	Private	2 Private (plus 1 under construction)	Private	Private (truck to barge)	Private-Private	Barge	Private Landfill	No (county is considering changing)
City of Spokane	Public	Private	3 Public, including transfer station at waste-to-energy (WTE) facility	Public	Public (most waste to WTE; excess waste to intermodal[1])	Private-Private	Rail	Public-Private WTE Facility Local Public Landfill Remote Private Landfill	Local Public Remote Private
Thurston County	Public	Private and Public (City of Olympia)	1 Public (plus 3 rural drop box locations)	Private (includes hauling from 3 rural sites to transfer station)	Private	Private-Private	Rail	Private Landfill	No (Finlay Buttes LF, OR is backup to Roosevelt LF)
Kitsap County	Public	Private and Public (City of Poulsbo)	1 Public (DBOOT[2] on public land)	Private	NA	Public (part of Transfer Station)-Private	Rail	Private Landfill	No
Grays Harbor County	Public	Private	1 Private, 5 drop boxes	Private	Private	Private-Private	Rail	Private Landfill	No
Jefferson County	Public	Private	2 Public, 1 drop box	Public	Private	Private-Private	Rail	Public Landfill	No
City of Tacoma	Public	Public and Private	1 Public	Public	Public (to private landfill)	NA	NA	Private Landfill	Yes

Source: R.W. Beck, Technical Memorandum, October 18, 2005.

1. Excess waste beyond the capacity of the waste-to-energy (WTE) facility is trucked to an intermodal facility. Waste is bypassed during most months of the year, due to (1) seasonal fluctuations in waste volumes and (2) planned outages of the WTE for maintenance.
2. Facility developed under a design-build-own-operate-transfer (DBOOT) agreement, in which the county will buy the facility back from the private owner-operator after a certain period of time.

CHAPTER 4. ANALYSIS OF LANDFILL CAPACITY

Chapter Synopsis

This chapter explores options for extending the useful life of the Cedar Hills Regional Landfill, and discusses the possibility of preserving emergency backup capacity for King County and neighboring jurisdictions that have already moved to waste export. Also included in this chapter is a discussion of landfills in the western United States that are possible destinations for King County's exported solid waste.

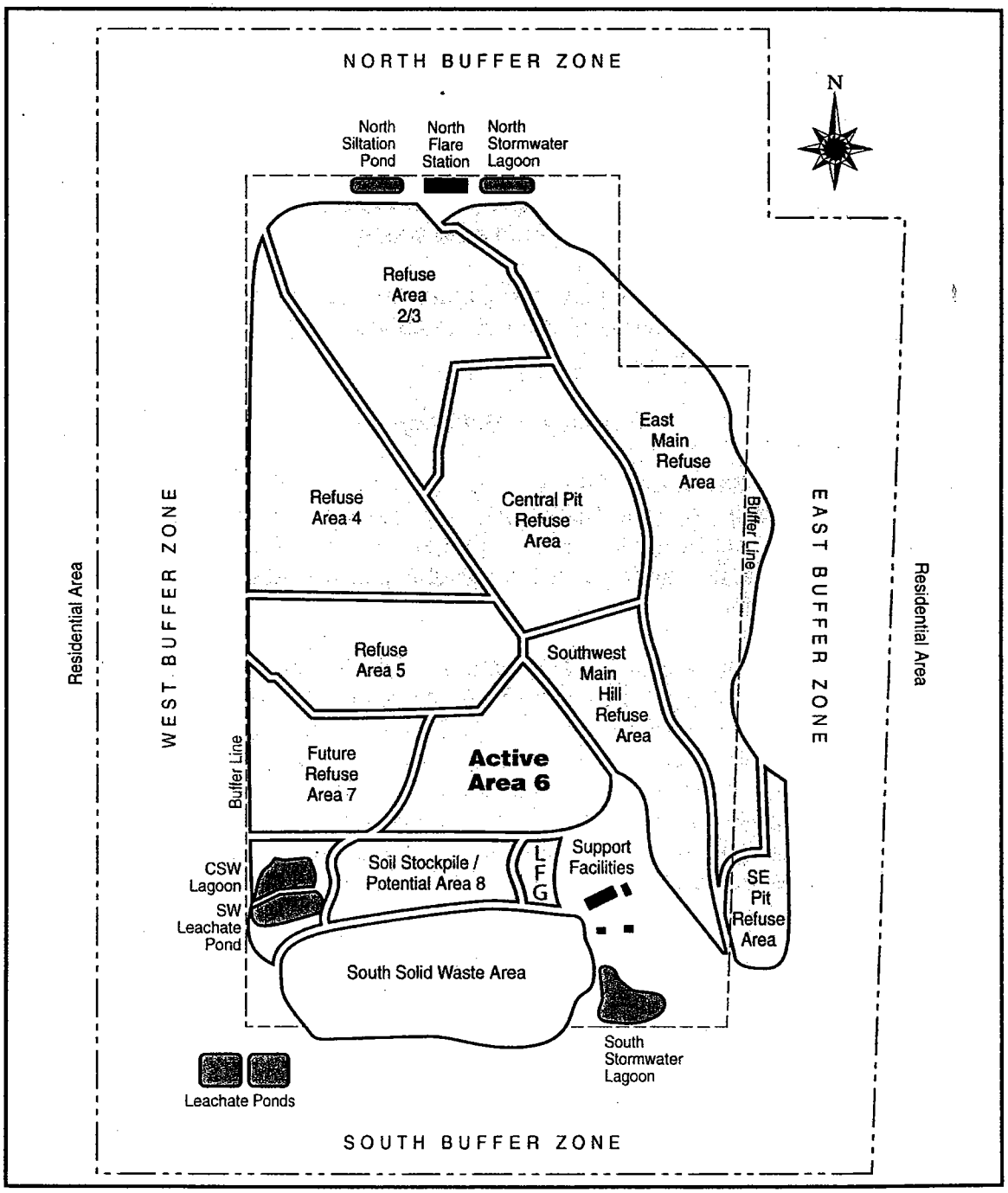
Under the current landfill development plan, the Cedar Hills Regional Landfill is expected to reach capacity in 2015. When Cedar Hills closes, the county's solid waste system needs access to a new MMSW disposal site.

Current Capacity

The calculated capacity of the landfill is the volume of space available based on height, footprint, and slopes, as defined in the *Cedar Hills Site Development Plan*. The capacity, or life, of the landfill is based on the amount of incoming solid waste and the density and consolidation of materials in the landfill over time. Both internal and external influences can affect overall landfill capacity.

The *2001 Final Comprehensive Solid Waste Management Plan* estimated that the Cedar Hills Regional Landfill would reach its permitted capacity in 2012. Based on incoming tonnage projections and the landfill density achieved to date (and expected in the future), it is currently estimated that the Cedar Hills Regional Landfill will reach its permitted capacity in late 2015, three years beyond earlier forecasts of 2012. This extension is possible within currently permitted constraints on the height and footprint of the site, and without encroaching upon the designated buffer zone, which is the area between the active solid waste handling area and the boundary of the site. See Figure 4-1, Layout of the Cedar Hills Regional Landfill.

Figure 4-1. Layout of the Cedar Hills Regional Landfill



Increased Capacity at Cedar Hills to Date

A number of factors have led to an increase in capacity:

1. Through natural settling of the landfill, less space is consumed; hence, the landfill is not filling at the rate previously projected. This is consistent with nationwide trends. See Appendix K.

2. A portion of the excavated areas for Areas 6 and 7 was reserved to stockpile soil for eventual daily cover. The division relocated the soil stockpile area to Area 8. This allows the entire excavated areas of 6 and 7 to be filled, increasing capacity. The stockpiling areas still do not encroach on the buffer zone. This change added one and one-half years of additional landfill capacity.

3. The division's method of building and maintaining refuse tipping floors on the landfill has improved since Area 5 was opened in 1999. The rock that is spread on the landfill face to create a driving surface is now dug up and reused the next day, instead of being left in place. This has added capacity, although it is difficult to calculate precisely how much.

Ongoing Efforts to Increase Capacity
New and expanded plans and programs will continue to increase Cedar Hills' lifespan:

1. Late in 2005 the division began using tarps as alternative daily cover rather than the previous daily application of six inches of compacted soil over the active fill area. The tarps are placed over a small portion of the active fill area at the close of daily operations and taken up at the next day's start of operations. Use of this alternative daily cover saves space and thereby extends the life of the landfill. Because the use of tarps is a pilot project that has only recently begun, the division is not yet able to calculate how much extra life this practice will add to the landfill.
2. Efforts to increase waste reduction and recycling would affect the tonnage received at Cedar Hills. Projections for this analysis are based on the tonnage forecasts using the current recycling rate of 41%.

Potential for Developing Additional Capacity

The division is currently operating in accordance with the Cedar Hills Development Plan, which includes the utilization of on-site soil in conjunction with alternative daily cover. No changes in current permit conditions are anticipated. Life remaining is through 2015. The following development scenarios present alternatives for the remainder of the life of the Cedar Hills Regional Landfill:

1. Regrade Areas 5, 6, and 7 to the permitted elevation when Area 7 is close to reaching capacity.

This alternative would use the projected airspace gained from the settlement of these refuse areas. This scenario includes only refuse areas that have bottom liners as required by current regulations. Final cover on these areas would be deferred until they reach permitted height. Changes in existing design criteria are not anticipated. This alternative is projected to add one year to the life of the landfill and would likely require modification of the existing operating permits.

2. Regrade Areas 2, 3, 4, and Central Pit to the permitted elevation.

This alternative would fully utilize existing airspace gained from past settlement of these refuse areas. This scenario considered only refuse areas that have bottom liners. But the bottom liners in these areas were installed under an earlier, less stringent set of regulations. This scenario may require addition of liners that are compliant with current regulations between the old cover and new garbage. Changes in existing design criteria are not anticipated. This alternative is projected to add up to two and one-half years to the life of the landfill and would require new construction and operating permits.

3. Develop Area 8.

Area 8 is currently used for stockpiling soil. This alternative would fully utilize the existing soil stockpile area for landfill development, which would include:

- Maximization of alternative daily cover use,
- Some importation of soil,
- Acquisition and operation of an offsite source for soil,
- Stockpiling soil over closed refuse areas, or
- A combination of all four actions.

This alternative is projected to add up to two and one-half years to the life of the landfill. This alternative would require new operating permits and environmental review, which could involve preparation of a Supplemental Environmental Impact Statement.

Each scenario described above involves costs and presumes landfill development and operating plan modifications will be approved by regulatory authorities. Offsetting these costs, however are the savings realized by extending the life of Cedar Hills and delaying the move to waste export. The cost benefits of the above alternatives, in different combinations, are presented in Table 4-1.

Table 4-1. Regrade/Development Alternatives Cost Savings

Scenario	Description	Lifecycle Present Value of savings per ton	Lifecycle Present Value of savings
Regrade areas 5, 6, & 7	Operate through 2016	$0.48	$ 14,000,000
Regrade areas 5, 6, & 7 plus regrade areas 2, 3, 4 & CP	Operate through 2019	$1.03	$ 30,000,000
Regrade areas 5, 6, & 7 plus develop area 8	Operate through 2019	$1.75	$ 51,000,000
Regrade areas 5, 6, & 7 plus regrade areas 2, 3, 4 & CP plus develop area 8	Operate through 2022	$3.85	$113,000,000

Note: Lifecycle analysis is through 2028, the duration of the Interlocal Agreements.

Increased Recycling – Potential for Extending the Life of Cedar Hills

Policymakers and advisory committee members have asked what effect more aggressive recycling would have on extending the life of the landfill. Recycling efforts which began in the early 1990's, in addition to operating efficiencies and landfill settling, have contributed to extending the life of the landfill by about ten years. The current recycling rate of 41% is used in the forecast. The division has also considered the effect a more aggressive recycling rate would have on extending the life of Cedar Hills.

If the region could achieve a 60% recycling rate between 2009 and 2015, an additional 1.1 million tons of material would be diverted from the landfill. This would add approximately one year of life to the landfill. In order to achieve a 60% recycling rate, the region would have to agree to more aggressive recycling programs, such as banning certain materials from disposal at the landfill and expanding curbside recycling services to include additional materials.

Benefits of Extended Life

Disposal at the Cedar Hills Regional Landfill is the lowest cost disposal option for King County residents and businesses. Diverting tonnage from Cedar Hills prior to filling it to capacity increases the average cost of disposal. Extending the life of Cedar Hills will keep rates lower for a longer period of time by delaying costlier waste export. It will also provide more time to make improvements to the solid waste system in preparation for waste export.

Backup Capacity

In general, there is limited landfill backup capacity in western Washington. When Cedar Hills closes, capacity in the Puget Sound area will be limited to the City of Tacoma Landfill. Neither Seattle nor Snohomish County has maintained backup capacity of their own and both rely on their waste export contractors to provide backup to their primary hauling and disposal systems.

While interviewing local jurisdictions for this report about their experiences exporting waste, a number of them spoke about the need for backup disposal capacity in this region. Exporting jurisdictions described the operational impacts of occasional rail service disruptions they have experienced and shared their concerns about what would happen if there were an extended problem. Everyone identified Cedar Hills as the best available option for disposal backup.

The Solid Waste Division plans to convene a working group of interested jurisdictions in 2006 to discuss a cost sharing arrangement to secure the needed backup capacity for other jurisdictions' waste. A work program will be jointly developed to cover all of the aspects of a potential agreement.

Out-of-County Landfills

Table 4-2 provides a list of landfill sites owned by different companies potentially available to compete for King County's waste after Cedar Hills closes. Only one landfill is listed for

each of these disposal companies. Although some of the companies may also own other landfills, the landfill closest to King County is listed as it is assumed to be the most likely to compete for the county's waste. Additional landfills or other disposal options may be available by the time Cedar Hills reaches capacity and the county begins waste export. This is, therefore, a preliminary list that could change over time. It does not imply any preference for any landfill or company – the information is included to indicate the potential market for the county's waste.

Table 4-2. Out-of-County Landfill Capacity

Landfill Name	Location	Owner	Miles From Seattle	Total Permitted Capacity (tons)	Remaining Capacity (2006)	Opening Year	Estimated Closure
Active Landfills							
1 Columbia Ridge Landfill and Recycling Center	Gilliam County, OR	Waste Management	325	221,875,000	205,000,000	1990	2060+
2 Roosevelt Regional Landfill	Klickitat County, WA	Allied Waste Industries dba Regional Disposal Co.	330	244,600,000	214,200,000	1998	2073+
3 Finley Buttes Regional Landfill	Morrow County, OR	Waste Connections	352	101,250,000 (See note 2)	98,750,000	1990	2060+
4 Simco Road Regional Landfill	Elmore County, ID	Idaho Waste Systems	628	210,000,000 (See note 1)	200,000,000+	2000	~2040
5 Herzog Environmental, Inc.	Mora County, NM	Herzog Environmental, Inc.	1,616	"unlimited"*		2000	2100+
Landfills Permitted, not Operating							
6 Eagle Mountain Landfill	Riverside County, CA	L.A. County Sanitation Dist.	1,325	560,000,000	560,000,000	~2010	2125
7 Mesquite Regional Landfill	Imperial County, CA	L.A. County Sanitation Dist.	1,420	970,000,000	970,000,000	~2010	2110

Source: HDR

* Herzog Environmental Inc.'s company representative describes its annual capacity as "virtually unlimited."

Notes:

1. Simco Road Regional Landfill is currently expanding to a permitted capacity of 420 million tons.
2. Finley Buttes has potential to expand to a permitted capacity of 400,000,000 tons.

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CHAPTER 5. LONG-HAUL TRANSPORT OPTIONS

Chapter Synopsis

This chapter describes and compares three transportation options: barge, truck and rail. Each option is examined for differences in travel time, reliability, and capital and operating costs.

There are currently at least five landfills in the western United States that could accept the county's solid waste (see Table 5-1). All are accessible by railway and truck. Only one of the five, Finley Buttes, is accessible by barge. Two additional landfills, Eagle Mountain and Mesquite, are expected to open around 2010 and will be accessible by rail and truck.

Table 5-1. Western U.S. Landfills

Landfill Name / Location	Barge Access	Road Access	Rail Access
Columbia Ridge Landfill Gilliam County, Ore.	No	I-84	UP*
Roosevelt Regional Landfill Klickitat County, Wash.	No	WA SR 14	BNSF*
Finley Buttes Reg'l Landfill Morrow County, Ore.	Yes	I-84	UP
Simco Road Regional Landfill Elmore County, Idaho	No	I-84	UP
Herzog Environmental Inc. Mora County, N.M.	No	I-25	BNSF UP
Eagle Mountain Landfill Riverside County, Calif.	No	I-10	UP
Mesquite Regional Landfill Imperial County, Calif.	No	CA SR 78	UP

Source: HDR

* UP: Union Pacific Railroad; BNSF: Burlington Northern & Santa Fe Railway

Each mode of transport has distinguishing characteristics that help determine the most feasible and cost-effective transport option for exporting King County waste. Table 5-2 illustrates the relative costs and merits of barge, truck, and rail transport options.

Table 5-2. Comparison of Transport Options

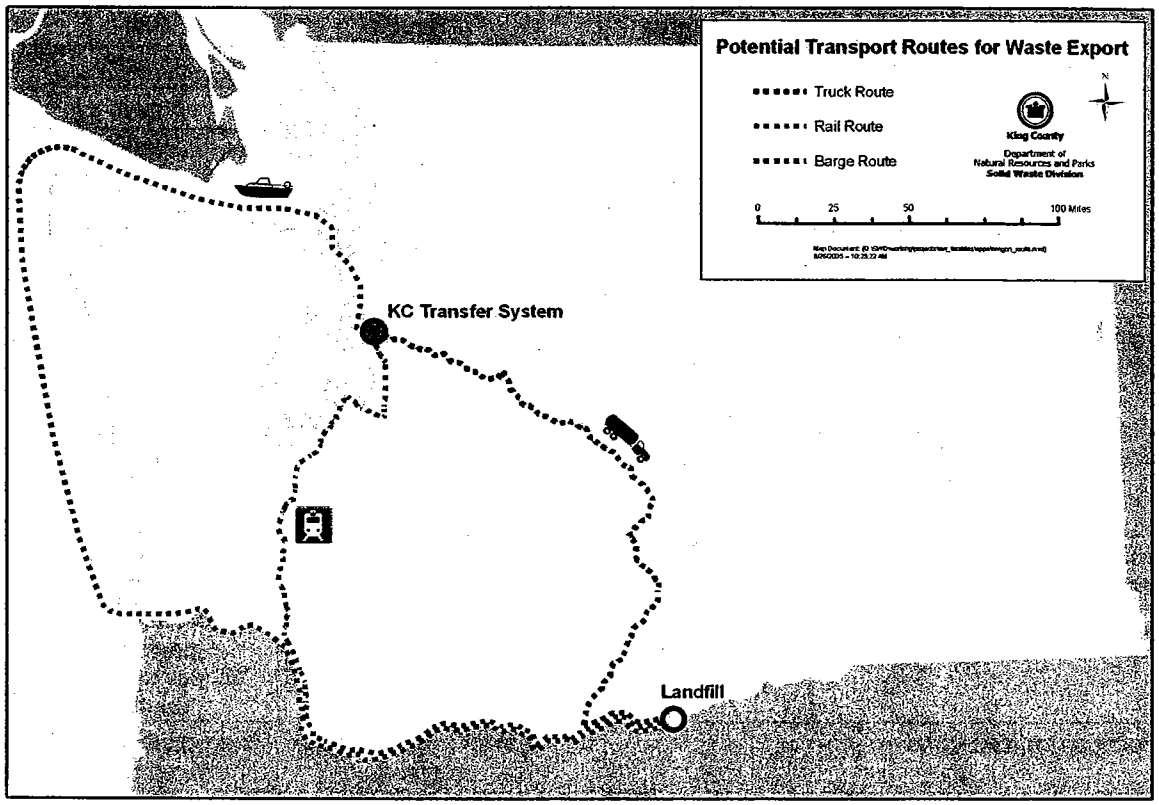
	Barge	Truck	Rail
Travel distance (one-way)	800 miles	260 miles	350 miles
Travel time (round-trip)	11 days	2 days	3 days
Minimum containers needed (not incl. spares or emergency backup capacity)	1,760	320	480
Number and frequency of transports	2 to 3 barges per day	160 trucks per day	4 trains per week
Minimum other equipment (not incl. spares)	30 custom barges plus short haul trucks at destination	320 trucks	3 to 5 locomotives per train Rail cars (120 wells per train)
Facility needs	Intermodal facility w/dock	NA (would leave from transfer stations)	Intermodal facility
Factors affecting system reliability and dependability	Lock closures, storm delays	Weather, road conditions	Rail service interruptions
Impact on competition	Limited to one landfill More than one maritime provider	Multiple transport providers	Limited to 2 rail providers Access to multiple landfills
Impact on infrastructure		Traffic and roadway congestion	Negligible increase in overall rail traffic
Relative capital costs	High	Medium	Medium
Relative operating costs	Medium	High	Low

Source: HDR, R.W. Beck

For feasibility and cost comparison purposes, the following assumptions were made:

- MMSW would be long-hauled to a hypothetical location at least 260 miles one-way by road from Seattle (see Figure 5-1).
- The average annual amount of exported waste is expected to be 1.3 million tons, or 25,000 tons per week.
- Compacted loads will average 27 tons per container.
- Containers will be filled 362 days a year.

Figure 5-1. Potential Transportation Routes for Waste Export



Note: The three closest landfills to King County (Columbia Ridge, Roosevelt and Finley Buttes) are within 30 miles of each other on the Columbia River. This location is being used for the analysis of transport options but does not imply that it is where King County's waste will be disposed.

Barge Transport

Travel Distance and Time

The travel distance for barge transport is more than twice the distance of truck or rail. Vessels must travel through Puget Sound, around the Olympic Peninsula, and up the Columbia River through three sets of locks before reaching the landfill. The round-trip travel time for barge transport would be 11 days; nearly four times that of train transport and almost six times that of truck transport.

Containers and Equipment

Barging would require a minimum of 1,760 containers for regular operations. This quantity of containers would fill two to three barges daily with transport six days per week. Considering the 11-day trip time, about 30 barges would be required for system operations. In addition, trucks would be required to short-haul containers between local collection facilities and intermodal facility(ies) as well as between a destination intermodal facility and final disposal site.

Facility(ies) and Infrastructure

Barging requires intermodal facilities with dock access to navigable waterways at both ends of the water route at which containers can be loaded onto and off of barges. Sealed containers of waste are lifted off the transfer trailer chassis and placed onto barges at an intermodal facility and then transported to a second intermodal facility near the landfill. There the containers are transferred to trucks, hauled to the landfill, and emptied. The process is reversed to return the containers.

System Reliability

Columbia River locks close for about two weeks annually for maintenance. This would substantially exceed the three days of storage capacity proposed for King County transfer stations and intermodal facilities. This closure would require truck transport from the first dam on the Columbia River near Portland to the landfill for this period of time each year. In addition, during winter months, storm delays of one to three days can occur on the Washington coast and at the mouth of the Columbia River. Such events would also affect storage capacity and require additional containers and/or barges to manage the transport delay.

Other Considerations

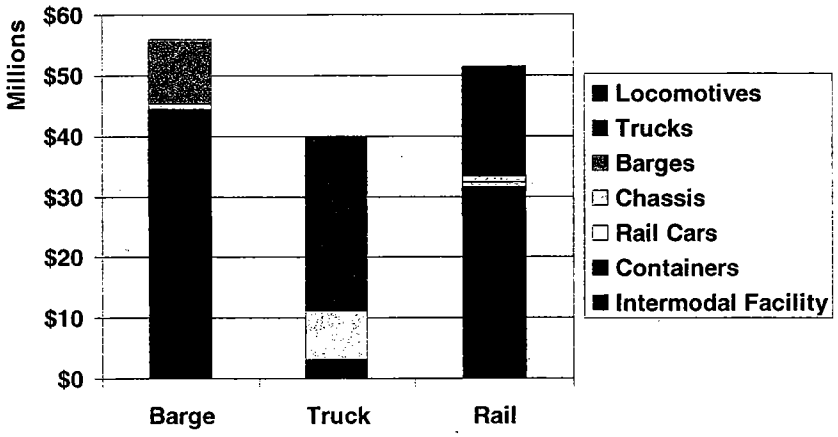
Only one landfill currently has waterway-to-intermodal facility access. This is a significant competitive limitation on barging as a transport method.

Oceangoing barges do not meet size limits for vessels passing through Columbia River locks. Waste would either have to be reloaded onto smaller river barges before passing through the locks, or custom oceangoing barges would have to be built that meet lock specifications. Custom barges would likely be more cost-effective than reloading but would require long-term contracts (10 to 20 years) to recover capital costs.

Capital Costs

Barge transport would require the greatest capital investment of the three options. It would require an intermodal facility(ies); four or six times the number of containers compared with rail or truck transport, respectively; and the construction of a fleet of barges specially designed and constructed for ocean and river use. Figure 5-2 details the capital investment required for each of the three modes of long-haul transport.

Figure 5-2. Transport Capital Cost Comparisons



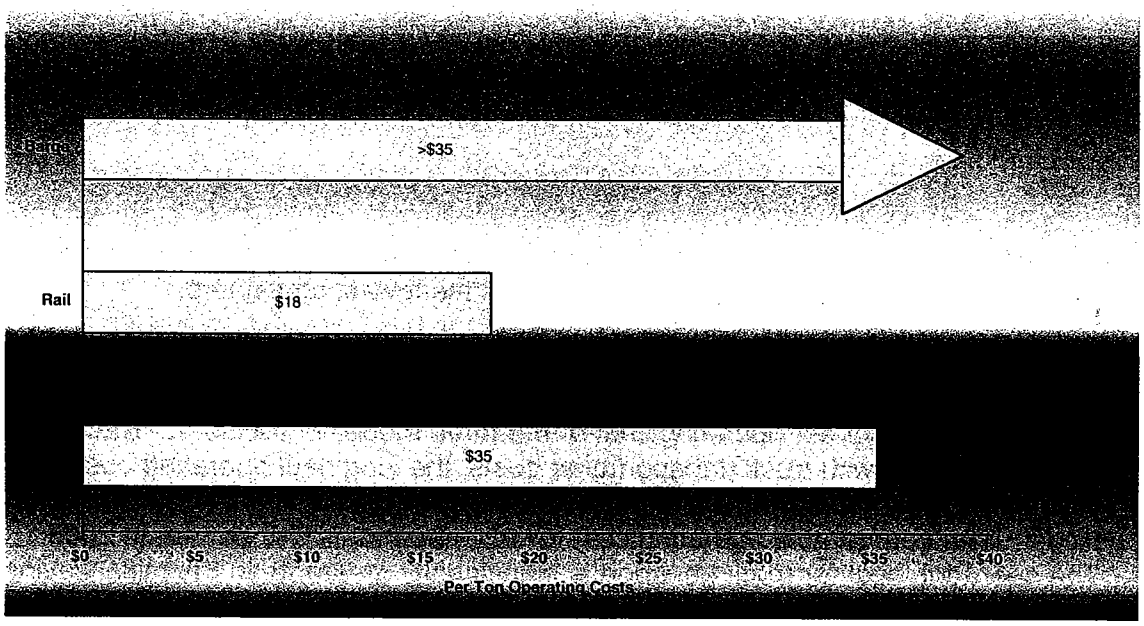
Operating Costs

It is unlikely that barging could be cost-competitive. Based on a rail haul cost model developed for King County by a consultant[3], transport operating costs must be between $10 and $13 per ton, not including capital, intermodal, or short-haul operating costs, to be competitive with rail. Specific cost data are not available, but discussions with barge companies have indicated that their costs are significantly higher than this. Figure 5-3 illustrates the operating costs for each mode of long-haul transport.

The round-trip time of 11 days directly affects operating costs and because of the number of waste containers required, capital costs are significantly impacted as well. Travel time appears to be a fatal flaw in a barge transport system.

[3] HDR

Figure 5-3. Transport Operating Cost Comparisons



Truck Transport

Travel Distance and Time

The travel distance and time for truck transport is shorter than either barge or rail transport. A truck driver could make the 520-mile round trip in two days.

Containers and Equipment

Truck transport of waste would require a minimum of 320 containers for regular operations. This quantity of containers would require 160 trucks daily with transport six days per week. With a round-trip travel time of two days, 320 trucks would be required for system operations.

Facility(ies) and Infrastructure

Transport via truck eliminates the need for intermodal capacity because containers are loaded directly onto truck trailers at a transfer station and then long-hauled to a disposal site.

System Reliability

Dependence on roadways introduces some level of risk to system reliability. Prolonged mountain pass closures and road closures due to weather conditions or natural disasters are possible. In emergencies, on-call contracts with barge or rail companies would be needed for transport services. On-call contracts typically are more expensive on a per-unit basis than long-term contracts.

Other Considerations

The county could contract with the private sector or use the county work force to operate the trucking fleet needed for this transport option. Regional traffic impacts could be significant.

Capital Costs

On a capital cost basis, truck transport would be the least expensive of the three modes of transport because it requires no intermodal facility and the fewest containers.

Operating Costs

Truck transport has the highest operating cost of the three modes of transport. Based on the division's experience with truck transportation costs, the long haul operating costs of trucking waste would be approximately $35 per ton, labor being the largest component of additional cost. The comparable operating cost for rail transport is $10 per ton in 2005 dollars. The operating cost for truck transport is significantly greater than the initial savings in capital costs compared to rail. Operating costs appear to be a fatal flaw for truck transport.

Rail Transport

Travel Distance and Time

The travel distance for rail transport is a little longer than for truck transport but less than half the distance of barge transport. The round-trip travel time for a train would be three days, one day slower than truck transport, but nearly four times faster than the travel time for barges.

Containers and Equipment

Rail transport would require a minimum of 480 containers for regular operations. This quantity of containers would fill one train four days per week. The containers would be double-stacked on the railroad cars. With a three-day round trip, and with three to five locomotives per train, the system would require up to 15 locomotives.

Facility(ies) and Infrastructure

Rail transport requires intermodal facilities with access to rail lines. Sealed containers of waste are lifted off transfer trailer chassis and placed on railroad cars at intermodal facility(ies) and then transported to a second intermodal facility near the landfill. There the containers are transferred to trucks, hauled to the landfill, and emptied. The process is reversed to return the containers.

Chapter Six describes the need for additional local intermodal infrastructure to provide consistent, long-term intermodal handling capacity to move the county's waste. Rail-hauling

the county's waste once it leaves the intermodal facility(ies) would not significantly increase current regional rail traffic. The additional trains that would be needed represent a trivial increase in the current volume of daily rail traffic. Studies indicate adequate main-line capacity will be available to export the region's waste when waste export is initiated in the next decade and for the 20-year planning horizon.

System Reliability

Rail transport is the most reliable and dependable of the three modes. Trains are less likely to suffer en route breakdowns than trucks and rail transport is less susceptible to weather delays than trucks or barges. However, service disruptions anywhere in the country can impact local operations.

Capital Costs

Capital costs for rail transport would be more than truck transport primarily because of the need for intermodal facility(ies) and because 50 percent more containers are required. Rail capital costs would be significantly less than the capital costs for barge transport.

Operating Costs

Rail transport has the lowest long-haul operating cost of the three modes at approximately $10.00 per ton based on a consultant's rail haul cost model. This cost is lowest because a single train can do the work of more than 100 long-haul trucks on a daily basis. This cost does not include capital costs or intermodal and short-haul operating costs.

Based on their export contract, Snohomish County's waste transport costs are currently around $28 per ton.[4] This rate includes all costs of transporting containers between the rail receiving facility and the disposal site and includes all container storage, loading, and unloading costs. A comparable rate for Seattle is not available because their transport costs cannot be separately identified within their total cost for transport and disposal. Absent a formal procurement process to establish a long-haul contract, King County's costs are estimates based on models developed from recent experience in contract agreements between railroad firms and waste management firms. Long-haul rail transport of the county's solid waste appears to be the best option.

Summary

Given that the timeline for waste export is expected to be at least a decade away, detailed cost analyses were not performed at this stage of planning. Absent a formal procurement process, it is difficult to acquire accurate cost estimates. Preliminary research provided some estimates for barge and rail costs and Solid Waste Division operating information was used in analyzing trucking costs. The experience of neighboring jurisdictions has been used in reviewing the feasibility of the three modes of transport and their relative costs.

[4] 2005 Snohomish County export contract.

Of the 16 counties in western Washington that export waste, all but two do so by rail. Wahkiakum County trucks its waste a relatively short distance to the Cowlitz County Landfill. Clark County barges its refuse approximately 180 miles up the Columbia River to the Finley Buttes Landfill. Portland trucks most of its waste 153 miles to the Columbia Ridge Landfill. Both the City of Seattle and Snohomish County use trains to export waste rather than trucks.

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CHAPTER 6. INTERMODAL FACILITY(IES)

Chapter Synopsis

This report does not make a recommendation on how intermodal services will be provided. Because full export of King County's waste is at least 9 years away, it is premature to decide if the county is going to develop or contract for intermodal facility(ies), and where it would be located. The Harbor Island property will be retained as a potential option for future intermodal capacity. Until that time, the division will continue leasing parts of the property to private businesses. If a decision is made to contract with the private sector for intermodal services, the Harbor Island property will be sold.

