

# Appendix H

## Final 2000 Comprehensive Solid Waste Management Plan

**Contents:**  
Final Environmental Impact Statement





**King County  
Solid Waste Division**

Department of Natural Resources  
King Street Center  
201 South Jackson Street, Suite 701  
Seattle, WA 98104-3855  
**(206) 296-6542**

February 28, 2001

Dear Environmental Impact Statement Recipient:

The King County Department of Natural Resources Solid Waste Division has completed preparation of the Final Environmental Impact Statement (EIS) on the proposed 2000 Comprehensive Solid Waste Management Plan for King County.

The Final EIS evaluates alternatives for Waste Reduction, Recycling, and Market Development; Collection of Mixed Municipal Solid Waste (MMSW) and Curbside Recyclables; the Regional MMSW Transfer System; MMSW Disposal; and Construction, Demolition, and Land Clearing (CDL) Wastes and Special Wastes. Alternatives evaluated in the Final EIS are:

**Waste Reduction, Recycling, and Market Development**

- Alternative 1 - Maintain Existing Programs at Current Levels (No Action)
- Alternative 2 - Improve Existing Programs and Add New Programs
- Alternative 3 - Implement Alternative 2 with Large-scale Organics Diversion
- Alternative 4 - Implement Alternative 2 with Regulations to Increase Diversion

**Collection of MMSW and Curbside Recyclables**

- (No Action considered in the evaluation of Alternative 1 under The Regional MMSW Transfer System)
- Alternative 1 - Implement Mandatory Curbside Collection of MMSW
- Alternative 2 - Improve Pickup Service for Bulky and Extra Waste

**The Regional MMSW Transfer System**

**Service Level Improvement Alternatives**

- Alternative 1 - Maintain Existing Service Levels (No Action)
- Alternative 2 - Institute Special Self-haul Hours and Other Programs

**Facility Improvement Alternatives**

- Alternative 1 - Maintain Transfer System in Current Condition (No Action)
- Alternative 2 - Implement Business Plan Alternative (Anchor/Branch Concept)
- Alternative 3 - Implement Alternative 2, with Increased Private-Sector Role
- Alternative 4 - Competitive Process

**MMSW Disposal**

- Alternative 1 - Construct a New County-owned Landfill Outside of King County
- Alternative 2 - Construct an Incinerator
- Alternative 3 - Contract with an out-of-County Landfill (No Action)

**CDL Wastes and Special Wastes**

**CDL Wastes**

- Alternative 1 - Renew and Renegotiate Existing Contracts (No Action)
- Alternative 2 - Current Contracts Expire, No New Contracts Negotiated



Alternative 3 – Limited Disposal at Transfer Stations  
Alternative 4 – Negotiate New Contracts  
**Special Wastes** – Maintain status quo.

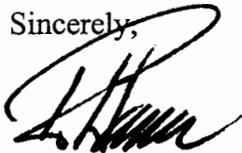
Key issues discussed in the Final EIS include traffic, air quality and odor, water, plants and animals, noise, environmental health, land use, and public services and utilities. Minor changes have been made in the EIS text since the Draft EIS was issued to reflect changes made in the proposed 2000 Plan. The Solid Waste Division received two comment letters on the Draft EIS. Responses to those letters are included in Attachment D of the Final EIS.

The Final EIS is Appendix H of the 2000 Plan. Copies of the Final EIS are available for review at King County branch libraries, the Renton libraries, and the downtown Seattle Public Library. Additional copies of the Final EIS can be purchased at the King County Solid Waste Division (see contact person below). The cost of a copy of the Final EIS is \$15. The complete Final EIS is also available free of charge on the County's website at <http://dnr.metrokc.gov/swd>.

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Thank you for your interest in the 2000 Plan and EIS. For further information, please call or email the contact person.

Sincerely,



Rodney G. Hansen  
Manager

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# **FINAL ENVIRONMENTAL IMPACT STATEMENT**

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## **Appendix H 2000 King County Comprehensive Solid Waste Management Plan**



King County Solid Waste Division  
Seattle, Washington

February 28, 2001

Prepared in compliance with the State Environmental Policy Act, Revised Code of Washington 43.21C  
as amended, and its implementing rules, Washington Administrative Code 197-11.



Printed on  
recycled paper

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# Fact Sheet

## Nature and Location of Proposal

The King County Department of Natural Resources, Solid Waste Division, proposes to update the 1992 *King County Comprehensive Solid Waste Management Plan*. Since that plan was adopted, the King County Council has made major policy decisions affecting solid waste management, and substantial changes have occurred in the solid waste industry.

This EIS evaluates and compares the following alternatives for each key component of the solid waste system. The no-action alternative for each component involves maintaining existing facilities, services, and programs as long as possible. Under some no-action alternatives, however, King County would have to take future actions in response to system changes, such as the eventual closure of the Cedar Hills Regional Landfill.

### Waste Reduction, Recycling, and Market Development

Alternative 1 - No Action (Maintain Existing Programs at Current Levels)

Alternative 2 - Improve Existing Programs and Add New Programs

Alternative 3 - Implement Alternative 2 with Large-scale Organics Diversion

Alternative 4 - Implement Alternative 2 with Regulations to Increase Diversion

### Collection of MMSW and Curbside Recyclables

No Action (considered in the evaluation of Alternative 1 under The Regional MMSW Transfer System)

Alternative 1 - Implement Mandatory Curbside Collection of MMSW

Alternative 2 - Improve Pickup Service for Bulky and Extra Waste

### The Regional MMSW Transfer System

#### Service Level Improvement Alternatives

Alternative 1 - No Action (Maintain Existing Service Levels)

Alternative 2 - Institute Special Self-haul Hours and Other Programs

#### Facility Improvement Alternatives

Alternative 1 - No Action (Maintain Transfer System in Current Condition)

Alternative 2 - Implement Business Plan Alternative (Anchor/Branch Concept)

Alternative 3 - Implement Alternative 2, with Increased Private-Sector Role

Alternative 4 - Competitive Process

### MMSW Disposal

Alternative 1 - Construct a New County-owned Landfill Outside of King County

Alternative 2 - Construct an Incinerator

Alternative 3 - No Action (Contract with an Existing Landfill)

### CDL Wastes and Special Wastes

#### CDL Wastes

Alternative 1 - No Action (Renew and Renegotiate Existing Contracts)

Alternative 2 - Current Contracts Expire, No New Contracts Negotiated

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Alternative 3 – Limited Disposal at Transfer Stations  
Alternative 4 – Negotiate New Contracts  
**Special Wastes** – no alternatives developed

## **Proponent**

King County Department of Natural Resources, Solid Waste Division

## **Date of Implementation**

The Solid Waste Division will begin implementing the recommendations in the 2000 Comprehensive Solid Waste Management Plan when the Final 2000 Plan is adopted by the County and participating cities and approved by the Washington Department of Ecology (Ecology).

## **Responsible Official and Lead Agency**

Rodney G. Hansen, Ph.D., P.E., Manager  
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## **Contact Person**

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## **Required Permits and Approvals**

The Final 2000 Plan must be adopted by King County and participating cities and approved by Ecology. Construction of any needed facilities would require appropriate permits and approvals. These permits and approvals would be a consideration in the environmental review of these facilities once sites are selected and project specifics are known.

## **Authors**

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King County Solid Waste Division

## **Date of Draft EIS Issuance**

August 14, 2000

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## **Date Draft EIS Comments were Due**

All comments were due no later than **September 29, 2000**.

## **Time and Place of Public Hearing**

A public hearing to receive testimony on the Draft EIS was held on Tuesday, September 12, at 7:00 p.m. at Mercer Island City Hall, 9611 SE 36<sup>th</sup> Street, Mercer Island.

## **Date of Final EIS Issuance**

February 28, 2001

## **Date of Final Action**

Adoption of the Final 2000 Plan by King County and participating cities and approval by Ecology are expected during the second quarter of 2001.

## **Subsequent Environmental Review**

No subsequent environmental review is expected for the 2000 Plan. As actions are proposed to implement the plan, the Final EIS will be used to the maximum extent possible to satisfy SEPA environmental review requirements. However, it is expected that additional environmental review will be needed for some project actions, particularly those involving major capital improvements.

## **Location of EIS Background Data**

Background information and all documents incorporated by reference in this EIS are available for review at the office of the King County Solid Waste Division (see address of contact person above).

## **Cost to the Public for Copy of Final EIS**

\$15.00 plus postage if mailed.



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# Contents

Fact Sheet.....	i
Glossary .....	ix
Summary .....	xi
Purpose and Need .....	xi
Alternatives and Impacts.....	xii
Part 1. Introduction.....	1-1
Objectives of the Proposal .....	1-1
Background .....	1-2
Public Involvement and Scoping .....	1-3
Benefits and Disadvantages of Reserving Implementation .....	1-3
Organization of this EIS.....	1-4
Part 2. Waste Reduction, Recycling, and Market Development.....	2-1
Description of Alternatives .....	2-1
Alternative 1—Maintain Existing Programs at Current Levels (No Action) .....	2-1
Alternative 2—Improve Existing Programs and Add New Programs .....	2-1
Alternative 3—Implement Alternative 2 with Large-Scale Organics Diversion.....	2-2
Alternative 4—Implement Alternative 2 with Regulations to Increase Diversion .....	2-2
Affected Environment, Impacts, and Mitigation Measures .....	2-2
Air Quality and Odor .....	2-3
Water .....	2-4
Environmental Health .....	2-5
Public Services and Utilities .....	2-6
Part 3. Collection of MMSW and Curbside Recyclables.....	3-1
Description of Alternatives .....	3-2
Alternative 1—Implement Mandatory Curbside Collection of MMSW .....	3-2
Alternative 2—Improve Pickup Service for Bulky and Extra Waste .....	3-2
Affected Environment, Impacts, and Mitigation Measures .....	3-2
Part 4. The Regional MMSW Transfer System .....	4-1
A. Service-Level Improvement Alternatives .....	4-1
Description of Alternatives .....	4-1
Alternative 1—Maintain Existing Service Levels (No Action).....	4-1
Alternative 2—Institute Special Self-Haul Hours and Other Programs .....	4-1
Affected Environment, Impacts, and Mitigation Measures .....	4-3
Traffic.....	4-3
Air Quality .....	4-6
Use of Non-Renewable Fuel Resources.....	4-7

Public Services and Utilities .....	4-8
B. Facility Improvement Alternatives .....	4-8
Description of Alternatives .....	4-8
Alternative 1—Maintain Transfer System in Current Condition (No Action) .....	4-9
Alternative 2—Implement Business Plan Alternative (Anchor/Branch Concept) .....	4-9
Alternative 3—Implement Alternative 2, with Increased Private-Sector Role.....	4-9
Alternative 4—Competitive Process.....	4-10
Affected Environment, Impacts, and Mitigation Measures .....	4-10
Traffic.....	4-10
Air Quality/Odor.....	4-13
Water .....	4-15
Sensitive Areas/Plants and Animals .....	4-18
Use of Non-Renewable Fuel Resources.....	4-21
Noise .....	4-22
Land Use .....	4-26
Public Services and Utilities .....	4-28
Other Potential Impacts.....	4-31
Part 5. MMSW Disposal .....	5-1
Description of Alternatives.....	5-1
Alternative 1—Construct a New County-Owned Landfill Outside of King County .....	5-1
Alternative 2—Construct an Incinerator.....	5-1
Alternative 3—Contract with an Existing Landfill (No Action) .....	5-2
Affected Environment, Impacts, and Mitigation Measures .....	5-2
Traffic.....	5-2
Air Quality and Odor .....	5-6
Water .....	5-9
Sensitive Areas/Plants and Animals .....	5-12
Use of Non-Renewable Fuel Resources.....	5-14
Noise .....	5-15
Environmental Health .....	5-19
Land Use .....	5-22
Public Services and Utilities .....	5-24
Other Potential Impacts.....	5-28
Part 6. CDL Waste and Special Wastes .....	6-1
A. CDL Waste.....	6-1
Description of Alternatives .....	6-1
Alternative 1—Renew and Renegotiate Existing Contracts (No Action).....	6-1
Alternative 2—Current Contracts Expire; No New Contracts Negotiated .....	6-1
Alternative 3—Limited Disposal at Transfer Stations.....	6-2
Alternative 4—Negotiate New Contracts .....	6-2
Affected Environmental, Impacts, and Mitigation Measures .....	6-2
Traffic.....	6-2

---

Air Quality and Odor .....	6-7
Water .....	6-9
Use of Non-Renewable Fuel Resources.....	6-11
Noise .....	6-12
Environmental Health .....	6-13
Land Use .....	6-14
Public Services and Utilities .....	6-14
B. Special Wastes .....	6-16
Part 7. References and Information Sources .....	7-1
Part 8. Distribution List.....	8-1
Attachment A Environment of the Puget Sound Region	
Attachment B Supplemental Tables	
Attachment C Supplemental Information on the Cedar Hills Landfill	
Attachment D Comments to the Draft EIS and Responses	

## Tables

Table S-1.	Summary of Alternatives, Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts Waste Reduction, Recycling, and Market Development (Part 2 of EIS, Chapter 4 of 2000 Plan).....	xiii
Table S-2.	Summary of Alternatives, Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts Collection of MMSW and Curbside Recyclables (Part 3 of EIS, Chapter 5 of 2000 Plan).....	xv
Table S-3.	Summary of Alternatives, Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts The Regional Transfer System (Part 4 of EIS, Chapter 6 of 2000 Plan) .....	xvi
Table. S-4.	Summary of Alternatives, Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts MMSW Disposal (Part 5 of EIS, Chapter 7 of 2000 Plan) .....	xxi
Table. S-5.	Summary of Alternatives, Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts CDL Waste and Special Wastes (Part 6 of EIS, Chapter 8 of 2000 Plan) .....	xxv
Table 4-1.	Estimated average daily traffic at King County transfer stations, 1999 and 2010.....	4-4
Table 5-1.	Estimated average daily traffic at Cedar Hills Landfill, 1999 and 2010.....	5-4
Table 5-2.	Estimated average daily traffic at incinerator, 2012. ....	5-6
Table 6-1.	Estimated average weekday traffic at private transfer stations from commercial trucks delivering King County CDL waste, 1999 and 2010. ....	6-3
Table 6-2.	Estimated average weekday traffic at King County transfer stations with and without CDL waste now delivered to private facilities, 2010.....	6-5
Table 6-3.	Average weekday traffic at Cedar Hills Landfill with and without CDL waste now delivered to private facilities, 1999 and 2010. ....	6-6

## Figures

Figure 4-1.	Locations of the Region’s Facilities. ....	4-2
Figure 5-1.	Location of Existing Private Landfills outside King County .....	5-3

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# Glossary

**Anchor transfer station.** A transfer station capable of providing the full range of disposal services for MMSW and collection service for recyclable materials.

**Branch transfer station.** A transfer station capable of providing the full range of MMSW disposal services to commercial haulers and limited MMSW disposal and recyclables collection service to self-haulers.

**Certified hauler.** Any person engaged in the business of solid waste handling having a certificate granted by the Washington Utilities and Transportation Commission (WUTC) for that purpose.

**Commercial hauler.** Any person, firm or corporation including, but not limited to, "certified hauler" as defined in KCC Title 10, collecting or transporting solid waste for hire or consideration.

**Construction, demolition, and land clearing (CDL) waste.** Any recyclable or non-recyclable waste that results from construction, remodeling, repair, or demolition of buildings, roads, or other structures, or from land clearing for development, and that requires removal from the site of construction, demolition, or land clearing. CDL waste does not include clean mud and dirt, contaminated soil, asbestos-containing waste material containing more than 1% asbestos by weight, unacceptable waste, or any other solid waste that does not meet the definition of CDL waste.

**Drop box facility.** A County-owned and operated facility that typically serves the general public with loose loads and receives waste from off-site.

**Incinerator.** A facility in which combustion of solid waste takes place so that the volume of solid waste is substantially reduced.

**Landfill.** A disposal facility at which solid waste is permanently placed in or on the land and which is not a land spreading disposal facility.

**Leachate.** Water or other liquid that has been contaminated by dissolved or suspended materials due to contact with solid waste or gases there from.

**Mixed municipal solid waste (MMSW).** Solid waste generated by residences, stores, offices, and other generators of wastes that are not industrial, agricultural, or CDL wastes.

**Receiving facility.** A facility that has been permitted to receive a particular type of solid waste, such as CDL waste.

**Self-haul.** Materials hauled to a transfer disposal site by the generator rather than by a contracted hauler.

**Solid waste.** All putrescible and nonputrescible solid and semisolid wastes, including garbage, rubbish, ashes, industrial wastes, biomedical waste, swill, demolition and construction wastes,

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landclearing wastes, abandoned vehicles or vehicle parts, discarded commodities, or contaminated excavated soil/fill material.

**Transfer station.** A permanent facility used for the deposition of collected solid waste from off-site into a larger transfer vehicle for transport to a solid waste handling facility.

**Waste export.** The act of sending waste to a landfill out of the region.

## SUMMARY

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# Summary

## Purpose and Need

The King County Department of Natural Resources, Solid Waste Division, proposes adoption of the *2000 King County Comprehensive Solid Waste Management Plan* (the 2000 Plan). The overall goal of the 2000 Plan is to develop strategies to provide adequate solid waste facilities and services for the next 20 years. More specific objectives of the 2000 Plan are:

- To respond to issues raised by the public, suburban cities, unincorporated area councils, the Solid Waste Advisory Committee, and the solid waste industry as part of the public involvement process for the 2000 Plan.
- To respond to recent policy directives of the King County Council relevant to solid waste management.
- To meet customer service needs while keeping any increase in disposal rates below the rate of inflation.
- To maximize cost-effective waste reduction and recycling, while maintaining adequate transfer and disposal capabilities for non-recycled waste.
- To design, operate, and maintain the solid waste system in a manner that protects the environment and conserves energy and natural resources.
- To comply with federal, state, and local regulations governing solid waste management.
- Effective management of the region's solid waste is an essential public service. Overall, the solid waste system serves to mitigate potential significant impacts on the environment and public health that could otherwise result from improper disposal of waste. Nonetheless, certain aspects of the solid waste system, and some of the alternatives under consideration, have the potential to cause significant impacts. The purpose of this EIS is: to identify potential impacts; describe mitigation measures that can be used (and in many cases, are currently used) to avoid such impacts or reduce them below significant levels; and, where possible, draw conclusions about whether there may be any significant unavoidable adverse impacts (that is, significant impacts that cannot or will not be mitigated). Beneficial impacts are also discussed where relevant to the choice among alternatives.

This EIS is a non-project EIS. The level of detail of the analyses is consistent with the broad programmatic issues to be resolved. Based on the analyses in the EIS, as well as other relevant information and analyses in the 2000 Plan itself, King County and participating cities will select the facilities, programs, and services to be included in the regional solid waste management system over

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the next 20 years. As actions are proposed to implement the 2000 Plan, this EIS will be used to the maximum extent possible to satisfy SEPA environmental review requirements. However, it is expected that additional environmental review will be needed for project actions, particularly those involving major capital improvements.

## **Alternatives and Impacts**

Tables S-1 through S-5 provide a summary of alternatives for each key component of the solid waste system, as well as a summary of potential impacts, mitigation measures, and significant unavoidable adverse impacts. The tables correspond to the parts of the EIS and the chapters in the 2000 Plan, as follows:

- Table S-1 – Waste Reduction, Recycling, and Market Development  
(Part 2 of EIS and Chapter 4 of 2000 Plan)
- Table S-2 – Collection of Mixed Municipal Solid Waste (MMSW)  
and Curbside Recyclables  
(Part 3 of EIS and Chapter 5 of 2000 Plan)
- Table S-3 – The Regional MMSW Transfer System  
(Part 4 of EIS and Chapter 6 of 2000 Plan)
- Table S-4 – MMSW Disposal  
(Part 5 of EIS and Chapter 7 of 2000 Plan)
- Table S-5 – Construction, Demolition and Landclearing (CDL)  
Waste and Special Wastes  
(Part 6 of EIS and Chapter 8 of 2000 Plan)

For each component of the solid waste system, the EIS evaluates alternatives that could meet some or all of the objectives defined under Objectives of the Proposal above. In some cases, alternatives consist of two or more possible “scenarios.” In addition, a no-action alternative is considered for each system component. A true “no-action” alternative is not a feasible option for the revised plan as a whole. Washington State law requires King County to manage its solid waste, and certain actions must be taken during the planning period to fulfill this responsibility. For example, the Cedar Hills Regional Landfill will close and existing CDL waste contracts will expire during the planning period. Therefore, the no-action alternative described for each solid waste system component involves generally maintaining King County’s existing facilities, services, and programs, recognizing that actions will be necessary in some cases.

**Table S-1. Summary of Alternatives, Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts Waste Reduction, Recycling, and Market Development (Part 2 of EIS, Chapter 4 of 2000 Plan)**

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><i>Alternative 1 (No Action).</i> Maintain and refocus existing waste reduction, recycling, and market development programs.</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ Programs included in Alt. 1 could divert an additional 126,000 tons per year of material from disposal by 2020. This would not be sufficient to enable the region to meet the aggressive waste reduction and recycling goals recommended in the 2000 Plan.</li> <li>▪ The Cedar Hills Landfill would close approximately six months earlier than with the expanded programs under Alt. 2.</li> <li>▪ Mitigation for both of the above impacts is incorporated in Alts. 2,3, and 4.</li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ The above impacts are unavoidable except by selecting another alternative.</li> </ul>
<p><i>Alternative 2.</i> Improve existing programs where possible, with the addition of more recycling opportunities at transfer stations; additional diversion of organic materials through pilot programs; and increased marketing efforts to support program goals.</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ Alt. 2 could divert an additional 288,000 tons per year of material from disposal by 2020, approximately 2.3 times that under Alt. 1. Waste reduction and recycling goals recommended in the 2000 Plan could be met without affecting disposal rates.</li> <li>▪ Greater diversion would extend the life of the Cedar Hills Landfill by an estimated 6 months compared to Alt. 1; reduce the impacts of King County’s MMSW on whatever disposal facility is used after Cedar Hills closes; and reduce the costs of waste export.</li> <li>▪ If household hazardous waste (HHW) is collected at transfer stations, dedicated space, additional staff and specialized equipment and procedures would be needed. Collection of HHW at transfer stations would benefit the environment by reducing improper disposal of these wastes, and reducing the quantity that is landfill disposed.</li> <li>▪ Pilot programs for organics processing would allow issues affecting feasibility to be identified before large-scale organics processing, such as that proposed under Alt. 3, is implemented.</li> <li>▪ Additional recyclables processing capacity may be needed, requiring expanded or new processing facilities. On a programmatic level, impacts of construction and operation of processing facilities would be similar to construction and operation of improved or new transfer stations (see impacts of Facility Improvement Alt. 2 in Table S-3).</li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ If additional processing facilities are needed, short-term noise increase during construction could at times be significant based on federal criteria – construction noise is typically exempt from noise limits in land use codes. No other significant short-term or long-term impacts would be expected.</li> </ul>
<p><i>Alternative 3.</i> Implement Alt. 2. with an aggressive program to divert large quantities of organic materials; increase marketing efforts for organic products.</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ Alt. 3 has the potential to divert an additional 451,000 tons per year of material from disposal by 2020, 3.6 times that under Alt. 1 and 1.6 times that under Alt. 2. Therefore, Alt. 3 would extend the life of the Cedar Hills Landfill approximately 6 months compared to Alt. 2 and 1 year compared to Alt. 1.</li> <li>▪ Because Alt. 3 incorporates Alt. 2, other impacts would be similar to those summarized above. However, it is uncertain whether markets would be available for the additional diverted materials. If markets can be developed, there would be a (continued)</li> </ul>

**Table S-1 (continued)**

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><i>Alternative 3</i> (continued)</p>	<p>greater need for additional processing capacity for organics, and therefore a greater potential for expanded or new organics composting facilities. If needed, such facilities have the potential for the types of impacts summarized below.</p> <ul style="list-style-type: none"> <li>▪ There is a potential to generate odorous products during the organics composting process. Odor potential can be mitigated with techniques described in Ecology’s <i>Compost Facility Resource Handbook</i>, as well as WAC 173-304 and WAC 173-308. Most critical factors are ensuring that quantity of incoming materials don’t exceed capacity; that aerobic conditions are maintained in the compost; and that adequate markets are developed so piles of compost don’t remain on site for long periods of time.</li> <li>▪ Leachate from organics compost feedstock and products has the potential to contaminate surface or ground water. To meet the standards cited above, organics composting facilities typically have leachate and surface water management controls similar to those at an MMSW landfill. Leachate quantities can be reduced by conducting part of composting indoors, and using bulking agents (such as mixed paper) to absorb free liquids. Discharged leachate would have to meet state waste discharge standards or County standards for discharge to the sanitary sewer system.</li> <li>▪ Compost can contain pathogens that cause disease in humans, as well as heavy metals that can be toxic in high enough concentrations. Composting facilities can also attract disease vectors. Regulations cited above require measures to reduce these potential health risks. Disease vectors can be reduced through odor control (see above). Maintaining sufficient heat during the composting process is essential to reduce pathogens. Pathogens and heavy metals can also be reduced through waste source control and pretreatment programs. If compost doesn’t meet strict state standards, it cannot be used where people could be exposed – the Health Department must determine its use.</li> <li>▪ If sufficient composting capacity and adequate markets were available, Alt. 3 would provide environmental benefits by returning essential plant nutrients and organic matter to the soil.</li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Other than the potential short-term noise impact referred to under Alternative 2, none would be expected.</li> </ul>
<p><i>Alternative 4.</i> Implement Alternative 2, and add legislatively mandated programs to increase diversion.</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ Alt. 4 has the potential to divert an additional 441,000 tons per year of material from disposal by 2020, approximately 3.5 times that under Alt. 1, 1.5 times that under Alt. 2, and 0.98 that under Alt. 3.</li> <li>▪ Because it incorporates Alt. 2, Alt. 4 would have similar impacts, but additional diversion would extend the life of the Cedar Hills Landfill slightly compared to Alt. 2. Like Alt. 3, it is uncertain whether markets would be available for the additional diverted materials.</li> <li>▪ Enforcement of mandated programs would be costly and difficult for the County and cities, and may increase disposal rates. Mandatory requirements for producers could increase cost of certain products to consumers.</li> <li>▪ Due to difficulties with enforcement, the mandatory approach may not result in a substantial enough increase in diversion to outweigh the adverse impacts of this approach.</li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ None would be expected.</li> </ul>

**Table S-2. Summary of Alternatives, Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts Collection of MMSW and Curbside Recyclables (Part 3 of EIS, Chapter 5 of 2000 Plan)**

<b>Alternatives*</b>	<b>Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts</b>
<p><i>Alternative 1.</i> Implement mandatory curbside collection of MMSW to reduce self-haul traffic at transfer stations.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ The impacts of reduced self-haul traffic at transfer stations are reflected in the evaluation of Service-Level Alternative 2, Table S-3A.</li> <li>▪ Impacts associated with the mandatory aspects of Alt. 1 are similar to those for Waste Reduction and Recycling Alternative 4 (see Table S-1).</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ None would be expected.</li> </ul>
<p><i>Alternative 2.</i> Improve pick-up service for bulky and extra waste to reduce self-haul traffic at transfer stations.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ The impacts of developing more efficient and economical service for residential pickup of bulky waste to reduce self-haul traffic at transfer stations is reflected in the evaluation of Service-Level Alternative 2, Table S-3A.</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ None would be expected</li> </ul>

\* The impacts of maintaining existing levels of self-haul services at transfer stations (the No Action Alternative) are reflected in the evaluation of Service Level Alternative 1 in Table S-3.

**Table S-3. Summary of Alternatives, Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts The Regional Transfer System (Part 4 of EIS, Chapter 6 of 2000 Plan)**

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><b>Service-Level Alternatives</b></p> <p><i>Alternative 1 (No Action).</i> Maintain existing levels of service; expand transfer stations to meet growing needs.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ Transfer stations would have to undergo greater expansion under Alt. 1 to provide efficient service for commercial haulers while accommodating increasing levels of self-haul traffic.</li> <li>▪ At transfer stations that have inadequate capacity to expand (such as Houghton and Algona), increased traffic could mean offsite queues and longer delays for commercial haulers, potentially increasing the incidence of “regional direct haul” (bypassing of transfer stations by commercial haulers, who take MMSW directly to their own stations where it is consolidated for transport to the Cedar Hills Landfill). Primary reason for regional direct haul is probably lower regional direct fee at Cedar Hills; secondary reason is to avoid waiting lines at some transfer stations during peak periods.</li> <li>▪ If regional direct haul increased, it would result in more miles traveled and greater fuel use to transport MMSW; greater wear and tear on roads; and possibly increased collection and disposal rates. Mitigation could include reducing the regional direct fee margin, or cities requiring in their collection contracts that MMSW be delivered to the closest transfer station. (See potential traffic impacts of eliminating regional direct haul under Facility Improvement Alternative 2.)</li> <li>▪ With increased self-haul and regional direct haul, MMSW-related vehicle emissions would increase. The effect on regional levels of air pollutants is unlikely to be significant, because self-haul and regional haul traffic represents a very small percentage of regional traffic.</li> <li>▪ The County would need to increase capital and operating costs to serve the growing number of self-haulers at transfer stations. Transfer stations would have to be made larger to provide more tipping stalls for self-haulers, and sites would have to be larger to accommodate longer, or segregated queuing lanes. The replacement Factoria Transfer Station would cost an estimated \$2 million more than under Alternative 2. Additional costs for other transfer stations may be even more.</li> <li>▪ Disposal rates would likely increase to cover increased capital and operating costs.</li> <li>▪ It may be necessary to site replacement transfer stations for existing facilities with inadequate capacity to expand.</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ The County would need to increase capital and operating costs to serve the growing number of self-haulers at transfer stations. At stations that have inadequate space to expand to accommodate increased traffic volumes, the service levels for commercial haulers would decline; or replacement stations may need to be sited.</li> </ul>
<p><i>Alternative 2.</i> Institute special self-haul hours at some transfer stations; increase subscription to (continued)</p>	<p><i>Impacts and Mitigation Measures</i></p> <p>Alt. 2 includes programs to reduce self-haul traffic. It is not known how successful such programs would be. However, if self-haul traffic could be reduced by 20%, and if compactors are installed on the schedule anticipated in the Plan (page 6-20), average weekday traffic at transfer stations in 2010 would be similar to 1999 levels; and average weekend traffic would be less than 1999 levels. (continued)</p>

Table S-3 (continued)

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><i>Alternative 2</i> (continued)</p> <p>curbside services; expand special collection services; work with haulers to explore possible on-call collection of bulky and extra waste</p>	<ul style="list-style-type: none"> <li>▪ Adjusting self-haul hours to avoid periods of peak commercial activity would reduce delays for commercial haulers. This may reduce the incidence of regional direct haul, resulting in fewer miles traveled for disposal of MMSW.</li> <li>▪ Reductions in self-haul traffic and in regional direct haul would reduce fuel use and regional vehicle emissions associated with MMSW disposal.</li> <li>▪ Increased costs associated with construction of the replacement Factoria Transfer Station and major improvements to other transfer stations (see Alternative 1 above) could be avoided, resulting in lower disposal rates.</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ None would be expected.</li> </ul>
<p><b>Facility Improvement Alternatives</b></p> <p><i>Alternative 1 (No Action).</i> Maintain transfer system in current condition.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ No changes would be made in transfer stations to accommodate increased traffic. Therefore, there would be longer waiting lines, and service levels would decline for all customers.</li> <li>▪ Transfer stations would not have adequate capacity to allow all MMSW to be delivered to the nearest transfer station, so regional direct haul could increase (see associated impacts and mitigation measures under Service-Level Alternative 1 above).</li> <li>▪ Offsite queues at some transfer stations could increase in duration and frequency, which could affect use of adjacent streets and access to nearby land uses.</li> <li>▪ Vehicle emissions from transport of MMSW and recyclables would increase due to expected increases in disposed MMSW and recycling during the planning period. Longer delays for commercial haulers would also increase vehicle emissions.</li> <li>▪ Improvements in leachate control and surface water management that would occur at the First NE and Factoria transfer stations as a result of major improvements proposed under Alt. 2 would not occur. Therefore, Alt. 1 would have a greater potential than other alternatives for adversely impacting salmonid habitat downstream of these stations.</li> <li>▪ In the short-term, disposal rates would decrease due to avoided capital costs. In the long-term, significant ongoing maintenance costs would be incurred as facilities deteriorate with age.</li> <li>▪ Alt. 1 would not equip the transfer system for efficient waste export, because only two existing transfer stations (Enumclaw and Vashon) have compactors. This would result in increased miles traveled and fuel use for MMSW disposal, increasing disposal rates as much as \$11 per ton compared to rates for compacted MMSW under the other alternatives.</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ There would be longer waiting lines and offsite queues at transfer stations, service levels would decline for all customers, the solid waste system would not be prepared for efficient waste export, and disposal rates could increase significantly.</li> </ul>

Table S-3 (continued)

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><i>Alternative 2.</i> Implement the alternative in the King County Solid Waste Division Business Plan (the Anchor/Branch concept), including major improvements to the Bow Lake and First NE transfer stations and replacement of the Factoria Station.</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ Short-term impacts would occur during construction of improved and new transfer stations, including potential for erosion/ sedimentation and fugitive dust, increased truck traffic, increased noise levels, and at Bow Lake and First NE, possible interruptions in service. Erosion and sedimentation potential could be mitigated by best management practices (BMPs), including those needed to protect fish species listed under the Endangered Species Act. Fugitive dust potential would be mitigated by erosion control BMPs, as well as spraying with water or dust suppressants during dry weather. Construction traffic could be routed to avoid congested intersections and scheduled to avoid peak commuter periods. Short-term noise impacts could be minimized by limiting construction to 7AM to 6 PM, using electric equipment where possible, using properly operating mufflers, and other standard measures. Potential short-term interruptions in service at Bow Lake and First NE would be kept to a minimum, and customers would be notified beforehand.</li> <li>▪ During construction, there is a potential to unearth historic or cultural resources. Construction contracts could specify that if such resources are encountered, construction activities must cease in that area until the resources are evaluated.</li> <li>▪ Construction would result in loss of vegetation and wildlife habitat in disturbed areas. Only common, urban species are known to be present. Landscaping could incorporate vegetation of value to native wildlife. At Bow Lake, a sewer line may be embedded in a steep slope. Also, wetland filling may be necessary, in which case a mitigation plan would be developed. The 1993 EIS for the replacement Factoria station concluded that it would have significant impacts on protected steep slopes, and would encroach on a small amount of wetland buffer. The new design may or may not do so. At First NE, steep slopes may be affected by grading, but wetlands and Thornton Creek would likely not be affected. Leachate and stormwater would be managed to protect salmonid habitat downstream of the First NE and Factoria sites.</li> <li>▪ Major improvements at anchor transfer stations and efficiency improvements at branch stations would reduce the potential for delays at transfer stations, which could reduce the incidence of regional direct haul. In addition, self-haul hours would be adjusted at branch stations to better meet the needs of commercial haulers (see Service-Level Alternative 2 above.)</li> <li>▪ Installation of compactors would reduce transfer trailer traffic at transfer stations and the Cedar Hills Landfill. If regional direct haul is eliminated through measures discussed under Service-Level Alternative 1, a substantial amount of additional traffic could be added to some transfer stations, in part offsetting reductions from compactors and reduced self-haul traffic.</li> <li>▪ Alt. 2 would reduce the miles traveled and fuel used to dispose of MMSW, particularly when waste export is implemented. Associated vehicle emissions would also be reduced, and there would be less wear and tear on roadways.</li> <li>▪ The 1993 EIS on the replacement Factoria Transfer Station concluded that there would be a significant noise increase from trucks traveling up the graded access road. This issue would be reevaluated as part of the new design.</li> <li>▪ Disposal rates could be held below the rate of inflation under Alt. 2.</li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ During construction of transfer station improvements and the replacement Factoria station, short-term noise increases could be significant at times. It is not known whether the new design for the replacement Factoria Station would result in significant impacts on protected steep slopes, or a significant noise increase from trucks on the access road.</li> </ul>

Table S-3 (continued)