An intermodal facility is a location where cargo, in this case solid waste, is transferred from one mode of transportation to another. Sealed waste containers are trucked to intermodal facility(ies) and lifted onto railcars or barges. The containers are transported to a landfill, emptied, and then hauled back to the intermodal site. The county plans to use intermodal facility(ies) as part of a waste export and disposal system after the Cedar Hills Regional Landfill reaches permitted capacity and closes.

This chapter gives some background on other Washington State solid waste utilities' experiences with intermodal facilities and waste export. It then describes alternatives for obtaining intermodal capacity for King County waste.

Background – Regional Experience

With its transition to waste export, King County will add intermodal facility(ies) as part of its mixed municipal solid waste handling system. Discussions were held with several neighboring jurisdictions. The main findings from these discussions are as follows[5]:

- Many found an advantage in making the private disposal contractor responsible for owning and maintaining the containers. The contractor then assumes the risk of ensuring the provision of the right number of containers in the right place at the right time.
- Many found it preferable to have the contractor negotiate with the railroads and deal with day-to-day issues with the railroads such as delay in the return of trains and containers.
- Container shortages are a common problem. The contract terms should cover this risk.
- The private hauler should have a backup if the main transport system fails.
- With a long-term contract, it is recommended that the contract be split into a number of shorter, successive terms, or that the contract has "reopeners" that give a clear process to renegotiate aspects of the contract when needed.
- It is helpful to have a local backup landfill for emergencies. It would be a good planning effort for western Washington utilities to come up with a coordinated backup landfill option.

[5] R W Beck, Technical Memorandum, October 18, 2005.

Intermodal Facility(ies) Considerations

General

A truck-to-train intermodal facility is more than just a transfer site along a stretch of rail line. It is a large, complex facility with unique requirements and constraints. The following minimum requirements[6] are necessary for efficient intermodal transfer of solid waste:

- Size of the site – at least 10 acres,
- Site configuration – able to support the facilities and space needed for intra-site truck and train traffic including long lengths of track,
- Land use zoning – Industrial,
- Separation from residential areas – prefer sites that are not near to, or do not impact, residential areas,
- Proximity to railroads – within 200 feet, and
- Good access to the regional road system.

The ideal situation for intermodal operations would be:

- Accessible to both railroads operating in the western United States – Burlington Northern and Santa Fe Railway (BNSF) and Union Pacific Railroad (UP)
- Strategically located in relation to the county's network of transfer stations to minimize short-haul truck transport costs
- Sufficient size to handle the county's projected waste stream
- Located in an industrial area with compatible uses
- Accessible to roads that can handle truck traffic

However, it is recognized that siting intermodal facility(ies) to meet all of these criteria may not be possible.

Reliable waste export depends on consistent, long-term intermodal handling capacity to move the county's waste. A 2003 study found there to be insufficient intermodal facility capacity to reliably handle the region's waste in the future[7]. Since that study was completed, Waste Connections purchased Northwest Containers in South Seattle, adding to the intermodal capacity available for solid waste. In addition, the City of Seattle has plans to build an intermodal facility, which may include extra capacity for "partner waste." The amount of intermodal capacity available at the time of export will be determined as part of the design or procurement process.

Existing Intermodal Facilities

There are two types of facilities where containers are moved between trucks and trains – intermodal facilities and spot facilities.

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[6] RCW 70.95.165; SWANA Certification Course Manual; 1992 Solid Waste Plan
[7] HDR. "Business Case for a County Owned Intermodal Facility," 2003.

Intermodal Facilities

Intermodal facilities are yards capable of handling the arrival and departure of whole trains, the loading and unloading of cargo from the trains, and the storing of full and empty cargo containers. Currently there are four intermodal facilities in the county that handle commercial cargo, and only one of these facilities, Argo Yard, currently handles solid waste. Three of these existing intermodal facilities were developed and are owned by the two railroads that serve the western United States. The UP intermodal facility is at the Argo Yard in South Seattle, and the BNSF has two intermodal facilities – one at its Seattle International Gateway in Seattle's SODO District and the other at the South Seattle Domestic Intermodal HUB near Tukwila. The fourth intermodal facility is on Edmunds Street in Seattle, which is owned by Northwest Container (Waste Connections). This facility currently sends most of its freight to Portland.

Spot Facilities

Spot facilities are areas where groups of rail cars can be set or "spotted" for loading and unloading by switch engines. Spot facilities normally do not have the rail space for the arrival and departure of whole trains on one track and are dependent upon other rail yards or support track for the make-up or break-up of trains.[8]

There are two spot facilities in the region where waste containers are loaded from trucks to train cars. They are located on tracks adjacent to Allied Waste Industries, Inc.'s (Allied's) Third and Lander transfer station, in Seattle's SODO District, and on tracks adjacent to Allied's Black River Quarry in Renton, which handles construction, demolition and landclearing debris. Both sites are accessible only by BNSF tracks, and both are dependent on BNSF's Interbay Rail Yard near the Magnolia neighborhood in Seattle for assembly and disassembly of trains.

Regional Intermodal Needs

Approximately 850,000 tons of waste are exported annually from King County, consisting of the City of Seattle's municipal waste stream and Seattle and King County's construction, demolition and landclearing debris. When King County begins exporting its solid waste, approximately 2.3 million tons of waste will be exported from the county each year, an increase of 170% over current levels.

The region's existing intermodal facilities are built out to capacity with no space to physically expand. Expansion of existing intermodal capacity can only be achieved through additional work shifts and tighter rail schedules. Any expansion of intermodal capacity for solid waste handling at these facilities, however, would be problematic because it would significantly impact commercial cargo handling capacity for the railroads and the Port of Seattle. International intermodal traffic is projected to grow over the next 20 years, and increases in capacity for handling cargo will likely make it even more difficult and expensive to add capacity to handle solid waste. Guaranteed, dependable intermodal capacity is essential for waste export by rail to be a viable disposal alternative.

[8] Ibid.

Given this situation, it may be difficult for a potential hauler-competitor to secure space at existing intermodal facilities and make agreements with the railroad companies to haul the county's waste. If the county relied entirely on one of the existing intermodal facilities, that reliance could limit the choice of landfills to those served by that railroad company. Similarly, if a private-sector firm developed intermodal facility(ies), it might site on the rail line that served its own landfill. Truly competitive choices depend on adequate intermodal capacity that is accessible to both rail lines and all potential solid waste export companies.

The City of Seattle has concluded that local existing intermodal capability is insufficient and has decided to develop its own full-scale intermodal facility. Seattle Public Utilities has undertaken work to find an appropriate site, and expects to make a final decision early in 2006. As of October 2005, Seattle is evaluating four alternatives for their new intermodal facility:[9]

- Harbor Island – Terminal 10, site A.
- Harbor Island – Terminal 10, site B.
- Edmunds Street in South Seattle, about one mile south of the interchange connecting I-5 with Spokane Street. This site is at the south end of the Northwest Container property.
- Corgiat Drive, northeast of Boeing Field, about 1,500 feet from the runway.

County's Intermodal Facility Needs

The county's responsibility is to ensure that waste disposal is provided at the lowest cost, reliably, and consistent with goals for environmental protection and waste reduction and recycling. Any approach to intermodal facility(ies), as part of the waste export system, must address two key concerns:

- Ensure long-term competition in the marketplace for solid waste transport and disposal services, and
- Ensure sufficient long-term intermodal handling capacity for the county's solid waste.

While mainline railroad capacity in the Puget Sound region is currently available, new intermodal capacity must be developed in order to ensure a reliable and consistent export system for the county's waste in the long-term.

Promotion of Competitive Choices

Having a choice of alternatives for developing new intermodal capacity should enhance long-term competition for solid waste services among private-sector providers when the county moves to waste export.

At present, there are three major providers of waste export disposal services in the region – Allied Waste Industries, Inc., which exports to Roosevelt Landfill in Klickitat County; Waste Management, Inc., which exports to Columbia Ridge Landfill in Arlington, Oregon; and Waste Connections, which owns and operates the Finley Buttes Landfill in Oregon. These

[9] City of Seattle, Solid Waste Intermodal Transfer Facility Final Supplemental Environmental Impact Statement, August 5, 2005.

three companies have secured local intermodal and spot capacity to transport waste to their landfills.

Other disposal companies would need to obtain local intermodal capacity to compete for King County's solid waste. Developing new intermodal facility(ies) dedicated to handling the county's waste, and situated to be served by both major rail lines, would allow for access to a variety of disposal sites.

There are currently at least five companies with existing and planned landfills potentially able to receive the county's waste (see Table 5-1).

Intermodal Facility(ies) Alternatives

There are three basic ownership and operating options for the intermodal facility(ies) that could serve the county's solid waste export needs:

- Public ownership and operation
- Public ownership and private (contracted) operation
- Private ownership and operation (contracted services)

The benefits and drawbacks of each of these alternatives are described below.

Public Ownership and Operation

Benefits:

- Publicly owned and operated intermodal facility(ies) would provide the county with maximum flexibility to coordinate all elements of the county's solid waste system.
- The county would have guaranteed intermodal capacity under its exclusive control.
- The county would be in a better position to change its disposal arrangement if it is not tied to a long-term contract for intermodal facility(ies) operation.
- Future competition in the region could be encouraged by maintaining independence from a single, vertically integrated company handling all aspects of waste export and disposal.

Drawbacks:

- The county does not have any experience operating truck-to-rail intermodal facility(ies).
- The county would have the responsibility for siting intermodal facility(ies).
- The county would be responsible for the capital cost of facility(ies).
- The county would be responsible for the maintenance cost of facility(ies).
- The county would have to interface directly with the serving railroads in order to negotiate long-term service contracts and to deal with day-to-day issues such as delay in return of trains and containers.
- The county would have to arrange for backup service through other contracts if the primary train-haul system is disrupted.
- The county's union work rules would likely restrict the county's flexibility to work around unexpected fluctuations in workload at facility(ies) compared to a private operator. For example, a private contractor might be more able to shift its labor

force and/or use contract labor to cope with changing work demands at the facility(ies).
- Public sector labor restrictions in Washington State could be an obstacle to privatizing the system in the future.

Public Ownership with Private Operation

Benefits:

- The county would have considerable flexibility to coordinate all elements of the solid waste system.
- The county would have guaranteed intermodal capacity under its exclusive control.
- The county would have the benefit of competitively bid operating services and could expect this to keep costs down.
- The county could contract with an entity experienced in operating intermodal facility(ies).
- The county would benefit from contractor's experiences with negotiations with the railroads.
- If operation of intermodal facility(ies) is bundled with long-haul responsibility, the county could require the operating contractor to provide backup transportation and reserve containers in the event of a rail system disruption.

Drawbacks:

- The county would have the responsibility for siting intermodal facility(ies) unless it procured the facility under a design-build-operate (DBO) alternative delivery method that tasked the DBO contractor with siting responsibility.
- The county would have the responsibility for the capital costs of facility(ies) unless it procured the facility(ies) under a design-build-own-operate-transfer (DBOOT) alternative delivery method that made the DBOOT contractor responsible for the capital cost. Under a DBOOT approach those costs would, however, be reflected in the cost of service.

- The county would be more likely to be tied to a single, vertically integrated company handling all aspects of waste export and disposal, which could work against the county's long-term interests by discouraging future competition in the region.

Private Ownership and Operation

Benefits:

- The county would avoid upfront capital costs of developing intermodal facility(ies). Those costs would, however, be reflected in the cost of service to rate payers.
- The county would not be responsible for the siting of intermodal facility(ies).
- The county could expect the cost-competitive bundling of services between the intermodal facility(ies) operation and long-haul and disposal to drive down costs to the lowest possible level.
- If operation of the intermodal facility(ies) is bundled with long-haul responsibility, the county could require the operating contractor to provide backup transportation and reserve containers in the event of a rail system disruption.
- The county would not have the responsibility for facility(ies) maintenance.

- The county would avoid having to interface directly with the serving railroad.

Drawbacks:

- The county would lack the guaranteed intermodal capacity under its exclusive control and could find itself without such service or access to the rail system in the future.
- The county would have much less flexibility to coordinate all elements of the solid waste system and would need to rely on contract terms to ensure that its interests and waste export needs are addressed.
- The county would very likely enable a single, vertically integrated company to handle all aspects of waste export and disposal, which could work against the county's long-term interests by discouraging future competition in the region.

Summary

In summary, there is limited intermodal truck-to-rail capacity in the region and the prospects are for greater competition for this limited resource in the years ahead. The county will be adding significant waste tonnage to the intermodal and rail capacity as it transitions to waste export. Developing intermodal facility(ies) dedicated to the county's solid waste export needs would be a prudent and effective approach to meeting the region's long-term waste disposal needs.

Each of the three basic alternatives for ownership and operation of the intermodal facility(ies) has a unique set of benefits and drawbacks. Careful and timely consideration of these alternatives by decision makers will be needed as part of the waste export system plan.

Chapter 7. SENSITIVITY ANALYSIS

Synopsis

At the request of the MSWMAC, the division agreed to analyze partial early waste export, total early waste export and withdrawal of some waste from the system. That analysis is presented in this chapter.

Introduction

Chapter Four described landfill capacity and the benefits of extending the useful life of Cedar Hills Regional Landfill. ITSG and MSWMAC identified early waste export as another potential option for extending the useful life of Cedar Hills. The division agreed to conduct a sensitivity analysis of three scenarios that would reduce the tonnage disposed at the landfill. The three scenarios presented in this chapter are:

1. Full early export: Cedar Hills is closed before reaching capacity and 100% of the county's solid waste is exported beginning in 2010.
2. Partial early export: Cedar Hills remains open and 20% of the county's solid waste is exported starting in 2010.
3. Partial withdrawal: 20% of the county's solid waste becomes part of another solid waste system in 2010.

The division has analyzed the possibility of early waste export annually since publishing the 1989, CSWMP. Each time early export has appeared to be more expensive than filling Cedar Hills completely before beginning waste export. As a result of recent changes, such as the cost increase from rent on the Cedar Hills Regional Landfill, partial early waste export is an option warranting further analysis.
ITSG and MSWMAC also discussed the potential effect on the solid waste system if a portion of waste was withdrawn from the system entirely. The advisory committees wanted to know what the impacts would be if some part of King County's federated system of 37 cities were to join a different solid waste system or form a separate system. The division performed a sensitivity analysis to identify the impacts of reducing the tonnage that is processed through the King County solid waste system. The analysis can only look at a general reduction in tonnage because no city has stated an interest in leaving the King County solid waste system. It also considers only the impact of such a reduction on the King County system; such tonnage leaving would have to bear the cost of a new system.

Exporting means that waste enters the King County transfer system but is then rerouted somewhere outside of King County for disposal. Withdrawal means that tonnage never enters the King County transfer, transport or disposal system, generating no revenue for the King County solid waste system.

The division performed sensitivity analyses to identify the outcomes of the three scenarios.

These options were compared to the current landfill development plan, which would continue to use Cedar Hills until it is full before shifting to waste export (currently forecast to take place at the end of 2015). The year 2010 was selected for analysis in all three

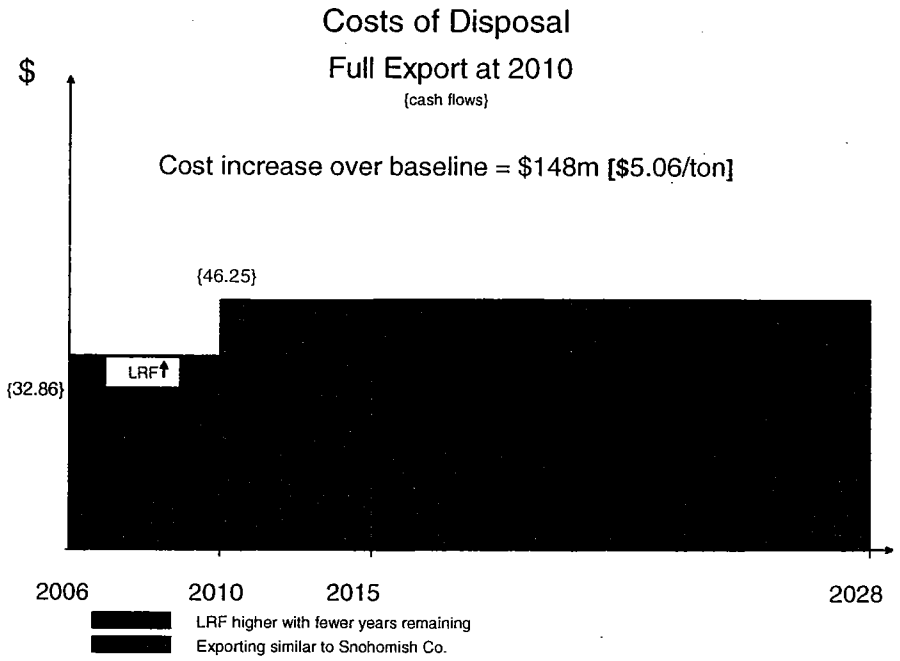
scenarios as the earliest feasible start date for any major system change. Twenty percent was the percentage used for sensitivity evaluation. The same percentage is used in both scenarios (b) and (c). By using the same percentage to evaluate both options, it is possible to identify the differences between the impacts of each scenario. Snohomish County's combined export costs (transport and disposal) of $46.25 were used. These costs are similar to the City of Seattle's.

Full Early Export

This scenario would accelerate the closure of Cedar Hills Regional Landfill so that all of King County's waste would be diverted from the landfill and exported to an out-of-county disposal facility. In this analysis it was assumed that this could begin in 2010 because this is the earliest the county could move ahead with this option. For the purpose of analysis, it is assumed that transfer station and short-haul costs would not change. However, the average total cost per ton would rise, primarily to cover the new cost of long-haul transport.

Full early export would require a substantially increased contribution to the legally required Landfill Reserve Fund (LRF) for closure and post-closure maintenance costs. Contributions would increase because there would be fewer years available to make the fund payments, which must provide for maintenance of Cedar Hills for 30 years after closure. Figure 7-1 illustrates these effects.

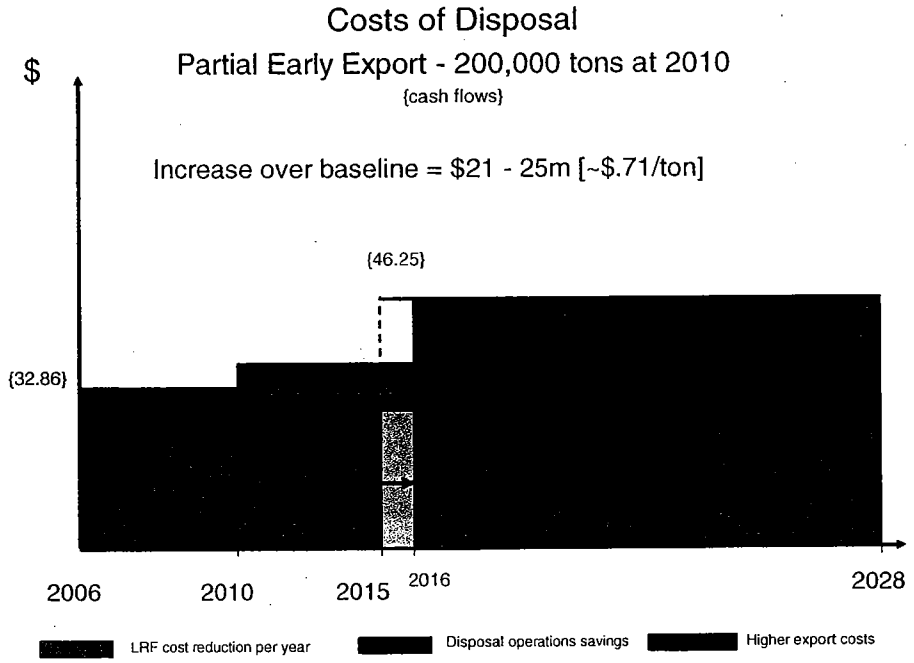
Figure 7-1. Full Early Export Costs



Partial Early Export

In this case, 200,000 tons of waste (20% of the current waste stream) would be exported beginning in 2010. This scenario is more complicated than complete early export because export will be taking place while Cedar Hills is still in operation. Figure 7-2 displays each of the costs and savings associated with this scenario. The costs for the 20% of the waste stream exported would be higher than the costs of disposal at Cedar Hills. However, partial early export would extend the life of the landfill by about one year, which has two important impacts. First, this would lower the per ton contribution to the Landfill Reserve Fund beginning in 2006. Second, and more importantly, delaying export of the remaining 80% of the waste stream for even one year means that 80% of the waste stream continues to cost the lower Cedar Hills' disposal amount for one more year. Keeping Cedar Hills open longer may also provide negotiating leverage at the time of initial waste export. Partial early export costs include an additional year of disposal at Cedar Hills. The end result is somewhat more expensive than the current development plan.

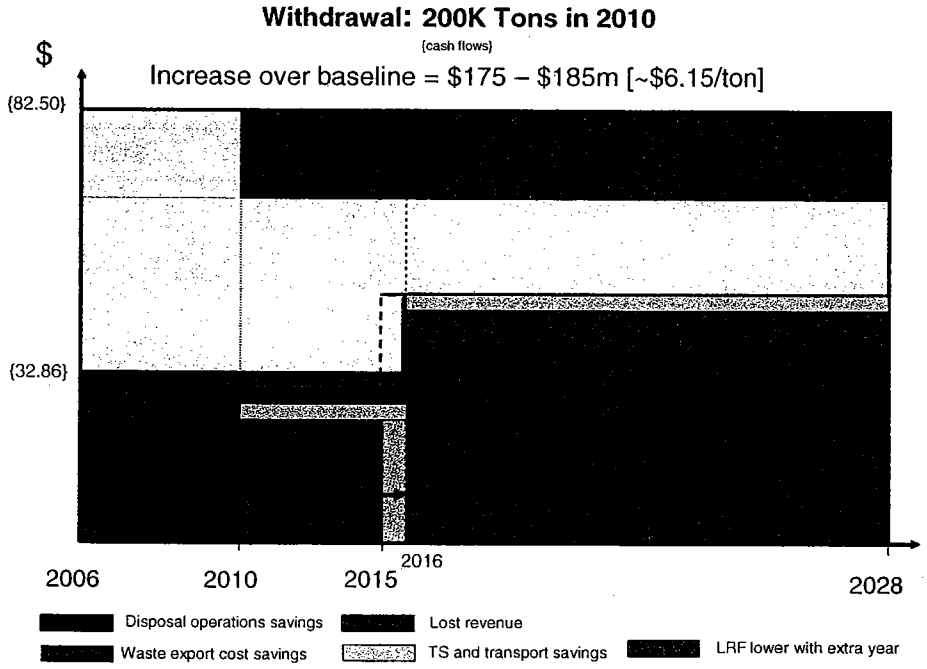
Figure 7-2. Partial Early Export Costs



Partial Withdrawal

This scenario involves the same amount of tonnage as partial early export. In this scenario 20% of the waste stream would no longer be processed through the transfer stations, require short-haul to Cedar Hills or disposal at Cedar Hills. These changes result in operating cost savings. In addition, after 2016 these tons would also not require costly waste export. However, unlike the tonnage in the early export scenarios, withdrawn tonnage does not generate revenue for the system. Compared to operational savings, lost revenue is substantial, as shown in Figure 7-3. The scenario results in a substantial net loss compared to the baseline scenario. King County would require that departing jurisdiction(s) make the system whole; the remaining ratepayers would not have to absorb the added costs.

Figure 7-3. Cost of Partial Withdrawal



Summary

Figure 7-4 provides a summary of costs for the three scenarios. The full early export option is quite expensive compared to the current development plan scenario because the higher costs of long-haul transport would be added to the system at least five years early. Withdrawing 20% of the waste stream from the system is far more costly because revenue losses outweigh operational cost savings.

However, the cost of partial early export merits further investigation to determine whether some variation of this option may result in cost savings.

Figure 7-4. Scenario Cost Summary

Overall of Net Impacts Increased costs compared to baseline	
	Cash Flow
Full Export at 2010	$148 million
Partial Export at 2010	$20 – 25 million
Partial Withdrawal at 2010	$175 – 185 million

CHAPTER 8. NEXT STEPS

The next step in the waste export planning process is to complete the Waste Export System Plan, scheduled to be transmitted to the King County Council by April 30, 2006. Building upon the four milestone reports, this document will make final recommendations for a solid waste handling system, including transfer system and waste export system options and system ownership. As in the four milestone reports, the Solid Waste Division, SWAC, ITSG, MSWMAC, haulers, and labor will collaborate on developing this final plan. The Waste Export System Plan will provide the division and the region with a set of recommendations for providing solid waste ratepayers with effective and efficient solid waste handling infrastructure and operations.

Before final approval by the council, the Waste Export System Plan will undergo an independent third-party evaluation. The council will arrange for an expert independent review panel to review system plans and recommendations to inform the county's decision-making on waste export. The council, after consultation with the Solid Waste Interlocal Forum or its successor, will define the scope of the evaluation to be conducted and will guide the selection of independent review panel members. The Solid Waste Division welcomes this review.

The Waste Export System Plan will also inform the transfer and disposal sections of the update to the 2001 Comprehensive Solid Waste Management Plan. This update takes place from late 2005 through 2007 and will involve extensive public participation. Waste export planning work will provide critical information for this update, and the plan will detail options for the future of recycling and waste diversion in King County, which are important to minimizing the amount of waste that has to be exported.

The division will also prepare a business plan as part of waste export planning. This plan will address, at a minimum:

- Emergency capacity
- System reliability
- Regional coordination
- Employment in a future system
- Competition
- Preserving levels of service
- Environmental protection
- Potential benefits of a federated system.

Further requirements of Ordinance 14971 direct ITSG to address the following issues:

- Potential modification or replacement of the solid waste interlocal forum, to identify membership, decision-making responsibilities and scope of duties;
- Identification of dispute resolution options;
- Development of a framework for financial policies and host city mitigation, including compensation agreements;

- Evaluation of the impact of the proposed waste export system plan on each of the provisions of the solid waste interlocal agreement between King County and cities;
- Identification of potential amendments to the solid waste interlocal agreement.

APPENDIX A

RESPONSIVENESS SUMMARY

APPENDIX A – RESPONSIVENESS SUMMARY

Submitted By:	*Comment:*	*Response:*
General Comments		
Jean Garber, MSWMAC Chair	Heading hierarchies are inconsistent.	Formatting will be completed for the final draft.
Bill Beck, SWAC Member	When do you intend to add your recommendations?	Recommendations will be included in the Waste Export System Plan.
Jean Garber, MSWMAC Chair	The report needs a Summary.	The final report will include an Executive Summary.
Jean Garber, MSWMAC Chair	More references are needed throughout the report to supporting documentation.	References and footnotes will be included.
January 20, 2006, SWAC	Each chapter should begin with a brief summary to orient the reader.	Text revised throughout report. See chapter synopses.
January 20, 2006, SWAC	Add a list of acronyms.	Text revised.
January 20, 2006, SWAC	Update table of contents to reflect new chapter order.	Text revised.
January 20, 2006, SWAC	Footer should include chapter as well as page numbers.	Text revised throughout report.
Executive Summary		
Jean Garber, MSWMAC Chair	p.3, end of first paragraph, add the following before the period: "(see Next Steps on the following page)."	Text revised under Intermodal.
Jean Garber, MSWMAC Chair	Delete "therefore" and add "continuing the rent payments on the landfill and" on Page 4. Extension of the life of the landfill by early waste export has two revenue effects. It doesn't just defer the high cost of waste export, it continues the rent payments on the landfill.	Text revised under Sensitivity Analysis. Rent is one component of the division's operating costs. It does not generate revenue for the division.
City of Redmond	*Revise sentence as follows*: "Total # of Facilities" column in the table includes the five facilities for which a determination had been made in the previous milestone reports that they did not need modification	Text revised to meet intent of suggested language.
City of Redmond	Replace the word "Washington" with the abbreviation 'WA" in the columns so that the name of the transfer station can be on one line (it is confusing as it currently appears).	Text revised.

Submitted By:	***Comment:***	***Response:***
City of Redmond	**Private options** *Delete the last sentence.* The sentence as written does not add value and leads the reader to question the statement being made	Text revised.
City of Redmond	*Intermodal: remove the following language from the beginning of the sentence*: Once Solid Waste is exported	Text revised.
City of Redmond	*Next Steps: Delete the second and third sentences of this paragraph*	Comment noted.
City of Auburn	Page 3 Public Private Options, First paragraph last sentence: By what criteria did you use on whether an intermodal facility or facilities should be privately owned and/or operated will not be include in the Waste Export System Plan? Why is the recommendation for the transfer stations included but not the intermodal facilities?	See next steps. Due to potential changes in the marketplace such as changes in long haul and disposal costs and fluctuating available intermodal capacity, it is prudent to defer the intermodal decision until the county is closer to moving to waste export.
February 10, 2006, MSWMAC	Emphasize the importance of extending the lifespan of Cedar Hills.	Text revised.
February 10, 2006, MSWMAC	Add key points.	Text revised.
February 17, 2006,SWAC	Skykomish and Cedar Falls were not analyzed for LOS standards.	Text revised.
Chapter One: Introduction		
City of Bellevue	While it is arguably the situation that long-haul will occur once CH Landfill reaches capacity and closes, it is still part of the analysis, and it is possible that long-haul will occur before Cedar Hills' closure.	The statement is consistent with current county policy and Report Four Assumptions
City of Bellevue	Not all cities adopted the 2001 Solid Waste Plan- is this relevant?	CSWMP page 2-13 addresses adoption procedures: The plan requires adoption by cities representing ¾ of the total population of the cities that act on the plan during the 120 day adoption period.
February 10, 2006, MSWMAC	Reorganize the beginning of the chapter.	Text revised.

Submitted By:	*Comment:*	*Response:*
Chapter One: Policy Framework, Purpose and Goals		
City of Bellevue	It is unclear which plan this refers to.	Export Plan. Text revised.
City of Bellevue	Second bullet list does not highlight the possibility of needing new facilities and replacing or closing existing facilities.	See bullet three.
January 20, 2006, SWAC	It is not clear which plan is meant on page 3, second paragraph.	Text revised.
January 20, 2006, SWAC	Inform should be form on page 3.	Comment noted.
Chapter One: Baseline Assumptions		
January 20, 2006, SWAC	Move the options on page 4 to follow the assumptions.	Text revised.
Jean Garber, MSWMAC Chair	I suggest breaking out assumptions into a separate one-page table rather than have them in the text. Then there won't be so much text between where the assumptions are first mentioned & where they are listed. I believe there is value in having the assumptions on one page.	Comment noted.
City of Bellevue	ITSG Additional Issues &responsiveness summary should be referenced and included as an attachment.	See Appendix A. At its December 19, 2005 meeting MSWMAC approved inclusion of this appendix.
Jean Garber, MSMWAC Chair	Insert "Discussion of these issues has been incorporated into the appropriate sections of the report," after mention of Additional Issues.	Text revised.
City of Bellevue	Don't understand how private sector is making capital investments in waste reduction (Waste Stream Assumptions, second point).	These assumptions have been finalized by MSWMAC.
City of Bellevue	Waste Stream Assumptions, point 3, I thought we got rid of the last part.	Assumptions appear as approved by MSWMAC.

Submitted By:	*Comment:*	*Response:*
Chapter Two: General Comments		
Jean Garber, MSMWAC Chair	Chapter Two should be reorganized and a section on Compaction added.	Text revised.
Jean Garber, MSMWAC Chair	Refer to the packages consistently in the subjunctive tense.	Text revised.
City of Bellevue	Three of the transfer station packages presented in the Report rebuild and expand the current Factoria transfer station on a new site located on Eastgate Way, adjacent to the existing Factoria site. However, the Report does not evaluate or even discuss the significant issues associated with locating a transfer station on the Eastgate Way site, such as traffic impacts and compatibility with surrounding land uses. That portion of the I-90 corridor is developing as a commercial center, serves as a gateway to Bellevue and appears incompatible with a transfer station.	Comment noted. The division is looking at options to address Bellevue's expressed concerns. The division has proposed options to the city of Bellevue to mitigate traffic and compatibility issues raised by the city.
Chapter Two: Geographic Areas		
January 20, 2006, SWAC	Identify additional benefits of well-sited transfer stations.	Text revised.
Chapter Two: Existing Solid Waste Transfer System		
January 20, 2006, SWAC	Recognize the importance of convenience as well as distance.	Text revised.
February 17, 2006, SWAC	These are goals. Report 2 concluded that the functions are not all met.	Text revised.
City of Federal Way	Title – This section is not about the future system.	Text revised.
Jean Garber, MSWMAC Chair	The heading "Existing Transfer Station Conditions" is unnecessary.	Text revised.
January 20, 2006, SWAC	The last sentence on page 9 should be the first in the paragraph.	Text revised.
City of Tukwila	This section provides a good summary of the impact self-haul has on the transfer system in terms of traffic, safety, support and maintenance and operations. It would be helpful if the report included analysis of true self-haul costs in a typical transfer station.	Comment noted: self-haul and its associated costs will be discussed in the Comp Plan update process.