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><b>Alternative 3, Scenario A.</b>                      Alt. 3 involves implementing Alt. 2, but with an increased role of the private solid waste management companies (the Shared System Alternative). Scenario A would implement a proposal by Rabanco to close the County's Renton Transfer Station and direct MMSW to Rabanco's Black River CDL waste transfer station. The Black River facility would be designated a branch transfer station.</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ Impacts of the anchor/branch system would be similar to those discussed under Alternative 2, with the following exceptions.</li> <li>▪ Closure of the County's Renton station would eliminate traffic associated with that facility; and would add self-haul and commercial traffic would to Rabanco's Black River facility. Depending on customers' choices, MMSW-related traffic added to Black River could be more or less than traffic at the Renton station. If the Black River Station also continued to accept King County's CDL waste, cumulative traffic levels could be significant. This could result in offsite queues, affecting use of the adjacent road and access to nearby businesses. The ability of the Black River station to accommodate additional traffic would be an important consideration in the permitting process for accepting MMSW.</li> <li>▪ Noise levels associated with the Renton station would cease, and noise levels would increase at the Black River station. Traffic at that facility could more than double, potentially resulting in significant noise increases along haul routes.</li> <li>▪ It is not known whether major improvements would be needed to accept MMSW at the Black River facility. If so, construction impacts would be similar to those described for construction of improvements to transfer stations (see Facility Improvement Alternative 2), and similar mitigation would apply.</li> <li>▪ The City of Renton has expressed concern about the potential for groundwater contamination at the Renton Transfer Station, because this station is located near the city's sole source aquifer. Leachate is pumped to the County sanitary line, and there is no evidence that operation of the station has affected the aquifer. Closure of the Renton Transfer Station would eliminate that facility's potential for creating impacts.</li> <li>▪ Acceptance of MMSW at the Black River facility would increase the potential for leachate contamination of surface water runoff. This potential would be minimized by directing washdown water from the processing floor to the sanitary sewer, which is the current practice.</li> <li>▪ Scenario A would increase the incidence of regional direct haul, increasing the miles traveled and fuel used for MMSW Disposal rates could increase an estimated \$1 per ton due to lost transfer station revenues and increased regional direct haul (see impacts of regional direct haul, and mitigation measures, under Service Level Alternative 1 above).</li> <li>▪ A number of issues related to operation of the solid waste utility would need to be resolved to implement this alternative. The Plan recommends that these and other issues associated with this alternative be studied further.</li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Acceptance of MMSW at the Black River Receiving Facility could result in significant cumulative traffic levels and significant noise increase along haul routes.</li> </ul>

Table S-3 (continued)

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><i>Alternative 3, Scenario B.</i> Implement Alt. 2, as well as a proposal by Waste Management that its Eastmont Facility be designated an anchor transfer station. In addition, designate Rabanco's Third and Lander facility as an anchor station.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ Impacts of the anchor/branch system would be similar to those of Alt. 2.</li> <li>▪ If improvements are needed at the Eastmont or Third and Lander facilities, construction impacts would be similar to those from construction of transfer station improvements under Alt. 2.</li> <li>▪ Scenario B could result in greater regional direct haul than Scenario A (see impacts of regional direct haul, and mitigation measures, under Service-Level Alternative 1 above). Unless regional direct haul is curtailed, traffic would decrease at King County transfer stations and increase at the private stations. Both private facilities currently generate substantial truck traffic. If Scenario B is considered further, the ability of these facilities to accommodate cumulative traffic would be an important issue.</li> <li>▪ Unless regional direct haul is curtailed, vehicle emissions could increase in the vicinity of the private stations, increasing the potential for violations of carbon monoxide (CO) standards at already congested urban intersections. This could be mitigated by routing trucks to avoid congested intersections, or scheduling them to avoid commuter peak periods.</li> <li>▪ The two private facilities are located in South Seattle, and would not be convenient to most of the County's customers.</li> <li>▪ Scenario B could result in underutilization of King County transfer stations, increased collection and disposal rates, and possibly the need to lay off County employees. Further analysis of labor issues would be needed before this alternative could be implemented.</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ Significant adverse impacts could be avoided by implementing measures to reduce or eliminate regional direct haul.</li> </ul>
<p><i>Alternative 4.</i> Implement a proposal by Waste Management for a competitive process that would allow both private and public proposals to be reviewed and evaluated for compliance with the 2000 Plan. Private companies could submit proposals to implement new or improved facilities or services recommended in the Plan.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ If the competitive process results in the same transfer system as Alt. 2, the resulting impacts on traffic, air quality/odor, water, sensitive areas/plants and animals, use of fuel, noise, and land use, would also be the same.</li> <li>▪ Capital costs could be less than for Alt. 2 as a result of avoided costs for capital improvements to transfer stations. However, if King County transfer stations became privately owned, King County's revenues from transfer station operations could be substantially reduced. Unless a method were developed to make up for lost revenues, the loss could result in increased disposal rates, or reduced service levels system wide.</li> <li>▪ As noted above, privatization of the County transfer system raises labor issues that would have to be addressed before initiating the competitive process envisioned under Alt. 4.</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ See significant unavoidable adverse impacts for Alt. 2. Also, disposal rates could increase significantly, or service levels decline, unless a method were developed to make up for lost revenues resulting from private ownership of transfer stations.</li> </ul>

**Table. S-4. Summary of Alternatives, Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts MMSW Disposal (Part 5 of EIS, Chapter 7 of 2000 Plan)**

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><i>All Alternatives.</i> Under all alternatives, the County's MMSW would continue to be disposed at the Cedar Hills Landfill until it reaches its permitted capacity in approximately 2012.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ Traffic to and from Cedar Hills would increase between now and closure in 2012. Increases would not be significant. After Cedar Hills closes, it would be used as a base for transfer vehicles. Total traffic would be reduced by about 62% and truck traffic by about 75%.</li> <li>▪ As long as Cedar Hills is open, truck traffic would continue to be a major component of traffic noise at residences along Cedar Grove Road.</li> <li>▪ During construction of Areas 6 and 7, there would be short-term increases in traffic, noise, and potential for erosion/ sedimentation and fugitive dust. Mitigation would be similar to that under Facility Improvement Alt. 2 in Table S-3.</li> <li>▪ Landfill gas will likely be produced at the Cedar Hills Landfill for 30 years or more after closure. The potential for odor and air toxics emissions will be mitigated by continued operation of the landfill gas control system; improvements to the system, most of which are complete; compliance with regulations; and phased final cover. The potential for low-frequency vibrations of windows in homes due to gas/air imbalances in gas flares (a phenomenon called "flare noise") would also be minimized by these improvements (there are two documented incidents of this, one in 1997 and one in 1999). An acoustical evaluation is being conducted to further investigate reported vibrations.</li> <li>▪ While Cedar Hills is open, there is a potential for sporadic incidents of fugitive dust. Dust at the landfill is controlled through an aggressive dust control program that includes erosion control BMPs and spraying water or dust suppressants on exposed soil during dry weather. Dust potential will be greatly reduced when operations cease and the last phase of final cover is applied.</li> <li>▪ Leachate will continue to be produced in relatively large volumes while the landfill is open, and gradually diminishing volumes after operations cease and the last phase of final cover is applied. The leachate and surface water management systems at the landfill have prevented significant leachate contamination of surface and ground water and would be expected to continue to do so.</li> <li>▪ Backup beepers on landfill equipment and trucks are audible at nearby residences. The Solid Waste Division is investigating alternatives to backup beepers that will not compromise safety.</li> <li>▪ Large numbers of birds are attracted to the Cedar Hills site, particularly gulls during nonbreeding season. A system of crossed wires is used to keep gulls from the active area. The Solid Waste Division is discussing with the U.S. Department of Agriculture the possibility of that agency providing bird control. Bird use of the site will diminish after the landfill closes.</li> <li>▪ Use of the remaining capacity of the Cedar Hills Landfill is more cost-effective than early closure and would result in the lowest disposal rates of any alternative (see further discussion under Alt. 3).</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ Landfill-related traffic would continue to be a major component of traffic noise along Cedar Grove Road until the Cedar Hills Landfill closes. With proper design and vigilant operation of environmental control systems at the landfill, other significant impacts could be avoided.</li> </ul>

Table S-4 (continued)

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><i>Alternative 1.</i> Construct a landfill in another County for use after the Cedar Hills Landfill reaches its permitted capacity. The landfill could be shared by the host jurisdiction.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ Construction impacts would be similar to those summarized under Facility Improvement Alternative 2 in Table S-3.</li> <li>▪ If MMSW were shipped to the landfill by rail, traffic would increase in the vicinity of local intermodal facilities. Traffic levels at the landfill itself would be comparable to those at the Cedar Hills Landfill.</li> <li>▪ King County's MMSW would contribute to the potential for erosion/sedimentation, fugitive dust, odor, air toxics emissions, flare noise, leachate contamination of water resources, and birds at the replacement landfill. Mitigation measures would be similar to those at Cedar Hills (see All Alternatives above). If the replacement landfill were located in an area of low population in eastern Washington, the potential for such impacts to affect nearby land uses would be less than at Cedar Hills. Leachate quantities would be reduced due to the dry climate, reducing the potential for leachate contamination of water resources. Stormwater volumes would also be reduced, reducing the potential for erosion/sedimentation. Fugitive dust potential would be higher than at Cedar Hills, requiring aggressive dust control during more months of the year. If there were no nearby population, birds could be controlled through noisy harassment measures.</li> <li>▪ Landfill development would result in loss of vegetation and wildlife habitat. Site selection criteria could take into consideration the presence of wetlands and any critical habitat, particularly habitat that supports endangered or threatened species. Impacts on wildlife, if any, could be mitigated through phased revegetation of the site with species of value to native wildlife; developing a wildlife management plan; or purchasing land for wildlife habitat protection.</li> <li>▪ A replacement landfill would be costly to develop (an estimated \$225 million in 2000 dollars for a 750-acre site), and would likely result in increased disposal costs.</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ Alt. 1 would likely result in a significant increase in disposal rates. The Division contacted four counties in eastern WA that are closer to King County than existing private landfills and could potentially offer reduced transportation costs. None needed a new landfill in their jurisdiction. Based on these considerations, and the fact that there is adequate developed landfill space in eastern WA and OR, the Division determined Alt. 1 is not feasible.</li> </ul>
<p><i>Alternative 2.</i> Construct an incinerator in King County for use after the Cedar Hills Landfill reaches its permitted capacity.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ Construction impacts for an incinerator would be similar in nature, but greater in degree, to those discussed for new and improved transfer stations under Facility Improvement Alternative 2 in Table S-3.</li> <li>▪ An incinerator could generate substantially more traffic than the Cedar Hills Landfill or a replacement landfill due to the need to transport noncombustible waste, bypass waste, and ash to disposal sites. Fuel use and vehicle emissions could also be greater.</li> <li>▪ Stack emissions from an incinerator can contain dioxins and heavy metals, some of which are in particulate form. Mitigation for potential air quality impacts is required by federal and state regulations, which require that incinerators incorporate MACT (maximum available control technology). Other mitigation measures would include selecting a site with terrain that promotes dispersion of stack emissions, adherence to a strict operations and maintenance plan, continuous monitoring for air toxics, and preparation of a response plan for upset conditions.</li> </ul>

Table S-4 (continued)

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><i>Alternative 2</i> (continued)</p>	<ul style="list-style-type: none"> <li>▪ There would be a potential for contamination of water resources from discharge of wastewater, including effluents from boilers and scrubbers and water used to cool ash. State regulations require that wastewater be reused, discharged under an NPDES permit, or discharged to groundwater or a municipal sewer system under a waste discharge permit. Pretreatment may be required. Some incinerators achieve zero discharge by recirculating and reusing wastewater.</li> <li>▪ Incinerators that produce electricity require large quantities of water for the boilers (approximately 1300 gallons per minute for a 2000 ton-per-day incinerator).</li> <li>▪ Incinerators often require auxiliary fuel (typically, natural gas or oil) to maintain high enough heat, especially when operated in conjunction with successful recycling programs.</li> <li>▪ Development of an incinerator would result in loss of vegetation and wildlife habitat over approximately 10-20 acres. Mitigation would be similar to that discussed for a replacement landfill under Alternative 1 above.</li> <li>▪ Incinerator operation can potentially result in significant noise from fans, steam vents, cooling towers, etc. Potential noise impacts could be mitigated by siting an incinerator in an industrial area, enclosing noisy operations, locating the cooling towers as far as possible away from sensitive noise receptors, and selecting a site with no nearby population.</li> <li>▪ Human health impacts resulting from failure of the emissions control system could be more serious than those resulting from failure of a landfill gas control system. Unlike landfill gas, heavy metals do not disperse well, and can settle out and cause serious health problems.</li> <li>▪ Incinerators can have significant aesthetic impact. Although the building may be architecturally designed and screened from view, it may be difficult or impossible to screen the stack and vapor plumes from view.</li> <li>▪ Incineration would be the most costly of all disposal options, and would result in the highest disposal rates. A 2000 ton per day incinerator would cost an estimated \$300 million in 1990 dollars to construct, which would be substantially more in 2000 dollars. Disposal of noncombustible waste, bypass waste and ash would also be costly.</li> <li>▪ Incinerators are incompatible with aggressive recycling programs, because such programs remove combustible waste with the highest energy value (such as paper, wood, and plastics).</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ It may not be possible to screen the incinerator stack and vapor plumes from view. Depending on the viewpoints from which they are visible, this may or may not be a significant impact. Incineration would be the most costly disposal option, and incompatible with aggressive recycling programs. With proper design and vigilant operation and maintenance, other significant impacts could be avoided.</li> </ul>

Table S-4 (continued)

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><b>Alternative 3 (No Action).</b> When the Cedar Hills Landfill reaches its permitted capacity, contract with an existing landfill for disposal capacity and service (waste export).</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ Disposal of King County’s MMSW at an existing landfill in eastern WA or OR would have impacts similar to disposal at a replacement landfill in eastern WA under Alt. 1 above.</li> <li>▪ If King County’s MMSW were exported to the Roosevelt Regional Landfill, it would contribute to cumulative traffic noise increases at residences near the offloading facility. Mitigation could include selecting more than one vendor, equipping trucks with noise suppression equipment, and requiring that trucks travel in pairs to reduce the number of noise incidents.</li> <li>▪ The 2000 Plan concludes that waste export is the most feasible disposal option for the region, because it is a proven disposal method that takes advantage of abundant existing landfill capacity; is less costly than other disposal alternatives; and is compatible with the region’s waste reduction and recycling goals. The County identifies four issues that must be resolved about how and when waste export should be implemented. These are summarized below:             <ol style="list-style-type: none"> <li>1. <b>Should the County implement waste export before the Cedar Hills Landfill reaches its permitted capacity?</b> The earliest waste export could be implemented would be 2004, by developing a temporary compaction/reloading facility. If Cedar Hills closed in 2004, a disposal rate increase of approximately \$16 per ton in 2000 dollars would be required during from 2004 to 2012 to cover the added cost. From an environmental standpoint, early closure of Cedar Hills would eliminate impacts of constructing Areas 6 and 7, end operational impacts sooner, and result in an earlier end to the post-closure period. Conversely, King County’s MMSW would contribute to construction and operations impacts at private facilities earlier. If the private landfills were located in sparsely populated areas, operations impacts would be less likely to affect adjacent residents.</li> <li>2. <b>Should the County implement a system of partial waste export, delaying closure of the Cedar Hills Landfill?</b> An analysis by the County concluded that partial waste export is not cost-effective. From an environmental standpoint, it may reduce certain operational impacts of the Cedar Hills Landfill (such as traffic noise on Cedar Grove Rd.), depending on how much waste is exported. Operational impacts would continue longer, however, and the post-closure period during which landfill gas is produced would end later. King County’s MMSW would contribute to the potential for similar impacts at private facilities sooner.</li> <li>3. <b>Should the County purchase future landfill space?</b> A cost analysis by the Solid Waste Division determined that purchase of future landfill space is not necessary at this time. There are no environmental considerations associated with this issue.</li> <li>4. <b>Should the County export to a single landfill or multiple landfills?</b> The 2000 Plan concludes that this will depend on future market conditions and the interest of private companies in providing MMSW services. From an environmental standpoint, contracting with multiple vendors could reduce impacts at any one facility.</li> </ol> </li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ None would be expected.</li> </ul>

**Table S-5. Summary of Alternatives, Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts CDL Waste and Special Wastes (Part 6 of EIS, Chapter 8 of 2000 Plan)**

Alternatives*	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><b>CDL Waste Alternatives</b></p> <p><i>All Alternatives.</i> Under all alternatives, CDL waste would be handled under the existing contracts with Rabanco and Waste Management until the contracts expire in 2004.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ King County's CDL waste would continue to contribute to cumulative traffic levels at private receiving facilities. Currently, there are no known significant traffic impacts, and none would be expected by 2004.</li> <li>▪ Disposal of the County's CDL waste would continue to contribute to traffic and noise; the potential for erosion and sedimentation; the potential for fugitive dust, air toxics emissions, and odor; and the potential for leachate contamination of water resources at the private landfills where it is disposed. Mitigation for these potential impacts is similar to that for the Disposal Alternative 3, Table S-4.</li> <li>▪ King County's CDL waste would not significantly increase the potential for impacts at private landfills, because it would constitute only a small percentage of the total solid waste (MMSW and CDL waste) disposed there by other jurisdictions.</li> <li>▪ The geographical distribution of private receiving facilities where CDL waste can be disposed may increase the miles traveled to dispose of CDL waste, as well as associated fuel use and vehicle emissions.</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ None would be expected.</li> </ul>
<p><i>Alternative 1 (No Action).</i> Renew the current contracts, but renegotiate conditions where service improvements could be made, such as recycling.</p>	<p><i>Impacts and Mitigation Measures</i></p> <ul style="list-style-type: none"> <li>▪ Traffic at private vendor facilities could increase during the planning period in proportion to projected increases in CDL waste. The increase in average daily trips, estimated at 12% between 1999 and 2010, would not be expected to cause significant traffic impacts in and of itself. However, cumulatively with other traffic to and from vendor facilities, there is a potential for impacts requiring mitigation. Other than greater recycling, mitigation could include requiring that vendors construct new facilities or improve existing facilities to accommodate more traffic.</li> <li>▪ Other impacts discussed above under All Alternatives would continue for the duration of the renewed contracts. The geographical distribution of disposal facilities could be improved by requiring in the renegotiated contracts that more transfer stations be provided to serve areas not conveniently served by existing facilities; or by allowing small commercial vehicles to deliver CDL waste to County facilities (see Alt. 3 below).</li> </ul> <p><i>Significant Unavoidable Adverse Impacts</i></p> <ul style="list-style-type: none"> <li>▪ None would be expected.</li> </ul>

\* There is limited information on the characteristics of the CDL waste stream, how much recycling is occurring, the potential for recycling greater quantities, etc. Therefore, the 2000 Plan recommends targeted studies to address these issues before deciding whether to implement any of the alternatives.

Table S-5 (continued)

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><b>Alternative 2, Scenario A.</b>            Allow the existing contracts to expire in 2004; accept CDL waste at County facilities under Cedar Hills reaches its permitted capacity, then include it in the County's waste export contracts; and consider establishing a dedicated CDL waste receiving facility to actively promote more recycling.</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ Acceptance of CDL waste from both large and small commercial vehicles could add substantial traffic to some transfer stations. At stations that do not have adequate capacity to handle this traffic, such as Houghton, there could be long waiting lines during peak use periods. This potential impact could be mitigated by continuing the existing ban on CDL waste at affected transfer stations. Greater recycling of CDL waste would also reduce traffic impacts at transfer stations.</li> <li>▪ Transfer trailer traffic would increase at the Cedar Hills Landfill. In 2010, it is estimated that there could be approximately a 20% increase in truck traffic and a 10% increase in total traffic. This would probably not significantly increase congestion on haul routes or noise levels on Cedar Grove Rd.</li> <li>▪ Until the Cedar Hills Landfill reaches its permitted capacity, there would be a geographically dispersed system of transfer stations that accept CDL waste, reducing miles traveled and associated fuel use and vehicle emissions, as well as the cost of CDL waste transport. This would particularly benefit small commercial vehicles. To continue this benefit, the County could allow small commercial vehicles to deliver waste to County facilities after waste export begins.</li> <li>▪ Acceptance of CDL waste at County facilities would likely cause more wear and tear on transfer stations, waste handling equipment, and trailers, due to the bulky and heavy nature of the waste. Therefore, maintenance costs would likely increase. Also, more staff may be needed to handle the additional waste.</li> <li>▪ It is estimated that the Cedar Hills Landfill would reach capacity approximately 6 months to 1 year earlier.</li> <li>▪ When waste export begins, the County's CDL waste and MMSW would be transported to the same private facilities, potentially resulting in significant traffic increases at these facilities. This could be mitigated by selecting multiple vendors, requiring in the contracts that multiple transfer stations or intermodal facilities be provided, and recycling more CDL waste.</li> <li>▪ The impacts of exporting CDL waste would be similar to those discussed under All Alternatives above.</li> <li>▪ If a dedicated CDL waste receiving facility is constructed, construction impacts would be similar to those summarized under Facility Improvement Alternative 2, Table S-3.</li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ Acceptance of CDL waste at County facilities would likely increase maintenance costs, require additional staff, and reduce the remaining life of the Cedar Hills Landfill by up to 1 year.</li> </ul>
<p><b>Alternative 2, Scenario B.</b>            Allow the exist contracts to expire in 2004, but continue to prohibit most CDL waste at County facilities. CDL waste would flow to private facilities without contractual ties to County.</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ King County's CDL waste would contribute to impacts similar to those summarized under All Alternatives at whatever private facilities the waste is delivered to.</li> <li>▪ The private sector could construct new facilities for handling CDL waste, including recycling facilities, transfer stations, or intermodal facilities. Construction impacts would be similar to those summarized under Facility Improvement Alternative 2 in Table S-3.</li> </ul> <p>(continued)</p>

Table S-5 (continued)

Alternatives	Impacts, Mitigation Measures, and Significant Unavoidable Adverse Impacts
<p><i>Alternative 2, Scenario B</i> (continued)</p>	<ul style="list-style-type: none"> <li>▪ If private companies do not develop a geographically dispersed system of CDL waste receiving facilities, the County could allow small commercial vehicles to deliver CDL waste to County facilities (see Alt. 3 below).</li> <li>▪ Without a King County contract requiring greater recycling of CDL waste, there would likely be little incentive for private companies to promote recycling.</li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ None would be expected.</li> </ul>
<p><i>Alternative 3.</i> Negotiate new long-term contracts that provide for greater recycling of CDL waste; allow small commercial vehicles to deliver CDL waste to County facilities.</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ Potential impacts similar to those discussed under All Alternatives would occur at whatever private facilities are included in the new contracts, except County facilities would provide a geographically dispersed system of CDL waste disposal facilities convenient to small commercial vehicles.</li> <li>▪ Allowing small commercial vehicles to deliver CDL waste to County facilities would not be expected to significantly increase traffic or other impacts at these facilities, or to significantly decrease the remaining life of the Cedar Hills Landfill (it may be reduced a few months at the most).</li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ None would be expected</li> </ul>
<p><i>Alternative 4.</i> Negotiate new contracts through 2012 that provide for expanded recycling of CDL waste; thereafter, include CDL waste in the County's waste export contracts.</p>	<p><b>Impacts and Mitigation Measures</b></p> <ul style="list-style-type: none"> <li>▪ Through 2012, the impacts of Alt. 4 would be similar to those of Alt. 1. The impacts of including CDL waste in the County's waste export contracts would be the same as those discussed for waste export under Alt. 2, Scenario A.</li> </ul> <p><b>Significant Unavoidable Adverse Impacts</b></p> <ul style="list-style-type: none"> <li>▪ None would be expected.</li> </ul>
<p><b>Special Wastes</b></p> <p>No alternatives were identified for handling of special wastes. However recommendations were made for their handling after the Cedar Hills Landfill closes.</p>	<p><b>Environmental Considerations</b></p> <ul style="list-style-type: none"> <li>▪ After Cedar Hills closes, handling of special wastes would shift to the private sector. Special wastes constitute a very small portion of the waste stream, and with few exceptions require clearance prior to disposal under various waste acceptance policies and regulations. No significant impacts have occurred historically at County facilities, and none would be expected at private facilities.</li> <li>▪ The 2000 Plan recommends evaluating the possibility of designating one transfer station to accept small amounts of asbestos-containing materials from residents; and providing receptacles for small amounts of sharps at transfer stations. This would benefit the environment by reducing improper disposal of these materials.</li> </ul>



## PART 1

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### Introduction



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# Part 1. Introduction

## Objectives of the Proposal

The King County Department of Natural Resources, Solid Waste Division, proposes adoption of the *2000 King County Comprehensive Solid Waste Management Plan* (the 2000 Plan). The overall goal of the 2000 Plan is to develop strategies to provide adequate solid waste facilities and services for the next 20 years. More specific objectives of the 2000 Plan are:

- To respond to issues raised by the public, suburban cities, unincorporated area councils, the Solid Waste Advisory Committee, and the solid waste industry as part of the public involvement process for the 2000 Plan.
- To respond to recent policy directives of the King County Council relevant to solid waste management.
- To meet customer service needs while keeping any increase in disposal rates below the rate of inflation.
- To maximize cost-effective waste reduction and recycling, while maintaining adequate transfer and disposal capabilities for non-recycled waste.
- To design, operate, and maintain the solid waste system in a manner that protects the environment and conserves energy and natural resources.
- To comply with federal, state, and local regulations governing solid waste management.

Effective management of the region's solid waste is an essential public service. Overall, the solid waste system serves to mitigate potential significant impacts on the environment and public health that could otherwise result from improper disposal of waste. Nonetheless, certain aspects of the solid waste system, and some of the alternatives under consideration, have the potential to cause significant impacts. The purpose of this EIS is: to identify potential impacts; describe mitigation measures that can be used (and in many cases, are currently used) to avoid such impacts or reduce them below significant levels; and, where possible, draw conclusions about whether there may be any significant unavoidable adverse impacts (that is, significant impacts that cannot or will not be mitigated). Beneficial impacts are also discussed where relevant to the choice among alternatives.

This EIS is a non-project EIS. The level of detail of the analyses is consistent with the broad programmatic issues to be resolved. Based on the analyses in the EIS, as well as other relevant information and analyses in the 2000 Plan itself, King County and participating cities will select the facilities, programs, and services to be included in the regional solid waste management system over the next 20 years. As actions are proposed to implement the 2000 Plan, this EIS will be used to the maximum extent possible to satisfy SEPA environmental review requirements. However, it is

expected that additional environmental review will be needed for project actions, particularly those involving major capital improvements.

## Background

RCW 70.95 and King County Code (K.C.C) Title 10 require that King County prepare, and periodically review and update, a comprehensive solid waste management plan. King County last updated its solid waste management plan in 1992. The Plan covers the entire County, with the exception of the cities of Seattle and Milton (Seattle develops its own Plan, and Milton is part of the Pierce County system). In addition, the Plan covers the City of Bothell, approximately half of which is in Snohomish County. King County and the cities work cooperatively to implement the Plan. Since 1992, the King County Council has made major policy decisions affecting solid waste management, and significant changes have occurred in the solid waste industry. These factors, described in more detail below, led to the need for a major update of the 1992 Plan.

Policy directives by the King County Council since the 1992 Plan are reflected in K.C.C. 10.22. Council directives that influenced the range of alternatives analyzed in the 2000 Plan include:

- Establish measurable long-term goals for waste reduction and recycling that reflect the distinct missions for each defined in Chapter 10.22.035B; and propose strategies to increase waste reduction and recycling to meet these goals.
- Reevaluate the current policies against siting a replacement landfill for the Cedar Hills Landfill, particularly in King County; and recommend whether these policies should be continued or modified in any way,
- Develop a process for monitoring conditions affecting the appropriateness, feasibility, and timing of waste export; and propose strategies for upgrading the existing transfer system to be compatible with waste export.
- Analyze alternatives that would reduce or eliminate the need for new transfer stations without eliminating self-haul services; and consider private sector options for expanding capacity or services within the transfer system.

Recent changes in the solid waste industry also influenced the range of alternatives evaluated in the 2000 Plan. In the last two years, large national solid waste management companies have acquired or merged with local companies. This strategy has resulted in a reduction in the number of solid waste companies operating in the region from five down to two – Waste Management and Rabanco. These large national companies have a corporate strategy to provide the full range of solid waste services to maximize returns to their stockholders. This strategy, referred to as “vertical integration,” can lead to privatization efforts. In response, the County is working to demonstrate efficiency in its own operations in order to ensure that there is open access to solid waste services in the region.

## Public Involvement and Scoping

The Solid Waste Division conducted an extensive public outreach program to solicit input on solid waste management strategies from those affected by the solid waste system. In June 1999, the Division began to meet individually with each of the suburban cities that are partners with the County in solid waste management planning. Solid waste coordinators, public works and utility managers, and elected officials of these cities participated in discussions with Division staff about appropriate roles and responsibilities in the regional solid waste system, and the facilities, services, and programs they believe should be provided over the next 20 years.

The Division held similar meetings with commercial haulers, unincorporated area councils, and the Solid Waste Advisory Committee in July and August 1999, as well as six meetings with the general public in September and early October. In order to hear from a range of County residents, the meetings were held at different geographic locations throughout the County: Auburn, Bellevue, Duvall, Issaquah, Renton, and Shoreline. Approximately 250 King County residents participated in these meetings.

The official EIS scoping period began with issuance of the determination of significance and scoping notice on November 15, 1999, and ended on December 10, 1999. No additional comments were received during the scoping period.

The Draft EIS was issued on August 14, 2000, which began a 45-day comment period. A public hearing to receive testimony on the Draft EIS was held on September 12, 2000. No one attended the public hearing. The Solid Waste Division received two comment letters on the Draft EIS. Comments and responses are included in Attachment D to this Final EIS.

The Solid Waste Division received numerous comments on the Draft 2000 Plan. Division staff met with the cities and other stakeholders to discuss their concerns and suggestions. The Final 2000 Plan incorporates responses to comments on the Draft Plan.

## Benefits and Disadvantages of Reserving Implementation

The State Environmental Policy Act (SEPA) Rules require that an EIS evaluate the benefits and disadvantages of reserving for some future time implementation of the proposal, as compared with possible approval at this time. Particular attention is to be given to the potential for foreclosing future options by implementing the proposal. (WAC 197-11-440)

The only apparent benefit of delaying adoption and implementation of the 2000 Solid Waste Management Plan is that it would delay short-term construction impacts and operation impacts associated with improved or new facilities. Disadvantages associated with a substantial delay in implementation include:

- There would be insufficient time to prepare the transfer system for efficient waste export when the Cedar Hills Landfill closes (or to develop a replacement landfill or waste-to-energy facility, if the Council selects one of those alternatives). This would increase disposal costs.

- Significant maintenance costs would be incurred as the County's transfer stations continue to age; operational equipment and facilities could become increasingly difficult to repair; and service levels would decline as population and employment in the area grows.
- The option of accelerated waste export, resulting in earlier closure of the Cedar Hills Landfill and an earlier end to the operation impacts of that facility, would be foregone.
- Opportunities to increase the diversion of material from the waste stream by improving existing waste reduction and recycling programs would be delayed.

Other disadvantages of delaying implementation are discussed in the Summary as adverse impacts of the no-action alternative for each component of the solid waste system.

## **Organization of this EIS**

The remainder of the text of this EIS is divided into five parts corresponding to different components of the regional solid waste system, and different chapters of the 2000 Plan:

- Part 2. Waste Reduction, Recycling and Market Development (Chapter 4 of 2000 Plan)
- Part 3. Collection of Mixed Municipal Solid Waste (MMSW) and Curbside Recyclables (Chapter 5 of 2000 Plan)
- Part 4. The Regional Transfer System (Chapter 6 of 2000 Plan)
- Part 5. Disposal of MMSW (Chapter 7 of 2000 Plan)
- Part 6. Construction, Demolition, and Landclearing (CDL) Waste and Special Wastes (Chapter 8 of 2000 Plan)

Each part of the EIS begins with a brief introductory discussion of the key issues associated with that component of the solid waste system, based on information in the 2000 Plan. This discussion is followed by a description of alternatives that were developed to address these issues, and an analysis of the environmental impacts of alternatives. The analysis of impacts within each part is organized by SEPA element of the environment -- Traffic, Air Quality and Odor, Water, Sensitive Areas/Plants and Animals, Use of Non-Renewable Fuel Resources, Noise, Environmental Health, Land Use, and Public Services and Utilities. The analyses under Environmental Health focus on human health, and the analyses under Public Services and Utilities focus on the King County solid waste system.

The impact analyses for each part include only those elements of the environment on which one or more of the alternatives could potentially have a significant adverse impact. For example, because waste reduction and recycling alternatives have less potential to significantly affect the environment

than transfer or disposal alternatives, the impact analysis is briefer and covers fewer elements of the environment.

For each component of the solid waste system, the EIS evaluates alternatives that could meet some or all of the objectives defined under Objectives of the Proposal above. The numbering and description of alternatives in the EIS, and the analysis of their effect on the solid waste system, correspond to those in the Draft 2000 Plan. The Final 2000 Plan focuses on recommendations, and generally provides a more abbreviated discussion of alternatives.

In some cases, alternatives consist of two or more possible "scenarios." In addition, a no-action alternative is considered for each system component. A true "no-action" alternative is not a feasible option for the revised plan as a whole. Washington state law requires King County to manage its solid waste, and certain actions must be taken during the planning period to fulfill this responsibility. For example, the Cedar Hills Regional Landfill will close and existing CDL waste contracts will expire during the planning period. Therefore, the no-action alternative described for each solid waste system component involves generally maintaining King County's existing facilities, services, and programs, recognizing that actions will be necessary in some cases.

A detailed comparison of the impacts of alternatives was developed for the EIS. Because of the importance of this comparison, it is included in its entirety in the Summary. To reduce volume, the comparison is not repeated here.

Throughout the EIS, parenthetical references are made to information sources listed in Part 7. If a parenthetical reference is included within a sentence, it refers to that sentence alone. If located at the end of a paragraph outside the last sentence, the reference applies to the entire paragraph.



**PART 2**

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**Waste Reduction, Recycling,  
and Market Development**



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## **Part 2. Waste Reduction, Recycling, and Market Development**

Chapter 4 of the 2000 Plan discusses waste reduction, recycling, and market development. In the late 1980's, King County's strategy for solid waste management shifted from disposal to waste reduction and recycling (RCW 70.95 and KCC 10.22). The cities and County have promoted waste reduction and recycling through a number of regional programs. The cities provide programs and services for their residents and businesses, while the County supports programs in unincorporated areas. In addition, the County's Commission for Marketing Recyclable Materials researches and helps develop markets for recyclable materials.

Since the late 1980's, the amount of material diverted from disposal has increased substantially. In recent years, however, diversion has been outpaced by the increase in waste generation due to population, economic, and employment growth in the region. To counteract this trend, the 2000 Plan sets an aggressive goal for waste reduction and recycling. The goal consists of six objectives, as well as primary and secondary measurement targets to evaluate the region's progress in meeting these objectives. A number of issues must be addressed to enable the region to achieve the waste reduction and recycling goal, including: how to improve opportunities for collection and composting of organic materials; how to improve the overall availability of recyclables materials collection; and what future markets can be developed for recyclable materials. The EIS evaluates four alternatives that address these issues to varying degrees. (2000 Plan, pages 4-2 to 4-7)

### **Description of Alternatives**

#### ***Alternative 1—Maintain Existing Programs at Current Levels (No Action)***

Existing waste reduction and recycling programs would continue as recommended in the 1992 Plan without substantial changes. The King County Commission for Marketing Recycled Materials (Marketing Commission) would also continue its existing level of effort to promote market development. This alternative would rely on the largely volunteer waste reduction and recycling programs that have been established by King County and suburban cities. Existing programs would be adjusted to focus on those materials and practices that are most likely to result in increased diversion of materials from landfill disposal.

#### ***Alternative 2—Improve Existing Programs and Add New Programs***

Alternative 2 would continue existing waste reduction and recycling programs, improving them wherever possible. Under this alternative, the Solid Waste Division would focus on the environmental benefits of waste reduction and recycling; place increased emphasis on waste reduction; collect additional materials at transfer stations where space permits; divert more organics (food waste, manure, and biosolids) through pilot collection and composting programs; promote take-back of household and small quantity-generator hazardous waste (some cities have expressed an interest in having household hazardous waste collected at transfer stations); develop and implement programs to reduce disposal of electronics; and help the suburban cities improve the efficiency of curbside collection programs. In addition, under Alternative 2, the Marketing Commission would

increase its current efforts to support recycling programs by promoting markets for recycled materials.

### ***Alternative 3—Implement Alternative 2 with Large-Scale Organics Diversion***

All the programs and program improvements in Alternative WRR-2 would be implemented. In addition, large quantities of organic materials would be diverted from landfill disposal. The Solid Waste Division would develop methods and implement programs for collecting and processing food waste and animal waste, or for mixing and processing these wastes with other organics. In addition, individuals and farmers would be educated in proper management of animal waste onsite. Technologies would be evaluated and implemented to incorporate waste streams from other King County agencies, such as wastewater treatment biosolids, into the mix for organic composting. Collection or onsite processing programs would be developed for large volumes of organic material from clearing large lots, as well as bulky material from large trees. Marketing Commission programs would help support markets for targeted materials.

### ***Alternative 4—Implement Alternative 2 with Regulations to Increase Diversion***

All the programs and program improvements described under Alternative 2 would be implemented, and additional diversion would be achieved through legislatively mandated programs. These programs could include a ban on paper and cardboard in commercial garbage (in other words, businesses would be required by law to recycle paper and cardboard); mandatory subscription to curbside residential recycling services; regulations for minimum recycled materials content in various products; or mandates for producer responsibility (such as requirements to use only recyclable packaging, or requirements to take back and recycle used products). Marketing Commission programs would help support markets for selected materials.

## **Affected Environment, Impacts, and Mitigation Measures**

In general, greater waste reduction and recycling would save natural resources and landfill space, and lead to greater protection of the environment. For example, greater take-back of household and small-quantity generator hazardous wastes, and greater diversion of organic wastes, would reduce improper disposal of these wastes that may adversely affect the environment.