Submitted By:	***Comment:***	***Response:***
City of Federal Way	Table 2-1 "Ability to Compact Waste" all are marked NO, yet alternative technologies may allow container movement in less space than typical installations. Perhaps this criterion should be retitled?	All of the criteria in Table 2-1 address current conditions.
Cities of Bellevue, Redmond and Federal Way	How does table 2-1 show stations are efficiently distributed or that service hours meet customer needs?	See Table 2-1 Criteria 1 and 3. All stations receive a 'Yes' rating for these criteria.
City of SeaTac	Move item #15 in Table 2-1 to the section on traffic on the previous page.	Table 2-1 appears as adopted in Milestone Report 2.
City of SeaTac	Retain original title "Local and Regional Considerations" for Criterion 17.	New draft reflects conclusions for Criterion 17 only. Subcriteria are presented in the Appendix.
City of SeaTac	Explain why the three "no's" listed for Bow Lake resulted in a "yes" rating overall. If the final conclusion is based on all subcriteria under Criteria 17, then the title of the last row "Conclusion regarding Land Use Compatibility" should be changed. The City of SeaTac agrees that Bow Lake rates compatible with surrounding land use –it does not however rate a "yes" for "Local and Regional Considerations" particularly not for traffic. This also applies to Algona.	New draft reflects conclusions for Criterion 17 only. Criterion 17 appeared as approved by MSWMAC.
February 17, 2006, SWAC	Table 2-1 Criterion 14 footnote is self-serving.	Table 2-1 appears as approved by SWAC, MSWMAC, RPC and King County Council in Report 2.
City of Redmond	Eliminate shading from table 2-1.	Text revised.
Bill Beck, SWAC Member	Why not include the rural facilities? Does Enumclaw interact differently with each package?	These stations meet, or will meet, all the standards established for evaluation of the older transfer stations. Enumclaw does not interact differently with each package.
City of Federal Way	Why not include the rural facilities? Are there savings from shifting rural waste to a transfer station?	Rural facilities and 1st NE were specifically excluded from the analysis. Rural waste goes to transfer stations or drop boxes.

Submitted By:	***Comment:***	***Response:***
Jean Garber, MSMWAC Chair	Suggested change: Division is currently securing additional land that would make needed improvements possible including improved access.	Orillia Road traffic is a regional issue that is not solved by station improvements.
December 16, 2005, SWAC	Criterion 9 needs a footnote.	Text revised.
Jean Garber, MSMWAC Chair	Tables should include Criteria 17-19	Text revised.
January 20, 2006, SWAC	Criterion 17 should be integrated into Table 2-1.	Text revised.
City of Redmond	*Delete first sentence and revise the last sentence to read as follows*: "In addition, structural changes are necessary to improve emergency response and future operational efficiency, as well as to meet desired safety goals are also necessary."	Comment noted.
Chapter Two: Transfer System Customer Base		
Cities of Bellevue and Redmond	Future Transfer Station System – this is all existing information.	Text revised.
Cities of Bellevue and Redmond	What about tonnage changes due to demographic changes?	See Appendix on Tonnage Forecast.
Cities of Bellevue and Redmond	What is the impact of self-haul garbage being uncompacted?	The impacts of long-hauling uncompacted waste are reflected in package costs.
City of Auburn	Provide business self-haul use information.	Text revised.
City of Federal Way	It looks like the Percentage of total (y-axis) is not to scale.	Y values are daily percentages of total weekly trips. Daily values across the entire week add to 100%.
City of Federal Way	Self haul takes twice as long as commercial per ton or transaction?	Text revised.
January 20, 2006, SWAC	The graphs on page 15 should be bar graphs.	Bar graphs were produced and found to be less illustrative of the distribution.
January 20, 2006, SWAC	Text explaining graphs should be on the same page.	Text and graphs will appear on facing pages for ease of comparison.
January 20, 2006, SWAC	Title on page 14 should be "Customer Characteristics."	Text revised.

Submitted By:	*Comment:*	*Response:*
Chapter Two: Waste Compaction		
City of Redmond	*Revise the second paragraph.* The city strongly believes that the Solid Waste division has not drawn the correct conclusion regarding the ability to compact at the current transfer stations.	The division stands by its conclusion regarding the ability to compact at the existing transfer stations.
City of Redmond	The analysis requested by Bellevue to rebuild the Factoria transfer station at the current site (or possibly at the current site with minor expansion onto the Eastgate site) must be conducted before the division reaches a conclusion about the ability to compact at Factoria.	The division is looking at options to address Bellevue's expressed concerns. An EIS developed jointly by King County and Bellevue (issued by the city of Bellevue in 1993) found the Factoria property to have significant unavoidable adverse impacts.
Chapter Two: Transfer Station Improvement Options, Central County		
City of Tukwila	If the purchase or lease of additional property adjacent to the Bow Lake facility fails, what impact would this have on reconstructing Bow Lake?	WashDOT has already agreed to sell property.
City of SeaTac	Suggested addition: Currently there are twice as many trucks traveling from Bow Lake transfer station to Cedar Hills a day compared to any one of the other transfer stations. Over the next 25 years as much as 10–14 million square feet of office and retail space is planned in the immediate area surrounding Bow Lake transfer station. The draft IS for this development indicates capacity restraints on Orillia Rd will be exceeded during some hours of the day, which may impact the amount of tonnage processed at Bow Lake. The access in and out of Bow Lake transfer station is on a 90-degree curve on a busy arterial street (Orillia Rd.) and immediately adjacent to the northbound access ramps to I-5. There is heavy traffic many hours of the day, turning conflicts, and limited sight distance. Traffic studies will be needed to address these significant traffic concerns at that intersection.	The division recognizes intersection level of service will be an issue at the Orillia Rd./S. 192nd Street intersection. This intersection serves regional traffic accessing Interstate 5, SeaTac International Airport, and other regional destinations such as the proposed Tukwila South development. Urban Corridors mega-project(s) planned for this area could also have an effect on the performance of this intersection. As such, addressing the off-site traffic issues will require a regional effort.

Submitted By:	*Comment:*	*Response:*
Chapter Two: Transfer Station Improvement Options		
Jean Garber, MSMWAC Chair	Suggested change: The division purchased the Eastgate site for that purpose after a formal siting process that included evaluation of alternative sites and preparation of an EIS.	Text revised.
Cities of Bellevue and Redmond	Why doesn't the range of possibilities include rebuilding on the Factoria site?	1993 Environmental Impact Statement coauthored by King County and the City of Bellevue eliminated this option.
January 18, 2006, MSWMAC	Add language to the effect that during design, traffic studies will be conducted to analyze access to the facility and propose improvements if necessary at Bow Lake.	See text revision under Analysis of Potential Transfer Station Packages final bullet.
January 18, 2006, MSWMAC	Note should say that Eastgate must be evaluated for all LOS criteria, not just traffic.	See text revision under Analysis of Potential Transfer Station Packages final bullet.
City of SeaTac	Add: Note that traffic studies for the Bow Lake site will be needed to determine whether or not the site meets LOS Criteria 17.	See text revision under Analysis of Potential Transfer Station Packages final bullet.
City of Bellevue	There may be potential for the County to sell the Eastgate Way site and use the proceeds to help fund needed improvements or new facilities in the system, including the possibility of an improved Factoria Transfer Station on its current site.	Comment noted.
City of Bellevue	Each package proposing to rebuild the Factoria Transfer Station on the Eastgate Way site should contain a statement that explicitly recognizes that the Level of Service Criteria (traffic, land use compatibility, aesthetics, etc.) have not been applied to a new transfer station on the Eastgate Way site. Studies will be needed to determine if a transfer station on that site would meet the criteria, and packages including the Eastgate Way option should not contain the statement that the package meets the criteria, since that is unknown at this time.	See text revision under Analysis of Potential Transfer Station Packages.

Submitted By:	***Comment:***	***Response:***
City of Bellevue	Regional equity is also an issue that will have to be addressed. The majority of the growth in the Northeast Lake Washington area is occurring outside of Bellevue, to the north and east. Bellevue should not have to bear any additional burden for future growth in the region. Similar to Brightwater, new facilities should be located where the growth and need for the facilities are occurring.	A new facility in the NE Lake Washington area is being proposed in addition to the Factoria/Eastgate facility.
City of Redmond	*Add the following sentence after the second sentence*: Another potential option is to rebuilt Factoria on the existing site or on the existing site with minor expansion onto Eastgate property.	Text revised.
City of Auburn	Page 17: The first paragraph needs a discussion on impacts when building new sites. A list of impacts needs to be addressed and could include: Littering, Economic, Traffic, Aesthetic, Noise, Environmental, Political, Cultural, Residential. Appendix F addresses siting criteria, but not impacts of the transfer station in the community.	Appendix F: The Transfer Station Siting Process, addresses community specific impacts that a facility may have. See Community-Specific Criteria
Chapter Two: Intermodal Co-location		
December 19, 2005, MSWMAC	Should identify site requirements of co-location, not constraints.	Text revised.
Jean Garber, MSMWAC Chair	Statement about whether co-location eliminates other stations should go above site requirements.	Text revised.
Jean Garber, MSMWAC Chair	Rewrite paragraph following site requirements.	Text revised.
Cities of Bellevue and Redmond	Statements about co-location and transfer station elimination are unclear.	Text revised.
Cities of Bellevue and Redmond	Where is the analysis of the pros and cons of co-location?	Text revised.
City of Federal Way	Is there an analysis of the benefits of co-location?	Text revised.
January 20, 2006, SWAC	Harbor Island should be discussed here.	Text revised.

Submitted By:	***Comment:***	***Response:***
City of Redmond	*Please provide analysis* to indicate the amount/percent of the waste stream this could reasonably accommodate.	Analysis cannot be completed until potential sites are identified.
Chapter Two: Analysis of Potential Transfer Station Packages		
January 20, 2006, SWAC	Add clarifying language to bullet 6 on page 20.	Text revised.
City of Redmond	The bullet states that all options can be financed within the 1999 rate plus inflation. However, the chart on page 41 shows that the rate would need to exceed that level from just past 2016 until 2022. These statements are inconsistent and need to be reconciled in the report.	Text revised in first bullet.
City of Redmond	*Rewrite the second sentence as follows*: Operations will remain the same as previously proposed at the First Northeast facility (soon to be reconstructed) and current operations at the four rural facilities will not change.	Text revised in seventh bullet.
Cities of Bellevue and Redmond	Add construction timelines.	Text revised.
City of Tukwila	Second bullet: if available, recommend the Division include a construction schedule or timeline by location.	See Appendix G.
City of Tukwila	Algona Transfer Station should be added as another facility that Bow Lake self-haulers could use during reconstruction at Bow Lake.	Text revised.
City of Federal Way	If redevelopment of Houghton costs the same as building a new facility, it could be rebuilt with a pit feed system without reducing capacity.	Comment noted.
City of Federal Way	Is there any update on property availability that would lead to closure of Bow Lake and co-location of in the south county?	The division is not evaluating closure of Bow Lake.
December 19, 2005, MSWMAC	Add construction timelines.	See Appendix G.
City of Auburn	Show expected construction timelines.	See Appendix G.

Submitted By:	***Comment:***	***Response:***
Jean Garber, MSMWAC Chair	Add a reference to Appendix D at the end of the section headed "Analysis of Potential Transfer Station Packages".	Text revised.
December 19, 2005, MSWMAC	It is not clear that new facilities are assumed to meet all LOS criteria.	Text revised.
City of Federal Way	It would be useful to have a table summary of the relative pros-cons of the packages.	Table will be added.
City of Federal Way	Could you add a chart that shows how well the various "packages" meet capacity forecasts in the near term and in the future? (Or are they all equivalent in this regard?)	The intent is that all packages will meet capacity requirements.
City of SeaTac	Include pros and cons for each package for ease of comparison.	See new text under "Longer Term Financial Outlook."
City of SeaTac	Include a transfer station location map for each package and note customer type.	Maps cannot reflect facilities that have not been sited.
City of Bellevue	The Report needs to include an evaluation of the potential to rebuild the transfer station on the current site; it is not acceptable to rely on a 12 year old Environmental Impact Statement to conclude rebuilding cannot be accomplished, especially when both the size & scope of the new transfer station as well as the regulatory environment have changed.	See Reports 1 and 2 for current evaluation of the Factoria Transfer Station. All new and remodeled facilities will have an environmental review to identify environmental issues and potential mitigation measures to address them.
City of Auburn	Page 20: In bulleted section, add the list of possible impacts.	Appendix F: The Transfer Station Siting Process, addresses community specific impacts that a facility may have. See Community Specific Criteria.
February 10, 2006, MSWMAC	Explain why complete data is not available for Package 1a.	Text revised.
February 10, 2006, MSWMAC	Explain the rate commitment.	Text revised.

Submitted By:	*Comment:*	*Response:*
Chapter Two: Self-haul Only Facilities		
Jean Garber, MSMWAC Chair	Change "operations" to "facilities". Improve language in this paragraph.	Text revised.
December 19, 2005, MSWMAC	The statement about retrofitting Houghton with a compactor is unclear.	Text revised.
Cities of Bellevue and Redmond	Does this assume no change at the existing sites other than no commercial loads?	Yes.
City of Auburn	Where do you show feasibility of shipping uncompacted waste from self-haul only facilities?	This is embedded in the calculations of cost for self-haul only facilities.
City of Auburn	First paragraph starting "The financial" needs a title "Impact on Ratepayers."	Text revised.
January 18, 2006, MSWMAC	Bring out how the decision whether or not to compact at self-haul stations is being made.	See revised text under Self-Haul Only Facilities.
City of Redmond	*Delete the first sentence.* It is not supported by the table. Few criteria improve with the removal of commercial vehicles. As stated by Solid Waste staff, most of the time the two types of customers, commercial and self-haul, are using the facility at different times. This first sentence, "Many of the deficiencies identified in Table 2-1 "Application of level of Service Criteria to Transfer Station" are directly attributed to conflicts arising from commercial and self-haul customers..." is not true.	Text revised for clarification.
City of Redmond	Table 2-4 seems to indicate that Business self-haul can't use self-haul only facilities. The report does not specify if Business self-haul can use self-haul only facilities. Can Business self-haul use self-haul only facilities? If so, Table 2-4, section 2.b. needs to be revised.	Business self-haul contributes 1-2% of the tonnage in the system. Operating procedures and vehicle type will determine which stations business self-haul customers use.

Submitted By:	***Comment:***	***Response:***
City of Federal Way	Suggested text: The General rule is that uncompacted waste will cost more to export and dispose than compacted waste. However, if a transfer station is converted to a self-haul only facility, it may *not* make economic sense to add the cost of waste compaction for that facility, since a dedicated self-haul facility may handle a very small percentage of the overall waste stream subject to waste export– it would handle a lot of customers, but not a lot of tons. It's also conceivable that this waste could be short-hauled to Cedar Hills at least in the near term and possibly longer if Cedar Hills is operating at an extended lifespan either due to early waste export or expansion of its capacity-while the bulk of the system's compacted wastes is exported via transfer stations that serve private haulers and handle much larger amounts of trash.	Text revised to reflect intent of suggested language in Self-Haul Only Facilities.
Chapter Two: Package One		
City of Bellevue	New package submitted.	Text revised.
City of Federal Way	Would Package 1 also lead to the lowest ongoing disposal cost?	Yes.
Cities of Bellevue and Redmond	This provides a description of the package but no real analysis.	Text revised.
Cities of Bellevue and Redmond	Where is the analysis showing that this package is the only one that meets all LOS criteria?	Appendix H.
Chapter Two: Package Two		
Waste Connections	New package submitted.	Text revised.
Cities of Bellevue and Redmond	This provides a description of the package but no real analysis.	Text revised.
Cities of Bellevue and Redmond	Where is the analysis applying LOS criteria to this package?	Appendix H.

Submitted By:	*Comment:*	*Response:*
Chapter Two: Package Three		
Cities of Bellevue and Redmond	Do not attribute the package to Bellevue.	Text revised.
December 19, 2005, MSWMAC	Do not attribute packages in the text.	Text revised.
Cities of Bellevue and Redmond	This provides a description of the package but no real analysis.	Text revised.
Jean Garber, MSMWAC Chair	Sale of the Eastgate property was included in analysis of Package 3. Was sale of Algona, Renton and Houghton included in analysis for other packages?	Algona, Renton & Houghton properties are owned by the county, not the division. Revenue from their sale would go to the Current Expense (General) Fund.
Jean Garber, MSMWAC Chair	Define "mega" the first time the term is used.	Text revised.
Cities of Bellevue and Redmond	Where is the analysis applying LOS criteria to this package?	Appendix H.
Cities of Bellevue and Redmond	There is no analysis of remodeling would allow compaction at existing sites.	Report 2 concluded there is no room at Algona and Houghton is not compatible with surrounding land use. The 1993 EIS coauthored by King County and the City of Bellevue eliminated this option for Factoria.
Cities of Bellevue, Redmond and Federal Way	Where is the analysis of other possibilities that provide for basically the same outcome as this package presents?	The division is having discussions with Bellevue staff on the Factoria/ Eastgate property.
Chapter Two: Package Four		
Cities of Bellevue and Redmond	Do not attribute the package to haulers.	Text revised.
December 19, 2005, MSWMAC	Do not attribute packages in the text.	Text revised.
Cities of Bellevue and Redmond	This provides a description of the package but no real analysis.	Text revised.
Cities of Bellevue and Redmond	Where is the analysis applying LOS criteria to this package?	Appendix H.

Submitted By:	***Comment:***	***Response:***
Cities of Bellevue and Redmond	There is no analysis of remodeling would allow compaction at existing sites limited to self-haul service.	Report 2 concluded there is no room at Algona and Houghton is not compatible with surrounding land use. The 1993 EIS coauthored by King County and the City of Bellevue eliminated this option for Factoria.
Chapter Two: Cost Information		
Cities of Bellevue and Redmond	Cost information was so insufficient and provided at such a high level that it appears meaningless. The conclusion is cost is not a basis for decision making.	Text revised.
Cities of Bellevue and Redmond	Where are the assumptions for this list of factors in the model?	The assumptions are described in the following paragraphs under their respective headings, and explained in greater detail in the appendices.
Bill Beck, SWAC Member	Does Table 2.5 include the rural stations?	No, those stations are not part of the analysis.
Cities of Bellevue and Redmond	Table 2-5 says there is no cost difference. Why not come up with a package that meets all interests?	Comment noted.
City of Federal Way	If costs are essentially the same, is there a package that will satisfy everyone?	Comment noted.
City of Federal Way	Do packages account for projected wage/benefit increases?	Yes.
Jean Garber, MSMWAC Chair	Are these costs included in the financial model?	No.
City of Federal Way	How can the package with most facilities be cheapest?	See "Cost Summary."
City of Federal Way	It is not clear with complete cost data is not available for Package 1a - it's not that much different than Package 1...	Text revised.
City of Federal Way	How much funding is already held in reserve by the County for capital transfer and intermodal system development? Is this funding built into the cost estimates for the "packages"?	Transfer station packages' capital costs will be funded through debt service. ***All*** existing reserves, $16.5 million, will be used to fund a portion of the First NE Transfer Station rebuild.

Submitted By:	*Comment:*	*Response:*
City of Bellevue	It is important to note that the results of the cost analysis presented in the Report show that the various transfer facility alternatives proposed by the Solid Waste Division are all approximately the same cost. Some have slightly higher or lower capital or staffing costs, but at the planning level, all come out about the same. Given that, the region should be able to agree on a package that meets all of the interests of the host cities, including Bellevue. Bellevue proposes Package 1a – which is the same as Package 1, except that Factoria is rebuilt on its existing site and the Eastgate Way site is sold.	See additional analysis in "The Longer Term Financial Outlook."
Chapter Two: Tonnage Forecast		
Jean Garber, MSMWAC Chair	Suggested new text under "Tonnage Forecast" heading.	Text revised.
Jean Garber, MSMWAC Chair	Use "forecast was" consistently.	Text revised.
Cities of Bellevue and Redmond	Where is the tonnage forecasts?	See Appendix C.
Jean Garber, MSMWAC Chair	Clarify 5% in Package 3 footnote.	If a facility is moved, it is assumed a small percentage of customers will use another facility instead of the new location. Five percent was selected for that percentage.
City of Federal Way	The actual forecast is in an appendix, which should be referenced.	Text revised.
City of Federal Way	Enumclaw and Vashon represent new capacity.	Report 4 only addresses the urban transfer stations.
City of Federal Way	The report should identify how much capacity is needed, when where and at what cost.	See Report 2. Stations are already over capacity.
City of Federal Way	Will self-haul capacity need to be provided at the same relative levels? Will commercial haulers increase collection efficiency and thereby require less transfer station access? Will more relative customers move from self-haul to commercial collection?	Self-haul will be discussed as part of the Comp Plan process. The division can't speak to commercial haulers' actions. Historically, it has never happened.

Submitted By:	*Comment:*	*Response:*
Jean Garber, MSWMAC Chair	Footnote to second table. I suggest removing the word "will" and adding the words "was assumed to."	Text revised.
City of Federal Way	Would it make sense to discuss how the system can be designed to allow for flexibility within the "packages" to ensure that the system is scaled to meet projected needs? Will the package selected mean the system be safer? Will the new system operate at a lower comparable cost/ton than the current transfer system? Can this be forecasted and quantified? Factored into table 2-5?	That is the intent; the stations will be designed to meet safety standards; yes; included and factored into table 2.5
Chapter Two: Costs to Site Design and Construct Facilities by Facility Type		
Jean Garber, MSMWAC Chair	Add Size as a critical assumption.	Text revised.
Cities of Bellevue and Redmond	The dollar estimates from each of the three groups are not included.	The three engineering groups reached consensus on costs.
Cities of Bellevue and Redmond	What does it take to make compaction work at an existing site?	The intent is to meet LOS standards from Reports 1 & 2, so retrofitting sites will not work.
Cities of Bellevue and Redmond	Where is it shown that commercial facilities cost less to site design and construct?	Text revised.
January 20, 2006, SWAC	The 20 acre site should not be called a requirement on page 36.	Text revised.
Chapter Two: Schedule for Capital Projects		
Jean Garber, MSMWAC Chair	Add "including environmental review" to Land Use Permitting	Text revised.
City of Federal Way	Could the report include a graphic for each package showing the timeline and generic facility construction or renovation necessary to allow waste export to commence?	See Appendix G, Project Implementation Schedules.
Chapter Two: Financing/Debt Service Assumptions		
Jean Garber, MSMWAC Chair	Change "into a" to "into the" and change "our" to "the division's".	Text revised.
Jean Garber, MSMWAC Chair	Add a section, Effect of Packages on Disposal Rates	Text revised.

Submitted By:	*Comment:*	*Response:*
Cities of Bellevue and Redmond	Where is the discussion about the need for new capacity?	See Milestone Report 2.
Cities of Bellevue and Redmond	Where is the financial analysis?	Text revised.
City of Federal Way	Is the relative cost of compacted versus partially compacted disposal factored into Table 2-5.	Yes.
City of Federal Way	Is there also a need to replace pilings under Algona and is this cost in the packages? Replacing the pilings may provide an opportunity to consider more comprehensive improvements.	For a self-haul only station the need for pilings is not as immediate as it would be for a full service facility.
Chapter Two: Cost Summary		
City of Redmond	"Full service only" to "commercial only"	Text revised.
City of Redmond	Add columns to the table for longer time frames. We understand that interlocal agreements only go to 2028. However, the stations potentially have a longer life then just the 22 years. Please show 30 years out and 40 years out what the costs would be. This may indicate a greater variation in costs that could help evaluate options. Additionally, this could provide additional financing alternatives.	See additional analysis in "The Longer Term Financial Outlook."
City of Federal Way	Please add a cost analysis for all "packages" based on useful life to better compare long-term costs. The extended term analysis may mean that this assertion needs to be qualified.	Text revised.

Submitted By:	***Comment:***	***Response:***
City of Federal Way	Regarding my comment on extended cost analysis for Table 2-5, I think the text in "Cost Summary" could include the following statement at the end of the first paragraph: "See Appendix H and the following section on (The Longer Term Outlook) for information on system costs beyond the ILA term. System costs will vary considerably into the future based on labor needs to operate facilities. The more facilities there are in a given package, the higher the long term cost."	See "The Longer Term Outlook."
Chapter Two: Effect of Transfer System Packages on Disposal Rates		
City of Redmond	Typographical error – reates.	Text revised.
January 20, 2006, SWAC	Explain that the rate commitment does not include the cost of disposal after waste export.	See Effect of Transfer System Packages on Disposal Rates, paragraph 4.
City of Redmond	Include the assumptions used in the model behind each of the 'inputs', so that MWSMAC can review them, and discuss and understand the rate setting model. In order to support a final waste export plan, MSWMAC must conclude the county is able to meets the Solid Waste divisions' commitment "*that the per-ton tipping fees will not increase by more than the rate of inflation*" (page 39 of the draft report) or the final plan must include a different rate recommendation.	Financial policy assumptions are provided in Appendix D. Summary methodology for financial analysis is provided in Chapter Two. More detailed information is available on request. ITSG has received two briefings by the Solid Waste Division's economist as well as an additional briefing from the City of Bellevue's consulting economist.

Submitted By:	***Comment:***	***Response:***
City of Redmond	Include the rate impact from long-haul transport of compacted vs. uncompacted waste. A few questions are posed to identify the types of issues that should be addressed regarding self-haul and the design of the future system: • What is the "tipping point" where it is not economically feasible to transport uncompacted waste? • Should policy makers evaluate whether or not self-haul should occur at all or establish different rates for self-haul to cover the increased costs of self-haul? • Should the county consider re-building any transfer stations (other than already proposed in the transfer station packages) to accommodate commercial and self-haul as the costs of operating a self-haul transfer station, coupled with long-haul transport costs of uncompacted waste, are too high?	• Two cost components are affected by compaction: short haul and long haul costs. The division would see an approximate 30% reduction in short haul costs due to compaction. Short of a procurement process, precise long-haul cost information is not available. • This is an issue that will be addressed in the update of the 2001 Comp Plan. • Milestone Report 2 concluded that sites proposed as self-haul only in the packages cannot be rebuilt as full service facilities.
City of Federal Way	Can the report address which of the packages best maintain long-term competition for waste export and disposal (and therefore the lowest rate impact during the planning horizon – and beyond, factoring in projected 'useful life' for these facilities)? Are all packages equivalent in this regard?	Recommendations will be made in the Waste Export System Plan.

Submitted By:	*Comment:*	*Response:*
City of Federal Way	Which packages best support a system that builds in long-term cost efficiency (for example, by supporting continued competition among the private haulers)? Are there any differences among the packages as far as keeping costs down during the first bid process as well as subsequent bid openers and re-bids for waste export and disposal?	Recommendations will be made in the Waste Export System Plan.
Chapter Three: General		
City of Bellevue	The analysis seems to say that privatization is not an option.	Text revised.
Cities of Bellevue and Redmond	There is no real analysis in this section.	Comment noted.
Cities of Bellevue and Redmond	How can Clark and Grays Harbor counties have private systems?	Text revised.
Cities of Bellevue and Redmond	How are customer satisfaction ratings developed?	Through customer surveys.
Cities of Bellevue and Redmond	How can we advise our policymakers without thorough discussion and analysis of impacts?	Comment noted.
City of Bellevue	The second sentence under Public Only belongs in the Private Only section.	Text revised.
City of Bellevue	Need to elaborate on labor issues under public-private partnership.	Text revised.
City of Bellevue	Is historical precedent outside of King County relevant?	Any precedent within Washington State is relevant.
City of Bellevue	Would like to have labor issues be the topic of a meeting for more in-depth discussion.	Comment noted.
December 19, 2005, MSWMAC	Identify policy considerations in summary.	Text revised.
City of Bellevue	Table 3-1 is confusing. Grays Harbor and Clark Counties data appears to conflict with text.	Text revised.
Jean Garber, MSMWAC Chair	It's worth providing additional explanation about the specific circumstances in each county described in Table 3-1.	Research in progress.
City of Bellevue	Table 3-1, Clark County Backup Landfill?	No, Clark County is considering acquiring local backup.

Submitted By:	***Comment:***	***Response:***
January 20, 2006, SWAC	Table 3-1, Snohomish County has both public and private collection.	Text revised.
City of Bellevue	Which customers are we talking about in the last paragraph of Private Only? How is customer satisfaction determined?	All customers are included in surveys to determine customer satisfaction.
City of Bellevue	Table 3-1, Clark County- completely privatized system, how?	Table revised.
City of Federal Way	P. 34: What is the impact of the 'no contract out' labor clause on the proposed "packages"? Is it the same regardless of "package" or variables?	Text revised.
City of Federal Way	Does the 'no contract out' labor clause automatically preclude the "private only" option? If so, is this a conclusion that can be stated in the Summary?	No. Text revised.
City of Federal Way	If policy makers are to address system configuration, the 'playing field' should be clearly defined in this report where they will be able to make policy analysis.	Text revised.
January 20, 2006, SWAC	Move the new sentence in Public Only to the next section.	Text revised.
City of Bellevue	The chapter in the Report does not provide decision makers with enough detail on the relative benefits of a public, private or combined public/private system. Although the chapter does provide some background regarding the King County Solid Waste staff view of the constraints of changing to a system with some privatized components, the chapter is lacking in a meaningful comparison of costs and other potential benefits of privatizing some portions of the system. Bellevue staff feel strongly that a robust independent analysis is needed regarding privatization of the solid waste management system in King County.	The Solid Waste Division supports an independent analysis of this issue.

Submitted By:	***Comment:***	***Response:***
Chapter Four: Potential for Developing Additional Capacity		
Jean Garber, MSWMAC Chair	Change Item 4, last sentence to "This alternative would require new operating permits and environmental review, which could involve preparation of a Supplemental Environmental Impact Statement.	Text revised.
City of Redmond	*Rewrite heading as follows:* Increased Capacity at the Cedar Hills landfill from 2012-2015. *Add a new sub-heading*: A. Factors leading to increased capacity.	Comment noted.
City of Redmond	*Replace table 4-1 with the following table*:	All feasible combinations are already aggregated in Table 4-1.
Chapter Four: Out of County Landfills		
Jean Garber, MSMWAC Chair	Table 4-1 should be retitled and available capacity should be included.	Table (now 4-2) revised.
January 20, 2006, SWAC	Benefits of preserving backup capacity should be spelled out.	See Benefits of Extended Life and Backup Capacity paragraph 1.
Cities of Bellevue, Redmond and Federal Way	The statement that diverting tonnage from Cedar Hills increases the average cost of disposal is not necessarily supported by the sensitivity analysis.	In all cases, sensitivity analysis agreed with this statement. Early export of 200,000 tons requires further analysis because other benefits may justify extra costs.
Chapter Four: Back-up Capacity		
City of Federal Way	There appears to be 29 million cubic yards of capacity at the LRI Landfill in Pierce County. Is this [presumably] private capacity not suitable for 'backup capacity'? Perhaps the word 'public' should be added before 'capacity'.	Yes, it is private capacity.
City of Federal Way	Is the disposal backup only being considered for emergency situations or for future bid 'alternative' support too? Can you discuss the pros/cons of holding capacity for bid support?	Backup capacity is for emergencies only.
City of Federal Way	What threshold would be envisioned for use of dedicated backup capacity?	During emergency situations.
City of Federal Way	'Total' Tonnage Capacity is equated to 'annual' capacity in the footnote. Instead of 'unlimited' in the table, it may be better to say 'no limit set'.	"Unlimited" is the term provided by the landfill owner.

Submitted By:	***Comment:***	***Response:***
City of Redmond	*After section 3, add a new sub-heading:* B. New and expanded plans and programs leading to increased capacity. *Change the next two bullets to numbers 1 & 2 Move the section* titled 'Benefits of Extended Life' after Table 4-1. *Rewrite sub-heading as follows:* Potential for Developing Additional Capacity at Cedar Hills landfill beyond 2015 *Revise the sentence after the sub-heading as follows*: The following development scenarios present alternatives to extend the useful life of the Cedar Hills landfill beyond 2015 *Remove statement 1. and renumber 2, 3 & 4*	Text revised - Final draft formatting will conform to King County style guide.
City of Federal Way	Could Report 4 include more info about the pros/cons of holding onto landfill 'back-up' capacity to foster better bids in the long term? Or will this discussion occur in Report 5?	Text Revised. Also see "Effect of Transfer System Packages on Disposal Rates."
February 10, 2006, MSWMAC	Mention potential railroad negotiating leverage provided by backup capacity at Cedar Hills.	See Chapter 7: Partial Early Export.
February 10, 2006, MSWMAC	Emphasize the benefits of extended life at Cedar Hills.	Text revised.
February 10, 2006, MSWMAC	Discuss historical and potential impact of recycling on Cedar Hills' lifespan.	Text revised.
February 10, 2006, MSWMAC	Clarify which actions to extend Cedar Hills' lifespan have already been taken vs. which are in progress or are merely potential actions.	Text revised.

Submitted By:	*Comment:*	*Response:*
Chapter Five: Long Haul Transport Options		
City of Federal Way	It seems that rail haul is the way to go- if this chapter preceded the intermodal chapter, intermodal analysis could focus more on rail mode parameters.	Text revised.
City of Bellevue	Table 5-1 – Would like to know who owns the landfills.	See Table 4-2.
City of Bellevue	Table 5-1- Do we honestly think we might haul our waste to California? Not sure this needs to be part of the analysis.	Maximum competition can result in lower rates despite increased distance. For analysis, a hypothetical 260 miles from Seattle is used.
City of Federal Way	Only one landfill has access by both railroad companies. How do its contract disposal rates compare? Does this lend any credence to the argument that access to both railroad companies is required to spur competition? Does the intermodal site need access to both railroad companies to create landfill competition?	It is important to have intermodal access to both railroads in order to have access to multiple landfills.
January 20, 2006, SWAC	Figure 5-1: Which three landfills?	Text revised.
City of Bellevue	Table 5-2 – Need to have difference in containers explained.	This is explained in the text for each transport type.
January 18, 2006, MSWMAC	Add a note to the text saying that costs are estimates based on current contracts, and actual costs will depend on bids at the time of procurement.	See text under Rail Transport Operating Costs.

Submitted By:	*Comment:*	*Response:*
City of Redmond	The City requests further elaboration of the rate analysis that was conducted by the Solid Waste division and the impacts on rates resulting from different capital and operational scenarios that are proposed. Waste export and long-haul transport operating and capital costs should be included. Given the significant cost overruns incurred by Sound Transit in implementing commuter rail from Tacoma to Everett, it is important to include long-haul transport costs, and have these cost assumptions be informed by Sound Transit's recent experience with rail.	Short of a procurement process, precise long-haul cost information is not available.
Chapter Five: Barge – Containers and Equipment		
City of Bellevue	Are these standard sized shipping containers?	Yes.
Chapter Five: Rail – System Reliability		
Cities of Bellevue and Redmond	Statement is based on what data? Our understanding is that the trains and containers are dedicated unit trains that provide daily service.	Service disruptions are not related to containers, but can result from strikes, weather events, & rail line damage from flooding or land slides. Recent events in Snohomish County provide an example.
Cities of Bellevue and Redmond	Given the current service interruptions to commuter rail, where is the county's analysis of potential service interruptions.	Haulers have stated at MSWMAC that rail contract terms address service disruptions and back-up capacity as a standard practice.
February 10, 2006, MSWMAC	Specify that the Snohomish County costs used in the analysis are current.	Text revised.
Chapter Six: Intermodal Facility		
Cities of Bellevue, Redmond and Federal Way	Why is co-location analysis not included?	Co-location is a siting issue. See discussion in Chapter Two: Transfer Station Co-location.
Cities of Bellevue, Redmond and Federal Way	Why isn't there consideration of more than one intermodal facility?	Text revised.
City of Bellevue	Waste can be compacted at the intermodal facility- paragraph 1 does not recognize that.	Comment noted.

Submitted By:	***Comment:***	***Response:***
City of Bellevue	Is any backhauling done? Seems like a waste of energy to haul back empty containers.	Solid waste containers cannot be backhauled with other commodities.
City of Federal Way	Is "sealing" part of the compaction process, or a separate step? What happens to the trailers when they are hauled back to the intermodal site?	Yes, trailers are either loaded or unloaded onto trains.
City of Bellevue	Paragraph two: does this imply partial or full early export will not be done?	No.
City of Redmond	Analyze the range of options for (public or private) intermodal facility(ies) to provide maximum flexibility in implementing waste export. Include at a minimum operational and cost impacts of providing an Intermodal Facility in south King County (the transportation infrastructure for moving waste from the transfer stations to another location is already in place, i.e. routes).	Comment noted.
City of Redmond	*Replace language in the summary with the following language*: The Waste Export Plan should allow for decision making on intermodal facility(ies) after a procurement process that provides the county with sufficient information on the costs/operations of a privately run and operated intermodal facility(ies); this will facilitiate informed decision making. It may therefore be beneficial to decide the best alternative for intermodal facility(ies), at some point in the future, since full waste export will not occur for close to a decade.	Comment noted.
City of Redmond	*Delete the fourth paragraph.* This paragraph provides summary statements that are more appropriate at the end of this section.	Comment noted.
Chapter Six: Background –Regional Experience		
December 16, 2005, SWAC	Intermodal facilities currently handle CDL as a part of the solid waste system.	Text revised.

Submitted By:	*Comment:*	*Response:*
City of Bellevue	It would be nice to read the discussions with other utilities.	Discussions were summarized for confidentiality purposes.
City of Bellevue	What is realistic backup emergency capacity for King County? Lack of available sites could impact economic redevelopment and disaster recovery costs.	KCSWD staff are discussing this issue with other solid waste utilities in the Puget Sound area.
Chapter Six: Intermodal Facility Considerations - General		
City of Federal Way	If the transport mode is apparent, discussion of siting intermodal can focus on maintaining long term competition for disposal services.	Comment noted.
December 16, 2005, SWAC	Accessibility to both railroads is essential for the intermodal site.	See following comment.
January 20, 2006, SWAC	Accessibility to both railroads is ideal, not essential.	Text returned to original.
February 10, 2006, MSWMAC	Eliminate reference to "ideal intermodal site" because there may be more than one site.	Text revised.
Cities of Bellevue and Redmond	Intermodal Facility Considerations- Where do these minimum requirements come from?	Text revised.
City of Bellevue	Wouldn't siting intermodal near rail and marine facilities be part of the decision process – it seems redundant to be convenient to both.	Text revised.
Cities of Bellevue and Redmond	On what data is the comment that intermodal capacity is insufficient based?	Text revised.
City of Bellevue	Where is the competition for intermodal capacity coming from?	Commercial shipping.
Cities of Bellevue, Redmond and Federal Way	Why isn't the BNSF letter in the report?	See comment below.
February 10, 2006, MSWMAC	Remove reference to BNSF letter.	Text revised.
City of Federal Way	Does the south County 'valley' rail corridor have this cargo handling constraint? Does the south County 'valley' rail corridor allow for rail access by both rail companies?	There is rail access to both lines through much of the south corridor.
Cities of Bellevue and Redmond	Where is the county's analysis of costs to use BNSF's track and any potential needed improvements?	Snohomish County's actual costs were used in the analysis, shown in Ch. Five. Potential improvements are site specific and can't be identified at this time.

Submitted By:	***Comment:***	***Response:***
City of Federal Way	Could you include a general map of where suitable access exists within King County? It might be interesting to compare this with transfer station locations, and see where overlaps occur that could change the needs of the various "packages".	The corridor within KC with access to both railroad companies is Harbor Island to the southern edge of King County.
City of Federal Way	A key sentence that bears emphasis is the last sentence of paragraph 1. But, when it states 'rail lines', I believe it means 'railroad companies'.	Yes, these terms are used interchangeably.
City of Federal Way	define: mainline versus rail line	These terms mean the same thing.
Chapter Six: Existing Intermodal Facilities		
City of Bellevue	Need to explain what is meant in Spot Facilities first paragraph – is it that the shorter trains are moved up to this facility for assembling into a longer train that then moves to the final destination?	Text revised.
Cities of Bellevue and Redmond	Where is the analysis?	Text revised.
City of Federal Way	How much capacity have these three companies already secured? How does it compare to projected needs? Is there enough intermodal capacity to share among the three companies? Would this be workable from a logistics and contract perspective?	Capacity will be determined through a procurement process.
City of Federal Way	Instead of rail lines, say railroad companies. Consider changing it to say "to all feasible remote disposal sites".	Comment noted.
City of Federal Way	How will customers 'see evidence'?	Text revised.
Chapter Six: Regional Intermodal Needs		
SWAC December 16, 2003	The last paragraph on prioritizing of rail customers is speculative and should be deleted.	Text revised.
Cities of Bellevue and Redmond	Where is the supporting data for the statement that current facilities are built out?	HDR "Business Case for a County Owned Intermodal Facility", 2003.

Submitted By:	***Comment:***	***Response:***
City of Bellevue	A letter dated 6/27/2003 from BNSF General Manager R.D. Jackson to King County Executive Sims &Councilwoman Cynthia Sullivan contradicts the statement about intermodal capacity. BNSF says they want the business and will provide capacity.	Text revised.
City of Bellevue	Regional Intermodal Needs, first sentence – are existing intermodal facilities operating at full capacity.	Currently yes, expansion can only be achieved through additional work shifts and tighter rail schedules.
City of Bellevue	What rail lines serve the known disposal sites?	See Table 4-2.
Cities of Bellevue and Redmond	*BNSF are likely to give priority to their larger national and international commercial cargo customers. ...*" Where is the supporting data for this statement and the entire paragraph?	Text revised.
City of Bellevue	Paragraph five – Not necessarily, depends on the procurement process. True competition means you open the process to all sorts of options and let the market bid on providing what you need, and that there are entities that are able and willing to bid/compete.	Comment noted.
City of Federal Way	Page 6-4, 2nd paragraph: Comment on whether or not the south corridor rail system has the same level of constraints regarding future commercial cargo handling competing with waste export, referenced for the Port of Seattle area over the next 20 years. Is the perceived constraint systemic throughout the county, or just in a specific area? Could it be better, or cheaper, to site an intermodal facility in the south corridor rail system? Or, would higher transfer costs from 1st NE or New NE Lake Washington eat any savings?	Comment noted. As discussed in Feb. 10 MSWMAC siting of an intermodal facility or facilities will be determined at a later date.

Submitted By:	***Comment:***	***Response:***
City of Federal Way	Is having an intermodal site in the heart of the Port of Seattle area (i.e. Harbor Island) a potential detriment because of commercial cargo handling competing with waste export in the future? Does this report infer that the intermodal site should not be near the Port area?	Comment noted. As discussed in Feb. 10 MSWMAC siting of an intermodal facility or facilities will be determined at a later date.
Chapter Six: County's Intermodal Facility Needs		
Cities of Bellevue and Redmond	First sentence is based on what?	Comprehensive Solid Waste Management Plan
City of Bellevue	First paragraph- how can you do this if you can't negotiate labor costs?	King County does negotiate labor costs.
Chapter Six: Promotion of Competitive Choices		
City of Bellevue	Paragraph three – What about developing more than one intermodal facility- whether full scale or spot?	Text revised.
City of Bellevue	This discussion gives the impression that there will not be enough rail capacity even if there is enough intermodal capacity. This conflicts with the analysis in Chapter 5.	There is sufficient rail capacity to handle King County's waste through the planning horizon. Existing intermodal capacity may be insufficient to process the county's waste.
City of Bellevue	Other Considerations – Needs more explanation.	Text revised.
SWAC	Other Considerations – This paragraph doesn't make sense.	Text revised.
Chapter Six: Intermodal Facility Alternatives – Public Ownership and Operation		
City of Bellevue	Benefit Two – Does not guarantee transport capacity exists.	Comment noted.
City of Bellevue	Benefit Four – This statement is more a Drawback for another option more than a Benefit for this option.	Text revised.
City of Federal Way	Clarify the last bullet point: it is ambiguous if it works against or for the county's interests. Versions of this same bullet appear in the two other operations scenarios –and make more sense as stated in these scenarios.	Text revised.
City of Bellevue	Drawback Three- Wouldn't these capital costs also be reflected in the cost of service?	Yes.

Submitted By:	*Comment:*	*Response:*
City of Bellevue	Drawback - Add bullet: County's labor restrictions could preclude any opportunity to privatize the system in the future.	Text revised.
Chapter Six: Intermodal Alternatives – Public Ownership Private Operation		
City of Bellevue	Benefit Five could be worded more positively – the county would benefit from contractor's experience with railroad negotiations.	Text revised.
City of Bellevue	Benefit Six – This is a risk transfer, what about liability?	Risk and liability are negotiated through contract terms.
City of Federal Way	It appears in these scenarios that interfacing with a railroad company is something the County wants to avoid. It is not clear why this is a detriment. Why would the County expect better rail service if a third-party hauler served as the intermediary?	Text revised - The county could benefit from contractors' experiences with railroad negotiations.
City of Federal Way	Ratepayers will be ultimately responsible for the capital cost under any of these three scenarios – why is this a drawback?	Text revised.
City of Federal Way	Couldn't unused capacity at Cedar Hills serve as backup?	Yes.
City of Federal Way	Can labor rules be changed in relationship to operation of a new facility, doing a new line of work not done in the past? Or is the County beholden to the existing rules no matter what, when it comes to operating facilities?	See Chapter Three.
Cities of Bellevue and Redmond	Why isn't DBO an option?	Design Build Operate is a method for implementing the Public Ownership Private Operation option, not a separate option.
City of Bellevue	Drawback Two – Won't they ultimately be reflected in the cost of service no matter what?	Yes.
City of Bellevue	Drawback Three – Not necessarily with the right bid process and contract.	Public entities will always have some administrative cost of contract management regardless of bid process or contract.
City of Bellevue	Drawback Four- Won't the administrative cost be reduced by outsourcing operations?	Reduced but not eliminated.

Submitted By:	*Comment:*	*Response:*
Chapter Six: Intermodal Alternatives – Private Ownership and Operation		
City of Bellevue	Benefits – wouldn't this free up county debt capacity?	Yes.
City of Bellevue	Benefit Two – rephrase "Private sector could site the facility in a shorter time frame at cheaper cost."	Not necessarily, as evidenced by haulers' statements at December 19, 2005 MSWMAC meeting.
City of Bellevue	Benefit Four- this could be significant and given the competition in the region, not fatal to long-term competition.	Comment noted.
City of Bellevue	Couldn't all of these be easily dealt with through contract negotiations and terms? Also frequency of bidding would assure future competition. These drawbacks seem contrived.	KC Solid Waste Division disagrees.
City of Federal Way	It seems this option automatically links intermodal to disposal. Is there a way to keep the two separate? Would there be too many operational conflicts between competing haulers who had different 'slices of the pie' (intermodal versus disposal) leading to poorer service/higher rates overall? Or would it help to keep at least two haulers competing in this area?	Yes, but not recommended.
Chapter Six: Summary		
City of Bellevue	Summary- What about the possibility of developing more than one facility?	The necessary number of intermodal facilities has yet to be determined, therefore it is possible.
City of Bellevue	Summary- Where does it show that it would be cost effective to develop an intermodal facility dedicated to the county's needs?	Text revised.
Chapter Seven: Sensitivity Analysis – General Comments		
Cities of Bellevue and Redmond	Where is the detail? Where is the analysis? We are only provided brief conclusions for each section.	Available on request.
Jean Garber, MSMWAC Chair	The text should discuss how Cedar Hills' rent influences the cost of early export scenarios.	Comment noted.
Jean Garber, MSMWAC Chair	Is there a way to calculate the effect on disposal rates if cities left the system?	Not within the scope of this report.
January 20, 2006, SWAC	Why use Snohomish County's export costs?	Text revised.

Submitted By:	***Comment:***	***Response:***
February 10, 2006, MSWMAC	Clarify the reason a different number for Snohomish County's cost is used here than in chapter 5.	Text revised.
City of Redmond	The City requests analysis of removal of 20% of the waste generated from within the geographic areas serving the City of Bellevue and the City of Federal Way. The use of these geographic areas is for hypothetical purposes only. The City does not assume nor anticipate that the waste from these cities will be withdrawn from the system.	Parameters for the sensitivity analysis were discussed and approved by MSWMAC before the analysis was performed. No further options will be analyzed as part of the sensitivity analysis.
City of Federal Way	If early partial waste export leads to extension of the landfill life, how much additional rent per year will be transferred to the County general fund? How does the continued assessment of rent (beyond 2015) factor into the economic analysis related to partial early waste export?	$7 million + inflation per year. In the analysis, rent is included in the operating costs.
City of Federal Way	Is there an optimal range or percentage of waste withdrawal or early waste export that would extend the life of Cedar Hills, while allowing variable operating costs to be reduced by an increment that generates real savings to the point where these proposed system improvement costs are offset? Is there a percentage of early waste export that, while extending Cedar Hills operating life, reduces variable operating costs to the point where economic benefits accrue (such as: more time for waste export system modifications and/or substantial operating savings at Cedar Hills)? The idea is to see if looking at a level of early export other than a fixed 20% could be beneficial.	As discussed at Feb 10 MSWMAC, this question can best be answered through a procurement process.

Submitted By:	***Comment:***	***Response:***
City of Bellevue	Bellevue hired a well-regarded economist with experience in solid waste to review the County's waste export financial model and help clarify the assumptions used in the model. Bellevue's economist demonstrated that completely withdrawing certain amounts of tonnage from the system had a neutral impact on costs and revenues, not a net loss as the County concludes in the Report. In addition, withdrawal of waste provides a large benefit to the County's system by extending the life of the landfill and allowing the County more time to plan and construct infrastructure in preparation for waste export. Major issues with the County's financial analysis raised by Bellevue's review include: Inconsistent treatment of the cost effects of disposal tonnage increases v. decreases. • Lack of consideration of transfer and short haul transport system reconfiguration and downsizing opportunities that would arise from a 20% decrease in disposal tonnage. • Use of upper bound estimates for future inflation rates compared to the historical record. • Use of tipping fee increases substantially greater than the historical record. • Failure to do a sensitivity analysis of the impacts of using a lower estimate for inflation or tipping fee growth. More detail can be found in the economist's review. <u>Bellevue staff feel strongly that a robust independent analysis is needed regarding the assumptions and sensitivity analysis completed by the County.</u>	The Solid Waste Division stands by its analysis and supports an independent analysis of this issue as part of the third party King County Council review of the Report.

Submitted By:	*Comment:*	*Response:*
Chapter Eight: General Comments		
City of Bellevue	Paragraph Two -How is there going to be time for this?	Per Ordinance 14971, third party review is the responsibility of King County Council.
January 20, 2006, SWAC	Change "will take place" to "takes place" because it has already begun.	Text revised.
February 10, 2006, MSWMAC	Identify all incomplete tasks called for by Ordinance 14971.	Text revised.
Appendices		
Cities of Bellevue and Redmond	Does not include analysis of alternatives to enable compaction to occur at transfer stations.	Report 2 concluded there is no room at Algona and Houghton is not compatible with surrounding land use. For Factoria, the 1993 EIS coauthored by King County and the City of Bellevue eliminated this option.
City of Redmond	Add Package IA to the Appendix, Project Implementation Schedules	Pending discussions with Bellevue.
February 10, 2006, MSWMAC	Include Responsiveness Summary as an appendix.	Text revised.
February 10, 2006, MSWMAC	Add an appendix on the inputs into the financial model used to calculate rate impacts in Chapter Two.	Text revised.

APPENDIX B

ITSG ADDITIONAL ISSUES

APPENDIX B – ITSG ADDITIONAL ISSUES

During the meetings of the Interjurisdictional Technical Staff Group (ITSG) where baseline assumptions were developed, a number of additional issues arose that were considered important to address in the fourth milestone report. These issues are listed in this attachment to ensure that they are noted as important topics to be covered in Milestone Report #4 and the Waste Export System Plan.

The items in this appendix are placed in one of four categories, defined as:

- **Policy:** A definite course or method of action selected from alternatives and options.
- **Direction:** Per ordinance 14971 and/or council direction.
- **Information:** Background information that may be used for planning or analysis.
- **Pending issues:** Incorrectly assumed or missing data that may require further analysis.

Where possible, a reference to Milestone Report #4, the final Waste Export System Plan or the Solid Waste Plan has been made to show where each issue will be addressed.

Policy

1. A new solid waste landfill will not be sited by King County. **Chapter 1 – Baseline Assumptions**
2. Cedar Hills will be filled to its current permitted capacity in conformance with the current adopted Site Development Plan and EIS. **Chapter 1 – Baseline Assumptions and Chapter 4, Current Capacity**
3. The useful life of the Cedar Hills Landfill may potentially be extended through operational and other efficiencies. **Chapter 4 – Potential for Developing Additional Capacity**
4. To what extent is King County willing to aggressively pursue additional capacity at Cedar Hills, considering the existing permit, legal settlement, publicly perceived/assumed closure date and insurance issues? **Chapter 4 – Potential for Developing Additional Capacity**
5. Alternative disposal methods exist for exported waste, however landfilling is the method of choice in the current comp plan. **Chapter 1 – Policy Framework, Purpose and Goals and Chapter 4, Landfills Available for Export**
6. Expanding Cedar Hills' permitted capacity by construction of additional cells would require policy changes and new permits. **Chapter 4 – Potential for Developing Additional Capacity**

7. Transfer stations will be dispersed geographically throughout King County to provide for reasonable trip time and accessibility (ease and time to get to facility). **Chapter 2 – Transfer Station Improvements Options**
8. The planning horizon for the comp plan is 20 years. The waste export system plan is limited to the project scope. **Chapter 1 – Policy Framework, Purpose and Goals**

Direction

1. The analysis will evaluate the potential for public only, private only, and a mixture of public and private ownership and operation. **Chapter 3 – Public-Private Options**
2. The analysis will evaluate methods to preserve competition. **Chapter 3 – Public-Private Options**
3. Per Milestone Report #3, a sensitivity analysis will be performed and "will include a comprehensive assessment and analysis so that the future size and configuration of the solid waste system can be developed." **Chapter 7– Sensitivity Analysis**

Information

1. The division plans to continue to keep CDL waste out of the King County municipal solid waste system through the planning horizon. **Appendix C – Forecast, and Solid Waste Comp Plan**
2. Yard waste, projected to be approximately 52,000 tons/year, is currently and will continue to be managed by the private sector throughout the planning horizon. **Appendix C – Forecast, and Solid Waste Comp Plan**
3. The division will use adaptive management and pursue innovations in capital investments to meet both immediate needs and long-range planning goals. **Comprehensive Solid Waste Management Plan**
4. The division will analyze the option of preserving emergency capacity at Cedar Hills for backup after closure. **Chapter 4 – Back-up Capacity [at Cedar Hills Landfill]**
5. At least three independent companies are expected to bid competitively for King County's waste when it is marketed at the time of waste export. **Chapter 4 – Landfills Available for Export**
6. Existing landfills outside of King County have legally permitted capacity to handle King County waste for at least 20 years. **Chapter 4 – Out of County Landfills**
7. Per RCW 70.95, primary responsibility for solid waste planning and handling is with the county, with input from cities per the interlocal agreements. **Chapter 3 – Public-Private Options**
8. The Comp Plan guides development and operation of waste reduction, recycling and solid waste management activities. **Comprehensive Solid Waste Management Plan**

9. The waste export system plan will address the transfer and disposal system in King County. **Chapters 2 and 4**
10. A waste export system plan will be developed with the collaboration of the 37 cities that have interlocal agreements with King County. **Chapter 1 – Collaborative Process**
11. The waste export system plan will be the foundation for the update of the Comprehensive Solid Waste Management Plan. The Comp Plan will be updated beginning in December 2005 and will address solid waste management, CDL and recycling waste streams, including toxics reduction. **Chapter 8 – Next Steps**
12. Transfer stations are an integral part of the solid waste system. **Chapter 2 – Transfer Station Improvements Options**
13. The transfer station system will provide capacity to handle solid waste within a reasonable time period. **Chapter 2 – Analysis of Potential Transfer Station Packages**
14. Existing intermodal facilities are available to export King County's waste. **Chapter 6 – Intermodal Background**
15. A sensitivity analysis will be done to illustrate the effect of a reduction of tonnage from the current system. **Chapter 7 – Sensitivity Analysis**
16. Increased waste reduction and recycling will reduce the amount of solid waste generated in King County and the amount of solid waste requiring export. **Appendix C – Forecast**
17. Settling of solid waste, and operational efficiencies at Cedar Hills Landfill may provide additional capacity within permits. **Chapter 4 – Potential for Additional Capacity [at Cedar Hills Landfill]**
18. Vactor waste is currently managed separately from the MMSW stream by both the public and private sector, and requires monitoring to determine long-term projections. **Appendix C – Forecast, and Comprehensive Solid Waste Management Plan**
19. Annexations will not affect King County's solid waste system tonnage except for the annexation of White Center by the City of Seattle by 2012 per the Growth Management Act, which will remove approximately 12,000 tons. **Appendix C – Forecast, and Comprehensive Solid Waste Management Plan**
20. Landfills designated for waste export in the final plan will comply with environmental regulations. **Chapter 4 – Out-of-County Landfills**
21. A transfer station is a fixed, supplemental collection and transportation facility used by persons and route collection vehicles to deposit collected solid waste from off-site into a larger transfer vehicle for transport to a permanent disposal site or intermodal facility. It consolidates many, smaller loads into fewer, larger loads to reduce overall transportation costs. A transfer station can be co-located with an intermodal facility. **Chapter 2 – Intermodal Co-location**

22. An intermodal facility is a location where containers are transferred from one mode of transportation, such as trucks, to another, such as train or barge. An intermodal facility can be co-located with a transfer station. **Chapter 2 – Intermodal Co-location**
23. Co-location is the siting of a solid waste facility that provides both transfer and intermodal functions. **Chapter 2 – Intermodal Co-location**

Pending Issues

1. Food waste, projected to be approximately 200,000 tons/year, will be removed from the MMSW stream and managed by the private sector over the planning horizon. **Comprehensive Solid Waste Management Plan**
2. Landfilling is the least expensive method of MMSW disposal. **Comprehensive Solid Waste Management Plan**
3. The timing of Cedar Hills' closure determines the cost for system improvements. **The statement is not accurate and therefore won't be analyzed in Report Four.**
4. The number of transfer stations that are needed in the system will be an outcome of analysis. **Chapter 2 – Transfer Station Improvements Options**
5. Transfer stations will handle standard recycling (not food, yard waste or CDL). **Comprehensive Solid Waste Managment Plan**
6. Installation of compactors at each transfer station requires analysis. **Chapter 2 – Waste Compaction, and Appendix E**

APPENDIX C

FORECASTING SOLID WASTE DISPOSAL

APPENDIX C – FORECASTING SOLID WASTE DISPOSAL

Variables: An econometric model is used by the County to forecast the future amount of solid waste to be disposed. This model includes the following variables:

- Number of people living in the service area
- Number of jobs and structure of the job market (service sector jobs vs. manufacturing jobs)
- Household size in persons per household
- Per capita income (in real terms)
- Disposal fees (inflation adjusted)
- Ban on CDL

Geographic boundaries: The geographic boundary for the forecast is King County, excluding Seattle and Milton, and including all of Bothell (part of Snohomish County).

Data sources: The data source for population, employment, and household size (first three bullets above) is the Puget Sound Regional Council (PSRC) "small area forecast." PSRC worked in close cooperation with the counties and cities to develop those numbers for the forecast period. For economic variables, data used are provided by Dick Conway and Associates, Seattle. Historical tonnage and transaction data are collected and maintained by the Solid Waste Division and are the most accurate numbers available for forecasting purposes. These data include each transaction by date, time, type of garbage, fees and taxes paid, and type of payment.

Methodology: The econometric model, based on a regression equation, uses information about the relationship between the variables mentioned above and the amount of garbage disposed. The future amount disposed for the forecasting period is estimated based on the projections for population, employment, household size, real income, and tip fees. The mean value of the lower and upper range is used as the projected amount disposed; the confidence interval of this forecast is 95%.

Recycling and Generation: The amount of tons recycled is provided by haulers (for the curbside recycling) and by a survey performed annually by the Washington State Department of Ecology. Those numbers are estimates and fluctuate considerably from year to year. As a result, the amount of garbage generated is also only an estimate with a wider margin of error.

Forecasting steps: The forecasting begins with developing the "baseline scenario." This scenario takes into consideration current and new policies as far as impacts and the implementation schedules are known.

Another step in the forecasting process is to consider all known events that might impact tonnage, such as temporary transfer closures or changes in recycling programs. Then a short-term budget tonnage forecast is developed and used to form a short-term financial forecast. As new information is available the numbers are updated.

The short-term tonnage forecast used for the adopted budget compared to actual tons:

Year	Budget Forecast	Actual Tonnage	% Difference
1995	819,000	822,585	0.4%
1996	839,000	817,602	-2.6%
1997	833,000	872,577	4.8%
1998	837,000	883,722	5.6%
1999	852,000	929,306	9.1%
2000	920,000	947,174	3.0%
2001	965,000	936,310	-3.0%
2002	950,000	939,489	-1.1%
2003	950,000	978,837	3.0%
2004	955,000	1,006,163	5.4%
Average			**2.5%**

For other planning purposes, a long-term forecast is developed and maintained. The same data sources are used but the horizon is expanded out to 25 years depending on the information available.

2001 Solid Waste Plan Forecast and Actual Tons Disposed
New Forecast for 2005 – 2030 (as of September 2005)

Year	Comp Plan 2001 Forecast	Actual Tonnage	% Difference	New 2005 Forecast
2001	963,000	936,500	-2.8%	
2002	978,000	939,500	-4.1%	
2003	990,000	978,836	-1.1%	
2004	1,000,000	1,006,163	0.6%	
2005	1,007,000	990,000	-1.7%	990,000
2006	1,014,000			976,700
2007	1,029,000			1,020,800
2008	1,048,000			1,050,800
2009	1,068,000			1,080,800
2010	1,092,000			1,115,200
2011	1,100,000			1,133,800
2012	1,101,000			1,160,200
2013	1,113,000			1,178,800
2014	1,117,000			1,210,200
2015	1,122,000			1,242,100
2016	1,133,000			1,264,900
2017	1,146,000			1,295,700
2018	1,159,000			1,327,700
2019	1,176,000			1,353,800
2020	1,194,000			1,388,500
2021				1,402,500
2022				1,436,400
2023				1,442,300
2024				1,478,500
2025				1,515,900
2026				1,524,400
2027				1,563,400
2028				1,588,100
2029				1,628,700
2030				1,670,300

APPENDIX D

FINANCIAL POLICIES

APPENDIX D – FINANCIAL POLICIES

The following are financial policies as contained in the Final 2001 Comprehensive Solid Waste Management Plan and King County Code 10.25.100:

FIN-1. The county shall maintain, conduct, operate and account for the disposal of solid waste as a utility of the county. The solid waste system shall be a self-supporting utility financed primarily through fees for disposal.

FIN-2. The county shall charge garbage disposal fees directly to users of the solid waste disposal system to pay for solid waste services.

FIN-3. The county shall maintain a rate structure based on tonnage, recognizing that the structure does not provide a self-hauler subsidy, unless the executive demonstrates that a different rate structure would benefit the system as a whole.

FIN-4. The county should keep garbage disposal fees as low as possible and should manage the solid waste system to keep rate increases as low as possible while meeting the costs of managing the system and providing service to solid waste customers.

FIN-5. The county should provide technical assistance to the cities in developing collection contracts and grants.

FIN-6. The county should develop and implement a grant program for the cities that will consolidate grant programs and contracts wherever possible. The county should provide technical assistance to aid the cities in identifying, applying for and administering grants.

FIN-7. The county should provide opportunities to expand the role of cities in developing and reviewing regional solid waste policies and rates by establishing a solid waste policy work group to work in conjunction with the solid waste advisory committee to make recommendations regarding system operations to the King County executive. As part of these recommendations, the executive shall evaluate the costs and benefits of alternative rate structures on individual customer classes.

FIN-8. The county is committed to working with the cities that are impacted by transfer stations to explore funding to mitigate potential impacts from these facilities. Any statutorily authorized host fees should be in amounts directly attributable to the solid waste facility provided that the cities can establish that the fee is reasonably necessary to mitigate for impacts of the solid waste facility as required in state law.

Financial Policies for the Funds of the King County Solid Waste Enterprise

Fund Title: Landfill Post-Closure Maintenance Fund
Fund #: 1040
Type: Special Revenue

Purpose:
To fund post-closure maintenance costs for county-owned closed landfills. May also be used for operating and maintenance costs for other solid waste disposal sites or handling facilities that the solid waste division owns or has custodial responsibility for.

Financial Policies:
After final closure of a landfill is complete, funds sufficient to cover 30 year post-closure maintenance costs are transferred from Landfill Reserve Fund to the Post-closure Maintenance Fund. Allowed post-closure expenditures are charged to the Post-closure Maintenance Fund and tracked by individual landfill or disposal site.

The fund includes mandatory reserves for four landfills that the solid waste division closed after federal and state financial assurance requirements were established. These landfills are Hobart, Enumclaw, Cedar Falls, and Duvall. The remainder of the fund is designated as a non-mandatory reserve for custodial landfills maintained by the division.

The balance of the mandatory reserves will be maintained at a sufficient level to assure that operating and maintenance costs for the mandatory landfills will be fully funded through the end of their post-closure maintenance periods. The division's current forecast indicates that total reserves will be sufficient to fully fund both mandatory and non-mandatory landfills.

Fund Title: Solid Waste Capital Equipment Recovery Fund (CERP)
Fund #: 3810
Type: Capital

Purpose:
1. Accumulate financial resources for the replacement of Solid Waste rolling stock and stationary compactors on a timely and economic basis. May be used for major maintenance in lieu of purchase.
2. Stabilize the impact of equipment purchases on the operating fund. Contributions out of the operating fund (and resulting rates) are leveled out even though the cost of required equipment replacements could vary significantly from year to year.

3. Maintain balances sufficient to mitigate effects of dramatic tonnage increases or decreases and catastrophic damages to equipment.

Financial Policies:
Contributions and fund balance will be determined in the following manner:

1. Annual transfers from the operating fund, salvage value of retired equipment, and interest earnings fund the Capital Equipment Recovery Fund (CERP). Using the principals of a sinking fund, calculated amounts of money are invested monthly to replace CERP equipment. As recommended by the 1996 Deloitte & Touche Performance Audit, contributions to the fund are calculated to increase at an annual rate of four percent until the closure of the Cedar Hills Landfill.
2. Fund contributions must be set at a level that maintains a minimum fund balance for each year projected through the estimated closure date of the Cedar Hills Landfill. Minimum fund balance is defined as beginning fund balance equal to the dollar amount of purchases made in the calendar year.

Fund Title: Solid Waste Environmental Reserve Fund
Fund #: 3831
Type: Capital

Purpose:
To fund remediation related to solid waste handling facilities that the department of natural resources and parks owns or has custodial responsibility for and costs for inverse condemnation claims.