Alternatives 2, 3, and 4 would provide collection of additional recyclable materials at transfer stations where space permits. The impacts of this are reflected in the evaluation of Facility Improvement Alternative 2 in Part 4 of this EIS.

All of the waste reduction and recycling alternatives would divert a greater volume of recyclable materials from the waste stream than is currently diverted (see King County Solid Waste System below). It is not known how much unused capacity for processing recyclable materials is available to the region. However, under those alternatives that substantially increase the volume of diverted materials (Alternatives 2, 3, and 4), there would be a potential need for expanded or new processing facilities.

On a programmatic level, construction and operation of most recyclables processing facilities would have potential environmental impacts similar to those resulting from construction and operation of

transfer stations (see impacts of Facility Improvement Alternative 2 in Part 4 of this EIS). However, under Alternative 3, there is a need for additional organics processing capacity (2000 Plan, Chapter 4), which could result in expanded or new organics processing facilities. If needed, organics processing facilities could process mixtures of different feedstocks (for example food waste, yard waste, animal waste, and biosolids). Such facilities may have a greater potential for impacts on air quality and odor, water, and environmental health than a typical transfer station; and the mitigation measures incorporated into facility design and operation would be different (E&A 1994). Therefore, the Air Quality and Odor, Water, and Environmental Health sections below focus on potential impacts of organics processing facilities, *if they are needed*, and on mitigation measures that would avoid significant adverse impacts.

The only other "element of the environment" section included in this part of the EIS is Public Services and Utilities. That section discusses the potential beneficial and adverse impacts of all four alternatives on the region's solid waste system.

## ***Air Quality and Odor***

### **Affected Environment**

As noted previously, under Alternative 3, there would be a potential need for expanded or new organics processing facilities. The sites of such facilities are unknown. Therefore, it is not possible to describe specific aspects of the environment that may be affected. Any needed facilities could potentially be sited in the Puget Sound Region. The general environment of this region is described in Attachment A.

Composting facilities are currently regulated under two sections of WAC 173-304, Minimum Function Standards for Solid Waste Handling (MFS): Section 420, the pile standards; and Section 300, the recycling facility standards. Since the MFS were written before composting was a viable industry in Washington State, the existing standards do not address several aspects of composting that are essential to successful operations. To provide additional guidance, Ecology developed the Compost Facility Resource Handbook (1997), which provides criteria for minimum facility designs and management practices. The MFS are now being revised, and will include a separate section on compost facility standards that will integrate the guidance in the handbook with existing regulations, including the MFS; WAC 173-308, Biosolids Management; state regulations governing air quality; water quality, and waste discharge; and local land use requirements. (Ecology 2000)

### **Impacts and Mitigation Measures**

Organics composting is generally accomplished by placing the material to be composted in plastic-covered static piles, or uncovered windrows that are turned regularly to aerate the compost. With either technique, there is a potential to generate odorous compounds during the composting process. The potential for odor can be mitigated with management techniques described in the Compost Facility Resource Handbook (Ecology 2000), as well as compliance with the compost facility standards in the revised MFS.

The most critical factor in reducing odor potential at organics composting facilities is maintaining aerobic conditions in the compost. This can be achieved by pulling air through pipes located below each pile. Odor control is achieved by passing this air through a biofilter before discharging it to the

atmosphere. Soil and microorganisms in the biofilter adsorb and degrade odorous compounds. (E&A 1994)

Odor generation at composting facilities is greatest during the initial rapid decomposition process. Therefore, odor potential can be reduced by conducting this process indoors, in composting vessels, or in aerated static piles covered with plastic. After the initial decomposition process has occurred, and odors have subsided, further curing can be achieved outdoors in aerated turned windrows without significant odors. (E&A 1994)

To reduce odor potential at composting facilities, it is also critical to ensure that the quantity of incoming materials does not exceed capacity, and that adequate markets are developed so piles of compost do not remain on site for long periods of time. Odor potential depends in part on the mix of organic materials being composted (E&A 1994). Pilot organics composting projects proposed under Alternative 2 could determine the optimum mix and help refine odor-prevention techniques before large-scale organics diversion such as that proposed under Alternative 3 is attempted. Other mitigation for odor potential includes proper leachate management (see Water section); and adequate site buffers to reduce the potential for offsite odors. If curbside collection of food waste is implemented, using airtight, leak-resistant containers would reduce odor potential.

### **Significant Unavoidable Adverse Impacts**

Significant adverse impacts could be avoided through proper design and vigilant operation of any needed organics composting facilities, in compliance with applicable federal and state regulations.

## **Water**

### **Affected Environment**

See Affected Environment under Air Quality and Odor above.

### **Impacts and Mitigation Measures**

The organics composting process requires water, and part of the curing process for organics compost is typically conducted outdoors. Therefore, substantial quantities of leachate can be generated. Because leachate from organics compost can contain nutrients, heavy metals, and pathogens, there is a potential for contamination of surface water or groundwater. Federal and state regulations incorporate measures to minimize this potential, including locational standards specifying the minimum depth to groundwater at the site, and the minimum distance to downgradient water supplies. (40 CFR 503; WAC 173-304; WAC 173-308; E&A 1994)

To meet federal and state standards, organics composting facilities typically incorporate leachate collection, treatment, and discharge systems similar to those at a solid waste landfill. The area underneath compost piles is lined with impervious material, and graded to direct leachate to a sanitary sewer drain, or to a lined storage pond where the leachate is pretreated prior to discharge. Surface water runoff and runoff controls are also required to reduce leachate quantities and minimize the potential for leachate contamination of surface water. Leachate quantities can also be reduced by conducting the composting process indoors to the degree possible, and using bulking agents (such as yard debris, mixed paper, or wood waste) to absorb free liquid in food waste or biosolids.

Discharged leachate would have to meet state waste discharge requirements for discharge to surface waters, or waste discharge standards for discharge to the sewer system. (40 CFR 503; WAC 173-304; WAC 173-308; E&A 1994)

The use of organics compost after it leaves the composting facility also has the potential to contaminate surface and groundwater. The Environmental Health section below discusses regulations for compost quality and use that would mitigate this potential impact.

### **Significant Unavoidable Adverse Impacts**

Significant adverse impacts could be avoided through compliance with applicable federal and state regulations.

## ***Environmental Health***

### **Affected Environment**

See Affected Environment under Air Quality and Odor above. Also, see background on the components of human health risk in Part 5 of this EIS (MMSW Disposal) under Environmental Health, Affected Environment.

### **Impacts and Mitigation Measures**

Compost can contain pathogens that cause disease in humans, as well as heavy metals that are toxic to human health in high enough concentrations (E&A 1994). Potential pathways of exposure to health risks at organics composting facilities include exposure via air contamination (primarily odor), exposure via leachate contamination of water supplies, and exposure via animal vectors.

Odor is probably the most common potential impact associated with organics composting facilities (Cornell University 1996 and 1997). Odors can affect well-being and create discomfort or specific symptoms (such as headache and nausea) even when no chemical injury leading to disease is indicated (University of North Carolina 1998 and 1999; Yale University undated). As discussed under Air Quality and Odor above, odor potential can be minimized through compliance with applicable regulations and use of a variety of management procedures. To minimize the potential for leachate contamination of water supplies, organics composting facilities must meet locational standards and incorporate leachate and stormwater controls similar to those required for MMSW landfills (see Part 5 under Water).

Organics composting facilities can also attract disease vectors such as rodents, particularly in feedstock storage sites. Because vectors may be attracted by odors, measures to reduce odors are also effective in reducing vector activity. These include mixing and processing feedstocks immediately. State law requires that vector reduction measures be taken at composting facilities. (WAC 173-304; WAC 173-308; E&A 1994)

In addition to potential health risks associated with organics processing facilities themselves, the use of compost after it leaves the processing facilities also involves potential risks. The composting process must be managed carefully to minimize these risks. The generation of heat and maintenance of high temperatures during the composting process are essential for destroying pathogenic

organisms that may be present in the material being composted. For solid waste compost, federal regulations specify the temperatures that must be achieved, and the period of time of which such temperatures must be maintained, to ensure pathogen destruction (40 CFR Part 257). For compost that contains biosolids, federal regulations specify limits for heavy metal concentrations, as well as standards for pathogen reduction (40 CFR 503).

As discussed under Air Quality above, the state MFS are currently being revised, and will include requirements specifically for composting. Meanwhile, guidance on compost quality is included in Ecology's 1994 publication *Interim Guidelines for Compost Quality*. Depending on pathogen levels, compost is classified as Class A or Class B. Compost meeting Class A standards is suitable for a variety of beneficial uses. To minimize potential risks to human health, acceptable uses for compost that does not meet Class A standards have to be determined in coordination with the Health Department. (E&A 1994; WAC 173-308; Ecology 1994)

Seattle and King County conducted a joint commercial food waste composting demonstration project in 1994 (E&A 1994). The trace metal concentrations in all final products were well below state and federal regulatory standards for utilizing compost products. In addition, final products met Class A pathogen reduction standards for all pathogens except fecal coliform. Further organics composting pilot programs could refine processing techniques and result in higher quality compost. If not, the Health Department would limit the uses of the compost to those that do not pose significant risks to human health.

Pathogens in biosolids can be reduced prior to composting through industrial waste source control and pretreatment programs. Since the early 1980's, King County's programs have significantly reduced the amount of heavy metals entering the treatment system. The County's biosolids treatment processes reduce the pathogens typically found in wastewater by 90-95%. Even without composting, biosolids meet state Class B pathogen-reduction criteria and are safe for a variety of beneficial uses. The County continues to evaluate alternative treatment technologies that may reduce pathogens to meet Class A criteria (King County 1999c).

### **Significant Unavoidable Adverse Impacts**

With the mitigation discussed above, there would be no significant risks to human health associated with expanded or new organics composting facilities.

### **Public Services and Utilities**

#### **Affected Environment**

Almost all primary recyclables (newspaper, mixed paper, PET and HDPE bottles, glass containers, and tin and aluminum cans) are accepted at the County's eight transfer stations, except at the Algona station, where there is currently no recyclables collection. Separate bins for collecting yard waste are available only at the Enumclaw, Cedar Falls, and Vashon facilities, and at the Factoria Transfer Station during the night shift. Additional materials are being considered for recyclables collection at transfer stations and at curbside in residential neighborhoods. In addition, the Counties and cities have begun looking at commingled collection (one large bin) instead of separate bins for collecting recyclable materials at the curb. The City of Seattle recently converted to this kind of system. (2000 Plan, Chapter 4).

As with residential recycling, recycling in the business community is voluntary. Businesses tend to participate in recycling programs when it is economical to do so. In some cases, however, it costs businesses more money to recycle than to simply dispose of their wastes. This is especially true for small businesses for which recyclables collection may be difficult due to the smaller volume of materials or out-of-the-way location. Currently a large quantity of recyclable paper and cardboard (approximately 20% of the non-residential waste stream) is still being disposed. (2000 Plan, Chapter 4)

To substantially increase waste reduction and recycling over current levels, measures will have to be taken to improve the overall availability of recyclable materials collection so that more businesses and residents participate. In addition, improved recycling of organics materials could substantially reduce the volumes of material that enter the regional waste stream. Programs for collection and composting of yard waste have been successful in achieving some reduction; however, yard debris, food, vegetative and wood wastes, and soiled paper still comprise approximately 30% of the disposed MMSW in King County. The technology now exists to recycle and reuse these materials in a way that is beneficial to the environment and the economy (2000 Plan, Chapter 4).

The King County Commission for Marketing Recyclable Materials is charged with developing and maintaining markets for recyclable materials. In 1998, the Marketing Commission prepared the *Assessment of Markets for King County Recyclable Materials* (2000 Plan, Appendix B-3). Some of the key challenges identified in the report were the potential for a sustained downturn in the global market for recyclables; maintaining the stability of fragile markets for mixed waste paper and glass, ensuring that there is a balance in supply and demand for organics materials; and being more proactive in developing markets.

### Impacts of Alternatives

**Alternative 1**—The Solid Waste Division estimates that the refocusing of existing waste reduction and recycling efforts, combined with the cumulative benefits of continued education and promotional programs, could divert an additional 126,000 tons per year of material from disposal by 2020 (2000 Plan, Appendix A-1). This diversion rate would not be sufficient to meet the region's goals for waste reduction and recycling during the planning period (2000 Plan, Chapter 4). Solid Waste Division staff estimate that the Cedar Hills Landfill would close approximately six months earlier than with the expanded programs under Alternative 2. In addition, King County's solid waste would have a greater impact on the capacity of whatever disposal facilities are used after the Cedar Hills Landfill closes.

Alternative 1 does not meet the County's adopted mission to divert as much material as possible from disposal in a manner that reduces the overall costs of solid waste management. Much more can be done in a cost-effective manner to improve regional programs. Furthermore, Alternative 1 is not responsive to the concerns expressed by the cities and residents during the public involvement process (King County 1999d)

**Alternative 2**—The Solid Waste Division estimates that under Alternative 2, an additional 288,000 tons per year of material could be diverted from disposal by 2020 (2000 Plan, Appendix A-1). This is approximately 2.3 times the estimated volume of additional diversion in 2020 under Alternative 1. By diverting more materials from disposal, the Division estimates that Alternative 2 would extend the life of the Cedar Hills Landfill by approximately 6 months compared to Alternative 1. Greater

diversion would also reduce the impacts of King County's MMSW on whatever disposal facility is used after the Cedar Hills Landfill closes. In addition, because there would be less MMSW requiring disposal, the cost of waste export would be reduced.

Increased recycling collection opportunities at transfer stations, including yard waste collection where possible, would provide convenient service for those who currently self-haul recyclables or solid waste (including yard waste) to transfer stations. Pilot programs for organics recycling would allow any issues affecting the feasibility of such programs to be identified before larger-scale organics recycling is implemented. Potential environmental impacts could also be identified and effective mitigation developed. In addition, the Marketing Commission could begin promoting markets for end products so markets are available when larger-scale organics recycling is implemented.

If household hazardous waste were collected at transfer stations, space would have to be created separate from the collection area for other recyclables, and special procedures would have to be developed for safe handling and storage until materials were picked up. In addition, procedures and equipment would be needed for spill prevention, control, and cleanup. Additional staff would be needed to operate the hazardous waste collection area. This staff would require training in safety and spill prevention procedures, as well as in use of spill control and cleanup equipment. Household hazardous waste collection would have benefits to the environment by reducing improper disposal of these wastes, and reducing the quantity that is landfill disposed.

Alternative 2 addresses many of the concerns identified by the suburban cities and the public during the EIS scoping process (King County 1991d). Furthermore, Alternative 2 meets the County's adopted mission (see mission statement under Alternative 1) by substantially increasing diversion without affecting disposal rates; and would allow the County to meet its future waste reduction and recycling goals. Diversion programs would be coordinated with market development strategies to ensure adequate demand for additional recycled materials. (2000 Plan, Chapter 4)

**Alternative 3**—Under 3, all the programs and program improvements in Alternative 2 would be implemented. Therefore, the discussion of the benefits and adverse impacts of Alternative 2 also apply to this alternative. In addition, large quantities of organic materials would be diverted from landfill disposal. Methods would be developed and implemented for collecting and processing food waste and animal waste, or for mixing it and processing it with other organics such as wastewater treatment biosolids. If markets could be developed for additional organics materials, this alternative has the potential to divert an additional 451,000 tons per year from the waste stream by 2020 (2000 Plan, Appendix A-1). This is approximately 3.6 times the estimated additional diversion in 2020 under Alternative 1, and 1.6 times that under Alternative 2.

With the additional materials diverted from disposal, the Solid Waste Division estimates that Alternative 3 would extend the remaining life of the Cedar Hills Landfill approximately 1 year compared to Alternative 2 and 1½ years compared to Alternative 1. Compared to those alternatives, Alternative 3 would also reduce the impacts of King County's solid waste on the capacity of whatever disposal facility is used after the Cedar Hills Landfill closes.

In preparing the 2000 Plan, the Solid Waste Division had insufficient information about whether the additional organics materials removed from the waste stream could be marketed cost-effectively; or whether organics materials diversion programs could be implemented without adversely affecting

disposal rates. If large quantities of organics were collected and composted without increased demand, piles of compost could build up at composting facilities, resulting in odors and fire hazard. Therefore, if this alternative were selected, it would be important not to build up the supply of compost until market development efforts increased the demand.

Assured composting capacity would also have to be in place before full-scale organics collection programs began. This could potentially be accomplished through expansion of existing organics composting facilities, adding work shifts to existing facilities, or developing new facilities. Expanded or new composting facilities may be difficult to site in King County, primarily because of concerns about potential odor, leachate management, traffic, and noise during operation. If this alternative is selected, King County could explore with private waste disposal companies the possibility of locating organics composting facilities at their regional landfills. If composting facilities were developed at these landfills, some or all organic materials could be added to the County's future waste export contracts.

If sufficient organics composting capacity were developed, and there were a sufficient demand for compost products, Alternative 3 would provide environmental benefits. Compost is an excellent source of essential plant nutrients and organic matter. The addition of organic matter can reduce erosion by improving soil texture and structure and the ability of the soil to hold moisture. By recycling organics, nutrients are returned to the soil where they can enhance plant growth. (King County 1999c)

**Alternative 4**—Under Alternative 4, all the programs and program improvements described under Alternative 2 would be implemented, and additional diversion would be achieved through legislatively mandated programs (see Description of Alternatives above). With market development and effective enforcement of mandates, the Solid Waste Division estimates that Alternative 4 would divert an additional 441,000 tons per year of material by 2020 (2000 Plan, Appendix A-1). This is approximately 3.5 times the amount of material diverted under Alternative 1, 1.5 times that under Alternative 2, and slightly less than that under Alternative 3.

Because it incorporates the same programs as Alternative 2, Alternative 4 would also have the benefits and adverse impacts discussed above for that alternative. However, like Alternative 3, Alternative 4 could extend the life of the Cedar Hills Landfill slightly compared to Alternative 2. Also, like Alternative 3, it is uncertain how marketable the additional diverted materials would be during the planning period. Another consideration is that mandated programs would require enforcement, with monitoring of businesses and residents and penalties if they do not comply. This would be costly and burdensome for both the County and cities, and could adversely affect disposal rates (2000 Plan, Chapter 4).

Mandatory requirements for producers could increase the cost of certain products to consumers. Also, mandatory recycling programs could be unpopular with some businesses and residents, which could lead to a backlash against recycling in general. It is difficult to estimate the difference in diversion that might occur with mandatory programs compared to the voluntary programs under Alternative 2. Due to difficulties with enforcement, the mandatory approach may not result in a substantial enough increase in diversion to outweigh the adverse impacts of this approach.

### **Significant Unavoidable Adverse Impacts**

The programs included under Alternative 1 would not be sufficient to enable the region to meet the aggressive waste reduction and recycling goal recommended in the 2000 Plan. The Solid Waste Division estimates that the Cedar Hills Landfill would close approximately six months earlier under Alternative 1 than with the expanded programs under Alternative 2. No significant unavoidable adverse impacts would be expected under Alternatives 2, 3, or 4.

**PART 3**

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**Collection of MMSW  
and Curbside Recyclables**



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## **Part 3. Collection of MMSW and Curbside Recyclables**

Collection of MMSW and curbside recyclables is discussed in Chapter 5 of the 2000 Plan. Approximately 90 percent of the residents in the King County regional system subscribe to curbside garbage collection services. About 87 percent of those subscribers also put their recyclables out for curbside collection. Except in Enumclaw and Skykomish, where the cities operate their own collection systems, private solid waste management companies provide MMSW collection throughout most of the service area. Waste Management, Inc. and Rabanco provide about 99 percent of the MMSW collection services in the region. Waste Connections, Inc. provides collection on Vashon Island only. (2000 Plan, Chapter 5)

Private collection companies are not always using the closest transfer station to dispose of their MMSW loads. About 23% of the loads are driven to their own transfer stations in Seattle for consolidation before being transported to the Cedar Hills Landfill, a practice called "regional direct haul" (2000 Plan, Chapter 5). The regional direct disposal fee is \$23 per ton less than the County's transfer station tipping fee, which provides a monetary incentive for regional direct haul (2000 Plan, Chapter 10). Commercial haulers have also indicated that they bypass County facilities because of long waiting lines (King County 1999a). In any case, the increased time and distance that collection vehicles travel may increase collection costs. In addition, regional direct haul results in a net revenue loss to the County. All ratepayers pay about \$2 more per ton than they would if the private companies hauled waste to the closest transfer station (2000 Plan, Chapter 10).

The 2000 Plan identifies two potential methods of reducing the incidence of regional direct haul: 1) the difference between the regional direct fee and the basic fee could be reduced (2000 Plan, Chapter 10); and 2) cities could specify in their collection contracts which transfer stations collection companies must use (2000 Plan, Chapter 5). In addition, to help ensure that MMSW is delivered to the closest facility, the capacity and hours of operation at the transfer stations must meet the needs of private collection companies. Reducing or eliminating regional direct haul would have environmental benefits in terms of reducing miles traveled and associated fuel use and vehicle emissions (see Part 4, Section A of this EIS, under Traffic, Air Quality and Odor, and Use of Petroleum-Based Fuels, Alternative 2). On the other hand, it would increase traffic at some County transfer stations (see Part 4, Section B, under Traffic, Alternative 2).

Another key collection issue with environmental ramifications is "self-hauler" use of County transfer stations. Residential and non-residential customers who choose to bring their MMSW or primary recyclables to transfer stations themselves, rather than have them collected at curbside, are referred to as self-haulers. This issue is addressed in more detail in Part 4 of this EIS (Service-Level Alternative 2 and Facility Improvement Alternative 2). The challenge with self-haulers is to balance the need of self-haulers with those of the commercial collection companies. Self-haulers can cause delays in service for commercial haulers. In addition, self-hauling increases capital costs for transfer station upgrades, because more queuing capacity is needed. The EIS evaluates two alternatives for self-hauler use of transfer stations, which are described under Description of Alternatives below.

The 2000 Plan also analyzes several possible improvements to the recyclables collection system, and recommends that their costs and benefits be studied further. The only one of these that has the potential for significant impacts is a possible fixed household hazardous waste collection site.

On a programmatic level, construction and operation of a fixed household hazardous waste collection site would involve impacts and mitigation measures similar to those for construction and operation of improved or new transfer stations (see impacts of Facility Improvement Alternative 2 in Part 4 of this EIS.) Additional mitigation measures would be required to minimize risks associated with handling of household hazardous waste. Any such facility would operate in compliance with Washington State dangerous waste regulations (WAC 173-303-560), and the Washington Department of Ecology's *Moderate Risk Waste Fixed Facility Guidelines* (Ecology 1992). The 1993 EIS on the replacement Factoria Transfer station evaluated locating a moderate risk waste facility at the new transfer station. The EIS concluded that potential significant impacts could be avoided by appropriate facility design and operation (City of Bellevue 1993).

## **Description of Alternatives**

Both of the alternatives described below involve actions intended to decrease self-hauler use of transfer stations. The impacts of maintaining existing levels of self-haul service at transfer stations (the No Action Alternative) are reflected in the evaluation of Service-Level Alternative 1 in Part 4 of this EIS.

### ***Alternative 1—Implement Mandatory Curbside Collection of MMSW***

The County and cities would require mandatory collection of MMSW. Thirteen cities in the county have already instituted mandatory collection within their jurisdictions. To require mandatory collection, the County would have to form an MMSW collection district as described in RCW 36.58A. The statute requires the County to hold public hearings on the issue and requires approval by the King County Council. The cities could join the District or could pass their own mandatory collection ordinances. The County and the cities would need to coordinate implementation of these ordinances.

### ***Alternative 2—Improve Pickup Service for Bulky and Extra Waste***

The County and cities would work with collection companies and the WUTC to develop an efficient and economical service for residential pick-up of bulky wastes.

## **Affected Environment, Impacts, and Mitigation Measures**

The impacts of mandatory curbside collection (Alternative 1) are similar to those for Waste Reduction and Recycling Alternative 4 (see Part 2 of this EIS under King County Solid Waste System). The impacts of developing more efficient and economical service for residential pickup of bulky waste (Alternative 2), are reflected in the evaluation of Service-Level Improvement Alternative 2 in Part 4 of this EIS.

**PART 4**

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**The Regional MMSW Transfer System**



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## Part 4. The Regional MMSW Transfer System

The regional MMSW transfer system is described in Chapter 6 of the 2000 Plan. It comprises a mix of public and private facilities, including eight transfer stations and two rural drop boxes operated by the County, and two transfer stations operated by the two private solid waste management companies in the region – Waste Management, Inc., and Rabanco. Figure 4-1 shows the location of the region's facilities.

The 2000 Plan presents two types of transfer system alternatives – service-level alternatives (discussed in Section A below) and facility improvement alternatives (discussed in Section B). Service-level alternatives consider the need to serve two distinct types of customers – the private solid waste management companies (referred to in the 2000 Plan and in this EIS as commercial haulers); and residential and nonresidential customers who choose to bring their MMSW and recyclables to the transfer stations themselves (referred to in the 2000 Plan and this EIS as self-haulers). County transaction records show that while 74% of the tonnage received at transfer stations is from commercial haulers, 88% of the transactions are with self-haulers (2000 Plan, Chapter 3). Since curbside collection of MMSW is available to nearly all of the region's customers, the majority of self-haulers do so because of personal preference. (2000 Plan, Chapter 6)

King County's transfer system is aging – five of the eight County-operated transfer stations are over 30 years old. Facility improvement alternatives consider the need for major improvements to meet long-term environmental and operational requirements at these aging stations; as well as the need to prepare the transfer system for efficient waste export by the time the Cedar Hills Landfill is projected to close in 2012. For efficient waste export, compactors would have to be installed in all King County transfer stations (only the relatively new Enumclaw and Vashon facilities currently have compactors). Compacting MMSW maximizes the amount that can be transported in a single load, resulting in reduced transportation costs (2000 Plan, Chapter 6).

### A. Service-Level Improvement Alternatives

#### Description of Alternatives

##### *Alternative 1—Maintain Existing Service Levels (No Action)*

Self-haul and commercial customers would continue to be served during all hours of transfer station operation. Stations would need to be expanded to accommodate projected growth in the number of transactions (2000 Plan, Chapter 6).

##### *Alternative 2—Institute Special Self-Haul Hours and Other Programs*

At larger transfer stations, self-haul service would continue to be provided during regular business hours. At other facilities, self-haul service would be restricted to off-peak hours on weekdays and regular hours on weekends. Education programs, and possible incentives, would be provided to increase subscription to curbside collection services. More programs would be provided at the community level for recycling, reuse, and disposal of bulky wastes (2000 Plan, Chapter 6).

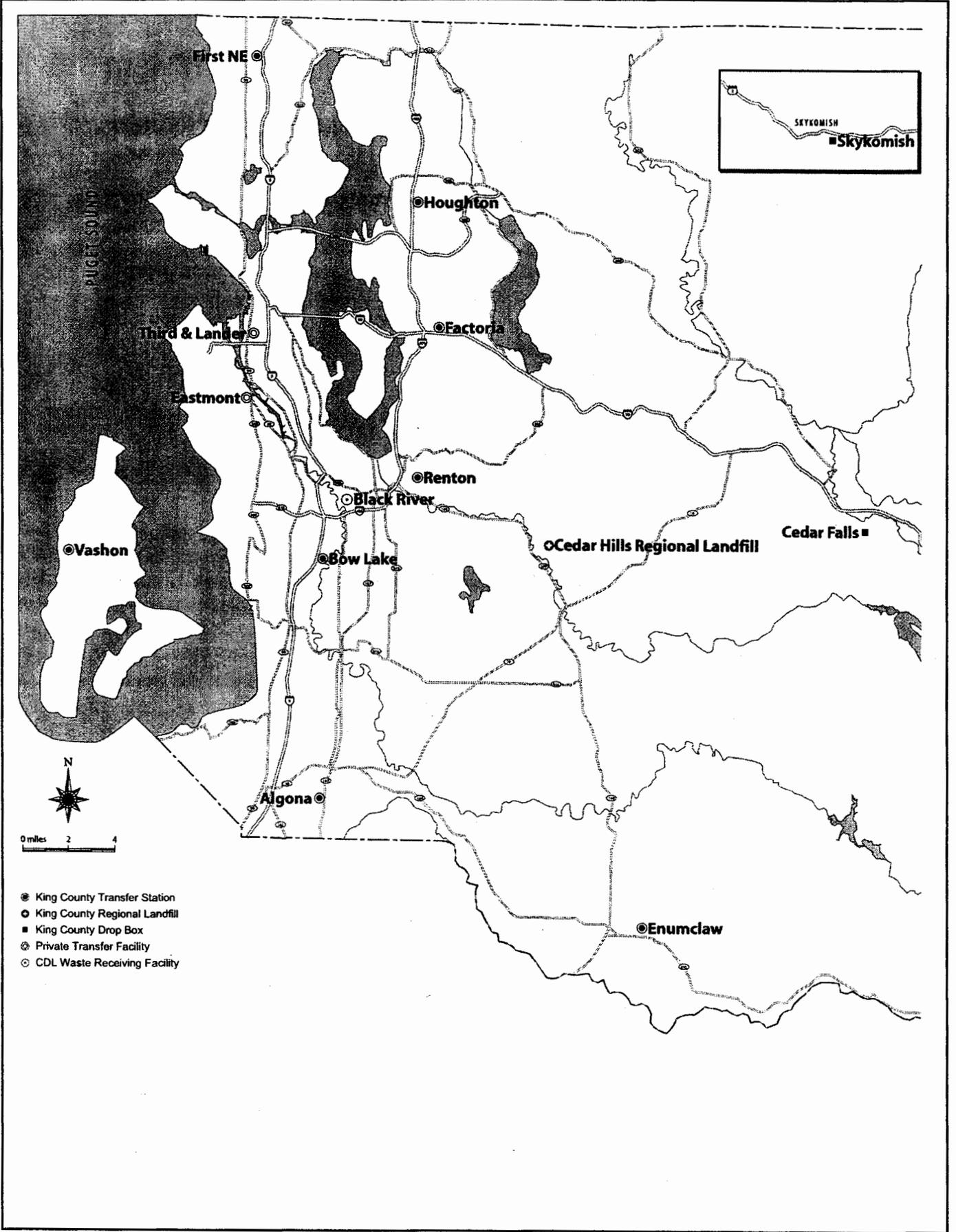


Figure 4-1. Locations of the region's facilities.

## Affected Environment, Impacts, and Mitigation Measures

As noted in the Description of Alternatives, both alternatives would require improvements to transfer stations to accommodate increasing levels of self-haul and commercial traffic. These improvements would have to be more extensive under Alternative 1 to accommodate greater levels of self-haul traffic. Therefore, potential short-term impacts during construction, such as traffic, noise, erosion potential and dust, may be somewhat greater under Alternative 1 than Alternative 2. Also, in the long-term, there may be greater volumes of surface water runoff to manage under Alternative 1 due to the potential for more extensive impervious surfaces. Potential impacts of transfer station improvements and mitigation measures are discussed under Facility Improvement Alternative 2 in Section B below.

The following sections focus on potential long-term impacts of service-level alternatives on traffic, air quality, use of petroleum-based fuels, noise, and the solid waste system.

### *Traffic*

#### **Affected Environment**

Table 4-1 shows estimated traffic levels at transfer stations in 1999, based on County transaction records and other assumptions explained in the footnotes to the table. Traffic is expressed as one-way trips, in plus out. Self-Hauler (No Fee) refers to self-haulers whose loads consist only of no-fee recyclables and who therefore bypass the cashier's booth and are not counted as transactions. Self-Hauler (Fee) refers to self-haulers with loads of MMSW or fee recyclables, who pay a fee at the cashier's booth and are recorded as transactions.

Self-hauling activity at transfer stations primarily peaks on weekends and in the late afternoon on weekdays. Commercial hauling activity usually peaks on weekdays, primarily in the early morning and early afternoon. Traffic congestion and longer waiting lines can occur when the hours of use by self-haulers and commercial haulers overlap. During peak hours of operation, traffic can delay commercial haulers waiting to unload their trucks. Traffic also has the potential to spill onto the surrounding streets. (2000 Plan, Chapter 6)

#### **Impacts and Mitigation Measures**

**Alternative 1**—The Weekday 2010 and Weekend 2010 columns in Table 4-1 represent estimated self-hauler traffic at King County transfer stations under Service-Level Alternative 1. It was assumed that self-hauler (fee) traffic would increase in proportion to the projected increase in disposed MMSW, and self-hauler (no fee) traffic in proportion to projected increases in recycling (2000 Plan, Figure 3-4).

As noted previously, transfer stations would have to undergo greater expansion under Alternative 1 to provide efficient service for commercial haulers while accommodating increasing levels of self-haul traffic. At transfer stations that have inadequate space for expansion (such as Houghton and Algona), increased traffic could mean longer delays for commercial haulers at times, as well as

Table 4-1. Estimated average daily traffic at King County transfer stations, 1999 and 2010.

Transfer Station/ Type of Traffic	Weekday 1999	Weekday 2010	Adjusted Weekday 2010	Weekend Day 1999	Weekend Day 2010	Adjusted Weekend Day 2010
<b>Algona</b>						
Commercial Hauler	110	130	130	3	3	3
Self-Hauler (Fee)	471	556	444	1036	1,222	978
Self-Hauler (No Fee)	0	0	0	0	0	0
King County Transfer	35	41	31	19	22	17
Employee/Visitor	12	12	12	12	12	12
Total	627	738	617	1070	1,260	1,010
<b>Bow Lake*</b>						
		0				
Commercial Hauler	122	144	144	8	9	9
Self-Hauler (Fee)	447	527	422	914	1,079	863
Self-Hauler (No Fee)	5	9	7	10	17	13
King County Transfer	40	47	35	22	26	19
Employee/Visitor	12	12	12	12	12	12
Total	626	739	620	966	1,142	917
<b>Enumclaw*</b>						
		0				
Commercial Hauler	16	19	19	3	4	4
Self-Hauler (Fee)	155	183	146	405	478	382
Self-Hauler (No Fee)	5	8	7	12	20	16
King County Transfer	7	8	8	5	6	6
Employee/Visitor	12	12	12	12	12	12
Total	195	230	192	437	519	420
<b>Factoria*</b>						
Commercial Hauler	162	191	191	6	7	7
Self-Hauler (Fee)	465	549	439	741	875	700
Self-Hauler (No Fee)	4	7	5	7	12	9
King County Transfer	57	67	50	17	20	15
Employee/Visitor	12	12	12	12	12	12
Total	700	826	698	783	925	743
<b>First Northeast*</b>						
Commercial Hauler	33	39	39	13	15	15
Self-Hauler (Fee)	542	640	512	865	1,021	817
Self-Hauler (No Fee)	11	18	15	17	28	22
King County Transfer	17	20	15	18	21	16
Employee/Visitor	12	12	12	12	12	12
Total	615	729	593	925	1,097	882

**Table 4-1. Estimated average daily traffic at King County transfer stations, 1999 and 2010**  
(continued).

Transfer Station/ Type of Traffic	Weekday 1999	Weekday 2010	Adjusted Weekday 2010	Weekend Day 1999	Weekend Day 2010	Adjusted Weekend Day 2010
Houghton		0				
Commercial Hauler	193	228	228	23	27	27
Self-Hauler -- Fee	455	537	430	899	1,061	849
Self-Hauler -- No Fee	6	10	8	13	21	17
King County Transfer	62	73	73	22	26	26
Employee/Visitor	12	12	12	12	12	12
Total	728	860	750	969	1,147	931
Renton						
Commercial Hauler	62	73	73	8	9	9
Self-Hauler -- Fee	250	295	236	631	745	596
Self-Hauler -- No Fee	5	8	7	12	20	16
King County Transfer	22	26	26	10	12	12
Employee/Visitor	12	12	12	12	12	12
Total	351	414	354	673	798	645
Vashon						
Commercial Hauler	4	5	5	4	5	5
Self-Hauler -- Fee	92	109	87	185	218	175
Self-Hauler -- No Fee	44	73	58	85	140	112
King County Transfer	3	3	3	3	3	3
Employee/Visitor	12	12	12	12	12	12
Total	155	201	165	289	378	307
Total King County						
Transfer to Cedar Hills	243	286	242	116	136	114

\*An asterisk after the name of the transfer station indicates that the facility is proposed as an "anchor" station under Alternative 2. The other stations are proposed as "branch" stations.

*For Commercial Hauler, Self-Hauler - Fee, and King County Transfer:*

Trips were estimated based on recorded 1999 transactions at transfer stations and are one-way trips (in plus out or transactions X2). Projected 2010 trips were estimated by increasing 1999 trips in proportion to the projected increase in disposed MMSW by 2010 (2000 Plan, Figure 3-4). It is assumed that the percent of MMSW delivered regional direct to the Cedar Hills Landfill would be the same in 2010 as in 1999.

Adjusted 2010 Self-Hauler - Fee trips reflect the effects of a hypothetical 20% decrease in self-haul traffic by that year due to education programs that encourage subscription to curbside services, and hauler-provided alternatives to bulky waste collection.

Adjusted 2010 King County Transfer trips reflect the installation of compactors at all transfer stations except Houghton and Renton (Enumclaw and Vashon currently have compactors, and this is reflected in the 1999 trips). Installation of compactors is expected at Houghton in 2011 and Renton in 2012, which would reduce King County transfer vehicle trips at those stations by approximately 25%. (Based on King County data, compacted loads weigh an average of 23.5 tons, while uncompacted loads weigh an average of 17.5 tons.)

*For Self-Hauler - No Fee:*

Algona does not currently offer collection of no-fee recyclables.

1999 trips were taken from Table B-1 in Attachment B, and, like all trips in the table, represent one-way trips (in plus out). 2010 trips were estimated by increasing 1999 trips in proportion to the projected increase in recycling between 1999 and 2010 (2000 Plan, Figure 3-4).

Adjusted 2010 trips were estimated in the same way described above for Self Hauler - Fee.

*For Employee/Visitor:*

It was assumed that transfer stations have an average of 5 employees going in and out once each day (10 trips) and that each station receives an average of one visitor or delivery each day (2 trips), for a total of 12 trips. This number was assumed to remain constant through 2010.

increased potential for offsite queues. Longer delays could encourage more commercial haulers to bypass busy County transfer stations and transport MMSW to their own private transfer stations where it is consolidated into larger loads and transported to Cedar Hills for disposal, a practice called "regional direct haul." If the incidence of regional direct haul increased, traffic would increase in the vicinity of private transfer stations and decrease at some County transfer stations. In addition, there would be more miles traveled for disposal of MMSW, resulting in greater fuel use, potentially more wear and tear on the region's roadways, and eventually higher costs to the consumer. (See further analysis of the traffic impacts of regional direct haul under Facility Improvement Alternative 2 in Section B.)

To mitigate these types of impacts, it may be necessary to site new transfer stations to replace those that have inadequate capacity to expand. On a programmatic level, potential impacts from construction and operation of new transfer stations would be similar to those resulting from construction and operation of the replacement Factoria Transfer Station (see analysis of Facility Improvement Alternative 2 in Section B.)

**Alternative 2**—Alternative 2 incorporates programs intended to reduce self-haul traffic at transfer stations. It is not known how successful such programs would be. However, the Adjusted Weekday and Weekend 2010 traffic levels in Table 4-1 reflect the hypothetical case where self-haul traffic is reduced by 20 percent. These estimated traffic levels also assume that compactors would be installed in transfer stations on the schedule proposed in the 1999 Business Plan (King County 1999a). Under these assumptions, estimated traffic at transfer stations in 2010 would be similar to that in 1999. In addition to including programs to reduce self-haul traffic, Alternative 2 would reduce the potential for self-haul traffic to delay commercial haulers by adjusting self-haul hours to avoid periods of peak commercial activity. This may reduce the incidence of regional direct haul, potentially resulting in fewer miles traveled for disposal of MMSW.

### **Significant Unavoidable Adverse Impacts**

Under Alternative 1, no measures would be taken to reduce self-haul traffic or to adjust self-haul hours to better serve commercial haulers. At transfer stations that do not have adequate capacity to expand to accommodate increased levels of self-haul and commercial traffic, there would likely be delays to commercial haulers and offsite queues during peak use periods; or these transfer stations may have to be replaced. No significant unavoidable adverse impacts would be expected under Alternative 2.

### ***Air Quality***

#### **Affected Environment**

Existing King County and private transfer stations lie within carbon monoxide (CO) and ozone maintenance areas established by the Puget Sound Clean Air Agency (PSCAA), formerly called the Puget Sound Air Pollution Agency (PSAPCA). At some congested intersections in the vicinity of these County and private transfer stations, CO levels may already approach or exceed state ambient air quality standards during commuter peak hours (King County 1993).

### **Impacts and Mitigation Measures**

Vehicle emissions from self-haul traffic contribute to ambient levels of CO and ozone-producing chemicals, and could potentially contribute to violations of CO standards at congested intersections on haul routes. This contribution would be less under Alternative 2 than Alternative 1, because measures would be taken to reduce self-haul traffic and to adjust self-haul hours at some transfer stations to avoid periods of peak commercial hauling activity. In addition, there could be a decreased incidence of regional direct haul under Alternative 2, which could decrease total miles traveled for disposal of MMSW, and associated regional vehicle emissions.

The contribution of either alternative to regional levels of CO or ozone is unlikely to be significant, because self-haul traffic represents only a small percentage of total traffic in the region. Potential impacts from vehicle emissions could be mitigated by improvements in pollution control technology over the years.

### **Significant Unavoidable Adverse Impacts**

None would be expected under either alternative.

### ***Use of Non-Renewable Fuel Resources***

#### **Affected Environment**

The analysis of impacts in this section focuses on the use of petroleum-based fuels in the transport of MMSW. Petroleum-based fuels result from the processing of crude oil, a non-renewable natural resource. The availability and affordability of petroleum-based fuels during the planning period are uncertain.

### **Impacts and Mitigation Measures**

Self-haul of MMSW and recyclables to transfer stations results in a greater number of individual vehicles trips (and associated fuel use) than commercial collection, because self-haul loads are so small in comparison to commercial loads. (King County transaction data, 1996-2000, indicates that self-haul loads of MMSW average 0.25 ton/load, while commercial packer loads average 5.75 tons/load). Fuel use and costs could be less under Alternative 2 than under Alternative 1, because measures would be taken to reduce self-haul traffic and the potential for longer waiting lines caused by overlap of self-haul and peak commercial hauling activity. In addition, the programs included under Alternative 2 may reduce the incidence of regional direct haul, potentially resulting in fewer miles traveled for disposal of MMSW, and reduced fuel use.

Neither alternative would result in significant fuel use in comparison to total fuel use for transportation in the region. However, differences between the two could be important in a period of fuel shortage.

### **Significant Unavoidable Adverse Impacts**

None would be expected under either alternative.

## **Public Services and Utilities**

### **Affected Environment**

King County transaction records show that commercial haulers delivered about 74 percent of the MMSW received by county transfer stations in 1999. The remaining 26% was brought in by self-haulers. By contrast, 12 percent of the transactions were with the commercial haulers, while 88 percent were with the self-haulers. As noted previously, curbside collection is available nearly everywhere in the County, so most self-haulers do so out of personal preference. In customer surveys, people gave two primary reasons for self-hauling: 1) they sometimes have a large amount of garbage or items too large for curbside pickup, and 2) they believe it is cheaper than curbside collection. (2000 Plan, Appendix A-2)

Self-haulers are more expensive to serve than commercial haulers because of the small size of their loads, but current disposal fees do not recognize this cost. More staff and space are needed at a transfer station to serve 200 vehicles each bringing in a quarter ton of waste than to serve commercial haulers bringing in the same amount of waste in 10 garbage trucks with 5-ton loads. Currently, all ratepayers pay for the self-haul services that are used regularly by only a small percentage of the households and businesses in King County (King County 1999a).

### **Impacts and Mitigation Measures**

Under Alternative 1, the County would need to increase capital and operating costs to serve the growing number of self-haulers at transfer stations. Transfer buildings would have to be made larger to provide more tipping stalls for self-haulers, and sites would have to be larger to accommodate longer, or segregated, queuing lanes. On the other hand, if the programs included under Service-Level Alternative 2 were successful in reducing self-haul traffic or holding it at current levels, County engineers estimate that approximately \$2 million in capital investment for the new Factoria Transfer Station could be avoided. The avoided costs could be higher for the other transfer stations, because these stations would likely require more modifications to maintain the current level of service. Due to these avoided costs, disposal rates would be lower under Service-Level Alternative 2. (2000 Plan, Chapter 6)

### **Significant Unavoidable Adverse Impacts**

Under Alternative 1, the County would need to increase capital and operating costs to serve the growing number of self-haulers at transfer stations. At transfer stations that do not have adequate capacity to expand to accommodate increased traffic volumes, the service level for commercial haulers could decline; or these transfer stations may have to be replaced. No significant unavoidable adverse impacts would be expected under Alternative 2.

## **B. Facility Improvement Alternatives**

### **Description of Alternatives**

With the exception of Alternative 1 (No Action), all facility improvement alternatives incorporate Service-Level Improvement Alternative 2 (page 4-1).

### ***Alternative 1—Maintain Transfer System in Current Condition (No Action)***

The current system of transfer stations would be maintained, with improvements made only as necessary for maintenance reasons, or as required by regulations (2000 Plan, Chapter 6).

### ***Alternative 2—Implement Business Plan Alternative (Anchor/Branch Concept)***

Under Alternative 2, the anchor/branch concept of transfer facilities described in the Solid Waste Division's 1999 Business Plan would be implemented. The larger, more accessible anchor facilities (Bow Lake, Enumclaw, Factoria, and First Northeast) would provide collection of MMSW as well as comprehensive recyclables collection services. Because there would be adequate space to accommodate both self-haulers and commercial haulers, self-haulers would be served during all hours of operation. Branch facilities (Houghton, Renton, Algona, and Vashon) would provide MMSW services and as much recyclables collection as possible in the space available. Self-haul hours would be adjusted as needed at branch facilities to better accommodate the needs of commercial haulers. (Plan, Chapter 6)

Alternative 2 would require major improvements at the Bow Lake and First Northeast stations, replacement of the Factoria Transfer Station, and at least minor improvements at most other County transfer stations. Improvements would include installation of waste compactors. No improvements would be needed for the two newest stations, Enumclaw and Vashon, which already have compactors and integrated self-haul recyclables collection areas. Drop boxes would continue to provide MMSW and recyclables collection in rural areas. The Solid Waste Division would study whether new drop boxes or transfer stations would be needed in rural areas after the Cedar Hills Landfill closes. (2000 Plan, Chapter 6; King County 1999a)

Because it is not known whether new drop boxes or transfer stations would be needed or where they would be sited, the impacts of construction and operation of such facilities are not evaluated specifically in this EIS. On a programmatic level, the impacts would be similar to those resulting from construction and operation of the replacement Factoria transfer station and improvements to the Bow Lake and First Northeast stations.

### ***Alternative 3—Implement Alternative 2, with Increased Private-Sector Role***

KCC 10.22.015 directs the Solid Waste Division to ask private companies if they are interested in expanding transfer services. Rabanco and Waste Management submitted proposals that assume implementation of the anchor/branch concept, but use private transfer stations to replace or supplement County-owned stations. These proposals, referred to as scenarios, are described below:

**Scenario A**—Rabanco proposes that King County close its Renton Transfer Station and direct MMSW to Regional Disposal Company's (RDC's) Black River CDL Waste Receiving Facility in Renton (assuming the Health Department permits that facility to accept MMSW). The Black River station would be designated a branch station in King County's transfer system. Rabanco would route trucks from SeaTac Disposal and Kent-Meridian Disposal, collection companies owned by Rabanco, to the Black River station. MMSW delivered to the Black River station would either be loaded in rail cars along with CDL waste for export to RDC's Roosevelt Regional Landfill in eastern Washington, or delivered to the Cedar Hills Landfill. (2000 Plan, Chapter 6)

**Scenario B**—Waste Management proposes that its Eastmont Station in Seattle be designated as an anchor station along with the County facilities identified in Alternative 2. Rabanco has also proposed that its Third and Lander transfer facility in Seattle be designated as an anchor station. For purposes of this EIS, these proposals are evaluated together under Alternative 3, Scenario B.

### ***Alternative 4—Competitive Process***

Waste Management, Inc. also proposed another alternative that could be implemented with any of the three alternatives previously outlined. Under this alternative, a competitive process would be developed whereby both private and public proposals could be reviewed and evaluated for compliance with the 2000 Plan. This process would give private industry the opportunity to submit proposals to implement new or improved facilities or service changes recommended in the Plan.

## **Affected Environment, Impacts, and Mitigation Measures**

### ***Traffic***

#### **Affected Environment**

Table 4-1 under Service-Level Alternatives shows estimated traffic levels at transfer stations in 1999, based on County transaction records and other assumptions explained in the footnotes to the table. There are four types of traffic at transfer stations: self-haulers (fee and no-fee), commercial haulers, King County transfer trucks, and a small amount of employee/visitor traffic. The potential for congestion at transfer stations when self-haul activity overlaps periods of peak commercial activity is discussed under Service-Level Alternatives above.

#### **Impacts and Mitigation Measures**

**Alternative 1**—Table 4-1 also shows estimated average daily traffic at transfer stations in 2010, midway through the planning period. Estimated self-haul traffic is discussed under Service-Level Alternatives above. It was assumed that commercial hauler and King County transfer truck traffic would increase in proportion to the projected increase in disposed MMSW (2000 Plan, Figure 3-4). Under Alternative 1, no changes would be made at transfer stations to accommodate increased traffic. Therefore, there would be increasing potential for delays to commercial haulers and offsite queues. This could result in an increased incidence of regional direct haul, resulting in more traffic at private transfer stations and less at some County stations.

**Alternative 2**—During construction of the replacement Factoria Transfer Station and major improvements to the Bow Lake and First Northeast Transfer Stations, there would be increased truck traffic in the vicinity of those sites. The existing Factoria Transfer Station would remain open throughout construction of the new facility. The Bow Lake and First Northeast stations would remain open to the maximum extent possible. Therefore, construction and operation traffic could contribute cumulatively to traffic congestion in the vicinity of these sites. This is a short-term potential impact, and could be mitigated by scheduling construction traffic to avoid peak periods of commercial hauling activity.

Under Alternative 2, the County would anticipate increases in traffic at transfer stations as the waste stream grows, and would make improvements at transfer stations to accommodate this traffic to the maximum extent possible. In addition to major capital improvements at the older anchor stations, efficiency improvements that would improve traffic circulation would be made at the older branch transfer stations, such as reconfiguration of queuing lanes. In addition, self-haul hours would be adjusted at branch transfer stations to better meet the needs of commercial haulers and mitigate the potential for long waiting lines and offsite queues.

As part of this alternative, compactors would be installed at transfer stations that currently do not have them on approximately the following schedule: Factoria and First Northeast, 2004; Bow Lake, 2006; Algona, 2008; Houghton, 2010; and Renton, 2012. King County data from 1999 indicates that transfer vehicle loads from county transfer stations without compactors weighed an average of 17.5 tons, while those from stations with compactors (Enumclaw and Vashon) weighed an average of 23.5 tons. Therefore, when compactors are installed at stations that currently do not have them, King County transfer vehicle traffic to and from these stations would be reduced by an average of approximately 25 percent. This reduction is reflected in the adjusted 2010 projections of County transfer vehicle traffic in Table 5-1. As discussed under Service-Level Alternative 2 above, if King County installed compactors on the above schedule, and achieved a 20 percent reduction in self-haul traffic by 2010, average weekday traffic at transfer stations could be slightly less than in 1999.

In estimating commercial hauler and transfer truck traffic in Table 4-1, it was assumed that the percentage of MMSW delivered by regional direct haul to the Cedar Hills Landfill would remain the same as it was in 1999. Alternative 2 would provide adequate capacity at transfer stations so that MMSW could always be hauled to the closest transfer station. If regional direct haul were eliminated, on an average weekday there would be an estimated 390 additional trips (310 commercial hauler and 80 King County transfer truck trips) distributed among County transfer stations (see estimation method in Table B-4, Attachment B). Transfer stations that are bypassed to the greatest extent in favor of regional direct haul, and that would most likely receive additional traffic if regional direct haul were eliminated, are Bow Lake, Houghton, Renton, First Northeast, and Factoria (2000 Plan, Figure 3-4). At some transfer stations, the additional traffic could offset the traffic reductions achieved through installation of compactors and reduction in self-haul traffic.

Conversely, if regional direct haul were eliminated, average weekday commercial hauler and transfer truck traffic would decrease by the same number of trips at the two private transfer stations in Seattle. If this decrease were allocated to the two transfer stations in proportion to the volume of MMSW hauled regional direct from each in 1999 (King County 1999b), there would be a decrease of approximately 114 trips per average weekday at Rabanco's Third and Lander Transfer Station and 240 trips at Waste Management's Eastmont station.

As compactors are installed at County transfer stations, King County would convert the transfer trailer fleet to new trailers with more axles. The added axles would better distribute the load on haul roads, resulting in less wear and tear on roadway surfaces and reducing the cost of road maintenance. In general, mitigation for potential physical deterioration of roadway surfaces is provided by truck licensing fees, a portion of which is applied to road resurfacing or maintenance projects.

Installation of compactors would also reduce transfer vehicle traffic to and from the Cedar Hills Landfill. In 1999, the average weekday transfer trailer traffic at the Cedar Hills Landfill was 243 trips (in plus out). By 2010, the reduction in transfer trailer traffic resulting from installation of

compactors at all but two of the King County transfer stations (Houghton and Renton) would slightly outpace the increase in transfer trailer traffic resulting from the projected increase in disposed MMSW (2000 Plan, Table 3-4). Therefore, in 2010, the average weekday transfer trailer traffic at the Cedar Hills Landfill would be approximately 241 trips, slightly less than the 243 trips in 1999 (see Table 5-1 in Part 5 of this EIS).

If waste export were implemented after the Cedar Hills Landfill closes, compactors would also reduce the number of transfer trailer trips to private intermodal sites, the number of rail cars per train (or possibly the number of trains), and the number of truck trips from rail offloading facilities to private landfills. Some containers used for waste export are larger than the containers currently used in the King County transfer system. If King County used these larger containers for waste export, transfer trailer trips would be reduced further.

**Alternative 3, Scenario A**—The impacts of the anchor/branch system of transfer stations would be similar to those discussed under Alternative 2. However, closure of the Renton Transfer Station would eliminate the traffic associated with this facility – an estimated 355 trips on an average weekday in 2010, about 245 of which would be self-haul trips; and an estimated 645 trips on an average weekend day in 2010, approximately 610 of which would be self-haul trips (Table 4-1, Adjusted Weekday 2010).

A similar amount of traffic would be added to RDC's Black River CDL Waste Receiving Facility. In addition, acceptance of King County's CDL waste at that facility, if it continued at current levels, would generate an estimated 290 average weekday trips and 80 average weekend day trips in 2010 (see assumptions in footnotes to Table B-3, Attachment B). These estimates assume that self-haul service would be provided at the facility. Therefore, the total amount of traffic at the Black River Station related to acceptance of King County's solid waste could be approximately 645 trips on an average weekday and 725 trips on an average weekend day in 2010.

The EIS on the Black River Receiving Facility evaluated the station operating at capacity, at which point it would generate approximately 808 truck trips per day and 60 automobile trips (Renton 1991). The EIS concluded that with the proposed mitigation there would be no significant unavoidable adverse impacts from this level of traffic. Therefore, based on the traffic numbers in the previous paragraph, it appears that closure of the Renton Transfer Station, and use of RDC's Black River Receiving Facility instead, would not result in significant traffic impacts. It is assumed that Rabanco has or would implement the mitigation measures identified in the EIS on the Black River Receiving Facility (City of Renton 1991).

More traffic could be added to the Black River station if Rabanco accepted CDL waste or MMSW from other jurisdictions, or if some commercial and self-haul customers who currently use the Bow Lake Transfer Station used the Black River station instead. Conversely, traffic could be reduced if Rabanco loaded King County's MMSW in railcars at the Black River site (along with CDL waste) for disposal at RDC's Roosevelt Regional Landfill, rather than transporting it in transfer trucks to the Cedar Hills Landfill; or if Waste Management, Inc. took the MMSW it currently takes to the Renton Transfer Station to the Bow Lake station or its own Eastmont facility. In any case, the ability of the Black River station to accommodate cumulative traffic would be an important consideration in the environmental review of a proposal to accept MMSW at that facility.

It is not known whether major improvements would be needed at RDC's Black River CDL Waste Receiving Facility in order to accept MMSW and be designated a branch transfer station. If so, short-term traffic impacts during construction would be similar to those discussed for improvements to County transfer stations under Alternative 2.

**Alternative 3, Scenario B**—The impacts of the anchor/branch system of transfer stations would be similar to those discussed under Alternative 2. If the commercial haulers chose to direct their trucks to their stations in Seattle and ship the waste to Cedar Hills as regional direct haul, truck traffic would decrease in the vicinity of some County transfer stations and increase in the vicinity of the private stations.

Both the Eastmont and Third and Lander transfer stations currently generate substantial truck traffic. If Scenario B is considered further, the ability of these facilities to accommodate cumulative traffic would be an important consideration. If commercial haulers delivered MMSW to the closest transfer station, truck traffic would not be expected to increase significantly at the two private transfer stations in Seattle. In any case, designating the two private facilities as anchor transfer stations would probably not result in significant levels of self-haul traffic at these facilities. They are not within the King County service area, and are not convenient to most of the county's customers.

It is not known whether major improvements would be needed at the Eastmont and Third and Lander transfer stations to be designated anchor transfer stations. If so, short-term traffic impacts during construction would be similar to those discussed for improvements to County transfer stations under Alternative 2.

**Alternative 4**—Potential impacts of the changes in service and facility improvements discussed in this part of the EIS would be the same regardless of whether they were implemented by King County or the private sector.

### **Significant Unavoidable Adverse Impacts**

Under Alternative 1, no improvements would be made at transfer stations to accommodate increasing volumes of commercial and self-haul traffic. Therefore, there would likely be delays to commercial haulers and offsite queues at some transfer stations during peak use periods. No significant unavoidable adverse impacts would be expected under the other alternatives.

### ***Air Quality/Odor***

#### **Affected Environment**

The primary air quality issues associated with transfer facilities are the potential for fugitive dust emissions during construction of improvements or new facilities; vehicle emissions during operation (primarily CO and ozone-producing chemicals); the potential for fugitive dust when loads of MMSW are dumped; and odor potential from MMSW handling and storage.

The affected environment for vehicle emissions is discussed under Service-Level Alternatives in Section A. Two of the existing private transfer stations are located in the south Seattle industrial area, which PSCAA has designated a non-attainment area for inhalable particulate matter (PM<sub>10</sub>).

Dust is minimized at County and private transfer stations by such measures as prohibiting dusty loads of MMSW, and spraying waste handling areas with a mist as necessary to suppress dust.

There are currently no significant odor problems at King County or private transfer stations. Although some odors occur, they are minimized and largely confined onsite through a number of mitigation measures. These include prohibiting delivery of highly odorous loads of MMSW to transfer stations, minimizing storage time of solid waste on site, using leak-resistant waste containers, and regular washdown of waste handling areas and the inside of waste containers. In addition, at private transfer stations and the County's Enumclaw and Vashon transfer stations, waste handling areas are enclosed.

### **Impacts and Mitigation Measures**

**Alternative 1**—No major capital improvements would be constructed under the “No Action” Alternative, so fugitive dust during construction would not be an issue. Transport of MMSW and recyclables to and from King County transfer stations would continue to contribute to regional emissions of CO and ozone-generating chemicals. This contribution would increase in proportion to projected increases in recycling and disposed MMSW during the planning period (2000 Plan, Figure 3-4).

Transfer station-generated traffic would be a small percentage of total regional traffic, so associated vehicle emissions would likely not contribute significantly to regional levels of CO and ozone. On a local scale, the transfer station traffic could contribute cumulatively with background traffic to violations of ambient CO standards at some congested intersections during peak commuter hours (City of Bellevue 1993). However, the geographic dispersion of King County transfer stations already minimizes the potential for transfer trucks to adversely affect air quality at any one intersection.

The potential for fugitive dust and odor would continue at King County transfer stations. This potential would be mitigated through standard practices currently in effect (see Affected Environment above).

**Alternative 2**—During construction of major improvements at the Bow Lake and First NE transfer stations and replacement of the Factoria transfer station, a potential for fugitive dust would exist when soils are exposed during dry weather. This potential impact would be mitigated through erosion-control best management practices (BMPs) discussed under Water below; and by spraying water or dust suppressant on unpaved roads and exposed soils where equipment is operating during dry weather.

Transport of solid waste to and from King County transfer stations would continue to have the types of impacts discussed under Alternative 1. However, because some transfer stations would be improved to better handle increased traffic and minimize queues, vehicle emissions would decrease compared to Alternative 1, as would the potential for violation of ambient CO standards at congested intersections. If necessary, the mitigation measures discussed under Alternative 1 could be implemented.

The potential for fugitive dust and odor impacts at transfer stations would continue to be mitigated through the measures discussed under Alternative 1. Enclosed transfer buildings at the replacement

Factoria Transfer Station and improved Bow Lake and First Northeast stations would further mitigate fugitive dust and odor potential at those facilities.

**Alternative 3, Scenario A**—If substantial improvements are needed at the Black River Receiving Facility in order to accept MMSW and be designated a branch station, short-term air quality impacts during construction would be similar to those discussed for improvements at King County stations under Alternative 2 above.

Because Scenario A incorporates the anchor/branch system of transfer stations, potential long-term impacts and mitigation measures would also be similar to those discussed under Alternative 2. Odor potential would increase at the Black River station with acceptance of MMSW, and cease at the Renton transfer station. Similarly, vehicle emissions from transfer station-generated traffic, and the potential for violations of CO standards at congested intersections, would increase in the vicinity of the Black River Receiving Facility and cease in the vicinity of the Renton facility. Measures to reduce the potential for violations of CO standards are discussed under Alternative 1 above.

**Alternative 3, Scenario B**—If substantial improvements are needed at the Eastmont and Third and Lander transfer stations in order to be designated anchor stations, short-term air quality impacts during construction would be similar to those discussed for improvements at King County stations under Alternative 2 above.

Because Scenario B incorporates the anchor/branch system of transfer stations, potential long-term impacts and mitigation measures would also be similar to those discussed under Alternative 2. Regional vehicle emissions would likely increase under this scenario due to the increase in miles traveled to dispose of MMSW. Also, truck traffic would increase in the vicinity of the two private transfer stations in Seattle (see Traffic above), increasing the potential for violating CO standards at already congested intersections during peak periods. If MMSW were delivered to the closest transfer station, these potential impacts would not occur, because the Seattle transfer stations are outside the King County service area and not convenient to most King County customers.

**Alternative 4**—If Alternative 4 results in the same transfer system as Alternative 2 or 3, the resulting air quality impacts would be the same regardless of whether King County or the private sector owns individual facilities.

### **Significant Unavoidable Adverse Impacts**

None would be expected under any of the alternatives.

### ***Water***

Impacts on water resources could occur as a result of major capital improvements at the Bow Lake and First Northeast transfer stations, replacement of the Factoria transfer station, and possible improvements at private transfer stations if needed to accept a portion of King County's MMSW. These improvements are unlikely to result in significant adverse impacts on groundwater, so this section focuses primarily on potential surface water impacts. However, King County's Renton Transfer Station is located near the City of Renton's sole source aquifer, and Renton has expressed concerns about the potential for leachate contamination of the aquifer (there is currently no evidence of such contamination). This issue is discussed under Alternative 3, Scenario A.

Wetlands are briefly mentioned in the Affected Environment section as water features. Further discussion of the types of wetlands, and potential impacts and mitigation measures, is provided under Sensitive Areas/Plants and Animals below.

### **Affected Environment**

Field studies in 1993 and 1994 found no significant free flowing water or permanent ponded water on the site of the Bow Lake Transfer Station improvements (the site includes the existing transfer station site, private property to the south proposed to be acquired for a new no-fee recyclables collection area, and Washington Department of Transportation (WSDOT) property to the north, proposed to be acquired for transfer trailer parking). Two small wetland drainages were identified in the western half of the transfer station property, and one larger wetland drainage on the property to the south. It appears that the wetlands are not natural, but rather the result of stormwater runoff that has been directed away from Interstate 5 and the transfer station. (Adolfson Associates 1993 and 1994).

A small stream named Thornton Creek crosses the western portion of the First Northeast transfer station site. Field studies in 1994 identified one or more potential wetlands adjacent to the creek (King County 1994). Water quality and flows in Thornton Creek are affected by stormwater runoff from upstream areas. In addition, some runoff from the transfer station is conveyed in a series of catch basins and swales to a wetpond on site that discharges to the creek.

The replacement Factoria transfer station site is a combination of the existing site and an adjacent site known as the Eastgate Way site. The existing site drains generally northward to unnamed creeks designated 0263 and 0263A by the City of Bellevue. These creeks join together in the northern portion of the site and drain into Richards Creek, which empties into Mercer Slough and Lake Washington. Wetlands exist at the confluence, and offsite along both creek channels. Sunset Creek, a tributary of Richards Creek, flows across the western portion of the Eastgate Way site, but only runoff from the immediately adjacent areas of the site drains to the creek. In all three streams, water quality does not meet state criteria for fecal coliform and, at times, for dissolved oxygen and some metals. No stormwater treatment or detention facilities currently exist at either site. Stormwater runoff is routed directly to receiving waters (City of Bellevue 1993).

Except for Alternative 1 (No Action), all facility improvement alternatives would include improvements in surface water management at the Bow Lake, First Northeast and Factoria transfer stations. (See discussion of Alternative 2 under Impacts and Mitigation Measures.)

There are no surface water bodies on or in the immediate vicinity of the private transfer station sites in South Seattle (King County 1991). At the site of RDC's Black River CDL Waste Receiving Facility, a small natural wetland on the site is protected with a 25-ft buffer of native vegetation. Stormwater runoff is directed to oil-water separators and through vegetated channels before entering an outfall leading to the Duwamish River.

Leachate at all County and private transfer stations is directed to the County's sanitary sewer system. At the County's Bow Lake and Vashon facilities, where there is no adjacent sewer line, potentially contaminated runoff is collected and transported by tank truck to the sanitary sewer system. At the County's Renton station, because it is below the sewer line, potentially contaminated runoff is collected and then pumped into the sanitary sewer line. The City of Renton has expressed concern

about the potential for ground water contamination at the Renton transfer station, because this station is located near the city's sole source aquifer (King County 1991). Soils at the point of surface water discharge are monitored and there is currently no evidence of such contamination. Data from this sampling is regularly reported to the City of Renton and the Seattle-King County Department of Public Health.

### Impacts and Mitigation Measures

**Alternative 1**—Under Alternative 1, the potential for short-term adverse impacts on surface water associated with construction of major capital improvements at transfer stations would not occur (see discussion of potential impacts under Alternative 2 below). Improvements at the Bow Lake, First Northeast, and Factoria transfer stations would result in improved leachate and stormwater management, and would likely improve the quality of receiving waters. These long-term benefits would also not occur under Alternative 1. As traffic at transfer stations increases over the years, increased levels of urban pollutants such as gasoline, oil and grease would be expected in receiving waters.

**Alternative 2**—During construction of the replacement Factoria Transfer Station and major capital improvements at the Bow Lake and First Northeast stations, stormwater runoff could erode exposed soil and transport it into the natural drainage system. This potential short-term impact would be mitigated by implementing BMPs during construction, as required by federal, state, and local regulations, including the *King County Surface Water Design Manual* (King County 1998b). BMPs could include such measures as minimizing areas of exposed soil; hydroseeding or otherwise stabilizing exposed areas where no activity is planned in the near future; limiting major construction to the dry season; installing stormwater conveyance channels and temporary sedimentation ponds; and placing berms, straw bales, or silt fences to slow down stormwater runoff and trap eroded sediments.

Impervious surface would increase on the sites of improved or new transfer stations, increasing the volume and rate of stormwater runoff. Specific requirements for surface water management are delineated in the *King County Surface Water Design Manual* (King County 1998b), as well as in similar state and local regulations. The required stormwater facilities include both a means of peak runoff control (detention pond, tank, or vault) and treatment of stormwater runoff (wet pond, wet vault, or biofiltration swale). Design guidelines for stormwater control facilities are much more stringent than when the existing Bow Lake, First Northeast, and Factoria transfer stations were constructed; and may become more stringent as a result of the recent listing of bull trout and Pacific chinook salmon under the Endangered Species Act. Following these guidelines would result in improved surface water management and minimize the potential for degrading water quality in receiving waters.

As part of the major improvements at the Bow Lake station, a connection to the sewer system would be made, and offsite transport of leachate would be discontinued. This would reduce the potential for leachate contamination of surface water during loading/unloading and transport.

**Alternative 3, Scenario A**—Potential impacts of the anchor/branch system of transfer stations, which forms the basis for Alternative 3, are discussed under Alternative 2 above. As noted under Affected Environment, Renton has expressed concern about the potential for leachate to enter its sole-source aquifer. Soil monitoring at the station shows no evidence of any effects on the aquifer.

Closure of the Renton Transfer Station would eliminate the potential for that facility to create impacts.

If improvements are needed at RDC's Black River Receiving Facility in order to accept MMSW, short-term construction impacts would be similar to those from improvements at King County transfer stations (see Alternative 2 above). Acceptance of MMSW at the Black River Receiving Facility, which currently accepts only CDL waste, would increase the potential for leachate contamination of surface water runoff at that facility. This potential would be minimized by directing washdown water from the processing floor to the sanitary sewer, which is the current practice (City of Renton 1991). Stormwater runoff would also continue to be managed pursuant to City of Renton drainage regulations.

**Alternative 3, Scenario B**—Scenario B would have similar impacts on water resources as Scenario A. However, there would be no increase in the potential for impacts at the Black River Receiving Facility, because the Black River facility would not be permitted to accept MMSW. Also, because the Renton Transfer Station would not close, the potential for impacts on water resources would continue at that facility. The operating history of the Renton station indicates that the potential for impacts is low.

No significant impacts on water resources would be expected from designating the two private transfer stations in Seattle as anchor facilities in the King County system. If improvements are needed at these facilities, short-term construction impacts and mitigation measures would be similar to those for improvements at King County transfer stations (see Alternative 2 above). During operation, leachate-contaminated water from waste handling areas would continue to be directed to the sanitary sewer. Stormwater runoff would continue to be managed pursuant to the City of Seattle's drainage regulations.

**Alternative 4**—If similar capital improvements were implemented under this alternative as under Alternative 2 or 3, the resulting impacts would be similar regardless of whether the improvements were implemented by King County or the private sector.

### **Significant Unavoidable Adverse Impacts**

None would be expected under any of the alternatives.

### ***Sensitive Areas/Plants and Animals***

Impacts on sensitive areas and plants and animals could occur as a result of major capital improvements at the Bow Lake and First Northeast transfer stations, replacement of the Factoria transfer station, and possible improvements at private transfer stations if needed to accept a portion of King County's MMSW. Sensitive areas considered in this section include wetlands and slopes of 40% or more (percent slope = vertical distance/ horizontal distance X 100).

The following sections briefly describe existing vegetative communities and fish habitat, if any, at each site. Due to the high level of human activity and previous habitat disturbance and removal, vegetative communities at the sites are probably used primarily by wildlife typical of urban and suburban areas. These include birds such as robins, towhees, chickadees, woodpeckers, starlings, crows, and hawks; small mammals such as opossums, raccoons, and shrews; and common reptiles

and amphibians. No threatened, endangered, or other special-status plant or wildlife species are known to occur, or would be expected to occur, on the sites. (City of Bellevue, 1993; King County 1994a and b)

### **Affected Environment**

Slopes exceeding 40% occur in the eastern portion of the site of the proposed Bow Lake Transfer Station improvements. The primary vegetation on the site is deciduous trees. Field studies in 1994 identified two small wetlands, classified as forested wetlands, in the western portion of the site, and one larger forested wetland in the southern portion. No fish habitat was identified. (Adolfson Associates 1994; King County 1994a)

At the First Northeast transfer station site, previous site development created slopes of 40% or more at some locations. Field studies in 1994 identified what appear to be small linear wetlands in the scrub-shrub vegetation associated with Thornton Creek, which crosses the western portion of the site (see Water above). Upland vegetation on the site includes plantings of pines, shrubs, and grasses in the vicinity of the transfer building; deciduous trees west of Thornton Creek; and invasive vegetation in other areas of the site. There is no fish habitat in the portion of Thornton Creek on the First Northeast transfer station site, but salmonids have been observed downstream. (King County 1994b)

Slopes over 40% occur in the southeast portion of the existing Factoria Transfer Station site. A small emergent marsh, a portion of which is classified as a forested wetland, is located in the northern portion of the existing site at the confluence of creeks 0263 and 0263A (see Water above). An upland deciduous tree stand occurs on moderate to steep slopes (less than 40% slope) in the western portion of the site. Two small forested wetlands, one associated with a drainage channel and one with Creek 0263A, are located within this wooded area. No salmonid habitat exists in streams 0236 and 0236A on the existing Factoria transfer station site, but good salmonid habitat exists downstream. (City of Bellevue 1993)

Approximately 65% of the Eastgate Way site where the new Factoria Transfer Station will be built is disturbed by development. The remaining 35% is composed mostly of deciduous forest on steep slopes. Slopes of 40% or over created by previous site development occur along the western and northern property lines and at the eastern end of the site. Sunset Creek provides fairly good salmonid spawning and rearing habitat. (City of Bellevue 1993)

At RDC's Black River CDL Waste Receiving Facility, fill slopes that may be 40% or over occur along the adjacent roads and railroad line. Vegetation includes a small wetland, protected by a buffer of native vegetation. Upland vegetation consists primarily of deciduous trees, shrubs and grasses. There are no surface water bodies on or in the immediate vicinity of the Black River Receiving Facility site. The site ultimately drains to the Duwamish River. A blue heron rookery is located about 0.6 mile east of the site along the Black River and near the Burlington Northern Railroad tracks. (City of Renton 1991; King County 1991)

The two private transfer stations in Seattle have no sensitive areas, and are virtually devoid of vegetation and wildlife habitat (King County 1991).