Financial Policies:
The Environmental Reserve Fund was established in 1992 with a transfer of some of the accumulated fund balance of the Energy/Resource Recovery Capital Fund. No future contributions to the fund are planned.

Fund Title: Solid Waste Construction
Fund #: 3901
Type: Capital

Purpose:
Funding for transfer station capital projects.

Financial Policies:
The Solid Waste Construction Fund provides funding for transfer station capital projects. All capital projects at the Cedar Hills Landfill is funded by the Landfill Reserve Fund.

The solid waste division funds transfer station capital projects via general obligation bond sales and contributions from the Solid Waste Operating Fund.

Fund Title: Landfill Reserve Fund
Fund #: 3910
Type: Capital

Purpose:
Accumulating and disbursing financial resources for the management of King County landfills.

Financial Policies:
This fund receives funds via a charge per ton on all solid waste disposed in the Cedar Hills Landfill. The intent of the charge is to fund the cost of all landfill development, closure and post-closure maintenance costs as the landfill is being used.

The fund includes the following four sub-accounts. The first two accounts are mandatory reserves maintained to meet federal and state requirements. The other accounts are non-mandatory reserves maintained pursuant to King County Ordinance 12764.

1. Landfill closure
2. Post-closure maintenance
3. Landfill facility improvements
4. New area development

The landfill reserve charges are adjusted annually based on forecasts of capital and post-closure maintenance costs, disposal tonnage, landfill life, and interest earnings. The fee is set to meet the following criteria:

- Contributions and reserve balances should be sufficient to fund all landfill closure costs and all post-closure maintenance costs for 30 years after final closure.
- Charges for the non-mandatory accounts should not depend on borrowing from the mandatory accounts. (The total of the non-mandatory account balances should never be negative.)
- The contribution will be set in a manner that maintains reasonable rate stability.

Fund Title: Solid Waste Operating Fund
Fund #: 4040
Type: Operating

Purpose:
General purpose operating fund for the Solid Waste Division

Financial Policies:
1. Operating expenditures are primarily supported by solid waste disposal fees, which are intended to be reviewed every three years.
2. Minimum fund balance should be maintained to meet or exceed 45 days of expenditures adjusted for fund transfers and debt service.
3. For the benefit of current and future ratepayers, the solid waste division will seek to maintain its capital assets in sound working condition.
4. At year-end, money in the Solid Waste Operating Fund that is in excess of working capital needs is transferred to the Solid Waste Construction Fund to minimize future debt.
5. In the event of an unanticipated drop in tip fee revenue, the Solid Waste Division will investigate conditions causing the revenue reduction, closely monitor fund balance, and, if warranted, develop proposed contingency plans.

APPENDIX E

COMPACTING WASTE FEASIBILITY ANALYSIS

APPENDIX E – COMPACTING WASTE FEASIBILITY ANALYSIS

Compacting solid waste to increase its density prior to shipment to a disposal site is standard industry practice in North America. Large machines installed at transfer stations compress waste into a cube and then push it into a transfer trailer or container. Compacting waste increases disposal efficiencies and reduces transportation costs.

King County owns eight transfer stations. Of the eight, six stations were constructed in the 1960s, well before compactors became integral components of a modern solid waste handling system. Of the six, First Northeast will receive a compactor as part of reconstruction scheduled to begin in 2006. The Enumclaw and Vashon stations, constructed in the 1990s, are equipped with compactors. That leaves Algona, Factoria, Renton, Houghton and Bow Lake without compactors. These five stations handle about 85% of the solid waste processed in King County.

Currently, the stations without compactors load trailers with an average of 18 tons of waste. In contrast, the two transfer stations with compaction units fill trailers with about 27 tons of waste. The number of containers shipped is a major factor in the overall cost of exporting waste.

Transfer Station Analysis

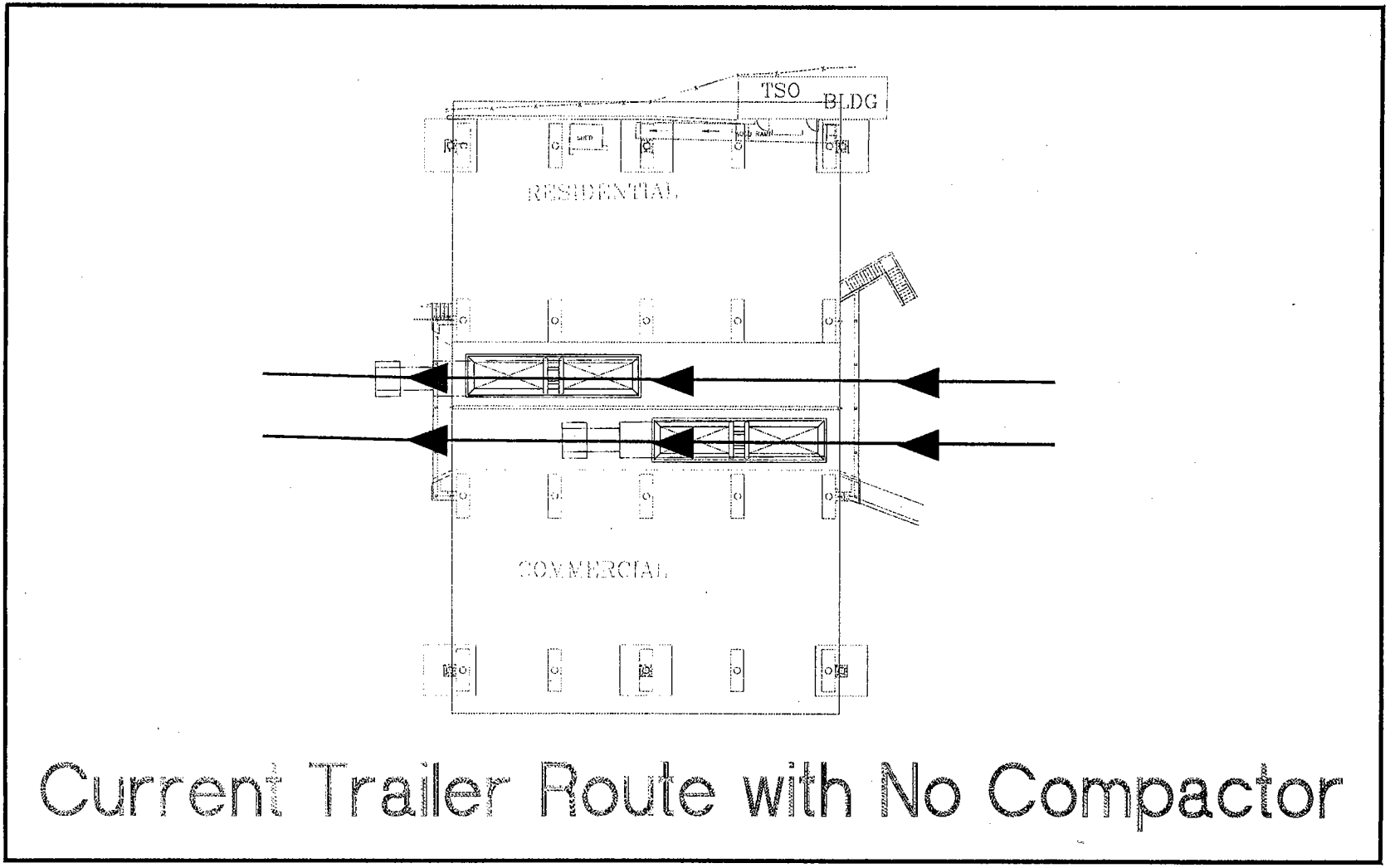
The Solid Waste Division performed a detailed feasibility analysis of installing waste compactors at the five urban stations that were evaluated. The analysis was based on the standard units of the two major manufacturers of refuse compaction equipment. The analysis assumed that compactors would be installed in the stations with no expansion of the existing buildings.

Current Operations:

Of the five stations without compactors, four – Algona, Factoria, Houghton and Renton – have identical floor plans. Current operations of the four are addressed as a group. The remaining station, Bow Lake, has a different design and is addressed separately.

Customers at the four identical stations unload into two parallel chutes. Waste is unloaded directly into transfer trailers parked in a tunnel below each chute. The vertical drop allows vehicles to remain stationary as they empty their loads. These stations are known as direct load facilities. Figure 1 illustrates the current system of operation.

Figure 1 – Direct Load Facility



At Bow Lake, customers unload waste into a pit. Dozers then push the garbage into a single chute to a transfer trailer in a tunnel below. This is known as a push-pit facility.

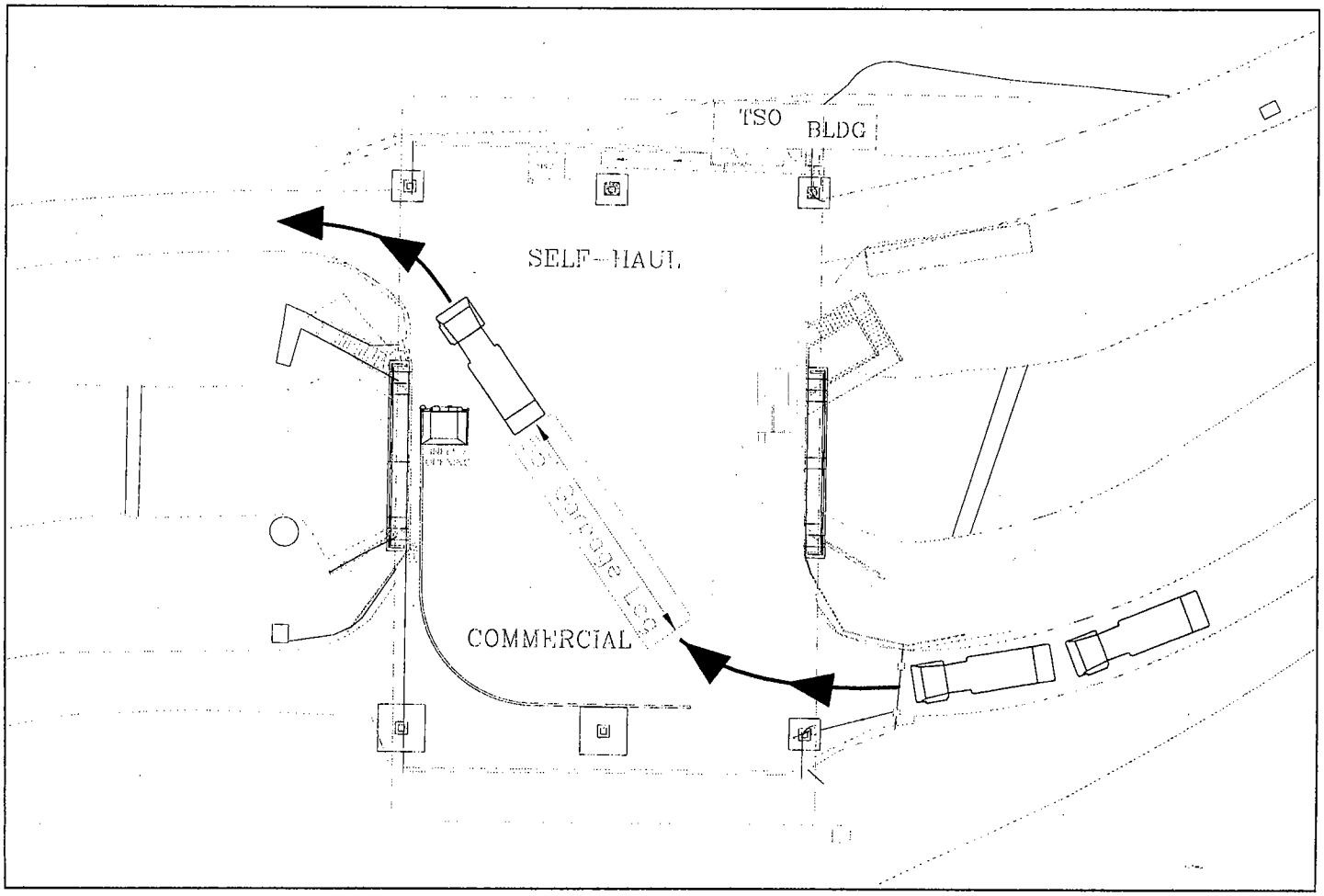
Compactor Installation and Operation:
At the direct load facilities, a single compaction unit would be installed in one of the two transfer trailer tunnels. The chute over the compactor would be replaced with a large hopper. The other tunnel would be covered to create a flat tipping floor.

Having compactors at the four direct load stations would add an intermediate step to the transfer process. After the waste is unloaded directly onto the tipping floor, it would then be preprocessed before being loaded into the hopper. Preprocessing the waste is necessary because oversize items could jam the compactor. The waste would be sorted for oversize items and then crushed and shredded by a dozer. This would require construction of a new push wall on the tipping floor. After preprocessing, a front-end loader would load the waste into the hopper.

Preprocessing requires a flat tipping floor, which would eliminate the vertical drop that currently allows vehicles to remain stationary while unloading. With a flat floor, commercial collector vehicles would have to move forward an average of 55 feet on the tipping floor to completely unload.

Virtually all of the tipping floor space at the four direct load stations would be needed for commercial haulers to unload and to preprocess garbage. Figure 2 depicts commercial operations at a flat floor facility.

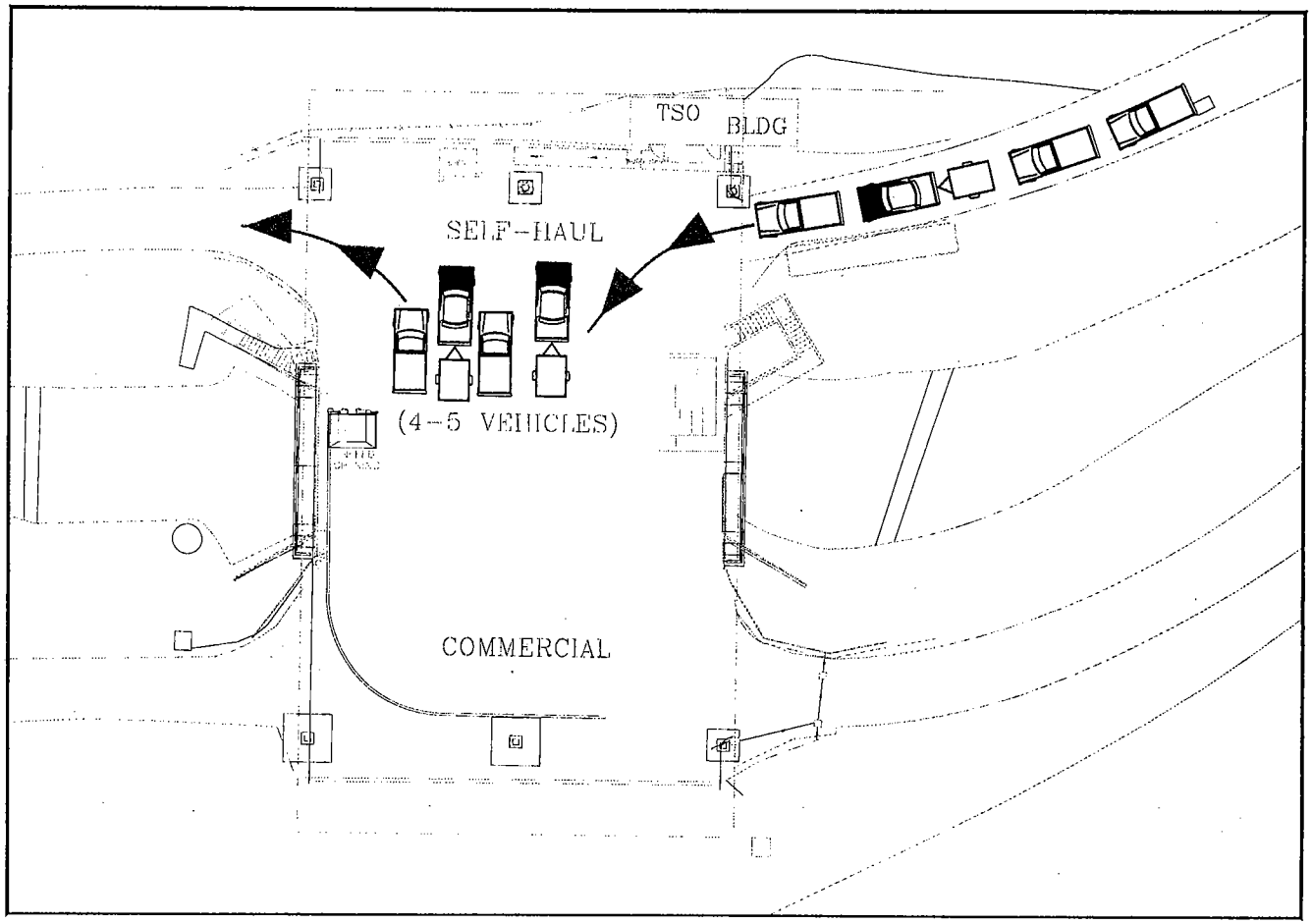
Figure 2



COMMERCIAL

Floor space at the direct load stations would be sufficient for only one commercial hauler to unload at a time. Self-haul traffic would be stopped while commercial haulers unload just as commercial haulers could not unload when self-haulers were doing so. Waste also could not be unloaded during preprocessing. This would create unavoidable service delays. Figure 3 shows self-haul operations at a flat floor facility.

Figure 3

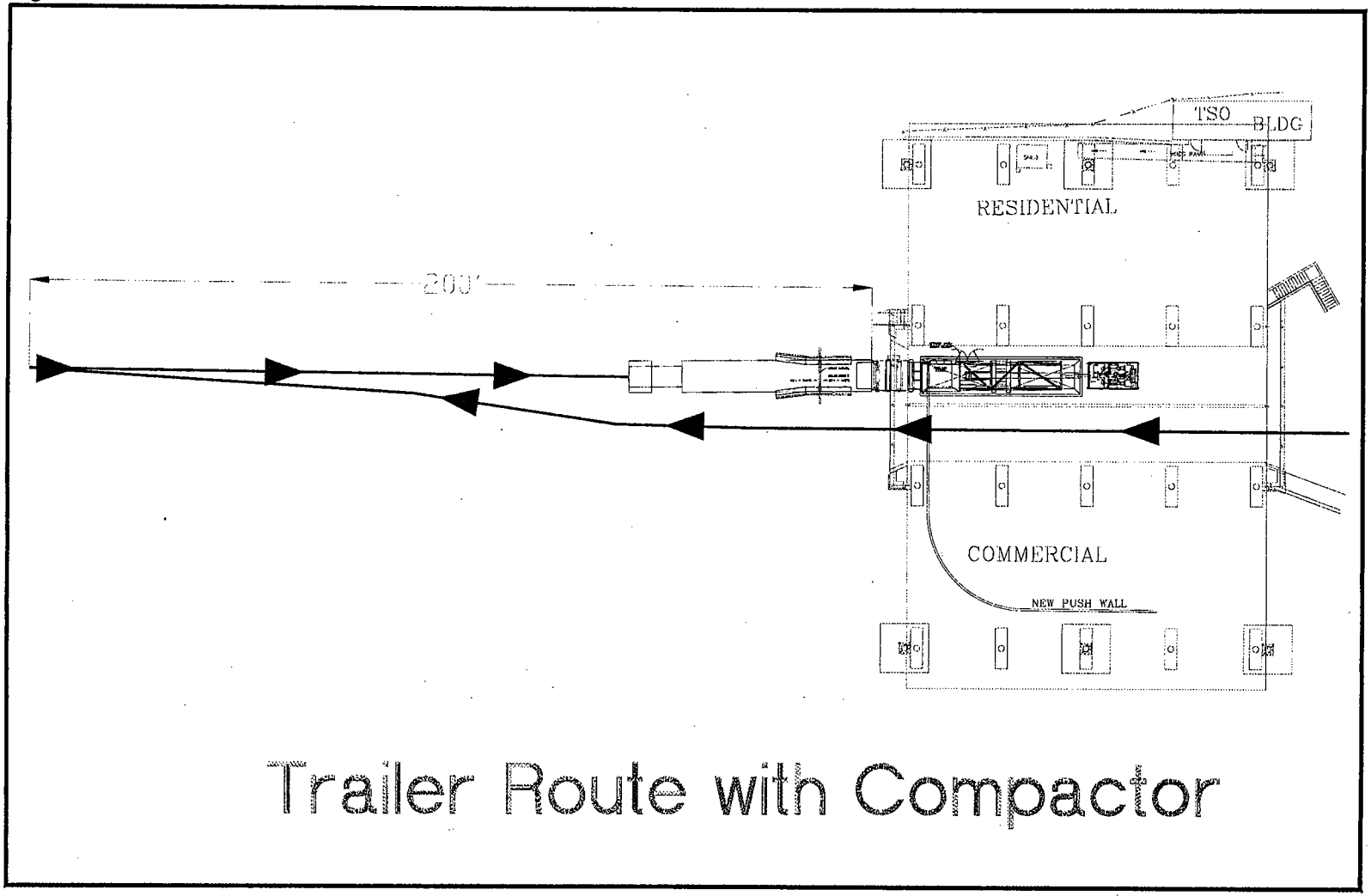


SELF-HAUL

To load a transfer trailer with compacted waste, it would first be pulled through the open tunnel (formerly the second chute). When it is clear of the tunnel, it would then have to be backed up into the other tunnel to connect to the compactor.

Driving through the tunnel and then backing up to the compactor would require about 200 linear feet of space. This is an important constraint for installing compactors at the existing stations. Additional back-up space would be needed at all five transfer stations. Figure 4 shows station operation with a compactor.

Figure 4



Trailer Route with Compactor

Facility Evaluations

The tables below summarize the results of the feasibility analysis for stations to be retrofitted with compactors. The first table specifically addresses tonnage and traffic impacts of compactor installation.

Compactor Installation in Existing Transfer Stations
Tonnage and Vehicle Capacity

	Algona	Bow Lake	Factoria	Houghton	Renton
Current No. Commercial Stalls (weekday)	2	2 or 3	2	4	2
Future No. Commercial Stalls	<1	2 to 4	<1	<1	<1
Current No. Self Haul Stalls (weekday)	8	10	8	6	4
Current No. Self Haul Stalls (weekend)	16	18	16	16	16
Future No. of SH Stalls (weekend)	5	18	5	5	5
Current Tonnage Capacity, tph	74	74	74	74	74
Future Tonnage Capacity, tph (Commercial Only)	28	Up to 200 assuming 2 compactors	28	28	28
Current SH Vehicle Capacity, vph	86.5	74	74	74	74
Future SH Vehicle Capacity, vph	37	74	37	37	37

Notes:

1. Average Self Haul unloading time on floor ~ 8 minutes.
2. Current tonnage capacity is constrained by the number of trailers that can be switched out per hour.
3. Future tonnage capacity constrained by the ability to process a 25 to 28 ton bale. Operations assumption is that it would take 15 minutes to tip commercial vehicle, push waste into small hopper (due to lack.of height from floor to compactor receiving floor), and form bale. Estimate number of commercial vehicles that can tip per hour is 4 commercial vehicles at 7 tons each.
4. Current vehicular capacity constrained by outbound scale.
5. Future vehicle capacity approximated by: (60 minutes/hr)/(8 minutes/vehicle) x (no. of stalls). If less than outbound scale capacity (74 vehicles/hr.), then this quantity is used.

The second table illustrates, if an insurmountable obstacle or "fatal flaw" is identified, the subsequent question or category for that station is no longer relevant. The questions addressed are:

- Does the station have the physical space needed for a compactor?
- Do site constraints allow trailer maneuvering?
- Is the loss of station capacity at direct load transfer stations acceptable?
- Are the construction costs of compactor retrofits acceptable?

Transfer Station Compactor Retrofit Feasibility					
	Algona	**Factoria**	**Renton**	**Houghton**	**Bow Lake**
Stations have the physical space to install waste compactors	Yes	Yes	Yes	Yes	Yes
Site constraints allow for trailer maneuvering	No	No	No	Yes	Yes
Loss of capacity at direct load facilities is acceptable	No longer applicable	No longer applicable	No longer applicable	No	Capacity increases
Construction costs of compactor retrofits are acceptable	No longer applicable	No longer applicable	No longer applicable	No longer applicable	Rebuilding is more cost-effective

Physical space

The analysis confirmed that all five transfer stations have the physical space required to install compactors. However, at the direct load facilities, station operators would operate in a constrained area and would need to exercise more control of traffic on the floor. Traffic flow would be adversely affected, including significant increases in vehicle queuing. Trailer parking at Bow Lake would be reduced. None of these impacts, however, would constitute an insurmountable obstacle to installing compactors at the stations.

Site constraints

There are no apparent site constraints at the Houghton and Bow Lake transfer stations. The other three stations, however, could not be retrofitted with compactors because the required 200 feet of trailer maneuvering room could not be provided at a reasonable cost.

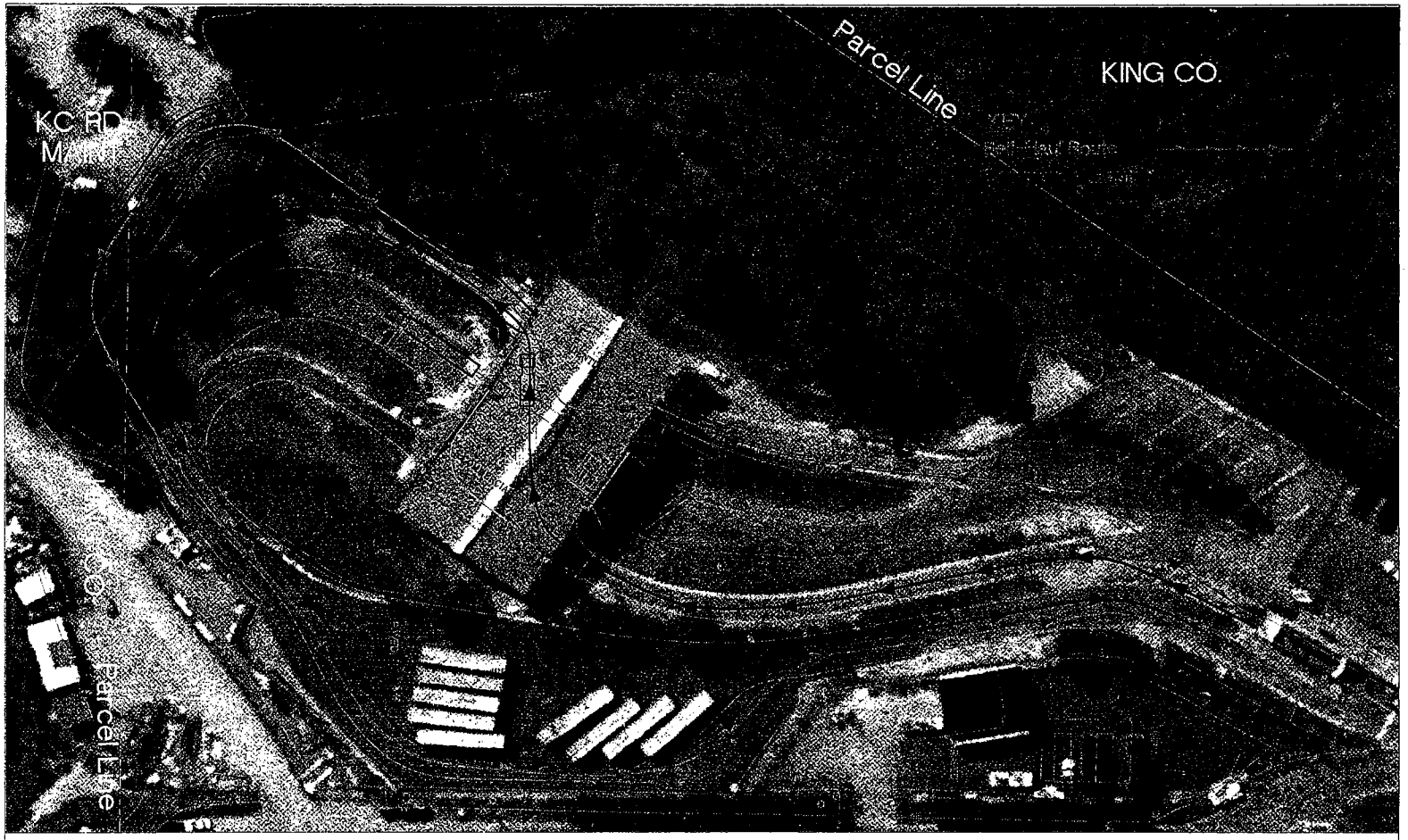
Providing space at Algona would require a massive vertical cut into the surrounding hillside. The cost would be considerable and eliminates Algona as a compactor candidate. Schematic A shows the changes required at Algona.

Schematic A

Algona Transfer Station

At Renton, providing sufficient space would require use of adjacent King County road maintenance land and extensive filling of an embankment. The analysis concluded that compactor installation at Renton would not be feasible. Schematic B shows the changes required at Renton.

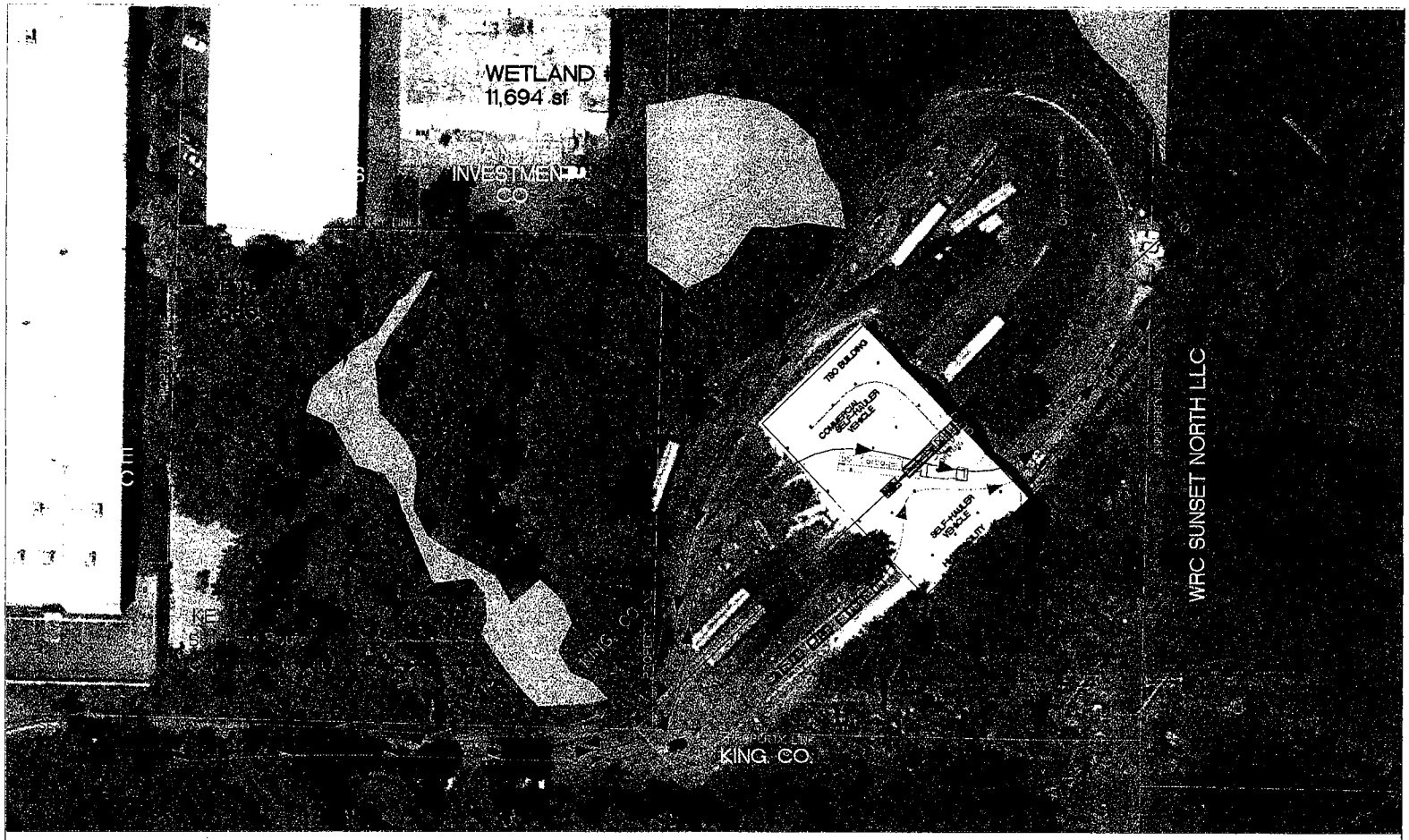
Schematic B



Renton Transfer Station

Achieving the clearance at Factoria would require relocating or realigning the Olympic natural gas pipeline. Such a project would be extremely difficult. Expanding roads into wetland areas and private property would also be required. Installing a compactor at Factoria would not be feasible. Schematic C shows the changes required at Factoria.