## Impacts and Mitigation Measures

**Alternative 1**—Construction of improvements at the Bow Lake and First Northeast transfer stations, and replacement of the Factoria transfer station, would not occur under Alternative 1. Therefore, there would be no impact on steep slopes or loss of wetlands or other fish and wildlife habitat. On the other hand, improvements in leachate control and surface water management that would occur at these facilities under the other alternatives would not occur under Alternative 1. Therefore, this alternative has a greater potential for impacting salmonid habitat downstream of the First Northeast and Factoria transfer station sites (see Water above).

**Alternative 2**—Improvements to the Bow Lake and First Northeast transfer stations, and replacement of the Factoria transfer station would result in permanent loss of vegetation and wildlife habitat in areas occupied by buildings or ancillary facilities such as recycling, parking, and trailer storage areas. Areas temporarily disturbed by construction could be revegetated with native plants of value to wildlife. (See introduction to this section for the types of wildlife that likely use the site.)

At the Bow Lake transfer station, it is likely that one or more of the three wetlands on the existing site and property to be acquired for expansion would have to be filled (King County 1994a). If so, a wetland mitigation plan would be developed and implemented in coordination with agencies with jurisdiction. A sewer pipe may be embedded in the steep slope on the east side of the site, a portion of which contains refuse (King County 1994a). Slope stability would be protected by minimizing the area of slope disturbance and implementing the erosion control measures discussed under Water above. (Measures to protect the pipe from settlement damage are discussed under Other Potential Impacts at the end of Section B.)

At the First Northeast site, the small linear wetlands along Thornton Creek would likely not be affected, because they would be within the stream buffer (King County 1994b). Depending on the final design of proposed improvements, slopes of 40% or over on the site may be disturbed by grading. To ensure slope stability, the mitigation discussed in the previous paragraph could be implemented. In addition, slopes can be stabilized with retaining walls and other similar measures.

A design for the Factoria Transfer Station site was developed in 1994-1995 as part of a conditional use permit application to the City of Bellevue. If this design were implemented, construction of the replacement facility would require a substantial amount of cutting and filling, which would affect protected slopes and their setbacks. Also, road and bridge construction would encroach on a very small area of wetland buffer. The design of the replacement transfer station would be reevaluated following adoption of the 2000 Plan. Depending in part on the level of self-haul services provided, the final design may or may not result in as much encroachment on sensitive areas.

Salmonids or their habitat would not be directly impacted at any of the three sites. Potential impacts on water quality that could affect salmonid habitat downstream of the First Northeast and Factoria sites, and mitigation measures for these impacts, are discussed above under Water. The proposed improvements would have to be constructed and operated in a manner that did not harm fish species listed under the Endangered Species Act or their habitat. Construction of improvements could be timed to avoid periods of salmonid spawning or migration. A Corps of Engineers permit would be required for improvements at the Bow Lake site if wetlands must be filled. If so, a biological assessment may be required to determine if the project has the potential to affect downstream habitat

for listed species. Depending on the results of the assessment, consultation may be required with the National Marine Fisheries Service to identify measures to protect such habitat.

**Alternative 3, Scenario A**—Impacts on plants and animals under Alternative 3 would be similar to those described for Alternative 2. It is not known what types of improvements, if any, would be needed at RDC's Black River Receiving Facility in order to accept MMSW in addition to CDL waste. If improvements are needed, it is assumed that the onsite wetland would continue to be protected and that stormwater would continue to be managed in a manner that protects water quality and potential fish habitat downstream. It is unlikely that the steep fill slopes associated with the railroad tracks and adjacent roads would be affected by construction of improvements, because they exist at the margins of the site. If it were necessary to disturb steep slopes during construction, mitigation would be similar to that discussed under Alternative 2.

The 1991 EIS on the Black River Receiving Facility concluded that, when operating at capacity, the facility would not affect the great blue heron rookery located approximately 0.6 mi from the site (City of Renton 1991). Potential impacts on the rookery may have to be reevaluated as part of the environmental review of the proposal to accept MMSW, if projected traffic levels near the rookery substantially exceed those considered in the 1991 EIS.

**Alternative 3, Scenario B**—Impacts on plants and animals would be similar to those of Alternative 2.

**Alternative 4**—If similar capital improvements were implemented under this alternative as under Alternative 2 or 3, the resulting impacts on plants and animals would be similar regardless of whether the improvements were implemented by King County or the private sector.

### **Significant Unavoidable Adverse Impacts**

The 1993 EIS on the replacement for the Factoria Transfer station concluded that impacts on protected steep slopes would be significant and unavoidable (City of Bellevue 1993). As noted in the evaluation of Alternative 2 above, the design of the station will be reevaluated after adoption of the 2000 Plan, when decisions have been made on the level-of-service to be provided. The final design may or may not result in significant impacts on protected steep slopes. No significant unavoidable adverse impacts would be expected under the other alternatives.

### ***Use of Non-Renewable Fuel Resources***

#### **Affected Environment**

The affected environment is the same as that for Service-Level Alternatives in Section A.

#### **Impacts and Mitigation Measures**

**Alternative 1**—Alternative 1 could result in substantially higher fuel use (and solid waste transportation costs) than other alternatives. This is particularly true after the Cedar Hills Landfill closes, because Alternative 1 would not provide a geographically dispersed system of transfer stations equipped for efficient waste export. Only the Enumclaw and Vashon transfer stations and private transfer stations in Seattle would be equipped with compactors.

Fuel use under Alternative 1 would represent a very small percentage of total fuel used for transportation in the region (King County 1988). However, the greater use of fuel under this alternative could be important in a period of fuel shortage. Fuel use could be reduced by managing self-haul hours (see Service-Level Alternative 2 above); using fuel-efficient transfer vehicles maintained in good working order; and using the largest size waste containers available. Reliance on non-renewable fuels could decrease in future years if more vehicles are designed to run on alternative fuels or power sources.

**Alternative 2**—Alternative 2 would have several key benefits from the standpoint of reducing fuel use:

- Installation of compactors at transfer stations would result in larger transfer trailer loads, reducing the number of transfer vehicle trips and associated fuel use. (Compactors are powered by electricity.)
- Major improvements at the Bow Lake and First Northeast transfer stations and replacement of the Factoria transfer station would result in improved circulation for self-haul and commercial vehicles, reducing idling time and associated fuel use.
- Improvements to King County transfer stations could reduce the number of commercial haulers who bypass King County transfer stations and haul MMSW to private transfer stations, where it is consolidated and taken to the Cedar Hills Landfill. This would reduce vehicle miles traveled by collection vehicles, and associated fuel use.

Alternative 2 would prepare the solid waste system for fuel-efficient waste export by providing a system of geographically dispersed transfer stations capable of compacting waste into shipping containers for rail transport. Other mitigation is discussed under Alternative 1 above.

**Alternatives 3, Scenarios A and B**—Scenario A, and to a greater extent Scenario B, has the potential to increase the number of vehicle miles traveled for disposal of MMSW (see Traffic above). Unless MMSW is delivered to the closest transfer station, use of petroleum-based fuels would likely increase under both scenarios compared to Alternative 2.

**Alternative 4**—Use of petroleum-based fuels could be similar to that under Alternative 2 or 3.

### **Significant Unavoidable Adverse Impacts**

None would be expected under any of the alternatives.

### **Noise**

Noise impacts are described as excessive or unwanted sound. Noise is measured using a weighted logarithmic scale to better approximate how the human ear responds to different sound levels. The unit of noise measurement is the A-weighted decibel, or dBA. Sound levels from different sources combine logarithmically. For example, two noise sources, each producing a sound level of 50 dBA,

combine to produce a sound level of 53 dBA. Similarly, a doubling in traffic on a street increases sound levels by about 3 dBA, which is the smallest change in noise level perceptible to the average human ear (City of Bellevue 1993).

Most local jurisdictions establish limits on the levels and durations of noise crossing property boundaries. Allowable maximum sound levels typically depend on the land use zone of the source of the noise and that of the receiving property. Local jurisdictions typically identify a number of noise sources or activities that are exempt from the maximum allowable noise limits. These commonly include sounds created by vehicles traveling on public roads, and sound created by warning devices (such as reverse gear alarms) when not operated continuously for more than brief periods. Also, sounds from construction equipment and blasting are typically exempt from noise limits during daytime hours.

For those activities or sources that are exempt from the local jurisdiction's noise limits, federal criteria are useful in evaluating noise impacts. The U.S. Environmental Protection Agency (EPA) has established noise criteria for determining impacts based on sound level increases from a proposed action. Under these criteria, an increase of 0 to 5 dBA is considered a "slight" impact; an increase of 5 to 10 dBA is a "significant" impact; and an increase of more than 10 dBA is a "very serious" impact.

### **Affected Environment**

The affected environment for noise from transfer facility alternatives is the neighborhoods surrounding the transfer stations. These are described in the Land Use section below. The noise environment in these neighborhoods has not been quantified. In general, ambient noise levels are highest in urban areas and near roadways, construction sites, and similar noisy locations. Ambient levels in urban areas are typically 60 dBA or higher, while noise levels in rural areas away from particularly noisy locations may be 50 dBA or lower (EPA 1974).

### **Impacts and Mitigation Measures**

**Alternative 1**—As discussed under Traffic above, at transfer stations that do not have adequate capacity to expand to accommodate increasing levels of commercial and self-haul traffic, there would be increased potential for longer waiting lines and offsite queues. Longer lines of idling traffic could increase noise levels in adjacent neighborhoods. Projected increases in traffic (Table 4-1) would likely not be sufficient to result in significant noise increases even if self-haul traffic is not reduced, particularly since background noise levels would probably also increase during the planning period. (Generally, it takes a doubling in traffic to result in a discernible noise increase – see introduction to Noise above.)

Under Alternative 1, most King County transfer stations would not be equipped with compactors to support waste export. As a result, there would be more transfer trailer traffic and associated noise at these stations and at private intermodal facilities than under Alternative 2. The difference in noise levels would likely not be significant, however, for the reasons discussed above.

**Alternative 2**—During construction of major improvements at the Bow Lake and First Northeast transfer stations, and replacement of the Factoria Transfer Station, there would be short-term increases in noise levels in adjacent neighborhoods due to construction equipment and traffic.

Construction activities during daytime hours are typically exempt from noise limits in local land use codes. Noise level increases at adjacent properties during a typical construction project can at times be 5 to 10 dBA or more, which is considered a significant noise increase based on EPA criteria (King County 1993).

Construction noise would be mitigated in part by the limited duration of construction (probably one or two construction seasons). The following standard measures could be used, where feasible, to mitigate short-term construction noise: 1) limit construction activity to between 7AM and 6 PM; 2) use electric rather than diesel- or gas- powered equipment where possible; 3) use pneumatic tools with pre-installed mufflers, and use mufflers on all equipment driven by internal combustion engines; 4) mix concrete offsite and use precast concrete buildings where possible; 5) keep noisy equipment as far as possible from site boundaries, and turn off idling equipment; 6) use portable sound barriers around noisy operations; and 7) route construction traffic away from residential areas.

Major improvements at anchor transfer stations and efficiency improvements at branch transfer stations (such as reconfiguration of queuing lanes) would reduce the frequency and duration of off-site queues, and the associated potential for traffic noise in surrounding neighborhoods. Proposed improvements at branch stations would be implemented in conjunction with the programs proposed under Service-Level Alternative 2. By reducing self-haul traffic and adjusting self-haul hours to avoid overlap with commercial peak periods, these programs would provide further mitigation for potential traffic noise.

Improvements at the First Northeast Transfer Station would result in moving the solid waste handling area further from residential neighborhoods (King County 1994b), which would reduce the potential for offsite noise impacts from facility operation. The EIS on the replacement Factoria Transfer Station concluded that operation of that facility would not exceed the noise limits in the Bellevue Land Use Code; however, noise level increases at an adjacent commercial property from trucks traveling up the graded access road would be significant based on EPA criteria (City of Bellevue 1993). As noted previously, the design of the replacement transfer station would be reevaluated following adoption of the 2000 Plan. Depending on the grade of the truck access road, and projected levels of background and project-related truck traffic at the time of the reevaluation, noise levels from trucks on the access road may or may not be significant.

Alternative 2 could also reduce noise from solid waste handling operations at anchor transfer stations and potentially branch stations by enclosing such operations and providing adequate roof clearance for commercial trucks to dump loads. Operational noise could also be mitigated by using mufflers on bulldozers operating in the waste collection pit; limiting the height from which objects are dropped into the pit; monitoring noise levels at the site boundary to make sure they do not violate King County or local noise regulations; and minimizing the use of reverse gear alarms on operational equipment and vehicles.

After the Cedar Hills Landfill closes, Alternative 2 would provide a system of geographically dispersed transfer stations equipped for waste export. Compacting of waste would reduce transfer trailer traffic and associated noise at transfer stations and private intermodal facilities (see discussion under Alternative 1).

**Alternative 3, Scenario A**—Because Alternative 3 would incorporate the anchor/branch system of transfer stations, noise impacts would be similar to Alternative 2. However, under Scenario A, the

Renton transfer station would be closed, eliminating traffic noise and noise from solid waste handling operations associated with that facility. If major improvements were needed at the Black River facility to accept MMSW and serve self-haulers, there could be short-term increases in noise levels at adjacent properties during construction. The potential significance of these impacts, and mitigation measures, would be similar to those discussed under Alternative 2 above.

Self-haulers and commercial traffic currently delivering waste to the Renton station would likely use the Black River station under this alternative. Also, some commercial haulers or self-haulers currently using the Bow Lake transfer station may choose to use the Black River facility instead (see Transportation section). In any case, traffic levels at the Black River facility could more than double, which may result in noticeable increases in traffic noise levels along haul routes. Depending on background levels of traffic, noise increases at some locations could be significant based on EPA criteria (City of Renton 1991). Noise from solid waste handling operations would also be expected to increase. As long as these operations are enclosed, it is unlikely that the maximum permitted sound levels in the Renton Land Use Code would be exceeded (City of Renton 1991).

**Alternative 3, Scenario B**—As noted under Scenario A, Alternative 3 would incorporate the anchor/branch system of transfer stations. Therefore, noise impacts would be similar to Alternative 2. Under Scenario B, noise levels associated with the Renton Transfer Station would continue, and potentially significant increases in traffic noise associated with acceptance of MMSW at the Black River Receiving Facility would not occur. Even if MMSW is not delivered to the closest transfer stations, traffic increases at the two private transfer stations in Seattle would likely not be sufficient to result in significant noise increases (it generally takes a doubling in traffic to result in a discernible noise increase – see introduction to the Noise section.) There would likely also be no discernible increase in operations noise, because noisy operations at the private transfer stations are enclosed.

**Alternative 4**—If Alternative 4 results in the same transfer system as Alternative 2 or 3, the resulting noise impacts would be the same regardless of whether King County or the private sector owns and operates individual facilities.

### **Significant Unavoidable Adverse Impacts**

No significant unavoidable adverse impacts would be expected under Alternative 1.

Under Alternatives 2, 3, and 4, during construction of improvements to transfers stations or the replacement Factoria Transfer Station, construction equipment and trucks would cause short-term increases in noise that at times could be significant based on EPA criteria. During operation of the replacement Factoria Transfer Station, vehicles traveling up the graded access road during peak hours could result in significant noise increases (based on EPA criteria) at an adjacent commercial property (King County 1993). If the design of the access road is modified after adoption of the 2000 Plan, this may or may not remain a significant unavoidable adverse impact.

Under Alternative 3, vehicles delivering King County MMSW to RDC's Black River Receiving Facility could result in significant increases in traffic noise at some locations during peak use periods. (City of Renton 1991).

## ***Land Use***

### **Affected Environment**

Six King County transfer stations (all but Enumclaw and Vashon) were constructed between early 1960 and mid-1970, and are zoned existing, nonconforming land uses (that is, they pre-date existing zoning, and require a special land use permit for any major improvements). The new Vashon and Enumclaw transfer stations operate under special land use permits and are consistent with existing land use plans and zoning.

The 8-acre Bow Lake transfer station is located on the site of a closed landfill located near the intersection of Orillia Road and South 188<sup>th</sup> Street. The site is bounded by I-5, freeway access ramps, and industrial uses. There are no nearby residential uses and a low probability of such uses in the future (King County 1994a).

The First Northeast transfer station is located in the City of Shoreline on a 13-acre site partly occupied by a closed landfill. The site is bounded on the east by I-5, on the south by a King County Transit Division bus facility and a Seattle City Light power substation, and on the west and north by small-lot single-family residences. A small park called Keogh Park is also located immediately north of the site. A stand of deciduous trees between the transfer station and residences to the west serves as a partial visual buffer, particularly during the spring and summer. Views of the transfer station from residences to the north have a wooded character because of the dense trees and shrubs on the site north of the facility. (King County 1994b)

The 21.9-acre site of the replacement Factoria transfer station is located in Bellevue. The site consists of the existing transfer station property plus an adjacent property to the south off Eastgate Way. The site is zoned light industrial, and a variety of light industrial uses are located along the access road to the site (SE 32<sup>nd</sup> Street). A new office development is located on Eastgate Way just east of the site. The nearest existing residences, when constructed, would be approximately 850 feet northeast of the site, but would not have views of the site. Views of the site are available from the more distant Woodridge residential neighborhood northwest of the site, from Eastgate Way, and from I-90, which parallels Eastgate Way to the south (City of Bellevue 1993).

King County's Renton transfer station is located in the middle of a large King County Roads Division property in an area of mixed commercial/industrial uses. The Houghton transfer station is located in a residential area of Kirkland, with an abandoned landfill to the north and state park to the south. The Algona transfer station is located in a commercial/industrial area and bounded by the Valley Freeway; a topsoil, sand, and gravel operation; and other commercial uses. (King County 1991)

RDC's Black River CDL Waste Receiving Facility is also located in Renton in an area of light industrial uses. Property to the northeast is occupied by Renton Concrete Recycling and Stoneway Rock and Recycling. Further north are mixed light industrial and residential uses. Property to the west is occupied by railroad tracks. Part of Foster Golf Course is across the railroad tracks to the northwest. The nearest residential area is located on a bluff to the southwest across the Duwamish River, and has views of the Black River station through vegetation. Land use in the vicinity of Waste Management's Eastmont Transfer Station and Rabanco's Third and Lander Transfer Station is industrial. (King County 1991)

## Impacts and Mitigation Measures

**Alternative 1**—None of the King County transfer stations currently is having significant impacts on surrounding land use. Some transfer stations could adversely affect nearby land use at times as volumes of disposed MMSW increase with growth in the region. Potential impacts, which would be mitigated by the installation of compactors and other efficiency improvements proposed under Alternative 2, include an increased potential for offsite queues at the Algona, Houghton, Factoria, and First Northeast transfer stations due to the heavy use of those facilities and limited queuing space. At the Algona station, traffic backups on the West Valley Highway occur frequently (King County 1991). With no efficiency improvements or reduction in self-haul activity at that transfer station, traffic backups would be expected to increase in duration and frequency, which could affect use of West Valley Highway by general traffic. At the Houghton and First Northeast transfer stations, traffic backups and associated noise could affect residential uses; and at the Factoria Transfer Station, adjacent commercial and light-industrial uses.

**Alternative 2**—Proposed major improvements at the Bow Lake and First Northeast transfer stations, and replacement of the Factoria transfer station, would result in potential short-term impacts during construction that could affect adjacent land use. Potential impacts include dust, erosion and sedimentation, noise from construction vehicles and equipment, and traffic congestion. Further discussion of these potential impacts and mitigation measures is included in the Air Quality and Odor, Water, Noise, and Transportation sections. During construction, there is also the potential to unearth historic or cultural resources. Construction contracts could specify that if such resources are discovered during construction, construction activities must cease in that area until the State Historic Preservation Officer is contacted and the resources evaluated.

All of the transfer station improvement/replacement projects would require environmental review and special land use permits. Conditions would be attached to land use permits to ensure that the proposed transfer station use is compatible with other land uses in the surrounding area. Neighbors would have the opportunity to comment on the proposed projects at public hearings. In the long-term, the combination of major capital improvements at anchor stations, safety and efficiency improvements at branch stations, and management of self-haul hours at some or all stations (see Service-Level Alternatives above), would reduce the potential for traffic backups and associated noise that can adversely affect adjacent land uses.

Potential aesthetic and light and glare impacts from transfer station improvement/replacement projects could be mitigated through architectural design of buildings, use of shielded or directional lighting, incorporation of art work as required by King County code, and landscaping.

**Alternative 3, Scenario A**—Since this option includes the anchor/branch system of transfer stations, impacts would be similar to those discussed under Alternative 2. However, the Renton transfer station would close, eliminating use of that site as a transfer station and therefore the potential for the facility to affect adjacent land uses.

RDC's Black River Receiving Facility, which is currently permitted to accept only CDL waste, would be designated a branch transfer station and permitted to accept MMSW. The Black River facility would replace the commercial and self-haul services currently provided by the Renton transfer station. This would substantially increase traffic to and from the Black River facility (see Traffic above). Increased traffic levels could result in offsite queuing that may affect use of adjacent

roads and access to other commercial and industrial uses in the area. To mitigate this potential impact, adequate on-site queuing capacity would have to be developed (if it does not already exist) before the Black River facility is designated a branch station.

Other impacts resulting from acceptance of MMSW that could affect land use are noise and odor potential (see discussion of impacts and mitigation measures under Air Quality and Odor, and Noise above.) The potential for traffic, noise, odor, and other impacts that could affect land use would be considered by the City of Renton and King County Department of Public Health during the environmental review and permitting process. Permit conditions would include any mitigation measures needed to avoid significant impacts on land use.

**Alternative 3, Scenario B**—Like Scenario A, this option includes the anchor/branch system of transfer stations. Therefore, impacts would be similar to those of Alternative 2. However, under Scenario B, the Renton transfer station would remain open, continuing the existing use at that site; and the Black River Receiving Facility would continue to accept CDL waste, so there would be no potential impacts at that station from acceptance of MMSW.

The number of commercial haulers who deliver waste to the two private transfer stations in Seattle would depend in part on whether cities require in their collection contracts that MMSW be delivered to the closest transfer station. If cities do so, the private transfer stations would likely receive little use by King County customers. Therefore, there would likely be no significant increase in traffic or other impacts that could affect nearby industrial uses. On the other hand, if Waste Management and Rabanco were free to direct their haulers to their own private transfer stations, traffic could increase in the vicinity of these facilities and could affect access to other nearby industrial uses. This could be mitigated by developing adequate onsite queuing space if it does not already exist.

**Alternative 4**—If similar modifications to the transfer system were implemented under this alternative as under Alternative 2 or 3, the resulting potential impacts on land use would be similar regardless of whether the modifications were implemented by King County or the private sector.

### **Significant Unavoidable Adverse Impacts**

Under Alternative 1, as the volume of disposed MMSW increases during the planning period, there would be an increasing potential for offsite queues at heavily used King County transfer stations. Longer or more frequent offsite queues could interfere with use of affected roadways by general traffic, or with access to nearby land uses. No significant unavoidable adverse impacts would be expected under the other alternatives.

### ***Public Services and Utilities***

#### **Affected Environment**

The King County transfer system is shown in Figure 1-1 in Part 1 of this EIS. According to King County transaction data, about 75 percent of the county's MMSW is transported through County transfer stations, and from there by County transfer vehicle to the Cedar Hills Landfill. About 23 percent is hauled regional direct from private transfer stations to the Cedar Hills Landfill. The remaining 2 percent is hauled directly to Cedar Hills by commercial haulers, because the landfill is closer to their collection areas than any of the regional transfer stations.

As discussed in the introduction to this part of the EIS, the King County transfer system is aging and in need of capital improvements in order to maintain and improve service levels (2000 Plan, Chapter 6). Also, the system is not prepared for efficient waste export when the Cedar Hills Landfill closes – only the two newer transfer stations, Enumclaw and Vashon, are equipped with compactors. In addition, the older stations were originally built only to process MMSW, not to provide for recyclables collection or reuse opportunities. Recycling services have been added wherever possible, but often the demand for space has exceeded the space that currently available.

King County's Skykomish and Cedar Falls drop boxes are adequate to serve rural customers in these areas for the 20-year planning period, and are not discussed further in this section.

### **Impacts and Mitigation Measures**

**Alternative 1**—Under this alternative, existing transfer stations would not be capable of handling projected increases in tonnage over time. Further separation of self-haul and commercial activity and expanded collection of recyclables would not be possible. Lines at transfer stations would be longer, and service levels would decline for all customers. Transfer stations would not have adequate capacity to allow all MMSW to be delivered to the closest transfer station. As a result, regional direct haul could increase. (2000 Plan, Chapter 6)

In the short-term, disposal rates would be lower under Alternative 1 compared with the other alternatives because of reduced capital costs. In the long term, however, significant ongoing maintenance costs would be incurred as facilities begin to deteriorate with age. In addition, the transfer system would not be prepared for efficient waste export when the Cedar Hills Landfill closes. Without compactors at most transfer stations, the cost of waste transport could be significantly higher, resulting in higher disposal rates. The 2000 Plan indicates that transport costs for waste export could be as much as 1.5 times higher for uncompacted MMSW than for compacted MMSW.

**Alternative 2**—Alternative 2 would have two major benefits: (1) it would limit capital investment in the transfer system, while providing convenient service and sufficient capacity to accommodate growth; and (2) it would prepare the system for efficient waste export. Another potential benefit of Alternative 2 is a reduction in regional direct haul by commercial haulers, which could reduce rates for other users of the system. This alternative would provide sufficient capacity so that MMSW could always be hauled to the closest transfer station. Collection rates could be reduced because of fewer truck miles traveled between the customer's curb and the Cedar Hills Regional Landfill. (2000 Plan, Chapter 6)

The 2000 Plan concludes that King County could keep rate increases below the rate of inflation under Alternative 2, assuming that waste export is not implemented until the Cedar Hills Landfill reaches its permitted capacity. Early rate increases would cover the cost of needed capital improvements and expected increases in operating and program costs. The most substantial rate increase would take place as waste export costs are phased in after the Cedar Hills Landfill closes in 2012. Because compactors would be installed in all transfer stations, waste transport costs would be reduced significantly compared to Alternative 1. (2000 Plan, Chapter 6)

During construction of improvements to the Bow Lake and First Northeast transfer stations, there is a potential for short-term closures of these facilities (particularly at First Northeast). This would likely

not be an issue with replacement of the Factoria station, because the new transfer building would be constructed in a different area of the site. The Solid Waste Division would design construction to minimize the extent of such closures, and would notify customers well in advance about the closure schedule and alternative disposal sites.

**Alternative 3, Scenario A**—Alternative 3, Scenario A could be less efficient from a transportation and fuel usage standpoint than Alternative 2, because Rabanco collection trucks may use the Black River facility even if there were a closer King County station (such as Bow Lake); and Waste Management collection trucks may avoid taking waste to RDC's Black River facility even though it is the closest station and take it to its Eastmont transfer station. Higher transportation costs could be reflected in higher collection rates. In addition, because of the more western location of the Black River facility compared to the Renton station, access to self-haul disposal and recycling services at Black River would be less convenient to residents of the Maple Valley area. A new transfer station or drop box may be needed to serve this area if the Renton transfer station closes. (2000 Plan, Chapter 6)

Regional direct transactions at the Cedar Hills Landfill could increase under Scenario A. Unless fees for regional direct service were increased over current levels, lost revenues could result in higher disposal rates for other users of the system, or reduce King County's ability to maintain service levels systemwide (for example, waste reduction and recycling services, or self-haul services, may have to be cut back). Alternatively, RDC may ship MMSW from the Black River facility to its Roosevelt Regional Landfill in eastern Washington. Unless a method was developed to recover lost transfer station revenues, this could also result in higher disposal rates for other users of the system, or in reduced service levels. (2000 Plan, Chapters 5, 6, and 10)

The estimated capital cost for implementing this alternative could be approximately \$4.8 million less than the cost of implementing Alternative 2, as a result of avoided capital improvement costs for the Renton transfer station. (This cost savings assumes that the Black River facility would not require capital improvements to prepare it for receiving MMSW and functioning as a branch station.) Nonetheless, the 2000 Plan estimates that the loss in King County revenues from closure of the Renton transfer station and from increased regional direct haul would increase disposal rates by at least \$1.00 per ton compared to Alternative 2. There would not necessarily be any decrease in disposal fees for customers at the Black River facility – existing private transfer stations that accept MMSW currently charge the same rate as King County transfer stations. (2000 Plan, Chapter 6)

Another impact of Scenario A is that it would displace employees who currently work at the Renton transfer station. RDC has indicated that these displaced workers would have the first opportunity to fill new positions at the Black River facility. However, before this alternative were implemented, further analysis would be required of collective bargaining and labor issues, civil service law, and County policies related to contracting out of work performed by County employees. (2000 Plan, Chapter 6)

An advantage of Scenario A is that if Rabanco/RDC were selected as a vendor for waste export when the Cedar Hills Landfill closes, its Black River Receiving Facility would be equipped to serve as a branch transfer station and intermodal yard. Also the City of Renton may favor Scenario A, because the Renton transfer station would close. The Renton station is located near the city's sole source aquifer and is in an area with some residential use, while the Black River station is located in an area

of industrial and commercial use. County procurement rules require that a competitive process be the initial step in implementing this alternative.

**Alternative 3, Scenario B**—This option would have similar impacts on the solid waste system as Scenario A. Both Waste Management's Eastmont and Rabanco's Third and Lander Transfer Stations are in south Seattle, outside the King County service area and not convenient to most King County customers. Nonetheless, Rabanco would likely direct some of its haulers to use the Third and Lander Station, and Waste Management would likely direct some of its haulers to use the Eastmont station. This would increase the truck miles traveled for disposal of MMSW compared to Alternative 2 or Alternative 3, Scenario A, and could result in higher collection rates than either of these alternatives. The incidence of regional direct haul to the Cedar Hills Landfill, or shipment to out-of-county private landfills, would also be greater under Scenario B compared to Scenario A (see discussion of potential revenue and service implications under Scenario A).

Scenario B could result in underutilization of King County transfer stations, and possibly the need to lay off County employees. Therefore, further analysis of labor issues would be required before this alternative could be implemented (see discussion of labor issues under Scenario A).

**Alternative 4**—Under Alternative 4, both public and private proposals would be evaluated before implementing major improvements to transfer stations or constructing new transfer stations. The impacts of this alternative on the King County solid waste system would depend on the resulting degree of privatization of the system. The capital cost for implementing this alternative could be less than the cost of implementing Alternative 2, as a result of avoided capital improvement costs for improved and new transfer stations. However, if any King County transfer station became privately owned, or if existing or new private transfer stations were used in lieu of county transfer stations, King County's revenues from transfer station operation could be substantially reduced. Unless a method were developed to make up lost revenues, the loss could result in increased rates for other users of the system, or reduce King County's ability to maintain service levels systemwide. In addition, privatization of the King County transfer system raises labor issues that would have to be resolved before initiating the competitive process envisioned under Alternative 4. (2000 Plan, Chapter 6)

### **Significant Unavoidable Adverse Impacts**

Under Alternative 1, service levels at transfer stations would decline as population and employment (and associated MMSW generation) increases. In addition, the transfer system would not be prepared for efficient waste export when the Cedar Hills Landfill closes. Under Alternative 4, depending on the degree of privatization of County transfer stations, disposal rates could increase significantly (or service levels could decline) unless some method was developed to recover lost transfer station revenues. No significant unavoidable adverse impacts would be expected under Alternative 2 or Alternative 3, Scenario B; or under Alternative 3, Scenario A, provided RDC's Black River facility could accommodate increased traffic levels (see Traffic above).

### **Other Potential Impacts**

The Puget Sound basin is an area of substantial seismic risk. Therefore, the design of the replacement Factoria Transfer Station, and major improvements to County or private transfer stations

(Alternatives 2, 3, and 4) would have to incorporate measures to ensure that the facility could withstand earthquakes. Such design measures are standard engineering practice in the region.

Both the Bow Lake and First Northeast Transfer Stations are located on the sites of old landfills that closed in the mid 1960's. A number of special mitigation measures would be implemented to avoid significant landfill-related impacts at these sites (King County 1994a and b):

- The potential for settlement would be taken into consideration in the foundation design of the transfer building and other structures.
- Measures would be taken to minimize the duration of potential short-term odors if refuse material must be excavated. These could include immediately loading excavated refuse into waste containers or covered trucks, and taking it to a permitted solid waste disposal facility; and placing plastic cover over any exposed areas of refuse that cannot be immediately disposed.
- As necessary, measures would be included in the design to vent landfill gas so it does not accumulate beneath structures and present an explosion or fire hazard.
- Drainage measures would be implemented during construction and operation to avoid ponding of water in areas where there is buried refuse. This would reduce the potential for settlement of the underlying refuse, as well as additional leachate generation.

With the above mitigation measures, no significant adverse impacts would be expected under any of the alternatives.

**PART 5**

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**MMSW Disposal**



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## Part 5. MMSW Disposal

The regional disposal system for MMSW is described in Chapter 7 of the 2000 Plan. Currently, all MMSW under King County's jurisdiction is disposed at the Cedar Hills Regional Landfill in Maple Valley, Washington. The landfill is designed, operated, and monitored to meet or exceed applicable federal, state, and local regulations for protection of public health and the environment. Operation of the landfill is carried out in accordance with the *Cedar Hills Site Development Plan*. MMSW is disposed in engineered cells or "Areas." Currently, MMSW is being disposed in Area 5, which will be filled in approximately 5 years. After that time, the *Site Development Plan* states that Areas 6 and 7 will be filled sequentially until the landfill reaches its permitted capacity in approximately 2012. (2000 Plan, Chapter 7)

The key disposal issue discussed in the 2000 Plan is how to provide for disposal of King County's MMSW when the Cedar Hills Landfill closes. During the public involvement phase of the Plan (see Part 1. Introduction), the public suggested a number of disposal alternatives for consideration. Of these, the Solid Waste Division selected three for inclusion in the 2000 Plan: construct a new publicly owned landfill in another county; construct an incinerator; and contract with an existing landfill for disposal capacity and service (waste export). The 2000 Plan does not consider replacement of the Cedar Hills Landfill with another landfill in King County due to siting obstacles and directives from the King County Council and the Executive to pursue other options (2000 Plan, p. 7-3).

### Description of Alternatives

#### *Alternative 1—Construct a New County-Owned Landfill Outside of King County*

Under Disposal Alternative 1, the County would construct a new landfill in another county that could be shared with the host County. King County would cover the development and most of the operational costs of the landfill. Current King County policy is to implement waste export when conditions warrant, rather than site a replacement landfill. However, County policy also directs that this Plan review the current policy direction and recommend whether it should be continued or modified in any way (KCC 10.22.025).

Four counties in eastern Washington were looked to as possible partners – Chelan, Douglas, Kittitas, and Yakima. These counties were chosen for the following reasons: (1) the cost of land is well below that in King County; (2) larger tracts of land are available and the population density is lower, reducing the potential for affecting adjacent land use; (3) The annual rainfall is considerably lower, reducing the costs and potential impacts associated with leachate and surface water management; (4) development costs, including siting and permitting, are typically lower than in King County; and (5) proximity to the four counties would minimize transportation costs (2000 Plan, Chapter 7).

#### *Alternative 2—Construct an Incinerator*

Under Disposal Alternative 2, the County would construct an MMSW incinerator in King County. Energy from the incineration process would be used to generate electricity. King County considered incineration as a disposal option in the 1970s and 1980s to reduce the volume of MMSW disposed.

However, due in large part to public concerns about potential air quality impacts and impacts from ash disposal, the County decided to focus on waste reduction and recycling as the priority methods of handling solid waste. In the development of the 2000 Plan, the County was asked to evaluate incineration again to see if there had been changes in technology over the last 10 years that would make it a more palatable option. (2000 Plan, Chapter 7)

### ***Alternative 3—Contract with an Existing Landfill (No Action)***

Under Disposal Alternative 3, King County would contract with an existing landfill for waste export. Existing County policy states, in part, that the county should initiate waste export when conditions warrant, and after Council approval (KCC 10.22.025). This alternative assumes that the County would continue to operate its transfer stations, and to short-haul waste from the transfer stations to local private facilities for transport to a landfill outside King County (2000 Plan, Chapter 7).

King County would conduct an open bidding process to select one or more waste export contractors, so it is not known at this time where the waste would be disposed. For purposes of the analysis in this EIS, it is assumed that the County's MMSW would be exported to one or more of the existing landfills in eastern Washington or Oregon (Figure 5-1): RDC's Roosevelt Regional Landfill in Klickitat County, Washington; Waste Connections, Inc.'s Finley Buttes Landfill in Morrow County, Oregon; and Waste Management, Inc.'s Columbia Ridge Landfill in Gilliam County, Oregon. It is possible that other landfills within or outside Washington State would become available by the time King County seeks waste export proposals. For example, Waste Management, Inc. has received permits to construct and operate a landfill in Adams County, Washington. However, no disposal areas have been constructed to date.