Schematic C



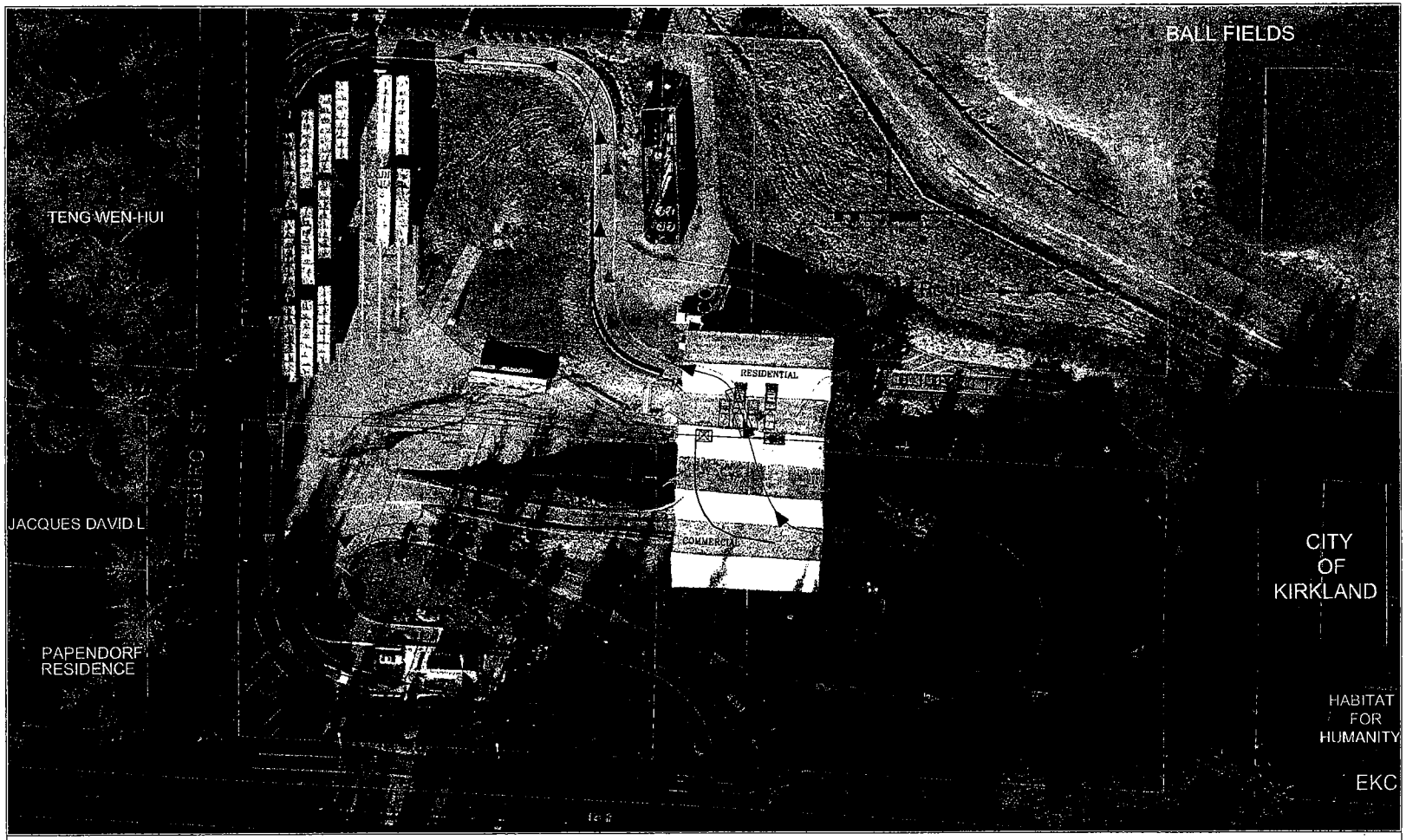
Factoria Transfer Station

Loss of capacity

All direct load transfer stations would suffer significant capacity losses as a result of installing compactors. For Algona, Renton and Factoria, site constraints also preclude compactor installation.

Installing a compactor at Houghton as at the other three direct load stations, would result in a 60% capacity loss. Self-haul activity at Houghton accounts for 84% of the traffic. The remaining capacity would not be sufficient for self-haul service especially on weekends. Schematic D shows the changes required at Houghton.

Schematic D



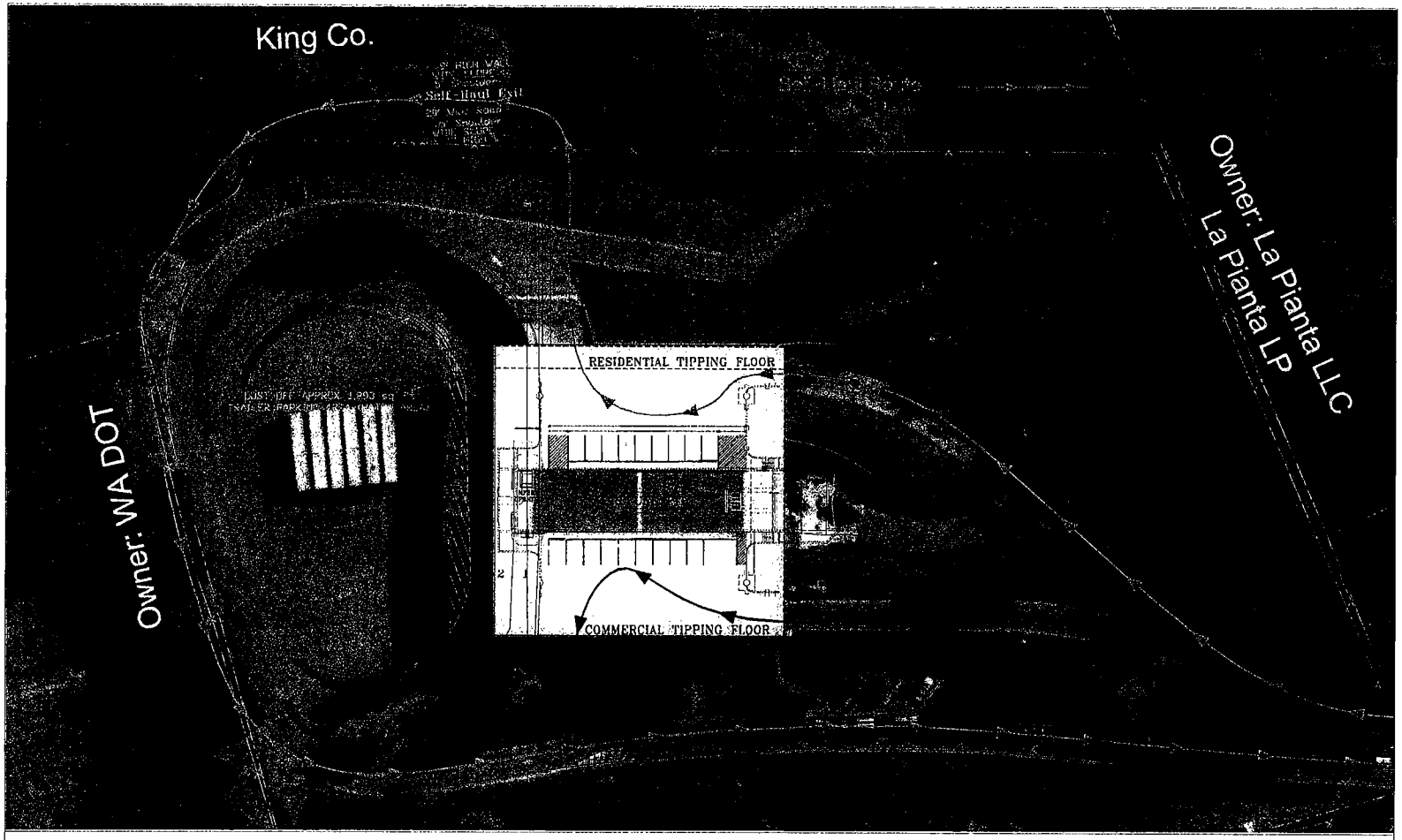
Houghton Transfer Station

Capacity at Bow Lake would actually increase from the current 74 tons-per-hour (tph) to 100 tph with one compactor or 200 tph with two compactors.

Construction costs for the direct load stations are not discussed because compactor installation at these stations is not feasible due to site constraints and capacity loss.

Due to its design, Bow Lake could accommodate installation of one or two compactors. Construction required for this installation would be subject to current code requirements of the City of Tukwila, Bow Lake's permitting jurisdiction. Construction costs to bring the facility up to current code are comparable to costs for building a new facility designed for use with a compactor. Schematic E shows the changes at Bow Lake.

Schematic E



Bowlake Transfer Station

Summary

The division's feasibility analysis demonstrates that installing compactors at the existing transfer stations would not be a viable approach because of one or more of the following obstacles:

- site constraints
- loss of waste handling capacity
- high costs

Site constraints and loss of capacity are significant at Algona, Factoria, Renton and Houghton. One or two compactors could be installed at Bow Lake; however, the cost of retrofitting the existing facility would likely exceed that of replacing it with a new structure.

APPENDIX F

THE TRANSFER STATION SITING PROCESS

APPENDIX F – THE TRANSFER STATION SITING PROCESS

There are well-established processes for siting a new transfer station. King County's siting process represents a compilation of the best practices currently employed in siting solid waste facilities. These practices have been drawn from the experiences of private firms and public agencies that have conducted solid waste siting studies within recent years both in the Pacific Northwest and around the U.S.

The objective of the siting process is to recommend a site to decision makers that is environmentally acceptable, feasible from an engineering and operational perspective, and is acceptable to the public. There are seven steps in the process:

1. Site identification. Potential sites are identified.
2. Broad site screening. Sites are screened according to general criteria (regulatory, environmental, development, or other situational factors), and a prioritized list of sites is compiled.
3. Focused site screening. Sites are screened for site-specific criteria and then ranked. The highest ranked sites proceed to comparative site evaluation.
4. Comparative site evaluation. The highest ranked sites are examined from environmental, operational, and policy perspectives. Sites meeting these criteria are ranked again, and the top three or four sites proceed to environmental review.
5. Environmental review. Final candidate sites undergo environmental review (SEPA process) and EIS development (if required). A preferred site alternative is recommended to the County Executive.
6. County decision making. The County Executive reviews the recommendation and approves, modifies, or rejects the recommended site.
7. The Metropolitan King County Council reviews the recommendation and approves, modifies, or rejects the recommended site.

Site characteristics are rated numerically to compare alternative sites in relation to a single criterion. It is important to note that no site may meet all the criteria, in which case, each criterion's relative weight and importance must be considered. Criterion weight compares the importance of a given criterion in relation to other criteria.

Three categories or sets of criteria applied during various stages of the siting process are exclusionary, technical, and community-specific.

1. Exclusionary criteria:
Exclusionary criteria are often defined by federal, state, or local laws or regulations and might exclude areas such as:

- Wetlands and floodplains
- Endangered and protected flora and fauna habitats
- Protected sites of historical, archeological, or cultural significance
- Prime agricultural land
- Parks and preserves
- Proximity to airports

2. Technical Criteria:
Technical criteria are used to ensure that sites selected for evaluation meet required engineering, operational and transportation needs. These criteria address the following issues:

- Central location to collection routes
- Access to major transportation routes
- Site size requirements
- Sufficient space for onsite roadways, queuing, and parking
- Truck and traffic compatibility
- Ability for expansion
- Space for recycling, composting, and public education
- Buffer space
- Gently sloping topography
- Access to utilities
- Zoning designations and requirements

3. Community-Specific Criteria:
Community-specific criteria address impacts that the facility may have on the surrounding community. These criteria are typically less technical in nature and incorporate local, social, and cultural factors. Examples of these criteria include:

- Environmental justice considerations
- Impact on air quality
- Impact on the local infrastructure
- Adjacent land uses
- Proximity to schools, churches, recreation sites, and residences
- Prevailing winds
- Number of residences impacted
- Presence of natural buffers
- Impacts on existing businesses
- Expansion capability

- Buffer zones and screening measures
- Traffic compatibility
- Impact on historic or cultural features
- Impact on neighborhood character

APPENDIX G

PROJECT IMPLEMENTATION SCHEDULES

APPENDIX G – PROJECT IMPLEMENTATION SCHEDULES

Package 1

	Siting		Design		Construction	
	Begin	End	Begin	End	Begin	End
New 1st NE (1)	N/A	N/A	Mar 2000	Mar 2006	Apr 2006	Dec 2007
Houghton Mitigation (2)	N/A	N/A	Apr 1998	Dec 2007	Jan 2008	Dec 2008
New Bow Lake	N/A	N/A	Feb 2002	May 2008	Jun 2008	Oct 2010
New Factoria/Eastgate	Apr 1990	Jul 1993	Jan 2007	Dec 2009	Jan 2010	Dec 2011
New NE Lake Washington	Jul 2008	Jul 2010	Jan 2007	Jun 2013	Jul 2013	Jul 2015
New South County	Jul 2008	Jul 2010	Jan 2007	Jun 2013	Jul 2013	Jul 2015
New Intermodal	Jul 2009	Jul 2011	Jan 2008	Dec 2013	Jan 2014	Dec 2015

Package 2

	Siting		Design		Construction	
	Begin	End	Begin	End	Begin	End
New 1st NE (1)	N/A	N/A	Mar 2000	Mar 2006	Apr 2006	Dec 2007
Houghton Mitigation (2)	N/A	N/A	Apr 1998	Dec 2007	Jan 2008	Dec 2008
New Bow Lake	N/A	N/A	Feb 2002	May 2008	Jun 2008	Oct 2010
New Factoria/Eastgate	Apr 1990	Jul 1993	Jan 2007	Dec 2009	Jan 2010	Dec 2011
New NE Lake Washington Commercial-Only	Jul 2008	Jul 2010	Jan 2007	May 2011	Jun 2011	Jul 2012
New South County	Jul 2008	Jul 2010	Jan 2007	May 2013	Jun 2013	Jul 2015
New Intermodal	Jul 2009	Jul 2011	Jan 2008	Dec 2013	Jan 2014	Dec 2015
Houghton Self-Haul Only	N/A	N/A	N/A	N/A	N/A	N/A

Package 2a

	Siting		Design		Construction	
	Begin	End	Begin	End	Begin	End
New 1st NE (1)	N/A	N/A	Mar 2000	Mar 2006	Apr 2006	Dec 2007
Houghton Mitigation (2)	N/A	N/A	Apr 1998	Dec 2007	Jan 2008	Dec 2008
New Bow Lake Commercial-Only	N/A	N/A	Feb 2002	May 2008	Jun 2008	Dec 2010
New Factoria/Eastgate	Apr 1990	Jul 1993	Jan 2007	Dec 2009	Jan 2010	Dec 2011
New NE Lake Washington Commercial-Only	Jul 2008	Jul 2010	Jan 2007	May 2011	Jun 2011	Jul 2012
New South County	Jul 2008	Jul 2010	Jan 2007	May 2013	Jun 2013	Jul 2015
New Intermodal	Jul 2009	Jul 2011	Jan 2008	Dec 2013	Jan 2014	Dec 2015
Houghton Self-Haul Only	N/A	N/A	N/A	N/A	N/A	N/A
Renton Self-Haul Only	N/A	N/A	N/A	N/A	N/A	N/A

Package 3

	Siting		Design		Construction	
	Begin	End	Begin	End	Begin	End
New 1st NE (1)	N/A	N/A	Mar 2000	Mar 2006	Apr 2006	Dec 2007
Houghton Mitigation (2)	N/A	N/A	Apr 1998	Dec 2007	Jan 2008	Dec 2008
New Bow Lake	N/A	N/A	Feb 2002	May 2008	Jun 2008	Oct 2010
New South County	Jul 2007	Jul 2009	Jan 2007	May 2013	Jun 2013	May 2015
New NE Lake Washington	Jul 2007	Jul 2009	Jan 2007	May 2013	Jun 2013	May 2015
New Intermodal	Jul 2009	Jul 2011	Jan 2008	Dec 2013	Jan 2014	Dec 2015
Factoria Self-Haul Only	N/A	N/A	Jan 2012	May 2015	Jun 2015	Dec 2015
Houghton Self-Haul Only	N/A	N/A	N/A	N/A	N/A	N/A
Renton Self-Haul Only	N/A	N/A	N/A	N/A	N/A	N/A

Package 4

	Siting		Design		Construction	
	Begin	End	Begin	End	Begin	End
New 1st NE (1)	N/A	N/A	Mar 2000	Mar 2006	Apr 2006	Dec 2007
Algona Self-Haul Only	N/A	N/A	Jan 2006	May 2007	Jun 2007	Dec 2007
Houghton Mitigation (2)	N/A	N/A	Apr 1998	Dec 2007	Jan 2008	Dec 2008
New Bow Lake Commercial Only	N/A	N/A	Feb 2002	May 2008	Jun 2008	Dec 2009
New Factoria/Eastgate	Apr 1990	Jul 1993	Jan 2007	Dec 2009	Jan 2010	Dec 2011
New NE Lake Washington Commercial Only	Jul 2008	Jul 2010	Jan 2007	May 2011	Jun 2011	Jul 2012
New South County Commercial Only	Jul 2008	Jul 2010	Jan 2007	May 2011	Jun 2011	Jul 2012
New Intermodal	Jul 2009	Jul 2011	Jan 2008	Dec 2013	Jan 2014	Dec 2015
Renton Self-Haul Only	N/A	N/A	N/A	N/A	N/A	N/A
Houghton Self-Haul Only	N/A	N/A	N/A	N/A	N/A	N/A

(1) The rebuilding of the 1st NE Transfer Station precedes issuance of Report 4 and although presented here as scheduled construction, work involving this station is not included in any particular package presented in this report.

(2) Houghton Mitigation includes two capital improvement projects – the transfer station roof replacement and safety improvements. Safety improvements include a number of site and facility enhancements to a few of which are noise mitigation, trailer parking, and a pedestrian/equestrian pathway.

APPENDIX H

LEVEL OF SERVICE TABLES

APPENDIX H – LEVEL OF SERVICE TABLES

This appendix contains tables showing the results of applying level of service criteria to the transfer stations addressed in this report. Criteria 1-17 were designed to evaluate the current conditions of the existing transfer stations in the county's waste handling system. It naturally followed that these level of service criteria were used to look at possible future stations and system packages.

Table 2-1 includes the conclusion of applying Criterion 17 to the existing transfer stations. Included here, as Table G-1, are all the elements of Criterion 17.

The remaining tables are Criteria 1 through 16 Level of Service as applied to "future" transfer stations delineated in the packages presented in Chapter 2.

At the point new facilities are actually sited, further studies will be conducted. The process of siting new facilities will consider compatibility with adjacent land use (Criterion 17). The following tables do not include an evaluation of new facilities using Criterion 17. New facilities will also require new land use permits. Acquisition of the land use permits will be successful if the local jurisdictions' land use requirements are met.

The tables included here are:

Existing Conditions

Table G-1: Application of Level of Service Criteria 17 to *Existing* Stations

Future Conditions

Table G-2: Results of Applying Level of Service Criteria to *Future* Stations as Self-Haul Only

Table G-3: Summary Results of Applying Level of Service Criteria to Package *Future* Stations

Table G-4: Results of Applying Level of Service Criteria to Package1 *Future* Stations

Table G-5: Results of Applying Level of Service Criteria to Package 1A *Future* Stations

Table G-6: Results of Applying Level of Service Criteria to Package 2 *Future* Stations

Table G-7: Results of Applying Level of Service Criteria to Package 2A *Future* Stations

Table G-8: Results of Applying Level of Service Criteria to Package 3 *Future* Stations

Table G-9: Results of Applying Level of Service Criteria to Package 4 *Future* Stations

Existing Conditions

Table G-1: Application of Level of Service Criterion 17 to Existing Stations
(as adopted by MSWMAC)

	Algona	Bow Lake	Factoria	Houghton	Renton
Consistency w/ Land Use Plans & Zoning Regulations					
Transfer station use is consistent with the land use comprehensive plan zoning regulations and building code of the host jurisdiction(s), including any variances or waivers.	Yes	Yes	Yes	Yes	Yes
Aesthetics					
1. Station is consistent in character and appearance with other developments in site vicinity or is largely obscured by topography, design feature, or landscaping	Yes	Yes	No[1]	No[2]	Yes
2. Effective dust and litter control measures are implemented to minimize offsite transfer station-related dust and litter	Yes	Yes	Yes	Yes	Yes
Noise					
1. Onsite noise from station operations meets applicable local noise ordinance standards.	Yes	Yes	Yes	Yes	Yes
Odor					
1. Operational best management practices are implemented to minimize the potential for offsite odor.	Yes	Yes	Yes	Yes	Yes
2. Meets PSCAA standards for odors; no complaints verified by regulatory agencies within last two years.	Yes	Yes	Yes	No[3]	Yes
Traffic					
1. Meet criteria for acceptable traffic on local streets					
a. Meets local jurisdiction's level of service standard	Yes	No[4]	Yes	Yes	Yes
b. Traffic does not spill out onto local streets 95% of the time	No[5]	No[5]	No[5]	Yes[6]	Yes
2. Transfer station-related traffic does not result in a safety hazard for other vehicles, bicycles, pedestrian or equestrian traffic; based on incidents reported to local law enforcement agency over last 2 years.	No Data	No Data	No Data	No Data	No Data
3. Transfer-station generated traffic does not significantly degrade LOS at any intersection	Yes	No[4]	Yes	Yes	Yes
General					
1.100 foot buffer between active area of station and nearest residence	Yes	Yes	Yes[7]	No[8]	Yes
2. Transfer station meets all state and local regulations governing design and operation of transfer stations.	Yes	Yes	Yes	Yes	Yes
Conclusion regarding Land Use Compatibility: Transfer station is compatible with surrounding Land Use.	Yes	Yes	No[1, 5]	No[2, 3, 8]	Yes

[1] FTS is a 30+ year old facility suffering from deferred maintenance. It is visible on the approach to adjacent businesses. This is a close call as the neighborhood is primarily commercial/industrial.
[2] HTS is a 30+ year old facility suffering from deferred maintenance. It is in a residential/recreational area and clearly visible from the road.
[3] One verifiable complaint in last two years.
[4] Spills out onto Orillia Road on weekends.
[5] Meets criterion weekdays, but not weekend days. Yes or no rating based on evaluating all days within study periods.
[6] For all weekend and weekdays combined, Houghton is at 95%.
[7] Meets 100 foot residential criterion, but businesses located within 100 ft.
[8] Transfer station parking is located within 100 feet of nearest residence.

Future Conditions

Table G-2: Results of Applying Level of Service Criteria to Future Stations as Self-Haul Only

Note: Many of the deficiencies identified in Chapter 2, Table 2-1 "Application of Level of Service Criteria to Transfer Station" are directly attributable to conflicts arising from commercial and self-haul customers queuing entering, dumping and exiting the constrained spaces of the existing facilities. Self-haul only facilities do not have the same requirements as a full service facility. The criteria in Table 2.1 were reapplied to the existing facilities proposed to be self-haul only and appear below. When the answer for a particular criterion changes due to being self-haul only, changes are italicized in blue.

			Algona SH-only	Factoria SH-only	Houghton SH-only	Renton SH-only
1.	Estimated time to a transfer facility within the service area for 90% of users	< 30 min=yes	YES	YES	YES	YES
2.	Time on site meets standard for 90% of total trips					
	a. commercial vehicles	< 16 min=yes	*N/A*	*N/A*	*N/A*	*N/A*
	b. business self haulers	< 30 min=yes	*N/A*	*N/A*	*N/A*	*N/A*
	c. residential self haulers	< 30 min=yes	YES	YES	YES	YES
3.	Facility hours meet user demand	YES/NO	YES	YES	YES	YES
4.	Recycling services...meet policies in SW Comp Plan					
	a. business self haulers	YES/NO	*N/A*	*N/A*	*N/A*	*N/A*
	b. residential self-haulers	YES/NO	NO	NO	NO	NO
5.	Vehicle capacity					
	a. meets current needs	YES/NO	NO	NO	NO	YES
	b. meets 20 year forecast needs	YES/NO	NO	NO	NO	*YES*
6.	Average daily handling capacity (tons)					
	a. meets current needs	YES/NO	*YES*	YES	*YES*	YES
	b. meets 20 year forecast needs	YES/NO	*YES*	*YES*	*YES*	YES
7.	Space for 3 days' storage					
	a. meets current needs	YES/NO	NO	NO	NO	NO
	b. meets 20-year forecast needs	YES/NO	NO	NO	NO	NO
8.	Space exists for station expansion					
	a. inside the property line	YES/NO	NO	YES	YES	YES
	b. on available adjacent lands through expansion	YES/NO	YES	YES	NO	NO
9.	Minimum roof clearance of 25 feet	YES/NO	YES*	*N/A**	*YES**	YES*
10.	Meets facility safety goals	YES/NO	NO*	NO*	NO*	NO*
11.	Ability to compact waste	YES/NO	NO	NO	NO	NO

** Self-haul facilities do not require 25 feet of clearance. However, each of these stations except FTS meet or will meet the criterion at the time of export.*

** The presence of these physical challenges doesn't mean that the stations operate in an unsafe manner.*

		Algona SH-only	Factoria SH-only	Houghton SH-only	Renton SH-only
12. a. Meets goals for structural integrity	YES/NO	YES	YES	YES	YES
b. Meets FEMA immediate occupancy standards	YES/NO	YES	NO	YES	YES
13. Meets applicable local noise ordinance levels	YES/NO	YES	YES	YES	YES
14. Meets PSCAA standards for odors	YES/NO	YES	YES	YES*	YES
15. Meets goals for traffic on local streets					
a. Meets LOS standard	YES/NO	YES	YES	YES	YES
b. Traffic does not extend onto local streets 95% of time	YES/NO	NO*	NO*	YES	YES
16. 100 foot buffer between active area & nearest residence	YES/NO	YES	YES*	NO	YES

* *New odor control system installed*

**Meets criteria weekdays, but not weekend days. Yes or No rating based on evaluating all days w/in study period.*

**Meets 100 ft from residence criteria, but existing business within 100 ft*

Table G-3: Summary Results of Applying Level of Service Criteria to FutureTransfer Station Packages

			Package 1	Package 1a	Package 2	Package 2a	Package 3	Package 4
1.	Estimated time to a transfer facility within the service area for 90% of users	< 30 min=yes	YES		YES	YES	NO	YES
2.	Time on site meets standard for 90% of total trips							
	a. commercial vehicles	< 16 min=yes	YES		YES	YES	YES	YES
	b. business self haulers	< 30 min=yes	YES		YES 1	YES 1	YES	YES 1
	c. residential self haulers	< 30 min=yes	YES		YES	YES	YES	YES
3.	Facility hours meet user demand	YES/NO	YES		YES	YES	YES	YES
4.	Recycling services meet policies in SW Comp Plan							
	a. business self-haulers	YES/NO	YES		YES 2	YES 2	YES	YES 2
	b. residential self-haulers	YES/NO	YES		NO	NO	NO	NO
5.	Vehicle capacity							
	a. meets current needs	YES/NO	YES		NO	NO	NO	NO
	b. meets 20-year forecast needs	YES/NO	YES		NO	NO	NO	NO
6.	Average daily handling capacity (tons)							
	a. meets current needs	YES/NO	YES		YES	YES	YES	YES
	b. meets 20-year forecast needs	YES/NO	YES		YES	YES	YES	YES
7.	Space for 3 days' storage							
	a. meets current needs	YES/NO	YES		NO	NO	NO	NO
	b. meets 20-year forecast needs	YES/NO	YES		NO	NO	NO	NO
8.	Space exists for station expansion							
	a. inside the property line	YES/NO	YES		YES	YES	YES	NO
	b. on available adjacent lands through expansion	YES/NO	YES		NO	NO	NO	NO
9.	Minimum roof clearance of 25 feet	YES/NO	YES		YES*	YES*	YES*3	YES*
10.	Meets facility safety goals	YES/NO	YES		NO*	NO*	NO*	NO*
11.	Ability to compact waste	YES/NO	YES		NO	NO	NO	NO

* *HTS new roof funding approved.*

* *The presence of these physical challenges doesn't mean that the stations operate in an unsafe manner.*

		Package 1	Package 1a	Package 2	Package 2a	Package 3	Package 4
12. a. Meets goals for structural integrity	YES/NO	YES		YES	YES	YES	YES
b. Meets FEMA immediate occupancy standards	YES/NO	YES		YES	YES	NO	YES
13. Meets applicable local noise ordinance levels	YES/NO	YES		YES	YES	YES	YES
14. Meets PSCAA standards for odors	YES/NO	YES		YES*	YES*	YES*	YES*

** New odor control system installed*

15. Meets goals for traffic on local streets							
a. Meets LOS standard	YES/NO	YES		YES	YES	YES	YES
b. Traffic does not extend onto local streets 95% of time	YES/NO	YES		YES	YES	NO*	NO

**Meets criteria weekdays, but not weekend days. Yes or No rating based on evaluating all days w/in study period.*

16. 100 foot buffer between active area and nearest residence	YES/NO	YES		NO	NO	NO	NO

**Meets 100 ft from residence criterion, but business within 100 ft.*

1) If business self haulers are eligible to use facility - have automated vehicles.

2) This is a policy decision - recycling services at transfer stations are a comp plan issue

3) For most self-haul customers, roof clearance is not an issue

Note: Package 1a (new Factoria) cannot be evaluated at this time.

Table G-4: Results of Applying Level of Service Criteria to Package 1 Future Stations

		New South County	New Bow Lake	Factoria / Eastgate	New NE Lake WA	Combined Effect
1. Estimated time to a transfer facility within the service area for 90% of users	< 30 min=yes	YES	YES	YES	YES	YES
2. Time on site meets standard for 90% of total trips						
a. commercial vehicles	< 16 min=yes	YES	YES	YES	YES	YES
b. business self haulers	< 30 min=yes	YES	YES	YES	YES	YES
c. residential self haulers	< 30 min=yes	YES	YES	YES	YES	YES
3. Facility hours meet user demand	YES/NO	YES	YES	YES	YES	YES
4. Recycling services meet policies in SW Comp Plan						
a. business self-haulers	YES/NO	YES	YES	YES	YES	YES
b. residential self-haulers	YES/NO	YES	YES	YES	YES	YES
5. Vehicle capacity						
a. meets current needs	YES/NO	YES	YES	YES	YES	YES
b. meets 20-year forecast needs	YES/NO	YES	YES	YES	YES	YES
6. Average daily handling capacity (tons)						
a. meets current needs	YES/NO	YES	YES	YES	YES	YES
b. meets 20-year forecast needs	YES/NO	YES	YES	YES	YES	YES
7. Space for 3 days' storage						
a. meets current needs	YES/NO	YES	YES	YES	YES	YES
b. meets 20-year forecast needs	YES/NO	YES	YES	YES	YES	YES
8. Space exists for station expansion						
a. inside the property line	YES/NO	YES	YES	YES	YES	YES
b. on available adjacent lands through expansion	YES/NO	YES	YES	YES	YES	YES
9. Minimum roof clearance of 25 feet	YES/NO	YES	YES	YES	YES	YES
10. Meets facility safety goals	YES/NO	YES	YES	YES	YES	YES
11. Ability to compact waste	YES/NO	YES	YES	YES	YES	YES

** HTS new roof funding approved.*

** The presence of these physical challenges doesn't mean that the stations operate in an unsafe manner.*

		New South County	New Bow Lake	Factoria / Eastgate	New NE Lake WA	Combined Effect
12. a. Meets goals for structural integrity	YES/NO	YES	YES	YES	YES	YES
b. Meets FEMA immediate occupancy standards	YES/NO	YES	YES	YES	YES	YES
13. Meets applicable local noise ordinance levels	YES/NO	YES	YES	YES	YES	YES
14. Meets PSCAA standards for odors	YES/NO	YES	YES	YES	YES	YES

** New odor control system installed*

15. Meets goals for traffic on local streets						
a. Meets LOS standard	YES/NO	YES	YES	YES	YES	YES
b. Traffic does not extend onto local streets 95% of time	YES/NO	YES	YES	YES	YES	YES

**Meets criteria weekdays, but not weekend days. Yes or No rating based on evaluating all days w/in study period.*

16. 100 foot buffer between active area and nearest residence	YES/NO	YES	YES	YES	YES	YES

**Meets 100 ft from residence criterion, but business within 100 ft.*

1) If business self haulers are eligible to use facility - have automated vehicles.

2) This is a policy decision - recycling services at transfer stations are a comp plan issue

3) For most self-haul customers, roof clearance is not an issue

Table G-5: Results of Applying Level of Service Criteria to Package 1A Future Stations

		New South County	New Bow Lake	New Factoria	New NE Lake WA	Combined Effect
1. Estimated time to a transfer facility within the service area for 90% of users	< 30 min=yes	YES	YES		YES	
2. Time on site meets standard for 90% of total trips						
a. commercial vehicles	< 16 min=yes	YES	YES		YES	
b. business self haulers	< 30 min=yes	YES	YES		YES	
c. residential self haulers	< 30 min=yes	YES	YES		YES	
3. Facility hours meet user demand	YES/NO	YES	YES		YES	
4. Recycling services meet policies in SW Comp Plan						
a. business self-haulers	YES/NO	YES	YES		YES	
b. residential self-haulers	YES/NO	YES	YES		YES	
5. Vehicle capacity						
a. meets current needs	YES/NO	YES	YES		YES	
b. meets 20-year forecast needs	YES/NO	YES	YES		YES	
6. Average daily handling capacity (tons)						
a. meets current needs	YES/NO	YES	YES		YES	
b. meets 20-year forecast needs	YES/NO	YES	YES		YES	
7. Space for 3 days' storage						
a. meets current needs	YES/NO	YES	YES		YES	
b. meets 20-year forecast needs	YES/NO	YES	YES		YES	
8. Space exists for station expansion						
a. inside the property line	YES/NO	YES	YES		YES	
b. on available adjacent lands through expansion	YES/NO	YES	YES		YES	
9. Minimum roof clearance of 25 feet	YES/NO	YES	YES		YES	
*HTS new roof funding approved.						
10. Meets facility safety goals	YES/NO	YES	YES		YES	
*The presence of these physical challenges doesn't mean that the stations operate in an unsafe manner.						
11. Ability to compact waste	YES/NO	YES	YES		YES	
12. a. Meets goals for structural integrity	YES/NO	YES	YES		YES	
b. Meets FEMA immediate occupancy standards	YES/NO	YES	YES		YES	

		New South County	New Bow Lake	New Factoria	New NE Lake WA	Combined Effect
13. Meets applicable local noise ordinance levels	YES/NO	YES	YES		YES	
14. Meets PSCAA standards for odors	YES/NO	YES	YES		YES	
15. Meets goals for traffic on local streets						
a. Meets LOS standard	YES/NO	YES	YES		YES	
b. Traffic does not extend onto local streets 95% of time	YES/NO	YES	YES		YES	
16. 100 foot buffer between active area and nearest residence	YES/NO	YES	YES		YES	

**New odor control system installed*

**Meets criteria weekdays, but not weekend days. Yes or No rating based on evaluating all days w/in study period.*

**Meets 100 ft from residence criterion, but business within 100 ft.*

1) If business self haulers are eligible to use facility - have automated vehicles.