## **Affected Environment, Impacts, and Mitigation Measures**

### ***Traffic***

#### **Affected Environment**

Table 5-1 shows the average weekday traffic at the Cedar Hills Landfill in 1999 based on King County transaction records and assumptions described in the footnotes to the table. Trips are one-way trips (in plus out). As noted in Part 3 (Collection), the Plan considers measures that could be taken by cities and the county to reduce or eliminate regional direct haul to the Cedar Hills Landfill. These measures would not change traffic volumes to and from the Cedar Hills Landfill. However, the regional direct traffic in Table 5-1 would become King County transfer truck traffic.

Current traffic levels at existing private intermodal yards, offloading facilities, and landfills are not known.

#### **Impacts and Mitigation Measures**

**All Alternatives**—Table 5-1 shows the estimated average weekday traffic at the Cedar Hills Landfill in 2010 under any of the disposal alternatives. As noted previously, the year 2010 was chosen arbitrarily as the analysis year, because it is half way through the planning period. Traffic estimates are based in part on waste forecasts in Figure 3-4 of the 2000 Plan, as well as other assumptions in the footnotes to the table.

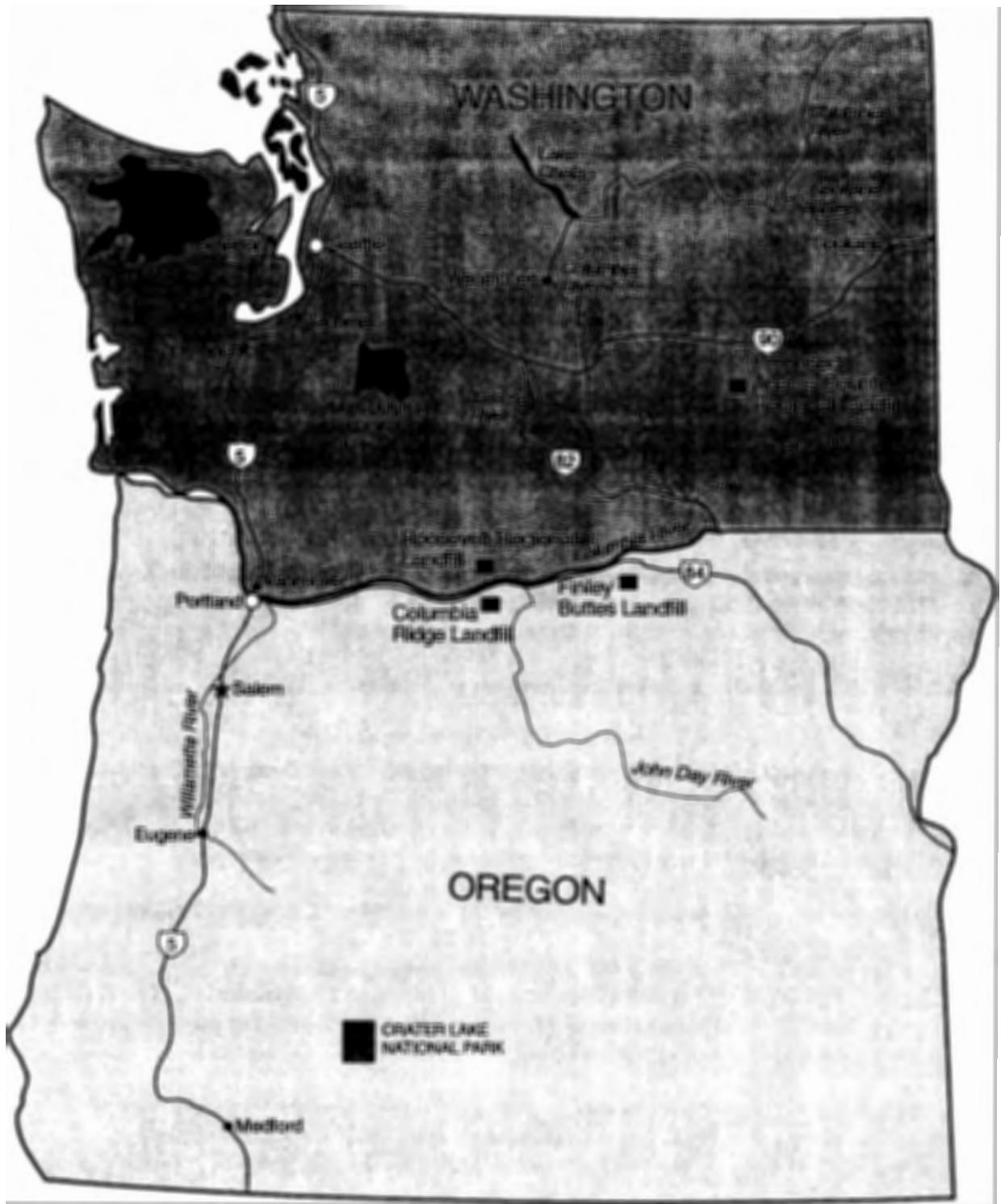


Figure 5-1. Location of existing private landfills outside King County.

**Table 5-1. Estimated average daily traffic at Cedar Hills Landfill, 1999 and 2010.**

Type of Traffic	1999 Average Weekday Traffic	2010 Average Weekday Traffic	1999 Average Weekend Traffic	2010 Average Weekend Traffic
Commercial hauler	18	21	3	4
King County transfer	244	241	119	116
Regional direct	68	80	17	20
Special waste hauler	6	6	6	7
Cedar Falls drop box	4	5	9	11
Employee and visitor	400	432	300	332
<b>Total</b>	<b>738</b>	<b>785</b>	<b>454</b>	<b>489</b>

Trips are one-way trips (in plus out). The 1999 figure for weekday employee and visitor trips is derived from the EIS on the Cedar Hills Site Development Plan (King County 1998a), and includes King County employees, contractors, consultants, deliveries, and visitors. The 1999 figure for weekend employee and visitor trips is an estimate based on discussions with Solid Waste Division staff. Other 1999 trips are actual trips.

Projected 2010 waste delivery trips were calculated by increasing 1999 trips in proportion to the projected increase in disposed MMSW from 1999 to 2010 (2000 Plan, Figures 3-1 and 3-4). KC transfer trailer trips also reflect the reduction resulting from installation of compactors at all transfer stations but Houghton and Renton. Regional direct trips assume that the percentage of MMSW delivered regional direct in 2010 would be the same as in 1999. Projected 2010 employee and visitor traffic reflects additional employees needed to handle the increased waste stream. The number of additional employees was calculated using the Solid Waste Division's staffing model.

Based on the data in Table 5-1, average weekday traffic to and from the Cedar Hills Landfill in 2010 would be approximately 50 trips per day greater than in 1999. The increase is primarily due to increases in commercial hauler, regional direct, and employee traffic resulting from projected increases in disposed MMSW (Plan, Figure 3-4). Weekend day traffic is substantially lower than weekday traffic, but is also projected to increase somewhat between 1999 and 2010 for the same reasons.

The major component of truck traffic to and from the landfill – King County transfer trailers – is projected to decrease slightly compared to 1999, assuming the County installs compactors at transfer stations on the schedule discussed under Facility Improvement Alternative 2 above. Further reduction could be achieved if the County moved to larger transfer containers.

Under all alternatives, two new disposal areas would be constructed, Area 6 in 2003 and Area 7 in 2007. During construction of each cell, which typically takes one to two construction seasons (May through September), approximately 400 trips per day would be added, due to construction workers coming to and from the site, as well as deliveries of construction materials and equipment (King County 1998a). To avoid potential congestion, construction traffic could be scheduled so as not to coincide with peak periods of operational traffic.

Landfill-related traffic would not be expected to significantly affect the level-of-service of intersections along haul routes. Continued operation of the landfill could contribute to the physical deterioration of roadway surfaces on haul routes. Mitigation for this potential impact is provided by truck licensing fees, a portion of which is applied to roadway resurfacing or maintenance projects. (King County 1998a)

When the Cedar Hills Landfill closes in approximately 2012, the landfill site would continue to be the base for King County transfer trailers. Drivers would pick up empty trailers in the morning, and bring them back empty at night. Based on data provided by the Solid Waste Division, it is estimated that there would be approximately 38 transfer trailer drivers per weekday shift in 2012, generating approximately 76 truck trips per weekday. Other types of truck traffic shown in Table 4-1 would cease. Total truck traffic to and from the landfill would decrease by approximately 75%.

Division staff estimate that after the Cedar Hills Landfill closes, the number of employees and visitors to the site would likely be half what it was when the landfill was open. Therefore, following closure in 2012, approximately 220 employee/visitor trips would be expected on an average weekday, including transfer trailer drivers traveling to and from the site in their private vehicles. Total average weekday traffic would be approximately 300 vehicles per day (76 transfer trailer trips plus 220 employee/visitor trips). This represents approximately a 62% reduction compared to estimated 2010 average weekday traffic, and approximately a 60% reduction compared to 1999 average weekday traffic (Table 5-1). There would be additional short-term truck traffic during construction of final cover over the last remaining portion of Area 7 (final cover would be phased).

**Alternative 1**—If King County constructed a replacement landfill in another county, there would be a short-term increase in truck traffic during the initial construction of landfill support facilities and the first disposal area, as well as during construction of each subsequent disposal area. After the Cedar Hills Landfill closes, all the MMSW now disposed at that landfill would be transported instead to the replacement landfill. In 2012, assuming compactors are installed at all King County transfer stations by that time, it would require approximately 155 transfer trailer loads (310 trips) on an average weekday, and approximately 69 transfer trailer loads (138 trips) on an average weekend day, to transport all the solid waste that now enters the Cedar Hills Landfill to the replacement landfill (or to one or more local intermodal facilities, if shipped by rail). In addition, there would likely be an average of approximately 435 employee and visitor trips to and from the replacement landfill on a weekday, assuming staffing levels are similar to those at the Cedar Hills Landfill. All in all, traffic levels at the replacement landfill in 2012 would be slightly greater than the estimated traffic at the Cedar Hills Landfill in 2010 (Table 5-1).

**Alternative 2**—During construction of an incinerator, there would be a short-term increase in truck traffic in the vicinity of the site due to construction worker trips and deliveries of construction materials and equipment. When the Cedar Hills Landfill closes in 2012, it would take the same number of transfer trailer trips to transport King County's MMSW to the incinerator as discussed above for a replacement landfill in another county. At a typical incinerator, approximately 15 percent of the incoming waste by weight is noncombustible, 15 percent of the combustible waste by weight must be "bypassed" to a landfill during periodic shutdowns of the incinerator, and 20 percent of the incinerated waste by weight remains as ash residue (Denison and Rusten 1990). Approximately 110 additional transfer trailer trips per weekday and approximately 50 additional trips per weekend day would be needed to haul these waste materials to private intermodal facilities for export to a private landfill (Table 5-2).

**Table 5-2. Estimated average daily traffic at incinerator, 2012.**

Type of Traffic	Average Weekday Trips	Average Weekend Trips
Delivered MMSW	310	134
Noncombustible waste	47	20
Bypass waste	40	17
Ash	22	10
Total waste transport	418	181
Employee/visitor	450	350
<b>TOTAL</b>	<b>868</b>	<b>531</b>

Delivered MMSW is the number of transfer trailer trips it would take to deliver to the incinerator all King County MMSW that had previously been transported to the Cedar Hills Landfill

It is assumed that twice as much ash as solid waste (by weight) can be compacted into a waste container (Denison and Rusten, 1990).

Employee and visitor traffic is assumed to be the same as that at the Cedar Hills Landfill (King County 1998).

**Alternative 3**—After the Cedar Hills landfill closes and waste export is implemented (in approximately 2012), all the solid waste that now enters the Cedar Hills Landfill would be transported instead to private intermodal facilities. This would require the same number of transfer trailer trips as discussed under Alternative 1 for transport of MMSW to a replacement landfill in another county. The trips would be divided among an unknown number of intermodal facilities, depending on how many private companies are selected and how many intermodal facilities they have. For private landfills with offloading facilities off the landfill site (such as RDC's Roosevelt Regional Landfill), disposal of King County's waste would also increase traffic at the unloading facilities.

### Significant Unavoidable Adverse Impacts

None would be expected under any of the alternatives

### *Air Quality and Odor*

#### Affected Environment

The primary air quality issues at an MMSW disposal facility are the potential for odor and for emissions of "air toxics" (chemicals compounds that are known or suspected of causing adverse human health effects at high enough concentrations and with long enough exposure times). The potential for fugitive dust emissions is also an issue. At the landfills under consideration in this EIS, which are in rural areas, emissions from landfill-related vehicles and equipment are not of concern (King County 1991 and 1998; Adams County 1993).

Landfill gas is produced at MMSW landfills from the decomposition of solid waste. Landfill gas consists primarily of methane and carbon dioxide, which are odorless and nontoxic, as well as trace levels of odorous and toxic constituents (Snohomish County 1989; King County 1998a). At the Cedar Hills Landfill and existing private landfills, landfill gas is controlled through an active landfill gas control system. This system creates a vacuum within the solid waste, withdraws landfill gas, and

directs it to high-temperature flares that burn the methane and destroy 98 percent or more of the trace odorous and toxic compounds (Snohomish County 1989; King County 1998a). Federal and state regulations set strict operational criteria for landfill gas control systems, including a requirement that methane concentrations at the surface of the landfill cannot exceed 500 ppm. If these criteria are not met, changes must be made to the landfill gas control system on a specified schedule until the criteria are met (40 CFR Part 60, Subpart Cc; WAC 173-351).

As discussed further under Environmental Health, PSCAA records indicate that there have been few complaints of odor attributable to the Cedar Hills Landfill in 1999 and 2000 to date. CH2M Hill performed an air quality dispersion modeling analysis to predict the potential maximum offsite concentrations of four specific air toxics that may result from operation of Area 5: acrylonitrile, hydrogen sulfide, methylene chloride, and vinyl chloride. The analysis concluded that potential maximum offsite concentrations of these constituents would be well below their respective odor thresholds, and well below state standards designed to protect public health (CH2M Hill 1999, see Attachment C of this EIS).

There is a similar potential for offsite odors and air toxics emissions at existing private landfills. At landfills located in sparsely populated areas, there may be less potential for odor complaints. Fugitive dust is produced primarily when equipment is operating on unpaved roads or areas of exposed soil. The inhalable particulate matter in fugitive dust, referred to as PM<sub>10</sub>, is of most concern, because it is thought to have the greatest potential for health impacts. There are sporadic incidents of fugitive dust at the Cedar Hills Landfill, but PM<sub>10</sub> levels are well below ambient standards designed to protect human health and welfare (King County 1998a).

At existing private landfills, the potential for fugitive dust is higher than at the Cedar Hills Landfill due to the dry climate and frequent windy conditions. Due to agricultural practices, background levels of PM<sub>10</sub> likely exceed standards during dry, windy conditions (Seattle 1990). The potential for fugitive dust emissions at both Cedar Hills and existing private landfills is minimized through aggressive dust control measures. These include the erosion-control best management practices (BMP's) discussed under Water below, and spraying water or dust suppressant on unpaved roads and exposed soils where equipment is operating.

The existing private intermodal facilities for MMSW in King County (Union Pacific's Argo Yard and Rabanco's Third and Lander Transfer Station) are located in the south Seattle industrial area. PSCAA has designated this area a "nonattainment area" for PM<sub>10</sub>, meaning that the National Ambient Air Quality Standards for PM<sub>10</sub> are exceeded. In addition, PSCAA monitors air quality in this area and manages emissions to maintain compliance with CO and ozone standards (Washington State Public Stadium Authority 1998).

### **Impacts and Mitigation Measures**

**All Alternatives**—Landfill gas will continue to be produced at the Cedar Hills Landfill for a number of years after the landfill closes (probably 30 years or more). The potential for offsite odors and emissions of air toxics will be mitigated through continued operation of the active landfill gas control system (see Affected Environment), completion of planned improvements to the system, placement of final cover over Area 4 in 2000, and phasing of final cover over existing and future disposal areas (King County 2000b, Attachment C). In addition, as required by federal and state regulations, the Solid Waste Division will regularly monitor surface and flare emissions, and make any necessary

changes in the landfill gas control system to meet required operational criteria (40 CFR Part 60, Subpart Cc).

The potential for sporadic incidents of fugitive dust at the Cedar Hills Landfill will continue until operations cease and final cover is applied over the last remaining exposed area (approximately 2013). Aggressive dust control measures and phased final cover over existing and future disposal areas will reduce the potential for incidents of fugitive dust during the remaining years of landfill operation.

**Alternative 1**—Following closure of the Cedar Hills Landfill, disposal of King County's waste would contribute to the potential for odor and emissions of air toxics and fugitive dust at a publicly owned landfill in eastern Washington. The potential for odor and air toxics emissions would be similar to that at the Cedar Hills Landfill, and would be mitigated through similar measures (see All Alternatives above). To minimize the potential for affecting residents if there are unforeseen problems with the landfill gas control system, site selection criteria could favor areas with low population. There would likely be a high potential for fugitive dust emissions at an eastern Washington landfill due to the dry climate and frequent windy conditions. Therefore, aggressive dust control measures would be needed frequently throughout the year.

Depending on the location of the new landfill, King County's MMSW could be shipped by rail or truck. If shipped by rail, truck exhaust emissions would likely increase in the vicinity of whatever local rail yard is used as an intermodal facility for waste transport. If the rail yard is in an urban area, transfer truck emissions could contribute to violations of ambient carbon monoxide (CO) standards at congested intersections during commuter peak periods. This could be mitigated by ensuring that transfer trucks have up-to-date, properly operating emissions controls, using more than one intermodal facility, routing truck traffic to avoid congested intersections, and scheduling truck traffic to avoid commuter peak periods. If King County's MMSW were transported by truck to the new landfill, truck exhaust emissions would increase in the vicinity of the landfill. Because the landfill would likely be in a rural area, the potential for violations of ambient CO standards would be minimal (Adams County 1993; King County 1991 and 1998).

**Alternative 2**—An MMSW incinerator draws in air to provide oxygen for combustion, and discharges the gaseous products of combustion to the atmosphere through a stack. Stack emissions consist primarily of components of the drawn-in air, as well as carbon dioxide and water vapor. In addition, stack emissions contain trace quantities of air toxics. These can include acid gases such as hydrochloric acid and sulfur dioxide, dioxins, and heavy metals such as cadmium, lead, chromium, and mercury (Doornbos et al., undated).

To protect public health, federal and state regulations require special permitting procedures for MMSW incinerators, and specify strict standards for stack emissions (40 CFR Part 60, Subpart Eb; WAC 173-434). These standards, promulgated by EPA in 1995 and amended in 1997, are much more stringent than those in effect at the time King County considered siting an incinerator in the late 1980s. Incinerators are now required to incorporate not just "best available control technology" (BACT) but "maximum achievable control technology" (MACT). EPA estimates that the new standards (and the MACT required to achieve them) will reduce dioxin emissions by 99% and mercury emissions by 90% compared to standards in effect in 1990 (EPA 1998).

Other mitigation measures would include selecting a site with terrain that promotes dispersion of stack emissions, adherence to a strict operation and maintenance plan, continuous monitoring for air toxics, and preparation of a detailed response plan for likely upset conditions. Waste handling operations could be conducted indoors to minimize the potential for offsite odors. (King County 1988)

Truck traffic associated with an incinerator (see Traffic above) would result in increased exhaust emissions in the vicinity of the site. Depending on the site location, truck emissions could contribute to violations of ambient carbon monoxide (CO) standards at congested intersections during commuter peak periods. This potential impact could be mitigated as discussed under Alternative 1 above.

Construction of an incinerator would require clearing and grading over a site of approximately 10 - 20 acres (King County 1988), during which there would be a potential for fugitive dust emissions. During operation of the incinerator, disposal of noncombustible waste, bypass waste, and ash would contribute to fugitive dust potential at the disposal sites. Dust control measures described under Affected Environment above would be used to minimize the potential for fugitive dust emissions.

**Alternative 3**—Following closure of the Cedar Hills Landfill, disposal of King County's waste would contribute to the potential for odor and emissions of air toxics and fugitive dust at a private landfill. Potential impacts and mitigation measures would be similar to those discussed for Alternative 1 above.

### **Significant Unavoidable Adverse Impacts**

With vigilant operation and maintenance of air pollution control systems at the disposal facility, as well as other mitigation measures described above, significant adverse impacts could be avoided for all alternatives.

## ***Water***

### **Affected Environment**

The Cedar Hills Landfill lies within the drainage basins of Issaquah Creek to the north and east (approximately 0.25 miles from the landfill), and the Cedar River to the southwest (approximately 1 mile from the landfill). Most of the south central portion of the landfill drains to Queen City Lake south of the site, which has no surface outlet. Surface water quality monitoring indicates that stormwater runoff from the site is not contaminated by landfill leachate. Elevated turbidities in runoff are likely caused by fine silts that move through the stormwater controls. Improvements to these controls are planned to reduce turbidity. (King County 1998a)

Ground water is present in two geologic units beneath the Cedar Hills Landfill site. The uppermost unit consists of multiple discontinuous perched saturated zones (local unconfined flow systems) that occur within 30 feet of the ground surface. The underlying unit is unconfined and is a regional aquifer used for drinking water supplies. The regional aquifer occurs at a depth of approximately 300 feet or more below the ground surface, and is separated by at least 150 feet of unsaturated soils from the local flow systems. Monitoring indicates that ground water quality in the local flow zone is affected by leachate or gas from the landfill. However, the water quality of the regional aquifer is

consistently good, and shows no indication of contamination by leachate or landfill gas (King County 1998a).

Existing private landfills and Waste Management, Inc.'s planned Adams County Landfill are located within the Columbia River Basin. There are no permanent lakes, rivers, or streams within 1 mile of the landfill sites. Small, drainages are located on or near the sites, but these drainages are dry during parts of the year due to the dry climate. During rainy weather, the small intermittent drainages on or near the sites flow into larger local streams or rivers that eventually flow to the Columbia River or its tributaries. The uppermost aquifers at existing private landfill sites occur at 100-350 feet below the ground surface beneath dense Columbia River basalts. (King County 1991; Adams County 1993)

Rail haul routes between King County and existing private landfills pass over and along numerous rivers and streams and near water supply wells (King County 1991). Operation of intermodal and offloading facilities have a low potential for significantly affecting water resources, and are not addressed in this section.

### **Impacts and Mitigation Measures**

**All Alternatives**—In general, the potential for a disposal facility to affect surface or groundwater is mitigated through compliance with federal, state, and local regulations, including the National Pollutant Discharge Elimination System (NPDES) regulations, which require preparation of a stormwater pollution prevention plan; state criteria for MMSW landfills and incinerators (WAC 173-351 and WAC 173-304)); the 1999 King County Surface Water Design Manual and other similar state and local regulations; state waste discharge regulations; and federal rules for implementing the recent listings of the Pacific chinook and bull trout under the Endangered Species Act.

During construction of Areas 6 and 7 at the Cedar Hills Landfill, there would be a short-term increase in the potential for eroded sediments to enter surface water runoff. This potential would be mitigated with erosion-control BMPs specified in the *Stormwater Pollution Prevention Plan for the Cedar Hills Regional Landfill* (Woodward Clyde 1993). BMPs include those discussed under Facility Improvement Alternative 2 in Part 4 of this EIS. During operation, surface water runoff from Areas 5 through 7, the soil stockpile, and the operation and maintenance facilities would drain through stormwater detention and treatment ponds at the south end of the landfill site, then discharge offsite into the wooded area in the southern buffer. Under heavy storm conditions, some runoff may reach Queen City Lake, which has no surface water outlet. With the leachate control system at the landfill, the potential for leachate contamination of surface water is minimal (King County 1998a).

The Cedar Hills Landfill has been operating since 1962. Early disposal areas were not required to have engineered bottom liner systems. Despite the absence of engineered bottom liners in these areas, monitoring indicates that groundwater in the regional aquifer shows no signs of contamination by leachate or landfill gas. Until the Cedar Hills Landfill closes in 2012, and throughout the post-closure maintenance period, leachate would continue to be managed in a manner similar to existing conditions. In addition, all new disposal areas would have engineered bottom liner systems. Therefore, the potential for degradation of water quality in the regional aquifer by leachate or landfill gas is considered remote and speculative (King County 1998a). Leachate production would be substantially reduced after landfill operations cease and the entire landfill is under final cover, reducing the potential for leachate contamination of ground water or surface water.

**Alternative 1**—After the Cedar Hills Landfill closes, disposal of King County’s solid waste would contribute to the potential for similar types of impacts at a publicly owned landfill in eastern Washington. Because of the dry climate in this area, the potential for eroded soils to enter surface water runoff would be reduced compared to Cedar Hills. In addition, leachate volumes would be substantially reduced, reducing the potential for leachate contamination of surface and groundwater. The replacement landfill would be subject to the same regulations as the Cedar Hills Landfill, and would therefore incorporate similar stormwater and leachate management systems. If necessary to further protect ground water, a leak detection system could be installed under the bottom liner of the new landfill so that any leaks in the main leachate pipes could be detected early and corrective actions taken. Existing private landfills, and the planned Adams County Landfill, incorporate such a system. (King County 1991; Adams County 1993).

King County’s MMSW would be transported to the new landfill in continuously welded, leak resistant, sealed containers. These containers would be unlikely to spill or leak into water bodies under normal conditions. In a truck or train accident, however, there is the potential (as a worst case) for one or more containers to split and empty their contents into one of the rivers or streams crossed by haul routes. Studies have indicated that the potential for significant impacts on water quality from such spills is minimal given their low probability of occurrence, the nonhazardous nature of the waste, the small volumes that would likely enter the water, and the fact that the Solid Waste Division (if County transfer trucks were used) or railroads would be required to have emergency response plans to immediately clean up such spills. (City of Seattle 1990)

**Alternative 2**—During construction of an incinerator, there would be a short-term potential for erosion and sedimentation when soils are exposed. In addition, impervious surfaces on the site would increase, resulting in long-term increases in the volume and potentially the peak rate of stormwater runoff. These potential impacts would be mitigated through BMP’s included in the stormwater pollution prevention plan for the facility, incorporating drainage facilities consistent with the *King County Surface Water Design Manual*, and complying with other drainage-related regulations discussed under All Alternatives above.

For incinerators that produce electricity, there is a potential for contamination of water resources from discharge of wastewater. Boilers and scrubbers may produce contaminated liquid effluents. In addition, water is used to cool ash as it exits the furnace to allow safe handling and transport. Because this water comes into contact with ash, excess water not absorbed by the ash may contain very high levels of salts and heavy metals dissolved from the ash (Denison and Rusten 1990). State regulations require water used in the incineration process to be either reused, discharged to surface waters under an NPDES permit, or discharged to ground water or a municipal sewer system under a state waste discharge permit (WAC 173-434). Discharge from an incinerator may require pretreatment or treatment to meet requirements for a permitted discharge. Some newer facilities achieve zero discharge of wastewater by recirculating and reusing it (Denison and Rusten 1990).

Incinerators that produce electricity also require large quantities of water for the boilers. For a facility of the size that King County would likely need (2000 tons per day), average water needs would be approximately 1300 gallons per minute. If the water source is a ground water aquifer, there is a potential for depleting the aquifer if water withdrawal exceeds recharge. A site-specific evaluation of aquifer characteristics would be needed to assess the level of impact to ground water resources. Potential impacts of an incinerator on groundwater quantity could be mitigated by

limiting the amount of groundwater withdrawal, or using a surface water source if one is available. (King County 1988)

**Alternative 3**—The potential impacts and mitigation measures discussed above for a replacement landfill in eastern Washington (Alternative 1) would also apply to export of King County's MMSW to one or more private landfills in eastern Washington or Oregon.

### **Significant Unavoidable Adverse Impacts**

The use of large quantities of water in an incinerator would be a significant impact of Alternative 3 given the current difficulty in obtaining water rights from the state, the recent listings of certain fish species under the Endangered Species Act, and the possible regional shortage of water in the future. No significant unavoidable adverse impacts would be expected under the other alternatives.

### ***Sensitive Areas/Plants and Animals***

#### **Affected Environment**

Uplands in the southern and western buffer zones at the Cedar Hills Landfill are occupied by three vegetation types; deciduous trees, mixed conifers and deciduous trees, and shrubs/grasses. Three wetlands classified as forested and emergent are located in the southern buffer, and five in the western buffer. They range in size from less than 1 acre to approximately 20 acres. There are no waters that support fish on the landfill site, and no fish are known to exist in Queen City Farms Lake, which would receive surface water runoff from Areas 5, 6, and 7. Numerous species of birds and small mammals likely use the landfill site. Large numbers of birds (primarily starlings, crows, and gulls) flock to the landfill at certain times of year and congregate outside the active area (King County 2000b, see Attachment C). A gull control system of crossed wires over the active area, which interrupts the flight path of gulls, is effective in keeping these birds out of the refuse. No endangered or threatened plant or animal species are known to be present in areas that would be affected by landfill operations. (King County 1998a)

Vegetation on the existing private landfill sites and the proposed Adams County landfill site consists primarily of native rangeland and cropland. A small isolated wetland (less than 60 square feet) is located on the Roosevelt Regional Landfill site. Small potential wetlands (referred to as salt pans) were also identified outside the landfill footprint at the Adams County site. A variety of birds and small mammals use the sites. Like the Cedar Hills Landfill, the operating private landfills attract scavenger birds, such as gulls and crows. Birds are controlled by harassment. No waters that support fish are located on or in the immediate vicinity of the existing private landfills or proposed Adams County landfill. Also, no threatened or endangered plant or animal species are known to be present at the sites. (Seattle 1990; King County 1991; Adams County 1993)

#### **Impacts and Mitigation Measures**

**All Alternatives**—Under the *Site Development Plan* for the Cedar Hills Landfill, all facilities and operations would continue to be located within the existing permitted landfill area. Therefore, wetlands and other vegetation communities in the western and southern buffers, and any wildlife using the buffers, would not be significantly affected. Wildlife using the buffers currently coexist with noise and human activity associated with landfill operations (King County 1998a). Wildlife use

of the landfill area itself will likely be minimal during landfill operations. When operations cease, and the last remaining disturbed areas are revegetated with native species (revegetation will be phased), wildlife use of the site may increase.

Landfill operations in Areas 5, 6, and 7 would be unlikely to affect fish species listed under the Endangered Species Act, due to the leachate and stormwater control systems at the landfill. Also, stormwater from the remaining disposal areas drains southward to Queen City Farm Lake, which has no surface outlet and does not support salmonids or other fish.

While the Cedar Hills Landfill is operating, scavenger birds such as starlings and crows would be expected to continue to frequent the site. Gulls may also continue to frequent the site during the nonbreeding season, depending on the success of gull control measures. The Solid Waste Division will continue to investigate methods of improved gull control (see Environmental Health section). Use of the site by starlings, crows, and gulls would be expected to gradually drop off after landfill operations cease in approximately 2012.

**Alternative 1**—After the Cedar Hills Landfill closes, disposal of King County's waste would contribute to the loss of vegetation and wildlife habitat at a replacement landfill in eastern Washington. The overall effect would be a loss of wildlife communities within disturbed areas while the landfill is in operation. This impact could be mitigated through phased revegetation of the site with native species of value to local wildlife. Other mitigation measures could include development of a wildlife management plan for proactive enhancement of plant and animal resources (Waste Management, Inc. developed such a plan for its Columbia Ridge Landfill); or purchasing additional land for wildlife habitat protection or enhancement, as proposed for Waste Management, Inc.'s Adams County Landfill. (King County 1991)

While the replacement landfill is in operation, King County's MMSW would contribute to attracting scavenger birds such as gulls and crows to the site, requiring bird control measures. Site selection criteria for the replacement landfill could take into consideration the presence of wetlands and any critical habitat, particularly habitat that supports endangered or threatened species. Potential impacts on water quality that could affect listed fish species, and mitigation for these impacts, are discussed under Water above.

**Alternative 2**—As noted previously, construction of an incinerator would require clearing and grading over approximately 10 to 20 acres (King County 1988). Impacts on plants and animals, and mitigation measures, would be similar to those discussed under Alternative 1 above. However, scavenger birds like gulls would likely not be an issue, because waste handling operations at an incinerator typically take place indoors.

**Alternative 3**—Impacts on plants and animals, and mitigation measures, would be similar to those discussed under Alternative 1 above.

### **Significant Unavoidable Adverse Impacts**

None would be expected under any of the alternatives.

## ***Use of Non-Renewable Fuel Resources***

### **Affected Environment**

This section focuses primarily on fuel used to transport King County's MMSW to disposal sites. The affected environment is the same as that for Facility Improvement Alternatives in Part 4 of this EIS.

### **Impacts and Mitigation Measures**

**All Alternatives**—The Cedar Hills Landfill is centrally located in King County and accessible by convenient haul routes from the geographically dispersed system of County transfer stations. Therefore, it would be fuel efficient to continue to dispose of King County's MMSW at this landfill until it reaches its permitted capacity.

**Alternative 1**—Because this alternative involves transport of King County's MMSW to a publicly owned landfill in eastern Washington, it is assumed that it would be implemented in conjunction with Facility Improvement Alternative 2 (see Part 4 of this EIS). This would provide a geographically dispersed system of transfer stations equipped for efficient waste transport. Transport of King County's MMSW to an out-of-county replacement landfill would require somewhat more fuel than transport to the Cedar Hills Landfill. MMSW would likely be truck-hauled to intermodal facilities that may or may not be as centrally located as the Cedar Hills Landfill; hauled by rail to private offloading facilities; and possibly loaded onto trucks again for transport to the landfill. Alternatively, MMSW could be hauled by truck from King County transfer stations to the landfill, which would result in greater fuel use than rail haul.

**Alternative 2**—If an incinerator were used as the primary disposal method for MMSW, collected MMSW would be transported by commercial haulers to King County transfer stations, where it would be compacted into larger loads and taken to the incinerator. In addition to fuel used in these transportation steps, incinerators often require auxiliary fuel to maintain a high enough heat for a long enough period of time to completely burn the waste. This is particularly true of incinerators operated in conjunction with successful recycling programs, since such programs remove materials with the highest energy value (Morris 1996). Oil and natural gas are the auxiliary fuels typically used, with natural gas being the most efficient from a cost standpoint (Doornbos et al., undated). The need for auxiliary fuel could potentially be reduced through fuel-efficient design of the incinerator.

Up to the point where it is incinerated, disposal of King County's MMSW in an incinerator would probably result in similar fuel use as disposal at the Cedar Hills Landfill (assuming the distance from transfer stations to the incinerator would be comparable to that to the Cedar Hills Landfill; and the amount of auxiliary fuel needed for the incinerator would be comparable to that used in landfill operations). However, noncombustible waste, bypass waste, and ash would still have to be transported by truck to private intermodal facilities, rail-hauled from there to private off-loading facilities, and possibly truck-hauled from there to private landfills. Together, ash and residual MMSW typically constitute one-third or more of the total tonnage of MMSW requiring disposal. For King County, this means that the total residual MMSW and ash that must be transported to a landfill would be 300,000 to 450,000 tons per year, approximately equal to the City of Seattle's annual waste export tonnage (2000 Plan, Appendix D).

Considering the additional fuel required to transport residual MMSW and ash to a disposal site, a disposal system based on incineration would likely result in the greatest use of non-renewable fuel resources of any of the disposal alternatives.

**Alternative 3**—The use of fuel for export of MMSW to a private landfill would be similar to that discussed above for Alternative 1.

### **Significant Unavoidable Adverse Impacts**

For any of the disposal alternatives, the amount of fuel used to dispose of King County's MMSW would be a very small percentage of total fuel use in the region, and would not be expected to significantly affect the availability or cost of non-renewable fuel resources (King County 1988).

### **Noise**

A general discussion of noise and noise regulations is included in Part 4, Section B, under Noise. That section also discusses EPA criteria for determining the significance of noise level increases from a proposed action.