2) This is a policy decision - recycling services at transfer stations are a comp plan issue

3) For most self-haul customers, roof clearance is not an issue

Note: Package 1a (new Factoria) cannot be evaluated at this time.

Table G-6: Results of Applying Level of Service Criteria to Package 2 Future Stations

		New South County	New Bow Lake	Factoria / Eastgate	Houghton SH-Only	New NE Lake WA Comm Only	Combined Effect
1. Estimated time to a transfer facility within the service area for 90% of users	< 30 min=yes	YES	YES	YES	YES	YES	YES
2. Time on site meets standard for 90% of total trips							
a. commercial vehicles	< 16 min=yes	YES	YES	YES	N/A	YES	YES
b. business self haulers	< 30 min=yes	YES	YES	YES	N/A	YES 1	YES 1
c. residential self haulers	< 30 min=yes	YES	YES	YES	YES	N/A	YES
3. Facility hours meet user demand	YES/NO	YES	YES	YES	YES	YES	YES
4. Recycling services meet policies in SW Comp Plan							
a. business self-haulers	YES/NO	YES	YES	YES	N/A	YES 2	YES 2
b. residential self-haulers	YES/NO	YES	YES	YES	NO	N/A	NO
5. Vehicle capacity							
a. meets current needs	YES/NO	YES	YES	YES	NO	YES	NO
b. meets 20-year forecast needs	YES/NO	YES	YES	YES	NO	YES	NO
6. Average daily handling capacity (tons)							
a. meets current needs	YES/NO	YES	YES	YES	YES	YES	YES
b. meets 20-year forecast needs	YES/NO	YES	YES	YES	YES	YES	YES
7. Space for 3 days' storage							
a. meets current needs	YES/NO	YES	YES	YES	NO	YES	NO
b. meets 20-year forecast needs	YES/NO	YES	YES	YES	NO	YES	NO
8. Space exists for station expansion							
a. inside the property line	YES/NO	YES	YES	YES	YES	YES	YES
b. on available adjacent lands through expansion	YES/NO	YES	YES	YES	NO	YES	NO
9. Minimum roof clearance of 25 feet	YES/NO	YES	YES	YES	YES*	YES	YES*
10. Meets facility safety goals	YES/NO	YES	YES	YES	NO*	YES	NO*

* *HTS new roof funding approved.*

* *The presence of these physical challenges doesn't mean that the stations operate in an unsafe manner.*

		New South County	New Bow Lake	Factoria / Eastgate	Houghton SH-Only	New NE Lake WA Comm Only	Combined Effect
11. Ability to compact waste	YES/NO	YES	YES	YES	NO	YES	NO
12. a. Meets goals for structural integrity	YES/NO	YES	YES	YES	YES	YES	YES
b. Meets FEMA immediate occupancy standards	YES/NO	YES	YES	YES	YES	YES	YES
13. Meets applicable local noise ordinance levels	YES/NO	YES	YES	YES	YES	YES	YES
14. Meets PSCAA standards for odors	YES/NO	YES	YES	YES	YES*	YES	YES*
15. Meets goals for traffic on local streets							
a. Meets LOS standard	YES/NO	YES	YES	YES	YES	YES	YES
b. Traffic does not extend onto local streets 95% of time	YES/NO	YES	YES	YES	YES	YES	YES
16. 100 foot buffer between active area and nearest residence	YES/NO	YES	YES	YES	NO	YES	NO

** New odor control system installed*

**Meets criteria weekdays, but not weekend days. Yes or No rating based on evaluating all days w/in study period.*

**Meets 100 ft from residence criterion, but business within 100 ft.*

1) If business self haulers are eligible to use facility - have automated vehicles.

2) This is a policy decision - recycling services at transfer stations are a comp plan issue

3) For most self-haul customers, roof clearance is not an issue

Table G-7: Results of Applying Level of Service Criteria to Package 2A Future Stations

			New South County	Factoria / Eastgate	Houghton SH-Only	Renton SH-Only	New NE Lake WA Comm Only	New Bow Lake Comm Only	Combined Effect
1.	Estimated time to a transfer facility within the service area for 90% of users	< 30 min=yes	YES	YES	YES	YES	YES	YES	YES
2.	Time on site meets standard for 90% of total trips								
	a. commercial vehicles	< 16 min=yes	YES	YES	N/A	N/A	YES	YES	YES
	b. business self haulers	< 30 min=yes	YES	YES	N/A	N/A	YES 1	YES 1	YES1
	c. residential self haulers	< 30 min=yes	YES	YES	YES	YES	N/A	N/A	YES
3.	Facility hours meet user demand	YES/NO	YES	YES	YES	YES	YES	YES	YES
4.	Recycling services meet policies in SW Comp Plan								
	a. business self-haulers	YES/NO	YES	YES	N/A	N/A	YES 2	YES 2	YES 2
	b. residential self-haulers	YES/NO	YES	YES	NO	NO	N/A	N/A	NO
5.	Vehicle capacity								
	a. meets current needs	YES/NO	YES	YES	NO	YES	YES	YES	NO
	b. meets 20-year forecast needs	YES/NO	YES	YES	NO	YES	YES	YES	NO
6.	Average daily handling capacity (tons)								
	a. meets current needs	YES/NO	YES	YES	YES	YES	YES	YES	YES
	b. meets 20-year forecast needs	YES/NO	YES	YES	YES	YES	YES	YES	YES
7.	Space for 3 days' storage								
	a. meets current needs	YES/NO	YES	YES	NO	NO	YES	YES	NO
	b. meets 20-year forecast needs	YES/NO	YES	YES	NO	NO	YES	YES	NO
8.	Space exists for station expansion								
	a. inside the property line	YES/NO	YES	YES	YES	YES	YES	YES	YES
	b. on available adjacent lands through expansion	YES/NO	YES	YES	NO	NO	YES	YES	NO
9.	Minimum roof clearance of 25 feet	YES/NO	YES	YES	YES*	YES	YES	YES	YES*
10.	Meets facility safety goals	YES/NO	YES	YES	NO*	NO*	YES	YES	NO*
11.	Ability to compact waste	YES/NO	YES	YES	NO	NO	YES	YES	NO

** HTS new roof funding approved.*

** The presence of these physical challenges doesn't mean that the stations operate in an unsafe manner.*

		New South County	Factoria / Eastgate	Houghton SH-Only	Renton SH-Only	New NE Lake WA Comm Only	New Bow Lake Comm Only	Combined Effect
12. a. Meets goals for structural integrity	YES/NO	YES	YES	YES	YES	YES	YES	YES
b. Meets FEMA immediate occupancy standards	YES/NO	YES	YES	YES	YES	YES	YES	YES
13. Meets applicable local noise ordinance levels	YES/NO	YES	YES	YES	YES	YES	YES	YES
14. Meets PSCAA standards for odors	YES/NO	YES	YES	YES*	YES	YES	YES	YES*

** New odor control system installed*

15. Meets goals for traffic on local streets								
a. Meets LOS standard	YES/NO	YES	YES	YES	YES	YES	YES	YES
b. Traffic does not extend onto local streets 95% of time	YES/NO	YES	YES	YES	YES	YES	YES	YES

**Meets criteria weekdays, but not weekend days. Yes or No rating based on evaluating all days w/in study period.*

16. 100 foot buffer between active area and nearest residence	YES/NO	YES	YES	NO	YES	YES	YES	NO

**Meets 100 ft from residence criterion, but business within 100 ft.*

1) If business self haulers are eligible to use facility - have automated vehicles.

2) This is a policy decision - recycling services at transfer stations are a comp plan issue

3) For most self-haul customers, roof clearance is not an issue

Table G-8: Results of Applying Level of Service Criteria to Package 3 Future Stations

			New South County	New Bow Lake	Renton SH-Only	Factoria SH-Only	Houghton SH-Only	MEGA New NE Lake WA	Combined Effect
1.	Estimated time to a transfer facility within the service area for 90% of users	< 30 min=yes	YES	YES	YES	YES	YES	NO	NO
2.	Time on site meets standard for 90% of total trips								
	a. commercial vehicles	< 16 min=yes	YES	YES	N/A	N/A	N/A	YES	YES
	b. business self haulers	< 30 min=yes	YES	YES	N/A	N/A	N/A	YES	YES
	c. residential self haulers	< 30 min=yes	YES	YES	YES	YES	YES	YES	YES
3.	Facility hours meet user demand	YES/NO	YES	YES	YES	YES	YES	YES	YES
4.	Recycling services...meet policies in SW Comp Plan								
	a. business self-haulers	YES/NO	YES	YES	N/A	N/A	N/A	YES	YES
	b. residential self-haulers	YES/NO	YES	YES	NO	NO	NO	YES	NO
5.	Vehicle capacity								
	a. meets current needs	YES/NO	YES	YES	YES	YES	NO	YES	NO
	b. meets 20-year forecast needs	YES/NO	YES	YES	YES	NO	NO	YES	NO
6.	Average daily handling capacity (tons)								
	a. meets current needs	YES/NO	YES	YES	YES	YES	YES	YES	YES
	b. meets 20-year forecast needs	YES/NO	YES	YES	YES	YES	YES	YES	YES
7.	Space for 3 days' storage								
	a. meets current needs	YES/NO	YES	YES	NO	NO	NO	YES	NO
	b. meets 20-year forecast needs	YES/NO	YES	YES	NO	NO	NO	YES	NO
8.	Space exists for station expansion								
	a. inside the property line	YES/NO	YES	YES	YES	YES	YES	YES	YES
	b. on available adjacent lands through expansion	YES/NO	YES	YES	NO	YES	NO	YES	NO
9.	Minimum roof clearance of 25 feet	YES/NO	YES	YES	YES	NO 3	YES*	YES	YES*3

* *HTS new roof funding approved.*

		New South County	New Bow Lake	Renton SH-Only	Factoria SH-Only	Houghton SH-Only	MEGA New NE Lake WA	Combined Effect
10. Meets facility safety goals	YES/NO	YES	YES	NO*	NO*	NO*	YES	NO*

** The presence of these physical challenges doesn't mean that the stations operate in an unsafe manner.*

11. Ability to compact waste	YES/NO	YES	YES	NO	NO	NO	YES	NO
12. a. Meets goals for structural integrity	YES/NO	YES	YES	YES	YES	YES	YES	YES
b. Meets FEMA immediate occupancy standards	YES/NO	YES	YES	YES	NO	YES	YES	NO
13. Meets applicable local noise ordinance levels	YES/NO	YES	YES	YES	YES	YES	YES	YES
14. Meets PSCAA standards for odors	YES/NO	YES	YES	YES	YES	YES*	YES	YES*

** New odor control system installed*

15. Meets goals for traffic on local streets								
a. Meets LOS standard	YES/NO	YES	YES	YES	YES	YES	YES	YES
b. Traffic does not extend onto local streets 95% of time	YES/NO	YES	YES	YES	NO*	YES	YES	NO*

**Meets criteria weekdays, but not weekend days. Yes or No rating based on evaluating all days w/in study period.*

16. 100 foot buffer between active area and nearest residence	YES/NO	YES	YES	YES	YES*	NO	YES	NO

**Meets 100 ft from residence criterion, but business within 100 ft.*

1) If business self haulers are eligible to use facility - have automated vehicles.

2) This is a policy decision - recycling services at transfer stations are a comp plan issue

3) For most self-haul customers, roof clearance is not an issue

Table G-9: Results of Applying Level of Service Criteria to Package 4 Future Stations

		Algona SH-Only	New South County Comm Only	New Bow Lake Comm Only	Renton SH-Only	Factoria / Eastgate	Houghton SH-Only	New NE Lake WA Comm Only	Comb. Effect
1. Estimated time to a transfer facility within the service area for 90% of users	< 30 min=yes	YES	YES	YES	YES	YES	YES	YES	YES
2. Time on site meets standard for 90% of total trips									
a. commercial vehicles	< 16 min=yes	N/A	YES	YES	N/A	YES	N/A	YES	YES
b. business self haulers	< 30 min=yes	N/A	YES 1	YES 1	N/A	YES	N/A	YES 1	YES 1
c. residential self haulers	< 30 min=yes	YES	N/A	N/A	YES	YES	YES	N/A	YES
3. Facility hours meet user demand	YES/NO	YES	YES	YES	YES	YES	YES	YES	YES
4. Recycling services...meet policies in SW Comp Plan									
a. business self-haulers	YES/NO	N/A	YES 2	YES 2	N/A	YES	N/A	YES 2	YES 2
b. residential self-haulers	YES/NO	NO	N/A	N/A	NO	YES	NO	N/A	NO
5. Vehicle capacity									
a. meets current needs	YES/NO	NO	YES	YES	YES	YES	NO	YES	NO
b. meets 20-year forecast needs	YES/NO	NO	YES	YES	YES	YES	NO	YES	NO
6. Average daily handling capacity (tons)									
a. meets current needs	YES/NO	YES	YES	YES	YES	YES	YES	YES	YES
b. meets 20-year forecast needs	YES/NO	YES	YES	YES	YES	YES	YES	YES	YES
7. Space for 3 days' storage									
a. meets current needs	YES/NO	NO	YES	YES	NO	YES	NO	YES	NO
b. meets 20-year forecast needs	YES/NO	NO	YES	YES	NO	YES	NO	YES	NO
8. Space exists for station expansion									
a. inside the property line	YES/NO	NO	YES	YES	YES	YES	YES	YES	NO
b. on available adjacent lands through expansion	YES/NO	YES	YES	YES	NO	YES	NO	YES	NO
9. Minimum roof clearance of 25 feet	YES/NO	YES	YES	YES	YES	YES	YES*	YES	YES*
10. Meets facility safety goals	YES/NO	NO*	YES	YES	NO*	YES	NO*	YES	NO*

** HTS new roof funding approved.*

** The presence of these physical challenges doesn't mean that the stations operate in an unsafe manner.*

		Algona SH-Only	New South County Comm Only	New Bow Lake Comm Only	Renton SH-Only	Factoria / Eastgate	Houghton SH-Only	New NE Lake WA Comm Only	Comb. Effect
11. Ability to compact waste	YES/NO	NO	YES	YES	NO	YES	NO	YES	NO
12. a. Meets goals for structural integrity	YES/NO	YES	YES	YES	YES	YES	YES	YES	YES
b. Meets FEMA immediate occupancy standards	YES/NO	YES	YES	YES	YES	YES	YES	YES	YES
13. Meets applicable local noise ordinance levels	YES/NO	YES	YES	YES	YES	YES	YES	YES	YES
14. Meets PSCAA standards for odors	YES/NO	YES	YES	YES	YES	YES	YES*	YES	YES*

** New odor control system installed*

15. Meets goals for traffic on local streets									
a. Meets LOS standard	YES/NO	YES	YES	YES	YES	YES	YES	YES	YES
b. Traffic does not extend onto local streets 95% of time	YES/NO	NO*	YES	YES	YES	YES	YES	YES	NO

**Meets criteria weekdays, but not weekend days. Yes or No rating based on evaluating all days w/in study period.*

16. 100 foot buffer between active area and nearest residence	YES/NO	YES	YES	YES	YES	YES	NO	YES	NO

**Meets 100 ft from residence criteria, but existing business within 100 ft.*

1) If business self haulers are eligible to use facility - have automated vehicles.

2) This is a policy decision - recycling services at transfer stations are a comp plan issue

3) For most self-haul customers, roof clearance is not an issue

APPENDIX I

FINANCIAL PROJECTIONS

APPENDIX I – FINANCIAL PROJECTIONS

The Solid Waste Division utilizes a financial planning model to forecast revenue and expenditures and to forecast the need for tipping fee adjustments. The model projects annual total revenues which are then compared to annual expenditures.

In Table I-1, lines 1 and 2 show the current forecast for the tipping fee and tonnage volumes. Line 4 is the rate ceiling based on the Executive's commitment to maintain rates at or below the rate of inflation until Cedar Hills closes (base year 2001).

Lines 7-14 project revenue. The disposal fee is the primary source of revenue for the division.

Expenditures begin on Line 18. Existing debt obligations will be paid off by the year 2013. Projections regarding new debt assume Package 1 costs, as this is the most capital intensive package. Line 19 details the effects of various debt issues coming online as the construction of new stations proceeds. Annual cost of debt service peaks in 2011. All new bond issues are assumed to have 20-year maturities.

Other major cost items include:

- The Capital Equipment Replacement Program (CERP), Line 20, which rises until 2011 when it begins to decline in anticipation of the Cedar Hills Landfill closure at the end of 2015. CERP costs begin growing again in 2016 to address various equipment needs throughout the transfer and transport system.

- The Landfill Reserve Fund, Line 21, has been calculated to provide sufficient money to maintain Cedar Hills for 30 years after it is closed. This becomes zero in 2016, once the landfill is closed.

- The rent on the landfill, Line 25, also goes to zero after 2015, as do the disposal costs shown in lines 35 and 36.

- Line 29 reflects the cost of exporting, which is assumed to also include any expenses involved with future intermodal facilities. Under the current forecast the tipping fee is expected to rise sharply in 2016.

- Line 42 reflects the division's 45 days cash reserve requirement. Dropping below the 45 day cash reserve may prompt a rate increase.

Table I-1: Financial Model Summary

		2006	2007	2008	2009	2010	2011	2012	2013
1	Disposal Fee Projection ($/ton)	82.50	82.50	95.00	95.00	95.00	105.00	105.00	105.00
2	Total Disposal Tonnage	978,200	1,022,300	1,050,800	1,080,800	1,115,200	1,133,800	1,160,200	1,178,800
3									
4	Rate Commitment Ceiling	95.37	98.23	101.18	104.22	107.34	110.56	113.88	117.30
5									
6	**Revenues**								
7	Net Disposal Fees	80,031,481	83,761,632	99,514,593	102,386,953	105,637,747	118,737,117	121,495,605	123,438,921
8	MRW	2,973,435	3,062,638	3,154,517	3,249,153	3,346,627	3,447,026	3,550,437	3,656,950
9	Interest Earnings	930,330	815,954	308,259	433,818	399,206	347,016	498,066	575,822
10	Grants	588,286	200,000	180,000	180,000	250,000	250,000	250,000	250,000
11	LF gas / energy	-	-	200,000	350,000	360,500	371,315	382,454	393,928
12	Leases, rental Income	22,800	22,800	23,484	24,189	24,914	25,662	26,431	27,224
13	Other	743,999	751,439	758,953	766,543	774,208	781,950	789,770	797,668
14	**Total**	85,290,331	88,614,463	104,139,807	107,390,655	110,793,202	123,960,086	126,992,764	129,140,513
15									
16									
17	**Expenditures**								
18	Debt Service - Existing Debt	6,272,857	6,290,636	2,714,284	2,711,743	2,722,137	1,190,338	1,191,803	0
19	Debt Service - New Debt	-	4,343,490	6,961,358	10,692,765	10,692,765	17,888,422	17,888,422	17,888,422
20	CERP	3,398,342	3,534,276	3,675,647	3,822,673	3,975,579	2,976,914	2,665,992	2,325,433
21	Landfill Reserve Fund	5,634,432	6,065,101	6,421,212	6,802,671	7,229,764	7,570,857	7,979,555	8,350,706
22	Construction Fund Transfer	2,386,808	4,000,000	1,000,000	1,000,000	2,000,000	2,000,000	4,000,000	4,000,000
23	Overhead, Cx/DNRP	3,841,375	3,956,616	4,075,315	4,197,574	4,323,501	4,453,206	4,586,803	4,724,407
24	SWD Admin	5,722,331	5,894,001	6,070,821	6,252,946	6,440,534	6,633,750	6,832,762	7,037,745
25	Rent, Cedar Hills	7,426,300	7,649,089	7,878,562	8,114,919	8,358,366	8,609,117	8,867,391	9,133,412
26	Legal	655,549	675,215	695,472	716,336	737,826	759,961	782,760	806,243
27	Finance & Admin	4,167,469	4,292,493	4,421,268	4,553,906	4,690,523	4,831,239	4,976,176	5,125,461
28	Recycling & Enviro Svs	9,186,400	9,461,992	9,745,852	10,038,227	10,339,374	10,649,555	10,969,042	11,298,113
29	Waste Export Costs	0	0	0	0	0	0	0	0
30	Transfer and Transportation								
31	Variable	16,786,720	17,720,235	18,856,835	19,846,728	21,095,567	22,112,743	23,288,870	24,367,788
32	Savings from Compaction	0	0	0	0	(1,155,481)	(1,210,230)	(1,851,778)	(1,937,771)
33	Fixed	11,508,748	11,854,011	12,209,631	12,575,920	12,953,198	13,341,794	13,742,048	14,154,309
34	Disposal								
35	Variable	6,598,400	6,965,340	7,412,106	7,801,206	8,292,090	8,691,915	9,154,218	9,578,311
36	Fixed	8,353,729	8,604,340	8,862,471	9,128,345	9,402,195	9,684,261	9,974,789	10,274,032
37									
38	Solid Waste Div. Total Costs	91,939,460	101,306,836	101,000,833	108,255,959	112,097,939	120,183,842	125,048,852	127,126,612
39									
40									
41	Ending Fund Balance	20,398,841	7,706,467	10,845,441	9,980,138	8,675,400	12,451,644	14,395,556	16,409,457
42	Target	8,238,171	8,559,153	8,919,835	9,260,283	9,507,862	9,856,627	10,165,770	10,532,298
43	Above / Below	12,160,670	(852,686)	1,925,606	719,854	(832,462)	2,595,017	4,229,786	5,877,159

Table I-1: Financial Model Summary

		2014	2015	2016	2017	2018	2019	2020	2021
1	Disposal Fee Projection ($/ton)	105.00	105.00	128.00	128.00	144.00	144.00	140.00	140.00
2	Total Disposal Tonnage	1,210,200	1,242,100	1,264,900	1,295,700	1,327,700	1,353,800	1,388,500	1,402,500
3									
4	Rate Commitment Ceiling	120.81	124.44	128.17	132.02	135.98	140.06	144.26	148.59
5									
6	**Revenues**								
7	Net Disposal Fees	126,719,878	130,053,058	161,532,927	165,459,054	169,538,145	189,112,473	193,951,818	195,903,346
8	MRW	3,766,658	3,879,658	3,996,048	4,115,929	4,239,407	4,366,590	4,497,587	4,632,515
9	Interest Earnings	656,378	723,364	827,899	856,911	787,699	609,016	946,668	1,192,022
10	Grants	250,000	250,000	250,000	250,000	250,000	250,000	250,000	250,000
11	LF gas / energy	405,746	417,918	430,456	443,370	456,671	470,371	484,482	499,016
12	Leases, rental Income	28,041	28,882	29,749	30,641	31,561	32,507	33,483	34,487
13	Other	805,644	813,701	821,838	830,056	838,357	846,740	855,208	863,760
14	**Total**	132,632,346	136,166,581	167,888,917	171,985,961	176,141,839	195,687,696	201,019,245	203,375,145
15									
16									
17	**Expenditures**								
18	Debt Service - Existing Debt	0	0	0	0	0	0	0	0
19	Debt Service - New Debt	17,888,422	17,888,422	17,888,422	17,888,422	17,888,422	17,888,422	17,888,422	17,888,422
20	CERP	1,953,364	1,547,808	1,609,720	1,674,109	1,741,074	1,810,717	1,883,145	1,958,471
21	Landfill Reserve Fund	8,830,340	9,334,995	0	0	0	0	0	0
22	Construction Fund Transfer	4,000,000	4,000,000	0	0	0	0	0	0
23	Overhead, Cx/DNRP	4,866,139	5,012,123	5,162,487	5,317,361	5,476,882	5,641,189	5,810,424	5,984,737
24	SWD Admin	7,248,878	7,466,344	7,690,334	7,921,044	8,158,676	8,403,436	8,655,539	8,915,205
25	Rent, Cedar Hills	9,407,415	9,689,637	0	0	0	0	0	0
26	Legal	830,430	855,343	586,748	604,350	622,481	641,155	660,390	680,202
27	Finance & Admin	5,279,225	5,437,602	5,600,730	5,768,752	5,941,814	6,120,069	6,303,671	6,492,781
28	Recycling & Enviro Svs	11,637,057	11,986,168	12,345,753	12,716,126	13,097,610	13,490,538	13,895,254	14,312,112
29	Waste Export Costs	0	0	75,939,451	79,655,483	83,581,686	87,270,133	91,655,171	94,801,217
30	Transfer and Transportation								
31	Variable	25,773,346	27,243,547	28,582,551	30,155,699	31,826,900	33,424,930	35,318,833	37,013,963
32	Savings from Compaction	(2,048,890)	(3,533,515)	(3,709,370)	(3,915,894)	(4,135,352)	(4,345,189)	(4,593,470)	(4,812,057)
33	Fixed	14,578,938	15,016,306	15,466,796	15,930,799	16,408,723	16,900,985	17,408,015	17,930,255
34	Disposal								
35	Variable	10,130,797	10,708,693	0	0	0	0	0	0
36	Fixed	10,582,253	10,899,721	0	0	0	0	0	0
37									
38	Solid Waste Div. Total Costs	130,957,713	133,553,194	167,163,621	173,716,253	180,608,916	187,246,385	194,885,394	201,165,308
39									
40									
41	Ending Fund Balance	18,084,090	20,697,476	21,422,772	19,692,475	15,225,393	23,666,700	29,800,546	32,010,380
42	Target	10,957,583	11,230,562	18,205,333	19,005,254	19,846,779	20,656,510	21,589,377	22,354,326
43	Above / Below	7,126,507	9,466,915	3,217,439	687,221	(4,621,386)	3,010,189	8,211,170	9,656,054

Table I-1: Financial Model Summary

		2022	2023	2024	2025	2026	2027	2028
1	Disposal Fee Projection ($/ton)	140.00	140.00	152.00	152.00	152.00	152.00	152.00
2	Total Disposal Tonnage	1,436,400	1,442,300	1,478,500	1,515,900	1,524,400	1,563,400	1,588,100
3								
4	Rate Commitment Ceiling	153.04	157.64	162.36	167.23	172.25	177.42	182.74
5								
6	**Revenues**							
7	Net Disposal Fees	200,630,982	201,452,408	224,081,710	229,743,766	231,027,202	236,931,450	240,669,056
8	MRW	4,771,490	4,914,635	5,062,074	5,213,936	5,370,354	5,531,465	5,697,409
9	Interest Earnings	1,280,415	1,247,899	1,001,337	1,308,505	1,496,805	1,461,233	1,447,032
10	Grants	250,000	250,000	250,000	250,000	250,000	250,000	250,000
11	LF gas / energy	513,987	529,406	545,289	561,647	578,497	595,852	613,727
12	Leases, rental Income	35,522	36,587	37,685	38,815	39,980	41,179	42,415
13	Other	872,397	881,121	889,933	898,832	907,820	916,898	926,067
14	**Total**	208,354,794	209,312,058	231,868,027	238,015,502	239,670,659	245,728,078	249,645,706
15								
16								
17	**Expenditures**							
18	Debt Service - Existing Debt	0	0	0	0	0	0	0
19	Debt Service - New Debt	17,888,422	17,888,422	17,888,422	17,888,422	17,888,422	13,544,931	10,927,064
20	CERP	2,036,810	2,118,282	2,203,014	2,291,134	2,382,779	2,478,091	2,577,214
21	Landfill Reserve Fund	0	0	0	0	0	0	0
22	Construction Fund Transfer	0	0	0	0	0	0	0
23	Overhead, Cx/DNRP	6,164,279	6,349,208	6,539,684	6,735,874	6,937,951	7,146,089	7,360,472
24	SWD Admin	9,182,661	9,458,141	9,741,885	10,034,142	10,335,166	10,645,221	10,964,578
25	Rent, Cedar Hills	0	0	0	0	0	0	0
26	Legal	700,608	721,626	743,275	765,573	788,540	812,196	836,562
27	Finance & Admin	6,687,564	6,888,191	7,094,837	7,307,682	7,526,913	7,752,720	7,985,302
28	Recycling & Enviro Svs	14,741,475	15,183,719	15,639,231	16,108,408	16,591,660	17,089,410	17,602,092
29	Waste Export Costs	99,422,893	102,227,222	107,308,035	112,663,029	116,013,831	121,837,475	126,732,670
30	Transfer and Transportation							
31	Variable	38,937,228	40,942,576	43,033,202	45,212,417	47,483,655	49,850,476	52,316,571
32	Savings from Compaction	(5,062,422)	(5,323,478)	(5,595,641)	(5,879,343)	(6,175,031)	(6,483,169)	(6,804,237)
33	Fixed	18,468,163	19,022,208	19,592,874	20,180,660	20,786,080	21,409,662	22,051,952
34	Disposal							
35	Variable	0				0	0	0
36	Fixed	0	0	0	0	0	0	0
37								
38	Solid Waste Div. Total Costs	209,167,682	215,476,118	224,188,817	233,307,998	240,559,966	246,083,104	252,550,240
39								
40								
41	Ending Fund Balance	31,197,487	25,033,424	32,712,633	37,420,137	36,530,830	36,175,805	33,271,271
42	Target	23,331,262	24,098,969	25,162,691	26,276,109	27,158,889	28,363,572	29,471,420
43	Above / Below	7,866,225	934,455	7,549,942	11,144,028	9,371,942	7,812,233	3,799,852

APPENDIX J

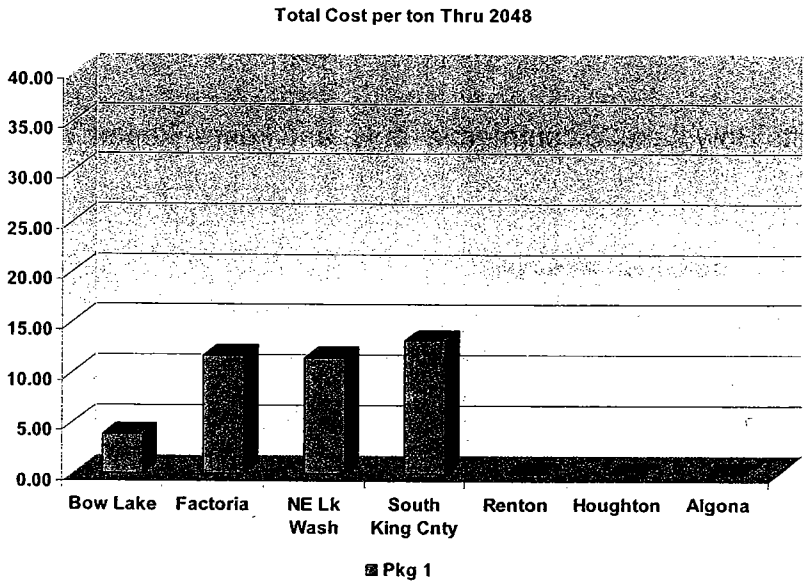
THE LONGER TERM OUTLOOK

APPENDIX J – THE LONGER TERM OUTLOOK

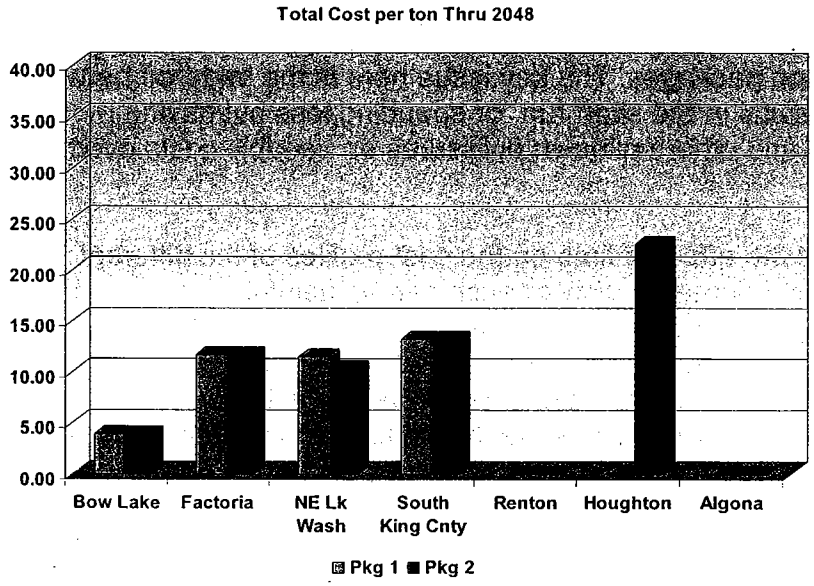
This appendix explores the longer term financial implications of selecting among the five transfer station packages. The key issue here is the trade-off between spending more on capital in the short run, or spending less but having more exposure to inflation and other unknown pressures on variable costs over the next four decades.