As noted in the discussion referenced above, noise from vehicles traveling on public roadways is typically exempt from noise limits specified in local noise regulations. The Federal Highway Administration (FHWA) has developed "noise abatement criteria" (noise levels suggesting the need for mitigation) for traffic noise affecting residential and commercial land uses. These criteria are intended to be used in evaluating traffic impacts from federally funded road projects. However, in the absence of regulatory noise limits, FHWA criteria are commonly used in EISs to evaluate traffic noise impacts from other types of proposed actions as well. (King County 1998a)

For residential and other noise-sensitive uses, the FHWA noise abatement criterion is an exterior sound level of 67 dBA. FHWA defines a traffic noise impact as a noise impact approaching or exceeding the criterion level. The Washington Department of Transportation (WSDOT) defines "approaching" as sound levels within 1 dBA of the criterion level. (King County 1998a)

### **Affected Environment**

Noise monitoring conducted in 1996 indicates that operations at the Cedar Hills Landfill, although audible on occasion at nearby residences west of the site, do not greatly increase the sound level at these residences. Operations sound levels are well below the allowable daytime noise limit of 57 dBA specified in the King County Code (KCC 12.88). Backup alarms on vehicles and equipment are audible above background noise levels at some nearby residences, but are exempt from noise limits in the King County Code because restricting their use could endanger workers. (King County 1998a)

A computer model was used to calculate traffic noise levels at residential locations along Cedar Grove Road, based on 1996 traffic levels (King County 1998a, Appendix G). Modeling results indicate that the average noise level from background traffic at these locations during the peak period of landfill truck traffic (3 to 4 PM on weekdays) is approximately 62 dBA; while the cumulative noise level with landfill truck traffic is approximately 67 dBA. Noise from traffic traveling on public roads is exempt from King County noise regulations. However, cumulative peak-hour traffic noise

levels at residences along Cedar Grove Road are at the FHWA noise abatement criterion level for residential areas (67 dBA). (King County 1998a)

Under certain circumstances, operation of landfill gas flares can result in low-frequency noise and vibrations in surrounding neighborhoods. In 1997, there was one documented incident of vibration and noise detected at two or more residences near the Cedar Hills Landfill. It is believed that this incident was related to an effort to redistribute landfill gas between flares to increase vacuum on Area 4. There was one other documented incident in 1999 related to failure of a flexible coupling in the north flare station. There have also been undocumented complaints from at least one neighbor about frequent vibrations. The Division expects that completion of planned improvements to the landfill gas control system (see Air Quality and Odor above) will minimize the potential for vibrations. An acoustic evaluation of the north flare station is being performed that will look at individual components of the station, including blowers, piping, and flares, for noise as well as vibrations. (King County, 2000b, Attachment C)

Truck traffic to and from private intermodal facilities contributes to cumulative traffic noise levels in the vicinity of those sites. The existing private intermodal yards are in the south Seattle industrial area, an area that has substantial background truck traffic and associated noise (King County 1991; Washington State Public Stadium Authority 1998). Trains transporting solid waste from intermodal yards to the private landfills contribute to noise levels on the rail routes to the sites.

One of the existing private landfills (RDC's Roosevelt Regional Landfill in eastern Washington) has a waste unloading facility at a rail yard off the landfill site. Landfill-related traffic contributes to noise levels at the rail yard, as well as along the truck haul route from the rail yard to the site. When grain trucks are also operating on the haul route, cumulative noise levels and noise level increases at residences along the haul route can be significant based on FHWA and EPA criteria (King County 1991). The affected residences are located in the town of Roosevelt just as trucks leave the unloading facility. Recent observations by the EIS consultant indicate that land uses in the vicinity of the Roosevelt Regional Landfill have not changed significantly in the last decade.

Operations at existing private landfills probably increase noise levels at the property lines at times (King County 1991), and potentially result in isolated incidents of flare noise. There are no nearby residential communities that would be affected (see Land Use).

### **Impacts and Mitigation Measures**

**All Alternatives**—Construction of new disposal areas at the Cedar Hills Landfill (Areas 6 and 7) would result in short-term increases in noise that exceed those resulting from operations alone. The EIS on the Cedar Hills Site Development Plan (King County 1998a) concludes that these noise increases would not be significant. Although mitigation is not required, construction noise could be reduced through use of standard noise reduction measures such as those discussed under Facility Improvement Alternative 2 in Part 4 of this EIS.

The 1998 EIS also concludes that noise from Cedar Hills Landfill operations would continue to be audible on occasion at some nearby residences, but would remain below maximum permissible noise levels specified in Chapter 12.88 KCC. King County uses standard measures for reducing operations noise, such as maintaining equipment mufflers in good working order. In addition, the County is

exploring safe alternatives to the use of reverse gear alarms on equipment and vehicles, which could decrease noise from this source. (King County 1998a)

With regard to traffic noise, the 1998 EIS concludes that during landfill peak periods (3 to 4 p.m. on weekdays), background traffic noise levels at residences along Cedar Grove Road in 2012 would be approximately 63 dBA. Cumulative traffic noise levels with landfill-related traffic would be approximately 69 dBA, which exceeds the FHWA noise abatement criteria for residential areas (67dBA). The increase of 2 dBA compared to existing levels would not be discernible. Although the noise analysis focused on the landfill peak period, the noise contribution from landfill truck traffic extends from about 7AM to about 4 PM. (King County 1998a)

Installation of compactors at King County transfer stations under Facility Improvement Alternative 2 would reduce future County transfer truck traffic at the Cedar Hills Landfill below levels expected without compactors. Nonetheless, total truck traffic at the Cedar Hills Landfill would be expected to increase somewhat by 2012 (see data for 2010 in Table 5-1). Since traffic would have to be reduced by one-half to result in a discernible (3 dBA) decrease in noise (City of Bellevue 1993), it is doubtful that installation of compactors would affect the conclusions of the 1998 EIS. After the Cedar Hills Landfill closes, average daily traffic associated with the landfill would be reduced by an estimated 62%, and average daily truck traffic by an estimated 75% (see Traffic above). This would substantially reduce the contribution of landfill-related traffic to noise levels along Cedar Grove Road.

As noted under Affected Environment, the Solid Waste Division expects that the potential for flare noise will be less than it is now after completion of planned improvements to the landfill gas control system. If King County decides to construct a gas-to-energy system, the potential for flare noise would cease when that system became operational. Other potential impacts will be evaluated in that project's environmental review.

**Alternative 1**—During construction of a replacement landfill in eastern Washington, there would be short-term noise increases due to construction equipment and trucks delivering construction materials to the site. Short-term construction noise would also occur periodically thereafter during construction of new disposal areas. Construction noise could be mitigated through standard measures discussed under Facility Improvement Alternative 2 in Part 4 of this EIS.

Disposal of King County's solid waste would contribute to traffic and operational noise at one or more local intermodal facilities where MMSW would be loaded onto railcars and shipped to the replacement landfill. The noise impact at intermodal yards would depend on where they are located – noise increases would be less if the facilities were located in an area with high background noise levels. Operations noise could be mitigated by measures such as enclosing noisy operations, using equipment with properly operating mufflers, and shutting off equipment when not in use. Traffic noise could be mitigated by ensuring that trucks have properly operated mufflers, routing truck traffic to avoid noise-sensitive uses to the extent possible, and using more than one intermodal yard.

With the addition of King County's waste, the duration of train noise on rail haul routes could increase (that is, more cars could be added to trains) or the number of noise incidents could increase (that is, one or more additional trains could be needed). The noise increase resulting from either possibility would likely not be significant, because the major rail lines are heavily used and trains generally take only minutes to pass by any one location (City of Seattle 1990). Trains could be

scheduled to avoid nighttime hours. Alternatively, King County's MMSW could be transported by truck from King County transfer stations to the eastern Washington landfill. Noise increases from truck traffic would likely not be significant along heavily used interstate highways to eastern Washington, but could potentially be significant on less heavily traveled local haul routes in the vicinity of the landfill. Site selection criteria could favor sites with no noise-sensitive receptors along haul routes.

Disposal of King County's solid waste would contribute to operations noise at the replacement landfill, along with disposal of waste from the host jurisdiction. The potential for noise impacts could be mitigated by selecting a site in an area of low population, and by implementing standard measures such as purchasing and maintaining the quietest available equipment, using soil stockpiles to attenuate noise, and creating noise barriers when operations are in line-of-site of any nearby receptors. Like all landfills that burn landfill gas in flares, there would be a potential for isolated incidents of flare noise, which would be minimized through proper design, operation, and maintenance of the landfill gas control system.

**Alternative 2**—During construction of an incinerator, there would be short-term noise increases due to construction equipment and trucks delivering construction materials to the site. Construction noise could be mitigated through standard measures discussed under Facility Improvement Alternative 2 in Part 4 of this EIS.

During operation, plant equipment in an incinerator, such as fans, steam vents, grinders, and conveyors, could potentially result in significant noise. Cooling towers could also be source of noise (King County 1991). In addition, depending on background traffic noise levels, traffic noise could increase along haul routes to the incinerator, particularly during peak use periods. Potential noise impacts could be mitigated by siting the incinerator in an industrial area where additional noise would be less noticeable, enclosing noisy operations, locating the cooling towers on a portion of the site as far as possible from any sensitive noise receptors, and selecting haul routes that avoid sensitive receptors to the extent possible.

Disposal of ash, noncombustible waste, and bypass waste would result in truck traffic noise at the incinerator site; contribute to noise levels on truck haul or rail routes to private landfill sites, and contribute to operations noise at private landfill sites. Potential impacts and mitigation measures would be similar to those discussed under Alternative 1 above.

**Alternative 3**—On a programmatic level, the potential impacts of exporting waste to a private landfill would be similar to those discussed under Alternative 1 above. As noted previously, one of the existing private landfills, the Roosevelt Regional Landfill, has a rail unloading facility off the landfill site. Trucks carrying King County's MMSW up the graded haul route to the landfill could contribute to significant cumulative noise increases at residences near the offloading facility (King County 1991). Potential mitigation measures would include equipping trucks with noise suppression equipment, maintaining a smooth road surface on the haul route, and reducing the number of noise incidents by requiring that trucks travel in pairs on the haul route. RDC has also constructed a new haul road to the landfill. While this would mitigate truck noise impacts along much of the route from Roosevelt to the landfill, residences along the portion of the route near the rail yard could still experience significant cumulative noise increases (King County 1991).

The incremental noise increase resulting from disposal of King County's MMSW may or may not be significant depending on background noise levels at the time waste export is implemented. In general, King County's contribution to potential noise impacts at any one private facility could be mitigated by contracting with more than one vendor.

### **Significant Unavoidable Adverse Impacts**

Under all alternatives, as long as operations continue at the Cedar Hills Landfill, landfill-related traffic would likely continue to be a major component of traffic noise along Cedar Grove Road. By selecting sites that have no noise-sensitive receptors along haul routes, significant noise impacts could be avoided at a replacement landfill (Alternative 1), an incinerator (Alternative 2), or a private landfill (Alternative 3).

## ***Environmental Health***

### **Affected Environment**

Prevention of potential human health risks is at the heart of landfill siting, design, and operation. Generally, exposure to health risks at a landfill may occur via water or air contamination or animal vectors. As discussed under Water, there is no evidence that water supplies are contaminated by leachate or landfill gas at the Cedar Hills Landfill or the private landfills. Therefore, this section focuses on potential health impacts from exposure via air contamination and animal vectors.

The primary way in which air contamination may occur at MMSW landfills is through fugitive emissions of landfill gas. Landfill gas typically contains trace levels of air toxics that can cause cancer or acute toxic effects at high enough concentrations and with long enough exposure times (WAC 173-460). To prevent such effects, federal regulations require that landfill gas be continuously collected and either burned in flares to destroy toxic constituents, or treated for subsequent sale or use (40 CFR Part 60, Subpart Cc). The regulations also require regular monitoring of surface and flare emissions, followed by timely corrective actions if specified performance criteria are not met.

An air dispersion modeling analysis of the Cedar Hills Landfill was performed in 1996, when Area 4 was still open. The analysis concluded that for all air toxics except vinyl chloride, predicted worst-case offsite concentrations were below state acceptable source impact levels (ASILs) designed to protect human health. Predicted worst-case offsite concentrations of vinyl chloride were at a level that would result in approximately one additional case of cancer in a population of one million people if all were exposed continually to that concentration for a period of 70 years. Given that no single location would be exposed continually for 70 years to the predicted worst-case concentrations, and considering the sample population potentially exposed, there would be no discernible increase in human health risk. (King County 1998a).

Area 4 of the landfill is now closed, and final cover of that area will be completed in 2000. At the request of PSCAA, CH2M Hill recently performed an air dispersion modeling analysis of Area 5, which is currently receiving solid waste. The analysis predicted maximum offsite concentrations of four specific toxic constituents in landfill gas, including vinyl chloride. Predicted maximum offsite concentrations for all these constituents are well below their respective ASILs (CH2M Hill 2000, see Attachment C to this EIS).

Landfill gas also contains trace quantities of highly odorous substances. Odors can indicate the presence of landfill gas and the need to assess the accompanying levels of air toxics and related health risks. In addition, a variety of health complaints may result from odors as chemical irritants, irrespective of the toxicity of the compounds causing the odors (University of North Carolina, 1998 and 1999; Yale University, undated).

PSCAA records indicate that there were two complaints about odor attributable to the landfill in 1999 and none in 2000 to date (King County 2000b – see Attachment C to this EIS). The Solid Waste Division expects that improvements to the landfill gas control system, most of which have already been implemented, will minimize the potential for off-site landfill gas odors (King County 2000b). Odor potential is similar at private landfills. However, at private landfills located in sparsely populated areas, there would be less potential for odor complaints.

The state Criteria for Municipal Solid Waste Landfills (WAC 173-351) requires that landfill operators prevent or control potential disease vectors. There are typically no significant rodent, fly, or mosquito problems at MMSW landfills, due to required vector control measures such as daily cover and compaction of solid waste. Gulls are not recognized as an important vector for disease transmission to humans. However, gulls are regulated as potential disease vectors, because they can leave droppings and pieces of refuse in neighborhoods along their flight path and can contribute to fecal coliform levels in surface water. (Seattle-King County Department of Public Health, personal communication, August 4, 2000; Buckley, undated; Snohomish Health District 1991)

King County uses a gull control system consisting of crossed wires over the active area to interrupt the flight pattern of gulls and discourage them from visiting the Cedar Hills Landfill. This system is effective in keeping gulls out of the active area, but they are still attracted to the landfill, particularly during the nonbreeding season when gulls typically flock. The Solid Waste Division has employed a number of strategies to discourage the birds, including broadcasting distress calls. These are initially effective, but their effectiveness decreases with time. The Division is currently talking with the U.S. Department of Agriculture (USDA) about performing bird control support under contract to the Division (USDA provides such support for a number of other landfills). A mixture of changing control strategies will likely be required indefinitely (King County 2000b, Attachment C). Gulls and other birds are also attracted to private landfills, and are controlled by harassment.

### **Impacts and Mitigation Measures**

**All Alternatives**—While the Cedar Hills Landfill is open, potential health risks associated with landfill gas emissions (air toxics and odor) would be minimized by completion of planned improvements to the landfill gas control system, as well as monitoring and any corrective actions required to meet federal and state performance criteria (King County 2000b, Attachment C). The number of gulls visiting the site, and their associated potential health risk, would also be reduced if King County were successful in improving its bird control efforts. When operations cease at the Cedar Hills Landfill, and the final portion of the phased final cover is placed, the landfill gas control system would be better able to operate at maximum efficiency. Also, the number of birds attracted to the site would likely decrease substantially over time.

**Alternative 1**—King County's MMSW would contribute to the potential for human health impacts at a publicly owned landfill in eastern Washington. Potential impacts would be similar in nature to those discussed above for the Cedar Hills Landfill, and similar mitigation measures would apply.

Siting the replacement landfill in an area with low population would provide additional mitigation for potential human health impacts that may result from unforeseen problems with the landfill gas control system or difficulty in controlling gulls. Although effective gull control is difficult at any landfill, there may be more flexibility in implementing control measures if there were no residential uses near the replacement landfill, because noisy harassment methods could be used.

**Alternative 2**—The two primary pathways for exposure to toxic substances at an incinerator are exposure via air contamination (including potential contamination of soils and food crops with toxic particulates emitted from the stack); and exposure via contamination of water supplies with wastewater from the facility. Ash disposal can also result in human health risks through inhalation of fugitive dust, which may be contaminated with heavy metals or other hazardous chemicals; and through leachate contamination of water supplies. (King County 1988; Doornbos et al., undated; Dennison and Rusten 1990)

Air toxics from an incinerator may contain acid gases such as sulfur dioxide and hydrogen chloride, dioxins, and heavy metals such as cadmium, lead, chromium, and mercury. Because air toxics can be in the form of particulates, and the particulates are very small and difficult to capture, the technology required to control air toxics from an incinerator is more complex than that used in landfill gas control. Technology does exist to reduce air toxics from an incinerator below levels that would cause human health impacts, and to continually monitor emissions and shut the facility down if emissions standards are violated. Nonetheless, the human health impacts resulting from a failure of emissions control systems at an incinerator could be more serious than those resulting from a typical failure of a landfill gas control system. Unlike landfill gas, heavy metals do not disperse well in the atmosphere, and can settle out and cause serious health problems. There is considerable public concern about this issue. (Doornbos et al., undated; King County 1998a; 40 CFR Part 60, Subpart Eb; WAC 173-434)

As noted under Water above, wastewater from an incinerator can be high in salts and heavy metals, and therefore could result in serious human health impacts if it were discharged improperly and contaminated water supplies. The mitigation measures described under Water would minimize the potential for human health impacts from this source. The potential for human health impacts from ash disposal would be mitigated through measures required by state law (WAC 173-306), including enclosing all ash handling operations; transporting ash in covered, sealed containers; and disposing it in an appropriate disposal site. The disposal site could be a permitted solid waste disposal site if testing shows the ash has no hazardous waste properties; a hazardous waste disposal site if tests indicate the ash is hazardous waste; or an ash monofill if tests indicate the ash meets Washington State criteria for a special waste.

**Alternative 3**—King County's MMSW would contribute to the potential for human health impacts at whatever landfill the MMSW is exported to following closure of the Cedar Hills Landfill. Potential impacts would be similar to those discussed for Alternative 1.

### **Significant Unavoidable Adverse Impacts**

If environmental control systems at disposal facilities are operated in compliance with federal and state regulations, none of the alternatives would be expected to significantly affect human health.

## **Land Use**

### **Affected Environment**

The Cedar Hills Landfill is located on a 920-acre site in unincorporated King County approximately 4 miles south of Issaquah and 6 miles east of Renton. Use of the Cedar Hills site for landfilling is allowed under a special use permit granted by King County in 1960, which requires that a 1,000-foot buffer around the perimeter of the site be maintained in its natural state. Moderate- to low-density single-family developments are located west, north, and east of the landfill. In early 1996, an inventory counted approximately 2900 residences within 1.5 miles of the landfill. Nonresidential land uses primarily to the south of the landfill include, but are not limited to, the Queen City Farms hazardous waste superfund site; the Cedar Grove Composting facility; Stoneway Concrete, a surface mining operation; and Pacific Topsoils, a private composting facility. A Bonneville Power Administration (BPA) easement 800 feet wide containing four electrical transmission lines crosses the southern portion of the site from east to west. A smaller electrical transmission line easement crosses north to south through the eastern buffer. In addition, a Northwest Pipeline Company easement 75 feet wide containing two natural gas pipelines parallels the BPA easement within the southern boundaries. (King County 1998a)

Based on studies conducted in the early 1990's, land surrounding existing private landfills in eastern Washington and Oregon, and the planned private landfill in Adams County, Washington, is largely used for dry land agricultural crops and cattle grazing. Residential density in the vicinity of the sites is extremely low. One single-family residence is located approximately 1000 feet southeast of Waste Management, Inc.'s Columbia Ridge landfill in eastern Oregon. The small town of Arlington is approximately 10 miles away. A few single-family residences are located approximately 2 miles from RDC's Roosevelt Regional Landfill in eastern Washington. The small town of Roosevelt is approximately 5 miles from the site. The nearest residences to the proposed Adams County landfill are located approximately 2 miles from the site in the settlement of Hooper. Private landfills also operate under special land use permits issued by the host jurisdictions. (King County 1991; Seattle 1990; Adams County 1993)

### **Impacts and Mitigation Measures**

**All Alternatives**—While the Cedar Hills Landfill is open, there are some operational impacts discussed in this EIS that could affect nearby residential land uses unless they are effectively mitigated. These include the use of backup alarms on landfill trucks and equipment (see Noise above); and the large numbers of gulls attracted to the site during the nonbreeding season. The Division is investigating ways to mitigate the above impacts, but the degree to which they can be mitigated is uncertain (King County 2000b, Attachment C).

The EIS on the Cedar Hills Site Development Plan (King County 1998a) determined that landfill-related truck traffic is a major component of noise along Cedar Grove Road (see Noise above). This and the other operational impacts discussed above would decrease substantially after operations cease and the last remaining open portion is under final cover (final cover will be applied in phases).

PSAPCA records indicate that there were two complaints from nearby residents about odors attributable to the landfill in 1999; and none in 2000 to date. Also, there have been two documented incidents of flare noise and vibrations. The Solid Waste Division expects that planned

improvements to the landfill gas control system, which are near completion, will effectively mitigate the potential for affecting nearby land uses with odor or flare noise. An acoustical evaluation of the north flare station is being performed that will further investigate the issue of potential vibrations (see Noise). (King County 2000b, Attachment C)

**Alternative 1**—A replacement landfill in an eastern Washington County would have similar potential as the Cedar Hills Landfill to generate traffic and operational noise, attract gulls and other scavenger birds, and occasionally result in offsite odor and flare noise. Also, similar measures would likely be taken to mitigate these impacts (see Air Quality and Odor, Noise, and Environmental Health above.). The potential for such impacts to adversely affect adjacent land use would likely be lower at a replacement landfill in eastern Washington, because there are large sites available in agricultural areas with low population. Site selection criteria could favor such sites.

Other types of potential land use impacts, such as impacts on scenic resources or historic and cultural resources could also be mitigated through site selection. Some areas of eastern Washington are of cultural importance to Native Americans, and a cultural resource management plan may be necessary to identify and protect such resources. Wherever a replacement landfill is sited, it would likely require a special use permit, the conditions of which would help reduce impacts on adjacent land use. Development of a new landfill would convert the land use of a large parcel of land (in the neighborhood of 750 to 1000 acres) to use for an MMSW landfill.

**Alternative 2**—Construction of an incinerator would convert a site of approximately 10 to 20 acres from its existing use to use for the facility. There could be some short-term impacts on land use during construction, such as noise and truck traffic. Mitigation for typical construction impacts is discussed under Facility Improvement Alternative 2 in Part 4 of this EIS.

Potential operational impacts that could affect nearby land uses include use of large quantities of ground water, air quality/odor, operations noise, and truck traffic and associated noise. These potential impacts and mitigation measures are discussed under Water, Air Quality and Odor, Noise, and Transportation above. Similar to a landfill, an incinerator would likely require some type of special land use permit, the conditions of which would help reduce impacts on adjacent land use. Site selection criteria could favor sites in areas with low population.

Incinerators can have substantial aesthetic impacts if visible from residential, recreational, or natural areas, or from scenic routes. A typical incinerator has the appearance of a large industrial complex with a stack that can be 200 feet high or more, depending on plant capacity and on the nature of the surrounding terrain. The building itself must be 80 to 100 feet high to house the incineration process. Lit portions of the building and stack can be visible to residences at lower elevations. In addition, a halo effect can result if bright lights are used to light the site at night. Emissions from the stack of an incinerator form a visible, white plume of condensed water vapor. Large vapor plumes are also produced by the cooling towers, which under adverse meteorological conditions can cause ground fogging in the immediate vicinity. (King County 1988)

Although the building housing the incinerator can be architecturally designed and the grounds landscaped, it may be difficult if not impossible to screen the stack and vapor plumes from view. Site selection criteria for an incinerator could consider the potential for aesthetic impacts as well as impacts on cultural resources. Mitigation for potential impacts on cultural resources is discussed under Alternative 1 above.

**Alternative 3**—King County's MMSW would contribute to potential impacts on adjacent land use at a private landfill. Potential impacts and mitigation measures would be similar to those discussed under Alternative 1 above. As discussed under Noise above, if King County's MMSW were exported to the Roosevelt Regional Landfill, it would contribute to noise increases at residences near the rail unloading yard. Cumulatively, these noise increases could be significant based on FHWA and EPA criteria (King County 1991). The incremental noise increase resulting from disposal of the County's waste may or may not be significant, and could be mitigated by selecting more than one vendor. If the County's MMSW were exported to the Columbia Ridge Regional Landfill, it would not contribute to offsite noise increases, because the rail unloading yard is located at the landfill itself.

Concerns were raised about potential historic and cultural resources during the environmental review of RDC's Roosevelt Regional Landfill. In coordination with the state Office of Archeology and Historic Preservation, RDC has developed a cultural resources management plan to identify and protect rock features on adjacent property that may be important from a historic or traditional cultural use perspective (King County 1991). Artifacts reflecting regional history have been identified at 16 different locations on or in the vicinity of Waste Management's planned Adams County Landfill site. As part of the site operations plan, Waste Management would develop a cultural resource preservation plan in coordination with interested parties (Adams County 1993). No historic or cultural resources have been identified at Waste Managements Columbia Ridge Landfill site, and the surrounding area is considered a low-sensitivity archeological zone (Seattle 1990).

### **Significant Unavoidable Adverse Impacts**

Under all alternatives, until the Cedar Hills Landfill closes, landfill-related truck traffic would continue to be a major component of traffic noise at residences along Cedar Grove Road. Under Alternative 2, it may not be possible to screen the incinerator stack and vapor plumes from view. Depending on the viewpoints from which these are visible, this may or may not be a significant unavoidable adverse impact. Through appropriate site selection, significant land use impacts could likely be avoided at a replacement landfill (Alternative 1) or private landfill (Alternative 2).

### **Public Services and Utilities**

#### **Affected Environment**

Currently, all MMSW generated within King County's jurisdiction is required to be disposed of at the Cedar Hills Landfill. As noted in the introduction to this part of the EIS, disposal is currently occurring in an area designated Area 5. If King County continues to use the Cedar Hills Landfill, Area 5 would close in 2004 and the remaining disposal areas, Areas 6 and 7 (currently undeveloped) would close in approximately 2008 and 2012, respectively.

Both the Cedar Hills Landfill and existing private landfills are designed, operated, and monitored to meet or exceed all applicable federal, state, and local standards for protection of public health and the environment. All of the existing private landfills are on large sites with expansion potential. The operating private landfills currently accept waste from multiple jurisdictions, and have adequate capacity to accept King County's solid waste for the duration of the planning period and beyond (2000 Plan, Appendix D; Ecology 1998).

## Impacts and Mitigation Measures

**All Alternatives**—As described previously, all disposal alternatives involve disposal of King County's MMSW at the Cedar Hills Landfill until the landfill reaches its permitted capacity. A cost analysis prepared for the 2000 Plan concluded that use of the entire remaining capacity of the Cedar Hills Landfill is more cost-effective than early closure, and would result in the lowest disposal rates of any of the disposal alternatives (2000 Plan, Appendix D). The cost analysis, which assumed that waste export would be implemented when the Cedar Hills Landfill closes, is discussed in more detail under Alternative 3 below.

**Alternative 1**—The cost analysis in the 2000 Plan indicates that development costs for new landfills (including siting and permitting) range from \$300,000 to \$800,000 per acre (2000 Plan, Appendix D). A landfill in eastern Washington would likely be at the low end of this range due to lower cost for land, fewer neighbors, and lower costs for surface water management during construction. Assuming a 750-acre site, the landfill could cost approximately \$225 million to develop. The Solid Waste Division contacted four counties in eastern Washington that are closer to King County than existing private landfills and could potentially offer reduced transportation costs compared to waste export. None of the counties (Chelan, Douglas, Kittitas, and Yakima) had a need or incentive to have King County site and operate a landfill within their jurisdictions. Because of this, and because there is developed landfill space in eastern Washington and Oregon with adequate capacity to accept King County's waste for at least the next 20 years, the Solid Waste Division has determined that constructing a new county-owned landfill outside King County is probably not feasible at this time. (2000 Plan, Chapter 7)

**Alternative 2**—A lengthy site selection and environmental review process would be required to site an incinerator in King County, and the outcome would be highly uncertain. Previous efforts by both King County and the City of Seattle to site an incinerator in the 1980s failed, largely due to strong public opposition to such a facility.

As noted in the description of this alternative, an incinerator is not really an alternative to landfill disposal. Even if a incinerator is constructed, approximately one-third of the waste stream would still require landfill disposal. This makes incineration the most costly of the disposal alternatives. Based on Spokane's experience with its 800 ton per day (tpd) incinerator, it would cost at least \$110 million (in 1990 dollars) to site and construct an incinerator (2000 Plan, Appendix D). King County would probably need a larger facility (2000 tpd), which would likely cost in the neighborhood of \$300 million in 1990 dollars (King County 1988; Denison and Rusten, 1990).

Operation and maintenance of an incinerator would be expected to cost approximately \$12 million per year (in 1990 dollars), or approximately \$240 million for the 20-year planning period. Bond payments for the size incinerator likely needed by King County could be close to \$40 million per year, or \$800 million over the 20-year planning period (in 1990 dollars), assuming an interest rate of 10 percent and a repayment period of 20 years (Denison and Rusten, 1990).

With inflation, the cost of constructing an incinerator in 2000 dollars would be substantially higher than the 1990 dollar amounts discussed above. In addition, assuming a rate of \$45 per ton for disposal of noncombustible waste, bypass waste, and ash (well within the range of current waste export contracts for neighboring jurisdictions), the landfill disposal cost to ratepayers for the 20-year

planning period would be approximately \$20 million in 2000 dollars (data provided by Solid Waste Division).

In addition to the expenses associated with incinerators, they are incompatible with aggressive recycling programs, because such programs remove combustible waste with the highest energy value, such as paper, wood, and plastics (Morris 1996). Therefore, reliance on incineration would be a step backward for King County in its efforts to encourage recycling and reuse of these materials. Given the available disposal capacity at private landfills, no environmental advantages were identified for an incinerator. The production of energy from waste is not an advantage, because energy can be produced more directly from landfill gas without using the large quantities of water required to produce electricity with an incinerator. One of the private landfills, the Roosevelt regional landfill in eastern Washington, has a gas-to-energy facility that produces electricity for the local public utility district.

**Alternative 3**—The 2000 Plan concludes that waste export is the most feasible disposal alternative for the region and should be initiated when conditions warrant for the following reasons: it is a proven disposal method that takes advantage of abundant existing landfill capacity; it is less costly than other disposal alternatives; and it is compatible with the County's waste reduction and recycling goals. The 2000 Plan identifies a number of issues that must be resolved about how and when waste export should be implemented. Key issues are discussed briefly below:

- ***Should the County implement waste export before the Cedar Hills Landfill reaches its permitted capacity?*** The Solid Waste Division conducted an analysis of the costs of waste export measured against the cost savings of no longer operating the Cedar Hills Landfill (2000 Plan, Chapter 7). The analysis found that closing the Cedar Hills Landfill when Area 5 is full would be less costly than closing the landfill any earlier, for several reasons: 1) The up-front costs of developing Area 5 have already been spent, and therefore could not be saved if Area 5 is closed prematurely; 2) A decision now to close Cedar Hills after Area 5 is full could allow the County to avoid the bulk of new area development costs for Areas 6 and 7, which need to begin several years in advance; and 3) It takes several years to put infrastructure in place to export waste cost-effectively, and 2004 was felt to be the earliest date this could be done (even then, this would require construction of a temporary compaction facility until the County's transfer stations could be equipped for waste export). The analysis also found that even if the landfill were closed after Area 5 was filled and before Areas 6 and 7 were developed, the cost to ratepayers would be approximately \$99 million or \$16 per ton (in 2000 dollars) between 2004-2012 – the projected date when Cedar Hills would otherwise reach capacity (2000 Plan, Chapter 7).

From an environmental standpoint, early closure of the Cedar Hills Landfill under the above scenario would eliminate impacts associated with construction of Areas 6 and 7 of the landfill; but could result in construction impacts at the site of the temporary compaction and reloading facility. There would be an earlier reduction of the operational impacts of the Cedar Hills Landfill, as well as an earlier end to the post-closure maintenance period during which landfill gas is produced. Conversely, King County's waste

would contribute to traffic and other operational impacts at the County's temporary compaction/reloading facility, and at whatever private intermodal facilities and landfills are included in the waste export contracts, at an earlier date. If the private landfills are located in sparsely populated areas, operations impacts would be less likely to affect residential communities.

- ***Should the County implement a system of partial waste export, delaying the closure of the Cedar Hills Landfill?*** In 1995, the County made projections using computer modeling of whether it would be cost effective to export waste from certain transfer stations at an earlier date, extending the life of the Cedar Hills Landfill. This modeling demonstrated that partial waste export would not be cost-effective. During preparation of the 2000 Plan, the County reviewed the assumptions used in the 1995 model and determined that further analysis was not warranted at this time (2000 Plan, Chapter 7).

From an environmental standpoint, partial waste export may reduce certain operational impacts of the Cedar Hills Landfill (such as noise from truck traffic along Cedar Grove Road) to some degree, depending on the amount of waste exported. Operational impacts of the landfill would continue longer, however, and the post-closure period during which landfill gas is produced would end later. Export of a portion of King County's MMSW would contribute to impacts at private intermodal facilities and landfills at an earlier date. The full impacts of the County's MMSW would be delayed until the Cedar Hills Landfill closed and full waste export was implemented.

- ***Should the County purchase future landfill space?*** The County evaluated whether it would be advantageous to purchase landfill space sooner in case prices rise over time. To determine if this trend is likely, the County reviewed disposal prices at existing landfills over the last 5 to 10 years, conducted a brief survey of landfill capacity in the western United States, and analyzed the cost of waste transport. The analysis determined that the cost of landfill space has actually decreased in recent years, that there is sufficient landfill capacity to keep the market competitive, and that the incremental cost of exporting waste longer distances is negligible. Therefore, this option need not be pursued at this time. (2000 Plan, Chapter 7)

There are no environmental considerations associated with this issue.

- ***Should the County export to a single landfill or multiple landfills?*** The 2000 Plan concludes that the answer to this question will depend on future market conditions and the interest of private companies in providing MMSW export services. Having one landfill may be more cost-effective, if there are economies of scale in using only one transport system and taking MMSW to only one landfill. On the other hand, having multiple landfills may provide more assurance that the County's disposal needs would be met even if one landfill closed unexpectedly.

From an environmental standpoint, use of multiple private landfills may provide mitigation for some impacts. For example, it would reduce traffic and associated noise at any one private intermodal facility or landfill; and may reduce operational impacts, such as need for additional equipment or (in the case of a landfill) need to operate multiple active faces. In general, disposal of King County's MMSW would make a smaller contribution to potential impacts at multiple landfills rather than a larger contribution at a single landfill.

### **Significant Unavoidable Adverse Impacts**

Alternatives 1 and 2 would likely result in a significant increase in disposal rates. Also, incineration of MMSW under Alternative 2 would be incompatible with the region's aggressive waste reduction and recycling goals. No significant unavoidable adverse impacts on the King County solid waste system would be expected under Alternative 3.

### ***Other Potential Impacts***

Disposal of King County's MMSW at the Cedar Hills Landfill under all alternatives, at a replacement public landfill outside the County under Alternative 1, and at a private landfill under Alternative 3, would substantially alter the topography of the site. Alteration of topography is typically not considered a significant impact unless scenic views are affected. This would not be the case at the Cedar Hills Landfill or at the existing private landfills (King County 1991 and 1998; Adams County 1993). View impacts could be avoided at a replacement landfill or new private landfill through appropriate site selection and landfill design.

As noted in Part 4 of this EIS under Other Potential Impacts, the Puget Sound basin is an area of substantial seismic risk. Therefore, the design of future disposal areas at the Cedar Hills Landfill (all alternatives) and an incinerator (Alternative 2) would have to incorporate measures to ensure that the facility could withstand anticipated earthquakes. Such design measures are standard engineering practice in the region. Although the potential for earthquakes may be less at a replacement landfill outside the County (Alternative 1) or a private landfill in eastern Washington or Oregon (Alternative 3), structures and disposal areas at these landfills would have to incorporate seismic design measures sufficient to withstand anticipated earthquakes in that area. (King County 1991; Adams County 1993).

With the above mitigation, no significant unavoidable adverse impacts would be expected under any of the alternatives.

**PART 6**

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**CDL Waste and Special Wastes**



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## Part 6. CDL Waste and Special Wastes

Chapter 8 of the 2000 Plan discusses CDL waste and special wastes. These two components of the MMSW stream may require special handling or may be unsuitable for disposal directly into a transfer station or landfill because of their physical characteristics or composition (Plan, Chapter 8).

CDL waste is generated primarily by construction and land development companies who build, remodel, and demolish structures and clear land for development. Because of its heavy and bulky nature, CDL waste requires special handling and safety measures. There is currently a ban on disposal of CDL waste at County facilities, except for small amounts delivered to transfer stations in private vehicles. Since 1993, King County's CDL waste has been handled through contracts with two private vendors: Regional Disposal Company (RDC), who accepts CDL waste at its Black River and Third and Lander receiving facilities; and Waste Management, who accepts CDL waste at its Eastmont and Argo Yard receiving facilities. Current contracts with these private vendors expire in 2004 (Plan, Chapter 8).

The 2000 Plan identifies four alternatives for handling CDL waste after the contracts expire. The potential environmental impacts of these alternatives are evaluated in Section A below. However, there is limited data on the regional CDL waste stream and its generators. Therefore, the 2000 Plan recommends conducting studies to collect such data between now and 2002 so that a decision can be made on an alternative or blend of alternatives before the existing contracts expire (Plan, Chapter 8).

Special wastes include contaminated soils, asbestos-containing materials, biomedical wastes, treatment plant grit and vector wastes, wood wastes, agricultural wastes, and waste tires. The 2000 Plan does not identify alternatives for handling special wastes in the near future. However, it makes specific recommendations for their handling after the Cedar Hills Landfill closes. Environmental considerations associated with these recommendations are discussed briefly in Section B below.

### A. CDL Waste

#### Description of Alternatives

##### *Alternative 1—Renew and Renegotiate Existing Contracts (No Action)*

Existing contracts with private vendors would be renewed. However, King County would renegotiate contract conditions that deal with recycling and other areas where service improvements could be made. The waste acceptance policy that currently restricts the disposal of large volumes of CDL waste at King County facilities would remain in effect.