To better understand the effect of time on the cost profiles of the different packages, a brief cost-oriented review of each can be helpful.

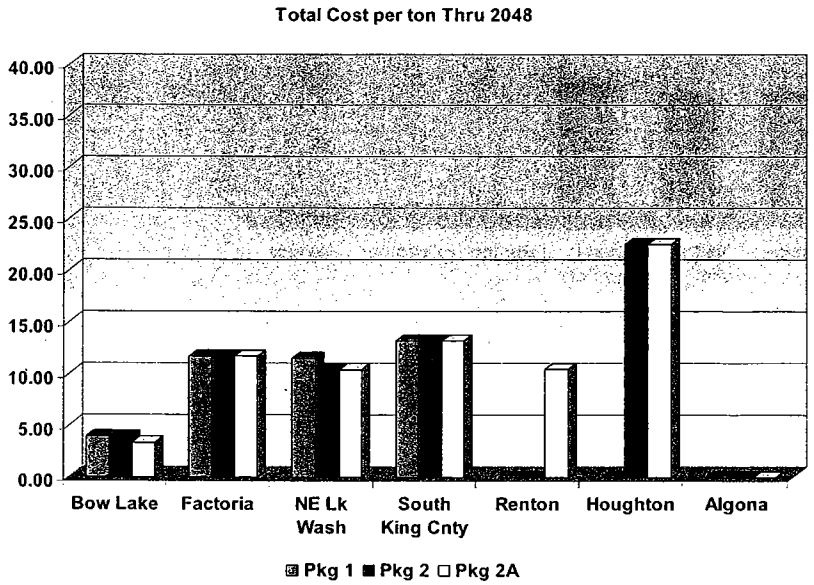
On a per-ton basis the five options look quite different. Package 1 closes three existing sites and builds four new ones, each handling substantial tonnage. The financial impact of this larger volume is especially noteworthy at Bow Lake, which would bring in all of Renton's activity:



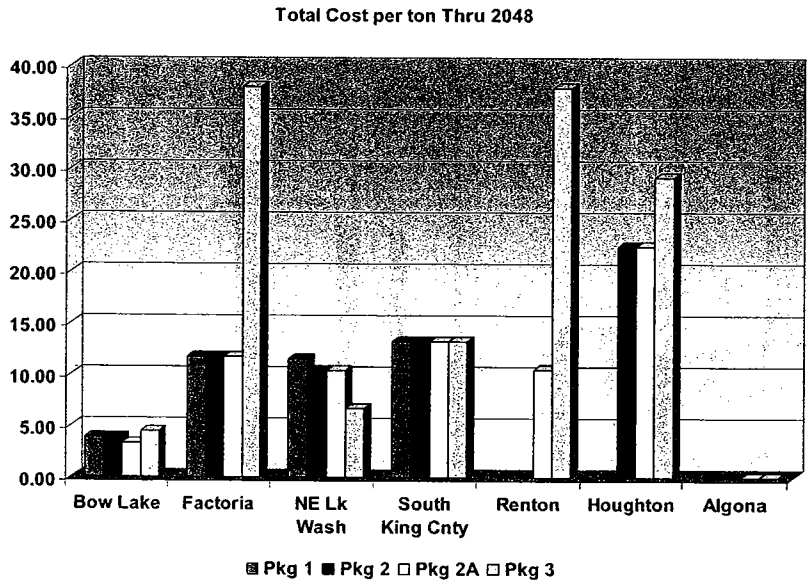
Package 2 makes Houghton a self-haul facility, and NE Lake Washington converts to commercial-only status:



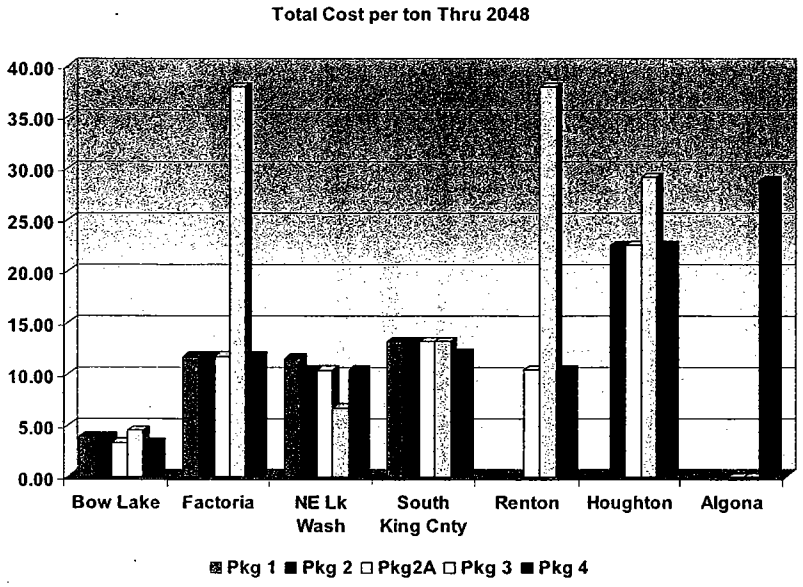
Package 2A also shifts Bow Lake to commercial-only, and keeps Renton as a self-haul facility:



Package 3 is interestingly different on a per-ton basis, as it utilizes Renton, Houghton and Factoria as self-haul operations. With the smaller tonnage involved in these locations the resulting costs are noteworthy:

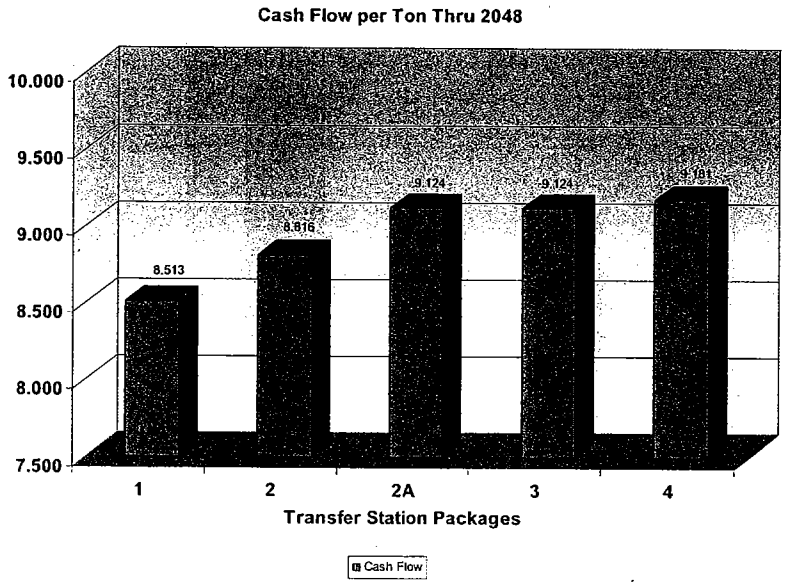


Package 4 builds only one new facility, at Eastgate, and divides the other operations into strictly self-haul or commercial only, with the expected cost per ton disparities:

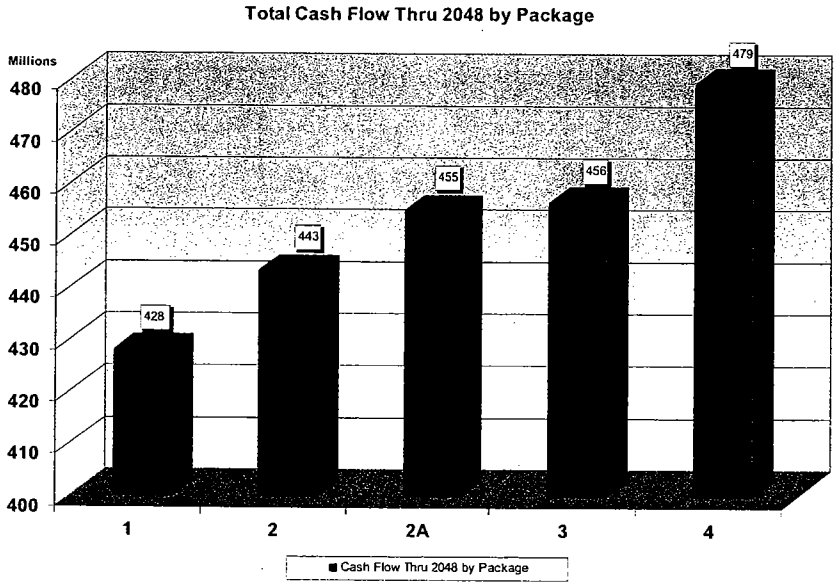


Although having a uniform cost per ton across all facilities is not a performance criterion, these graphs suggest the substantial operating cost differences among the various stations, within the different packages.

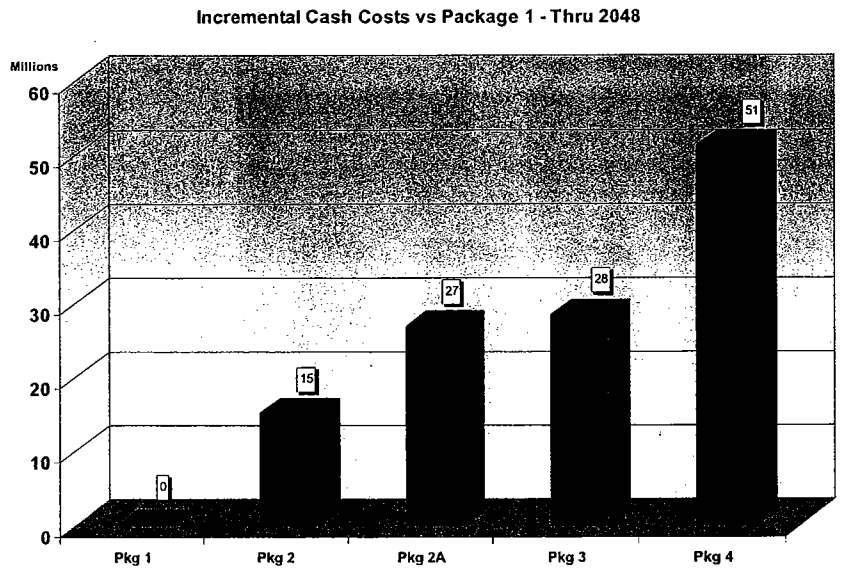
On a per-ton basis the total cost of each package through 2048 also shows some variation, largely due to the varying impacts of inflation on the cost of labor:



A total costs perspective shows the same relationship among the options.

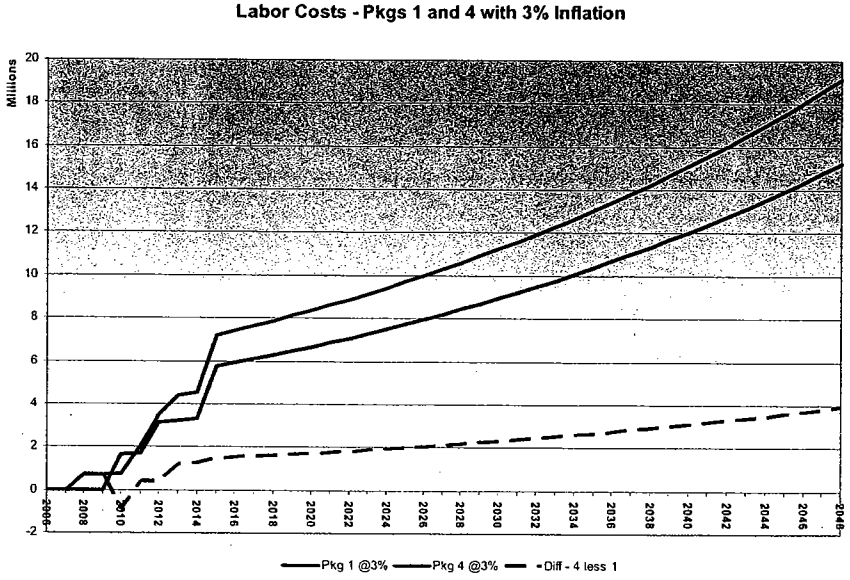


The incremental costs here beyond Package 1 are noteworthy:

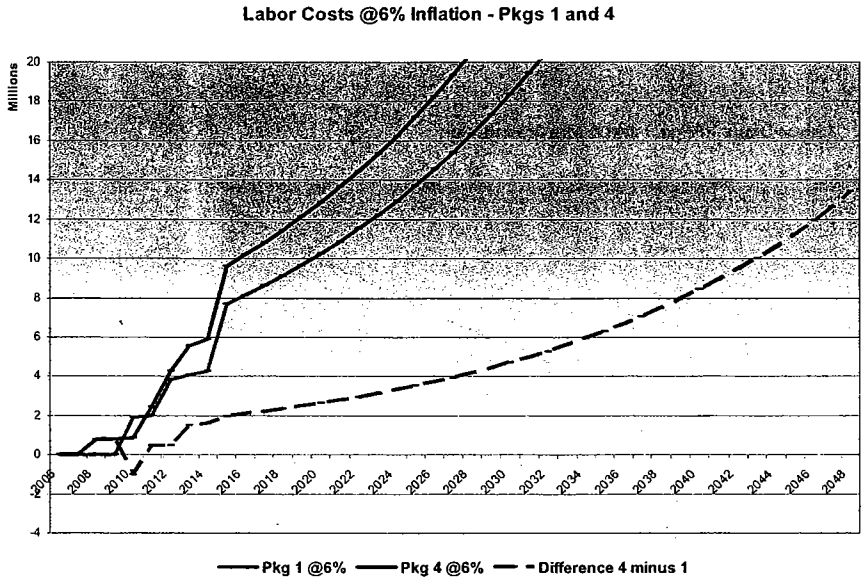


Of course if inflation were to be greater than the 3% employed here these differences beyond option 1 would be greater.

Since packages 1 and 4 involve respectively the most and least amount of initial capital investment, comparing the two over time is of some interest. At a 3% inflation rate the labor cost for the two alternatives diverges, and the dotted line below shows the difference in annual labor costs, other things equal, which approaches $2 million per year about the time Cedar Hills is currently expected to close:

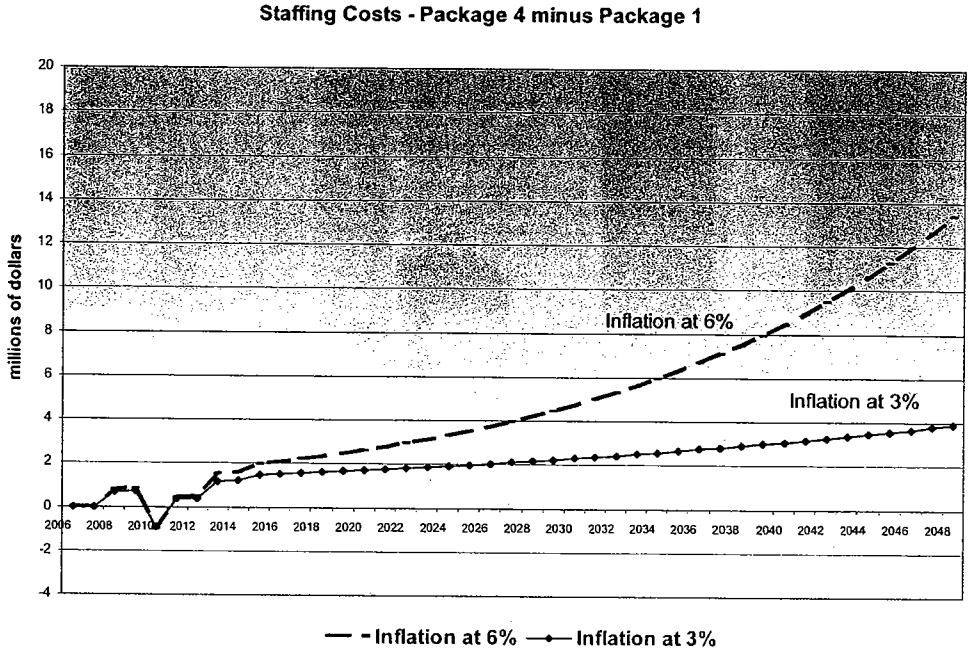


With inflation at 6% per year these differences, and the associated risks, become more pronounced. In this case the gap is easily $2 million per year by 2016, and increasing significantly.

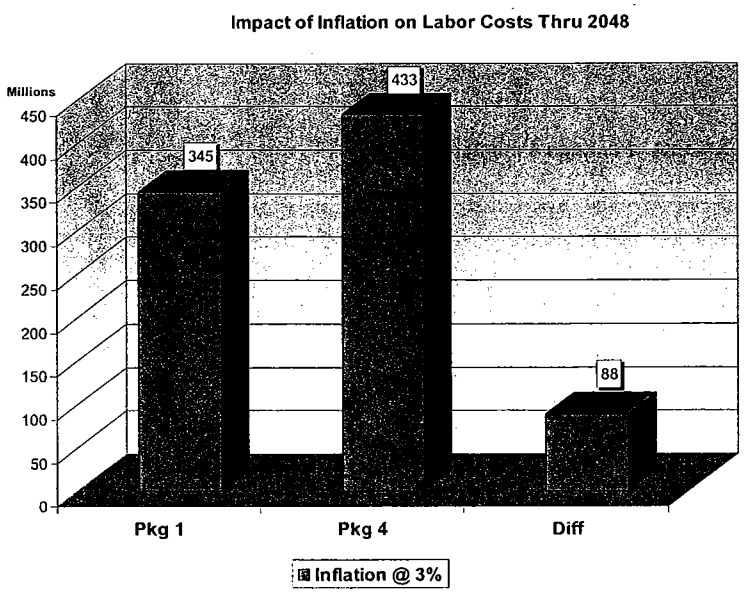


With this rate of annual price increase the labor bill differential approaches a noteworthy $10 million per year later in the horizon:

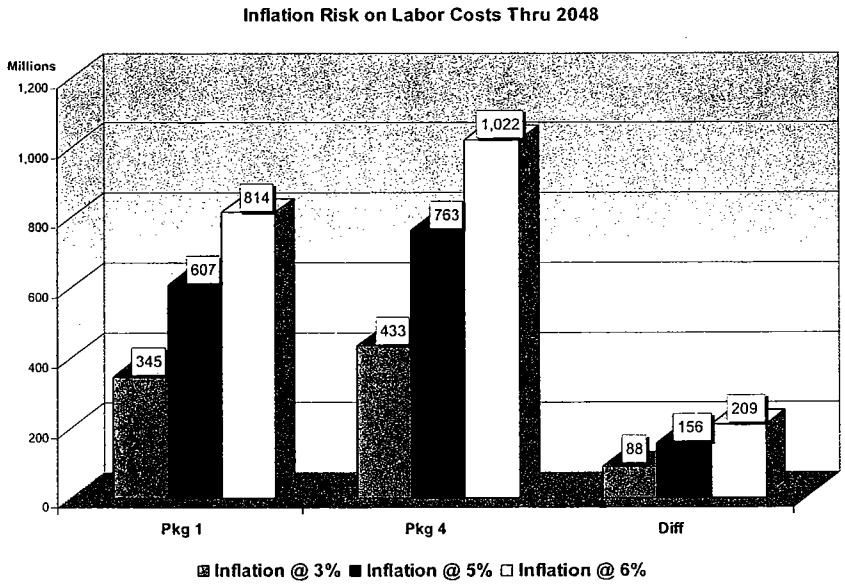
To better compare the previous two graphs, the figure below compares the impact of the two inflation rates on the difference in cost increases between Package 4 and Package 1. While in the very early years the patterns are about the same, the higher operating costs of Package 4 under a 6% inflation scenario become evident soon after Cedar Hills is scheduled to close.



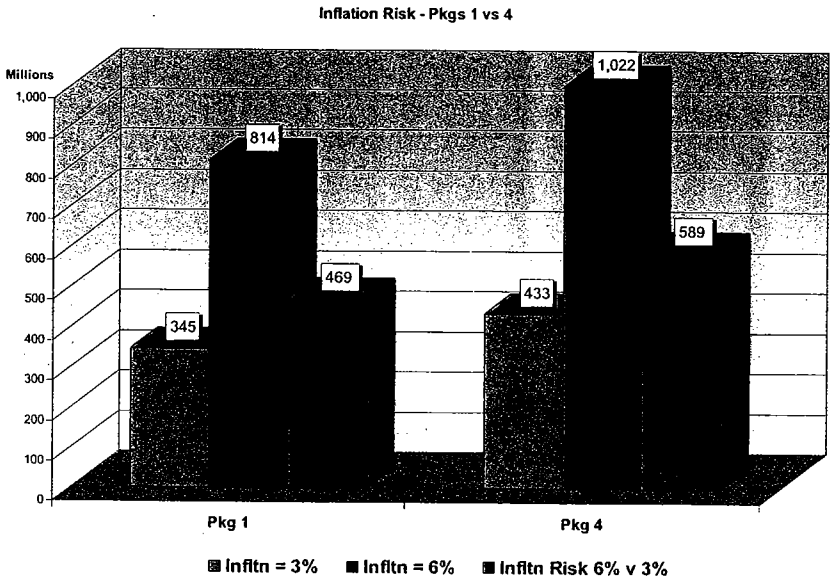
The following two graphs explore this labor cost difference for the period taken as a whole. First the gap at 3% inflation, totaling about $88 million:



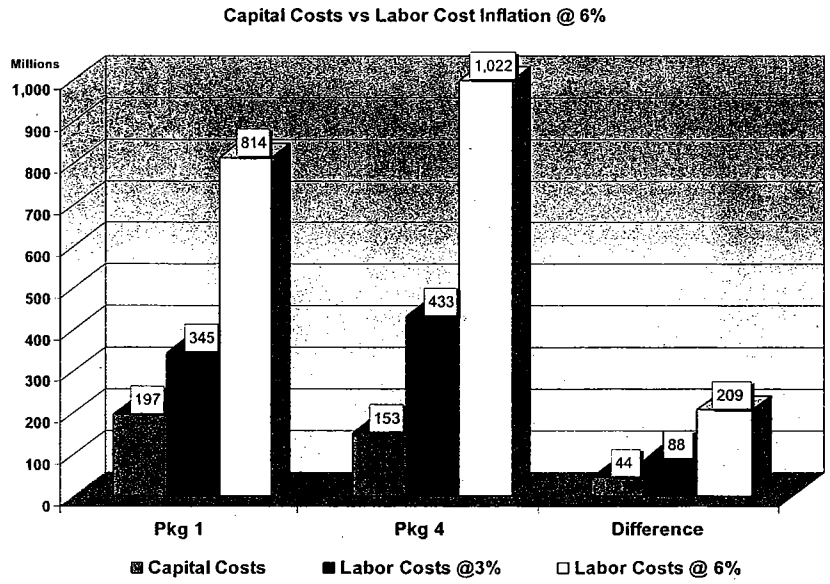
With 6% inflation this total labor cost difference between the two options widens to $209 million:



For a slightly different perspective the graph below shows the inflation effect on each option separately. The cost of Package 1 rises by $469 million if inflation is 6% each year, compared to 3%, while the corresponding risk exposure increase for Package 4 is $589 million.

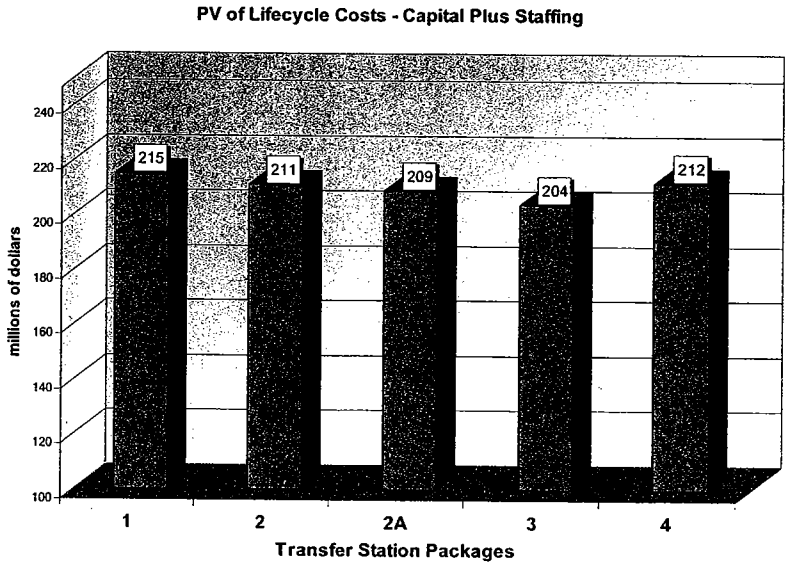


However, this $120 million lower risk with Package 1 requires extra capital invested in the early years. This trade-off between more capital and less risk of labor cost inflation is shown in the next graph:



The extra capital cost for Package 1 is $44 million. However, with 3% inflation the consequent labor costs are $88 million less than in Package 4. If inflation were to average 6%, the capital cost would be largely unchanged, but the labor cost difference increases to $209 million.

To provide a present value perspective on this capital versus operating cost issue, the following graph presents the discounted costs for both capital and staffing for each package over the entire period through 2048, assuming a 3% inflation rate.



Clearly the differences are not great, emphasizing again that the choice among the packages hinges on numerous non-economic factors, in addition to risk preference regarding future operating cost uncertainties.

APPENDIX K

LANDFILL CAPACITY

APPENDIX K – LANDFILL CAPACITY

The New York Times

Waste Yes, Want Not; Rumors of a Shortage of Dump Space Were Greatly Exaggerated

By JEFF BAILEY (NYT)
Published: August 12, 2005

Workers at a landfill in Orange County, Calif. -- as if tamping down the contents of a wastebasket -- regularly pile one million cubic yards of dirt atop a football field-size section of the giant dump. Six months later, the workers scrape the dirt aside and the dump's surface has fallen 30 to 40 feet, making space for yet more trash.

"It's just amazing," said Mike Giancola, deputy director of the county's waste agency.

Orange County's method is part of a remarkable productivity story playing out in the trash business, quietly saving consumers, businesses and municipalities billions of dollars a year. It is an unlikely industry for such a leap in efficiency.

Simply put, operators of garbage dumps are stuffing more waste than anyone expected into the giant plastic-lined holes, keeping disposal prices down and making the construction of new landfills largely unnecessary.

The clearest winner in this development is the City of New York, which exports 25,000 tons of trash a day to other cities and states, making it the waste industry's biggest customer. But the benefits stretch coast to coast and will continue for years to come.

The productivity leap is the second major economic surprise from the trash business in the last 20 years. First, it became clear in the early 1990's that there was a glut of disposal space, not the widely believed shortage that had drawn headlines in the 1980's. Although many town dumps had closed, they were replaced by fewer, but huge, regional ones. That sent dumping prices plunging in many areas in the early 1990's and led to a long slump in the waste industry.

Since then, the industry and its followers have been relying on time -- about 330 million tons of trash went into landfills in the United States last year alone, according to Solid Waste Digest, a trade publication -- to fill up some of those holes, erase the glut and send disposal prices skyward again. Instead, dump

capacity has kept growing, and rapidly, even as only a few new dumps were built.

How could that be? Waste companies and municipalities have fit much bigger dumps than originally permitted onto existing acreage, piling trash deeper and steeper, and vastly expanding permitted capacity. They are burying trash more tightly, so that each ton takes up less space, increasingly using giant 59-ton compacting machines guided by global positioning systems that show the operator when he has rolled over a section of the dump enough times. They cover trash at the end of the day, to keep it from blowing away, with tarps or foam or lawn clippings instead of the thick layers of soil that formerly ate up dump capacity.

Some operators are blowing water and air into landfills to hasten rotting and thus the shrinkage of buried garbage piles, creating more capacity.

Each practice is fairly prosaic, and many operators have yet to adopt the improved methods, but taken together the waste industry is in the early stages of the kind of increase in efficiency more typically seen in technologies like computer chips and turbines that generate electricity.

A well-run dump, tightly packed and using minimal dirt as cover, can hold 30 percent or so more trash than a poorly run site, said Thomas M. Yanoschak, a senior project manager at Camp Dresser & McKee, an engineering firm that advises waste sites. "Operators are much better now," he said.

The change is shown in the published disposal records of the three largest waste haulers -- Waste Management, Allied Waste Industries and Republic Services -- which combined handle more than half the nation's trash. In the last four years, they buried 882 million tons of waste. But the remaining permitted capacity of their combined 410 dumps did not shrink. It expanded over those four years by more than one billion tons. The three companies now expect expansions of another 1.8 billion tons. At that level, their combined capacity could handle the nation's trash sent to dumps for about 26 years.

Smaller companies and municipalities possess huge capacity, too. Taken together, the oversupply is a damper on prices. The nation's average gate rate, the price dumps post publicly, has lagged inflation, rising just 21 percent from 1992, when the original disposal glut first became widely known, to last year, climbing to $35 a ton from $29, according to Solid Waste Digest. Most businesses pay haulers directly for disposal. Many consumers pay through property taxes.

At $35 a ton, the 330 million tons buried nationally cost $11.6 billion. (Actual prices are typically lower than gate rates.) Had rates merely kept pace with inflation, disposal in dumps would average $39 a ton, or a collective $12.9 billion

a year. And the annual cost would be $16.5 billion had prices, as widely predicted years ago based on an expected shortage, hit $50 a ton.

Dennis Pantano, chief operating officer at Regus Industries, a regional waste company based in West Seneca, N.Y., and a former executive at a national waste company, said he had expected "at least $45 to $50" by now. Instead, he said, "In Ohio we're still beating our heads against each other to get $18, $20 a ton -- $25 in western New York. It really hasn't gone up in 10 years. That's obviously because of capacity."

Environmental regulations, which many feared would cause a disposal shortage, actually helped encourage the glut. The Resource Conservation and Recovery Act, passed in 1976 but put into effect over more than a decade, requires that liners be used to protect groundwater and that systems to extract water and methane be installed. The cost of all that forced thousands of small dumps to close and encouraged huge new landfills that could pile trash hundreds of feet deep to maximize the return on investment.

A 10,000-ton-a-year dump would cost $83 a ton to operate, estimates Solid Waste Digest, while a 300,000-ton-a-year site's cost would be $14 a ton. Dumps taking a million or more tons a year have even lower per-ton costs.

So, new replacement landfills were on average 25 times the size of the small ones that were closing, according to Solid Waste Digest. And even though the 8,000 dumps in 1988 fell to fewer than 1,800 today, according to the Environmental Protection Agency, capacity ballooned. Transfer stations, where trash is emptied from local collection trucks and reloaded onto bigger long-haul trucks or onto trains for transport to a dump, now number 3,700 nationally, a vast network extending the reach of giant disposal sites.

The nation's 25 biggest dumps, which are beginning to resemble operations in other more efficient and consolidated industries, account for about 24 percent of total capacity, Solid Waste Digest estimates, and that concentration will probably continue. Already, the Republic Services landfill in Las Vegas has more than 200 million tons of space, as does Waste Management's site in Arlington, Ore. And a desert site yet to begin accepting trash, owned by the Sanitation Districts of Los Angeles County, can hold more than 600 million tons, or enough to take 20,000 tons a day for 100 years.

Also, investment in railroad cars and containers for trash, still in its infancy, could further reduce transport costs and smooth out pricing disparities among regions. At present, disposal prices in the Northeast average about 2.5 times the cost to dump in the arid and little-populated Western states.

Owners of a recently built 210 million-ton-capacity landfill in Idaho are proposing to use barges to ship much of Hawaii's trash to the West Coast and transport it

by rail the remaining distance. Idaho Waste System's gate rate is just $16.50 a ton, said Grant Gauthier, a vice president, and its permit has no daily limit. The company is seeking to expand its permit to 420 million tons, even though it currently takes in just 800 tons a day.

If the glut depresses prices, why do waste companies keep expanding their dumps? One reason, for the companies with publicly traded stock, is an accounting rule. Companies must write off, or depreciate, their landfill investments based on the percentage of a site's capacity filled up each year. A dump costing $100 million to build, filled 10 percent, would require $10 million of depreciation, reducing pretax profit by that amount. They set aside funds for post-closing environmental monitoring on a similar as-used schedule.

So, the more capacity that can be permitted at each dump, the less depreciation and other costs recorded per ton, lifting reported profits. Waste Management, of course, suffered an accounting scandal in the late 1990's, in part over landfill accounting, and was forced to take a $3.5 billion charge against earnings to clean up its books.

Once glamour stocks, waste companies have mostly been mediocre performers in recent years and the growing glut could prolong their problems, especially as municipalities and other major customers become more aware of the oversupply.

Indeed, the City of New York does not have a disposal problem. Initial bids to handle the trash hauled by the city for 20 years include per-ton prices at dumps in Virginia, South Carolina and Georgia of the mid-$20's to the mid-$30's, said Harry Szarpanski, assistant sanitation commissioner.

The problem is transportation. Shifting from trucks to rail and barges to reduce traffic, New York is taking on huge costs to develop a network of new transfer stations. That could increase prices to $90 a ton or so, Mr. Szarpanski said.