##### *Alternative 2—Current Contracts Expire; No New Contracts Negotiated*

**Scenario A**—The existing contracts would be allowed to expire in 2004, after which CDL waste would be accepted at King County facilities. When the Cedar Hills Landfill reaches its permitted capacity, CDL waste would be included in King County waste export contracts. To actively promote

more recycling of CDL waste, King County would consider establishing a dedicated CDL waste recycling facility.

**Scenario B**—The existing contracts would be allowed to expire in 2004, the waste acceptance policy prohibiting disposal of most CDL waste at King County facilities would remain in place, and CDL waste would flow to private-sector facilities without any contractual ties with King County governing capacity and other requirements.

### ***Alternative 3—Limited Disposal at Transfer Stations***

King County would seek proposals from private vendors and execute new contracts to provide CDL waste handling services from 2004 (when the existing contracts expire) for the duration of the planning period. The new contracts would provide for expanded recycling of mixed CDL waste and transfer/disposal of the residual nonrecyclable CDL waste. Waste acceptance policy restrictions on disposal of CDL waste at King County transfer stations would be loosened to allow small commercial vehicles to deliver appropriately sized CDL waste to those facilities.

### ***Alternative 4—Negotiate New Contracts***

King County would seek proposals from private vendors and negotiate new contracts to provide CDL waste handling services from 2004 (when the existing CDL waste contracts expire) until the Cedar Hills Landfill closes in approximately 2012. The new contracts would provide for expanded recycling of mixed CDL waste and transfer/disposal of the residual nonrecyclable CDL waste. While the Cedar Hills Landfill is open and the new contracts are in effect, waste acceptance policy restrictions on disposal of CDL waste at King County facilities would remain in effect. After the Cedar Hills Landfill closes and the new contracts expire, CDL waste would be included in King County waste export contracts. At that point, King County could decide to allow small commercial generators to deliver appropriately sized CDL waste to county transfer stations.

## **Affected Environmental, Impacts, and Mitigation Measures**

### ***Traffic***

#### **Affected Environment**

King County's CDL waste is currently handled under contracts with two private vendors. Total average daily traffic at vendor facilities has not been estimated. However, Table 6-1 shows the estimated average weekday traffic attributable to King County's CDL waste at each of the in-county vendor facilities in 1999. Trips are one-way trips generated by commercial trucks delivering CDL waste to the facilities.

**Table 6-1. Estimated average weekday traffic at private transfer stations from commercial trucks delivering King County CDL waste, 1999 and 2010.**

Private Transfer Facility	CDL Waste Distribution (tons)	1999 Trips	CDL Waste Distribution (tons)	2010 Trips
<b>RDC</b>				
Black River	89,300	257	99,700	290
Third and Lander	75,200	217	84,000	242
<b>Waste Management</b>				
Eastmont	31,200	90	35,100	100
Argo Yard	13,700	40	15,200	44
<b>Total</b>	<b>209,400</b>	<b>604</b>	<b>234,000</b>	<b>676</b>

1999 CDL waste distribution based on information provided by haulers (2000 Plan, Chapter 8).

2010 CDL waste distribution assumes CDL waste would be distributed among private facilities in same proportion as 1999, and that no new private facilities would be constructed. Total CDL waste generation in 2010 was forecast by the Solid Waste Division (2000 Plan, Table 8-1 and 8-2), and assumes that contract provisions would be similar to those currently in effect.

Trips are one-way trips (in plus out), and were calculated based on the following assumptions: (1) the average incoming load of CDL waste weighs 2.4 tons (King County 1995); and 90 percent of CDL waste is delivered on weekdays, because that is when most CDL activity occurs.

In addition to the trips shown in Table 6-1, it is estimated that approximately 14 trips per day were generated at the Eastmont facility and Argo intermodal yard in 1999 due to transport of CDL waste in containers between the two facilities (see assumptions in last four footnotes to Table B-2). RDC's facilities incorporate intermodal yards on site, so no additional transfer trailer trips were generated there. However, an estimated 70 additional trips per day were generated at RDC's offloading facility in Roosevelt due to the need to transfer containers of CDL waste to the Roosevelt Regional Landfill, a distance of approximately 5 miles (see assumptions cited above). Waste Management's offloading facility is at the entrance to its Columbia Ridge landfill, so no offsite traffic is generated. Additional traffic, an estimated 10-20 trips per day, is also likely generated at vendor facilities from employees needed to handle King County's CDL waste.

Other aspects of the affected environment for CDL waste alternatives are the same at those described under Traffic in Part 4, Section B, and Part 5.

### Impacts of Alternatives

The analysis of Alternative 2, Scenario A, and Alternative 3 in this section is based on the assumption that the percentage of MMSW delivered regional direct to the Cedar Hills Landfill would be the same in 2010 as it was in 1999. If the County takes measures to substantially reduce or eliminate regional direct deliveries, regional direct trips would be redistributed as discussed in Part 4, Section B under Traffic, Alternative 2.

**All Alternatives**—Until 2004, CDL waste would continue to be managed by private companies under the existing contracts. Currently, there are no known significant traffic impacts at private transfer facilities or intermodal yards from acceptance of King County's CDL waste, and none would be expected through 2004.

**Alternative 1**—Under Alternative 1, vendor contracts would be renegotiated to deal with recycling and other service improvements, and renewed for another ten years or more. If no new vendor facilities are added and CDL waste recycling remains at current levels, it is estimated that approximately 680 average weekday trips would be generated at private facilities by commercial trucks hauling King County's CDL waste (Table 6-1).

If the waste distribution among facilities is the same as it was in 1999, these trips would be distributed among vendor facilities approximately as shown in Table 6-1. Additional trips from employees and transfer vehicles would be approximately the same as that discussed under Affected Environment above. The increase in average daily trips at each facility between 1999 and 2010 (approximately 12 percent) would not be expected to result in significant traffic impacts in and of itself. However, cumulatively with other traffic to and from vendor facilities, there is a potential for traffic impacts that may require mitigation. Mitigation could include selecting multiple vendors, which would increase the number of transfer facilities available; providing more opportunities to recycle CDL waste (which may be required by contract); and requiring that vendors construct new facilities or improve existing facilities to accommodate more traffic.

**Alternative 2, Scenario A**—After 2004 until the Cedar Hills Landfill closes, CDL waste would be accepted at King County facilities. The Solid Waste Division estimates that one-third to two-thirds of the CDL waste that currently goes to private facilities would be delivered to King County facilities and the rest would continue to flow to private facilities. The high end of this range was assumed in the following analysis so as not to underestimate resulting traffic impacts at King County facilities.

Table 6-2 shows estimated average weekday traffic at King County transfer stations in 2010. Based on the assumptions used in calculating average daily CDL waste traffic at transfer stations (see footnotes to Table B-2 in Attachment B), the transfer station that could be most affected by acceptance of CDL waste would be Houghton. Delivery of CDL waste to the Houghton station could generate an estimated 173 trips per average weekday, an increase of 23 percent over traffic levels without CDL waste. This would increase the potential for long waiting lines during peak use periods. Potential traffic impacts at the Houghton station could be mitigated by maintaining current restrictions on CDL waste disposal at that facility.

The relatively large percentage increase in traffic at Houghton is due to a weighting factor in the assumptions that gave high weight (assigned most trips) to transfer stations that 1) currently receive a high percentage of the total MMSW delivered to transfer stations; and 2) are farther away from RDC's Black River Receiving Facility. This weighting factor is considered reasonable, because 1) the percentage of MMSW accepted is an indication of convenience to population centers that may experience CDL activity; and 2) since the Black River facility would continue to accept CDL waste, King County transfer stations further from that facility would likely receive proportionally more CDL waste. Similarly, the transfer stations least affected by accepting CDL waste would likely be the Bow Lake and Renton stations, which receive considerably less MMSW than Houghton, and which are close to the Black River Receiving Facility. It is estimated that these stations would experience only a 4 to 5% increase in traffic. The estimated increase in traffic at all other stations ranges from 13 to 17%. The amount of CDL waste delivered to King County transfer stations could be considerably less than that assumed in Table 6-2 if county transfer stations are not as well suited to handling CDL waste as the private facilities, or if the private facilities charge sufficiently less for disposal.

**Table 6-2. Estimated average weekday traffic at King County transfer stations with and without CDL waste now delivered to private facilities, 2010**

King County Transfer Station	Trips Without CDL	CDL Trips	CDL Trips, Small Comm. Vehicle	Total Trips with CDL	Total Trips with Small Comm. Vehicle CDL
Algona	617	91	12	708	629
Bow Lake	620	24	3	644	623
Enumclaw	192	32	4	224	196
Factoria	698	104	14	802	712
First NE	593	79	10	672	603
Houghton	750	173	22	923	772
Renton	354	17	2	371	356
Totals	3,824	520	68	4,344	3,892

NOTE: The estimated weekday traffic shown is based on the assumption that up to two-thirds of the CDL waste currently going to private facilities will be received at King County transfer stations.

Trips are one-way trips (in plus out). MMSW trips are adjusted weekday trips taken from Table 4-1. It is assumed that the percent of MMSW delivered regional direct to the Cedar Hills Landfill would be the same in 2010 as in 1999. An estimated 390 additional trips would be distributed among transfer stations in 2010 if regional direct haul were eliminated (see traffic analysis for Facility Improvement Alternative 2).

Total CDL waste trips are taken from Table B-2 in Attachment B. Small commercial vehicles were assumed to be 13 percent of the total CDL waste trips, based on the Solid Waste Division's waste monitoring studies on CDL waste (King County 1995). It was assumed that the Vashon Transfer Station would not receive additional CDL-related trips, because Vashon Island CDL waste is not currently delivered to private facilities.

Accepting CDL waste at King County facilities would also increase transfer trailer traffic at the Cedar Hills Landfill (Table 6-3). In 2010, it is estimated that approximately 34 transfer trailer loads of CDL waste per day would be delivered to the landfill on an average weekday, generating approximately 68 trips per day (see Table B-2 in Attachment B). Compared to 2010 traffic without CDL waste, this represents approximately a 19 percent increase in truck traffic at the landfill, and a 9 percent increase in total traffic. This would not be expected to result in significant additional congestion along haul routes to the landfill. Depending on the volume of CDL waste received, Solid Waste Division staff estimate that acceptance of CDL waste would cause the Cedar Hills Landfill to reach capacity up to 1 year earlier (approximately 2011), resulting in an earlier end to operations traffic than other alternatives.

After the renewed vendor contracts expire, King County's CDL waste would be included in its waste export contracts. Waste export contracts could require that large loads be transported to private facilities, and could allow small commercial vehicles to deliver loads to King County transfer stations (see impacts under Alternative 3). Acceptance of CDL waste would add commercial truck traffic to the same private facilities that would be accepting transfer trailer loads of King County's MMSW. Together, King County's CDL waste and MMSW could generate approximately 1000 truck trips on an average weekday in 2012 – approximately 310 MMSW transfer trailer trips (Table B-5, Attachment B) and 700 CDL-related trips (Table 6-1 and text following table). The degree of impact on any one private facility could be mitigated by the measures discussed under Alternative 1 above.

If King County established a dedicated CDL waste recycling facility under this alternative, there would be a short-term increase in traffic in the vicinity of the site due to construction vehicles; and a long-term increase in traffic due to deliveries of recyclable CDL materials. If such a facility encouraged greater recycling of CDL waste, it would reduce CDL waste-related traffic at County

facilities while the Cedar Hills Landfill is open; and at all facilities after the Cedar Hills Landfill closes and waste export begins.

**Table 6-3. Average weekday traffic at Cedar Hills Landfill with and without CDL waste now delivered to private facilities, 1999 and 2010.**

Type of Traffic	Without CDL 1999	Without CDL 2010	With CDL 2010	With Small Comm. Vehicle CDL 2010
Commercial hauler	18	21	21	21
King County transfer	243	241	309	250
Regional direct	68	80	80	80
Special waste hauler	5	6	6	6
Cedar Falls drop box	4	5	5	5
Employee and visitor	400	432	464	436
<b>Total</b>	<b>738</b>	<b>785</b>	<b>885</b>	<b>798</b>

NOTE: The estimated weekday traffic shown is based on the assumption that up to two-thirds of the CDL waste currently going to private facilities will be received at County transfer stations and disposed at the Cedar Hills Landfill.

Trips are one-way trips (in plus out). The 1999 figure for employee and visitor trips is derived from the EIS on the Cedar Hills Site Development Plan (King County 1996), and includes King County employees, contractors, consultants, deliveries, and visitors. Other 1999 trips are actual trips.

Projected 2010 trips without CDL waste were calculated by increasing 1999 trips in proportion to the projected increase in disposed MMSW from 1999 to 2010 (2000 Plan, Figure 3-4). KC transfer trailer trips also reflect the reduction resulting from installation of compactors at all transfer stations but Houghton and Renton. It is assumed that the percent of MMSW delivered regional direct to the Cedar Hills Landfill would be the same in 2010 as in 1999. Total CDL waste trips were taken from Table B-2 in Attachment B. Small commercial vehicle trips were assumed to be 13 percent of total CDL waste trips (King County 1995). Projected 2010 employee and visitor traffic assumes the need for additional employees to handle the increased waste stream, and was calculated based on the Solid Waste Division's staffing model.

Construction trips are not included, because no new cell construction would take place in 2010. During construction of new cells, which is expected to occur in 2003 and 2007, approximately 400 more weekday trips would be expected from construction employees and deliveries of equipment and materials.

**Alternative 2, Scenario B**—After 2004 when the existing CDL waste contracts expire and no new contracts are executed, transport of King County's CDL waste would continue to contribute to traffic at whatever private transfer stations, intermodal facilities, and landfills the waste is delivered to.

The private sector may construct new facilities for handling CDL waste, including recycling facilities, transfer stations, or intermodal facilities. Construction of facilities would result in short-term increases in traffic in the vicinity of the sites. Facility operation would result in long-term increases in traffic due to deliveries of CDL waste for recycling or disposal. If new facilities were constructed, it would reduce traffic impacts at any one facility.

**Alternative 3**—From 2004 until the end of the planning period, CDL waste would be handled under new contracts with private vendors. Impacts similar to those of Alternative 1 would occur at whatever private facilities are included in the new contracts. Impacts at private facilities would be reduced slightly compared to Alternative 1, however, because King County would modify its waste acceptance policy to allow small commercial vehicles to deliver appropriately sized CDL waste to County transfer facilities.

Tables 6-2 and 6-3 show estimated average daily traffic at King County transfer stations and the Cedar Hills Landfill in 2010 under Alternative 3. None of the traffic increases would be significant.

Solid Waste Division staff estimates that acceptance of small quantities of CDL waste would slightly reduce the remaining life of the Cedar Hills Landfill (probably by a few months at the most), so operations traffic would end slightly earlier.

**Alternative 4**—Until 2004, the transportation impacts of Alternative 4 would be the same as those of Alternative 1. From 2004 until the Cedar Hills Landfill closes, similar impacts would occur at private facilities included in King County's new CDL waste contracts (see Alternative 3); and after the Cedar Hills Landfill closes, at private facilities included in King County waste export contracts (see Alternative 2, Scenario A). If King County allowed small commercial vehicles to deliver appropriately sized CDL waste to county transfer stations, traffic impacts at transfer stations and the Cedar Hills Landfill would be the same as those discussed under Alternative 3.

As discussed under Alternative 2, Scenario A, if the same private vendors were selected for export of MMSW as were selected to handle CDL waste, cumulative traffic at private facilities could be significant. The degree of impact on any one facility could be mitigated by measures discussed under Alternative 1 above.

### **Significant Unavoidable Adverse Impacts**

With the above mitigation, significant adverse impacts could be avoided under all alternatives.

## ***Air Quality and Odor***

### **Affected Environment**

The affected environment is similar to that described under Air Quality and Odor in Part 4, Section B, and Part 5.

### **Impacts of Alternatives**

**All Alternatives**—Until 2004, disposal of King County's CDL waste would continue to contribute to the potential for fugitive dust, air toxics emissions, and odor, at the private landfills where it is disposed. These potential impacts would be minimized through compliance with the federal, state, and local regulations discussed in Part 5 under Air Quality and Odor, Affected Environment; as well as by compliance with the revised Minimum Functional Standards (WAC 173-304) when they are adopted. The contribution of CDL waste would not be significant in light of the large quantities of MMSW from other jurisdictions disposed at the same landfills. CDL waste would be expected to produce less landfill gas per unit weight than MMSW, and to produce gas over a longer period of time (King County 1991).

King County's CDL waste would also continue to contribute to the potential for fugitive dust at the private transfer stations where it is dumped and placed in shipping containers. (Some types of CDL waste can produce more dust when dumped than typical loads of MMSW.) The potential for extremely dusty loads of CDL waste to be delivered to private facilities could be minimized through prohibitions on such loads, which is the policy at King County facilities. In addition, water sprays are available at private receiving facilities for use when dust is produced from dumping and handling waste.

Transport of King County's CDL waste would continue to contribute to vehicle emissions on haul routes to private transfer stations, intermodal facilities, and landfills. Traffic from transport of CDL waste represents a small percentage of total vehicle traffic in the region. Therefore, it would likely not contribute significantly to regional emissions of CO or ozone-producing chemicals. To the extent that transport of CDL waste occurs during commuter peak periods, it could contribute to violations of ambient CO standards at congested urban intersections. Potential impacts on air quality from increased vehicle emissions could be minimized as described in Part 4, Section B, under Air Quality and Odor, Alternative 1.

**Alternative 1**—Under Alternative 1, the potential impacts described above would occur beyond 2004 for as long as the renewed contracts remained in effect. The potential for such impacts could increase during the planning period due to the projected increase in CDL waste (2000 Plan, Table 8-2). On the other hand, the potential for impacts could decrease if the provisions of the renewed contracts were successful in encouraging greater recycling of CDL waste,

**Alternative 2, Scenario A**—If CDL waste is accepted at King County facilities after the current CDL waste contracts expire, potential impacts at those facilities would be similar to those discussed under All Alternatives above. Acceptance of CDL waste would not significantly increase the potential for fugitive dust, air toxics emissions, or odor. Assuming that one- to two-thirds of King County's CDL waste is delivered to County facilities, Solid Waste Division staff estimate that the Cedar Hills Landfill would reach capacity approximately 6 months to 1 year earlier. Placement of final cover over the last uncovered portion of the landfill, which would greatly reduce the potential for fugitive dust emissions and allow the landfill gas control system to be operated at maximum efficiency, would also occur approximately 6 months to 1 year earlier.

After the Cedar Hills Landfill closes, CDL waste would be included in King County waste export contracts. Potential air quality and odor impacts at private facilities would be similar to those discussed under Alternative 1. However, depending on the vendors selected for waste export, these impacts could occur at different facilities than those included in the current CDL waste contracts. Waste export contracts could require that large loads of CDL waste be taken to private CDL waste transfer stations, but King County could allow small commercial vehicles to dispose of appropriately sized CDL waste at King County transfer stations. This might result in slightly greater potential for fugitive dust at county transfer stations, as well as increased vehicle emissions. These impacts would not be significant.

If King County decided to establish a dedicated CDL waste recycling facility, there would be a short-term potential for fugitive dust when soils are exposed during dry weather. This could be mitigated with the measures described in Part 4, Section B, under Air Quality and Odor, Alternative 2. The long-term potential for fugitive dust from dumping and handling of CDL waste at the recycling facility could be mitigated as described under All Alternatives above.

**Alternative 2, Scenario B**—After 2004, transport of King County's CDL waste would contribute to impacts similar to those of Alternative 1 at whatever private transfer stations, intermodal facilities, and landfills the waste is delivered to. The private sector could construct new facilities for handling CDL waste, including recycling facilities, transfer stations, and intermodal facilities. Construction and operation of new facilities would result in potential air quality impacts similar to those discussed in Part 4, Section B, under Air Quality and Odor, Alternative 2.

**Alternative 3**—From 2004 until the end of the planning period, CDL waste would be handled under new contracts with private vendors. Potential impacts similar to those of Alternative 1 would occur at whatever private facilities are included in the new contracts. Potential impacts at private facilities would be reduced slightly compared to Alternative 1, because King County would loosen its current waste acceptance policy restricting CDL waste disposal at county transfer facilities to allow small commercial vehicles to dispose of appropriately sized CDL waste. This would result in a slightly greater fugitive dust potential at King County transfer stations, as well as increased vehicle emissions. As noted previously, these impacts would not be significant.

Acceptance of small quantities of CDL waste at the Cedar Hills Landfill would not significantly change the potential for fugitive dust emissions, air toxics emissions, or odor. The Solid Waste Division estimates that the landfill would reach capacity slightly earlier (probably a few months at the most). Placement of final cover over the last uncovered portion of the landfill, which would greatly reduce the potential for fugitive dust emissions and allow the landfill gas control system to be operated at maximum efficiency, would also occur slightly earlier.

**Alternative 4**—From 2004 until the Cedar Hills Landfill closes, impacts similar to those of Alternative 1 would occur at private facilities included in King County's new CDL waste contracts; and after the Cedar Hills Landfill closes, at private facilities included in county waste export contracts. If King County allows small commercial vehicles to deliver appropriately sized CDL waste to county transfer stations when waste export begins, it would result in slightly greater fugitive dust potential at transfer stations, as well as increased vehicle emissions. These impacts would not be significant.

### **Significant Unavoidable Adverse Impacts**

With the mitigation described above, no significant impacts would be expected under any of the alternatives.

## ***Water***

### **Affected Environment**

The affected environment is similar to that described in Part 5 under Water.

### **Impacts of Alternatives**

**All Alternatives**—Until 2004, disposal of King County's CDL waste would continue to contribute to the potential for impacts on water resources at the private landfills included in the vendor contracts. These potential impacts would be minimized through compliance with the federal, state, and local regulations discussed in Part 5 under Water, All Alternatives; as well as compliance with the revised Minimum Functional Standards (WAC 173-304) when they are adopted. The dry climate at existing private landfill sites, which reduces leachate production, would also reduce the potential for impacts on water resources. King County's CDL waste would not significantly increase the potential for impacts at these landfills, because it would constitute only a small percentage of the solid waste disposed there by other jurisdictions.

**Alternative 1**—After 2004, for as long as the renewed contracts remained in effect, disposal of King County's CDL waste would continue to have the potential impacts discussed under All Alternatives above.

**Alternative 2, Scenario A**—After 2004, acceptance of CDL waste at the Cedar Hills Landfill would contribute to the potential for impacts on water resources at that landfill. Mitigation measures to minimize potential impacts on surface and ground water are already in place at the Cedar Hills Landfill, so no significant impacts would be expected. Production of leachate at Cedar Hills, and the resulting potential for impacts on water resources, would decrease after operations cease and final cover is placed on remaining exposed areas. This would occur approximately 6 months to 1 year earlier if CDL waste were accepted, because the landfill would reach capacity that much earlier (based on estimates by Solid Waste Division staff).

After the Cedar Hills Landfill closes, disposal of King County's CDL waste would contribute to the potential for impacts on water resources at the private landfills where it is disposed under the waste export contracts. For the same reasons discussed under Alternative 1 above, acceptance of King County's CDL waste would probably not significantly increase the potential for impacts at private landfills. If King County decides to establish a dedicated CDL waste recycling facility, potential impacts on water resources from construction and operation of such a facility would be similar to those from construction and operation of improved or new transfer stations (see Part 4, Section B, under Water, Alternative 2).

**Alternative 2, Scenario B**—After 2004 when the existing CDL waste contracts expire and no new contracts are executed, the private sector could construct new facilities for handling CDL waste, including recycling facilities, transfer stations, or intermodal facilities. Construction of new facilities would result in potential impacts similar to those discussed in Part 4, Section B under Water, Alternative 2. At whatever private landfills King County's CDL waste is disposed, it would contribute to the potential for impacts on water resources (see discussion under All Alternatives above).

**Alternative 3**—At whatever private landfills King County's CDL waste is disposed after the existing contracts expire, it would contribute to the potential for impacts on water resources (see discussion under All Alternatives above). Acceptance of small amounts of CDL waste at King County transfer stations and the Cedar Hills Landfill would not significantly increase the potential for impacts on water resources.

**Alternative 4**—From 2004 until the Cedar Hills Landfill closes, King County's CDL waste would contribute to potential impacts on water resources at private landfills included in King County's new CDL waste contracts; and after the Cedar Hills Landfill closes, at private landfills included in the County's waste export contracts. Potential impacts would be similar to those discussed under All Alternatives above.

### **Significant Unavoidable Adverse Impacts**

No significant unavoidable adverse impacts would be expected under any of the alternatives

## ***Use of Non-Renewable Fuel Resources***

### **Affected Environment**

The affected environment is the same as that in Part 4, Section A under Use of Petroleum-Based Fuels.

### **Impacts of Alternatives**

**All Alternatives**—Until 2004 when the existing CDL waste contracts expire, CDL waste would have to be taken to RDC's Black River or Third and Lander receiving facilities, or to Waste Management's Eastmont and Argo Yard receiving facilities. These facilities are all located in the same general area, in or near the City of Seattle. Therefore, some CDL waste haulers travel greater distances and use more petroleum fuels.

**Alternative 1**—Because the terms of the renegotiated contract would provide for greater recycling of CDL waste, fuel used to transport CDL waste could decrease under Alternative 1. The decrease may or may not be sufficient to offset the increase in fuel use due to the projected increase in CDL waste over the years (2000 Plan, Table 8-2).

**Alternative 2, Scenario A**—After 2004, CDL waste would be accepted at King County facilities until the Cedar Hills Landfill reaches its permitted capacity. Because all CDL waste haulers, small and large, would have access to a geographically dispersed system of King County transfer stations, fuel use for transportation of CDL waste could be substantially reduced. After the Cedar Hills Landfill closes, CDL waste would be included in King County waste export contracts. Waste export contracts could require that large loads of CDL waste be taken to private transfer stations, but King County could decide to allow small commercial vehicles to deliver appropriately sized CDL waste to county transfer stations. If so, fuel use for transportation of CDL waste would be reduced.

**Alternative 2, Scenario B**—Fuel use associated with this option would depend on whether private companies constructed a more geographically dispersed system of receiving facilities, or provided greater opportunities to recycle CDL waste. If not, the amount of fuel used to transport CDL waste would initially be similar to that under the existing contracts, and would increase as the amount of disposed CDL waste increases over the years.

**Alternative 3**—The discussion of potential fuel use under Alternative 1 also generally applies to Alternative 3. However, under Alternative 3, King County would allow small commercial vehicles to dispose of appropriately sized CDL waste at county transfer stations, reducing miles traveled and fuel use by these vehicles.

**Alternative 4**—The discussion of potential fuel use under Alternative 1 also generally applies to Alternative 4. However, under Alternative 4, after the Cedar Hills Landfill closes, CDL waste would be included in King County waste export contracts. At that point, King County could decide to allow small commercial vehicles to deliver appropriately sized CDL waste to county transfer stations, potentially reducing fuel use by these vehicles.

### **Significant Unavoidable Adverse Impacts**

None would be expected under any of the alternatives.

### **Noise**

#### **Affected Environment**

The affected environment for CDL waste is the same as in Part 4, Section B, under Noise.

#### **Impacts of Alternatives**

**All Alternatives**—Until 2004, trucks transporting CDL waste would continue to go to and from private receiving facilities included in the existing contracts. CDL waste-related truck traffic would not be expected to result in significant noise increases, because these facilities are located in urban areas with high background noise levels (King County 1991; City of Renton 1991). In addition, a substantial amount of traffic and associated noise is generated from disposal of MMSW or processing of recyclables that pass through the Seattle facilities from other jurisdictions.

Disposal of King County's CDL waste would contribute to operations noise levels at private landfills, but the contribution would likely not be significant given the large amount of MMSW from other jurisdictions disposed at the same landfills.

**Alternative 1**—By providing for greater recycling of CDL waste, the renegotiated contracts could reduce the amount of traffic and associated noise near private receiving facilities. In general, however, traffic must be reduced by one-half to result in a discernible decrease in noise levels (City of Bellevue 1993).

**Alternative 2, Scenario A**—From 2004 until the Cedar Hills Landfill closes, CDL waste would be accepted at King County facilities. The resulting increase in traffic at transfer stations and the Cedar Hills Landfill (see Transportation section) could increase noise from traffic traveling to and from these facilities, but noise increases would likely not be discernible. Solid Waste Division staff estimate that acceptance of CDL waste at the Cedar Hills Landfill would cause the landfill to close 6 months to 1 year earlier, resulting in an earlier end to traffic and operations noise at that facility.

After the Cedar Hills Landfill closes, CDL waste would be included in King County waste export contracts. Potential noise impacts at private facilities would be similar to those discussed under All Alternatives. However, depending on the vendors selected for waste export, these impacts could occur at different facilities than those included in the current CDL waste contracts. Waste export contracts could require that large loads of CDL waste be taken to private transfer stations, but King County could allow small commercial vehicles to dispose of appropriately sized CDL waste at County transfer stations. The relatively small amount of additional traffic generated by these vehicles would not be expected to result in significant noise increases. Operations noise could increase at times from tipping and handling of CDL waste materials, but this also would not be a significant noise impact.

If King County decided to establish a dedicated CDL waste recycling facility, there would be a short-term increase in noise levels at the site during construction; and a longer-term potential for noise

impacts from truck traffic traveling to and from the facility, and from tipping and handling of CDL materials. Possible mitigation measures for construction and operational noise are described in Part 4, Section B, under Noise, Alternative 2.

**Alternative 2, Scenario B**—When the existing CDL waste contracts expire and no new contracts are executed, transport of King County's CDL waste would contribute to traffic and operational noise at whatever private facilities the waste is delivered to. The private sector could construct new facilities for handling CDL waste, including recycling facilities, transfer stations, and intermodal facilities. If so, traffic and associated noise would be dispersed among a greater number of facilities, reducing the potential impacts at any one facility. Potential impacts of construction and operation of new CDL waste facilities would be similar to those discussed above for a dedicated CDL waste recycling facility.

**Alternative 3**—From 2004 until the end of the planning period, CDL waste would be handled under new contracts with private vendors. Potential noise impacts similar to those described under All Alternatives above would occur at whatever private facilities are included in the new contracts. Potential impacts at private facilities would be reduced slightly, because King County would allow small commercial vehicles to dispose of appropriately sized CDL waste at County facilities.

Acceptance of additional small quantities of CDL waste at King County facilities would not significantly increase traffic or operations noise levels at those facilities. Solid Waste Division staff estimate that the Cedar Hills Landfill would reach capacity slightly earlier (probably a few months at the most), reducing traffic and operations noise slightly earlier than if CDL waste were not accepted.

**Alternative 4**—From 2004 until the Cedar Hills Landfill closes, impacts similar to those of Alternative 1 would occur at private facilities included in King County's new CDL waste contracts; and after the Cedar Hills Landfill closes, at facilities included in King County waste export contracts. If King County allows small commercial vehicles to deliver appropriately sized CDL waste to county transfer stations when waste export begins, noise impacts would be similar to those discussed under Alternative 3.

### **Significant Unavoidable Adverse Impacts**

No significant unavoidable adverse impacts would be expected under any of the alternatives.

### ***Environmental Health***

All CDL waste alternatives involve landfill disposal of CDL waste. Potential exposure pathways and human health impacts at the Cedar Hills Landfill or private landfills accepting CDL waste would be similar to those described in Part 5 under Environmental Health. However, CDL waste is not as attractive to animal vectors, because it does not contain food waste. Therefore, the discussion of animal vectors in Part 5 does not apply. In addition, CDL waste typically produces landfill gas in smaller amounts and at a lower rate than MMSW (King County 1991).

## ***Land Use***

No significant land use impacts would result from accepting CDL waste at private or King County facilities. If King County established a dedicated CDL waste recycling facility under Alternative 2, Scenario A, construction and operation of that facility would result in potential land use impacts similar to those discussed for improved and new transfer stations in Part 5, Section B under Land Use, Alternative 2. Similar potential impacts would also result if private CDL waste recycling, transfer, or intermodal facilities were constructed under Alternative 2, Scenario B.

## ***Public Services and Utilities***

### **Affected Environment**

As discussed in the introduction to this part of the EIS, King County's CDL waste is currently handled by two private vendors – RDC and Waste Management, Inc. – under contract to the County. Based on reports provided to the Solid Waste Division by RDC and Waste Management, approximately 209,400 tons of CDL waste were delivered to private facilities in 1999. Approximately 43 percent was delivered to the RDC's Black River receiving facility in Renton, 36 percent to Rabanco's Third and Lander Transfer Station in Seattle, 15 percent to Waste Management's Eastmont Transfer Station, and 6 percent to the Argo Yard. (2000 Plan, Chapter 8)

To ensure that CDL waste is properly handled, King County banned CDL waste at its facilities in 1993, except for small amounts delivered to County facilities by private vehicles. These small amounts are accepted only when delivered in vehicles with a gross vehicle weight of 8,000 pounds or less. Loads of waste that do not contain more than 10% CDL waste by weight are also accepted as MMSW at the transfer stations. Data from King County's most recent waste characterization study indicate that approximately 12 % of the waste stream entering County-owned facilities is CDL waste. (2000 Plan, Appendix A-2)

Consistent with state and regional waste reduction and recycling goals, the preferred method of handling CDL waste is to separate out the recyclable and reusable portions to reduce the amount that must be disposed. Both RDC and Waste Management have indicated that they separate out some recyclables for processing, and transport the remainder to their respective landfills in Klickitat County, WA (the Roosevelt Regional Landfill) and Gilliam County, Oregon (the Columbia Ridge Landfill) for disposal. Waste Management's Argo Yard facility only accepts containerized loads of mixed CDL waste, which come from large construction/demolition projects or from their Eastmont Transfer Station. These loads are transported directly to the Columbia Ridge Landfill for disposal. (2000 Plan, Chapter 8)

### **Impacts and Mitigation Measures**

The following paragraphs discuss the potential impacts on the regional solid waste system of the four CDL waste alternatives. However, as discussed in the introduction to this part of the EIS, the recommendation in the 2000 Plan is to conduct targeted studies of the CDL waste stream by 2002 to better understand its characteristics, the types of vehicles it is hauled in, opportunities for increased recycling, potential impacts on County facilities of accepting CDL waste, and other factors that might affect the choice among alternatives. (2000 Plan, Chapter 8)

**All Alternatives**—King County's CDL waste would continue to be handled under the existing contracts until the contracts expire in 2004. Because there is a disposal ban on most CDL waste at County facilities, there would continue to be a system of private CDL waste receiving facilities that are not geographically dispersed and not convenient to many customers. Under the existing contract terms, recycling would likely not increase substantially over existing levels.

**Alternative 1**—The amount of CDL waste generated in the County would be expected to increase with growth in the region during the planning period. County forecasts indicate that if CDL waste contracts remain in place, there would be an estimated 234,000 tons of CDL waste disposed at private facilities in 2010, and an estimated 256,000 tons in 2020 (2000 Plan, Table 8-2).

If the existing contracts with vendors were renegotiated and renewed, King County would have the opportunity to include provisions to cover areas where service improvements are needed, such as providing more opportunities to recycle CDL waste. However, because the disposal ban on most CDL waste at King County facilities would continue, this alternative could again result in a system of private CDL waste receiving facilities that are not geographically dispersed and not convenient to many customers. To mitigate this potential impact, King County could require in the renegotiated contracts that more transfer facilities be provided to serve areas that are not conveniently served by existing facilities; or could allow small commercial vehicles to deliver CDL waste to County facilities (see Alternative 3.)

**Alternative 2, Scenario A**—After the existing contracts expire in 2004, CDL waste would be accepted at King County facilities until the Cedar Hills Landfill closes. Based on information from 1991 to 1993 when King County accepted CDL waste, this would likely cause more wear and tear on transfer stations, waste handling equipment, and trailers, due to the bulky and heavy nature of the waste. Therefore, maintenance costs would likely increase. In addition, more staff may be needed to handle incoming CDL waste as well as commercial and self-haul MMSW. Solid Waste Division staff estimate that acceptance of CDL waste at the Cedar Hills Landfill could reduce the remaining life of the landfill by 6 months to 1 year. (2000 Plan, Chapter 8)

Another impact on the transfer system of accepting CDL waste is that there could be a substantial increase in truck traffic at some transfer stations (see Traffic above). This could increase the potential for traffic congestion and off-site traffic backups during peak periods, and reduce the level of service to customers. As noted under Traffic, this could be mitigated by continuing to ban most CDL waste at transfer stations that cannot accommodate additional traffic.

When the Cedar Hills Landfill closes, waste export contracts could require that large loads of CDL waste be taken to private facilities. If only the existing private facilities were available, there would be little geographic dispersion of disposal sites, so disposal of CDL waste would be costly and inconvenient for small commercial vehicles. King County could mitigate this impact by allowing small commercial vehicles to deliver appropriately sized loads to county transfer stations (see Alternative 3). King County would promote recycling of CDL waste under this alternative, and would consider establishing a dedicated CDL waste recycling facility. Therefore, there could be less CDL waste requiring disposal at King County or private facilities.

**Alternative 2, Scenario B**—Under Scenario B, when the current CDL waste contracts expire in 2004, the disposal ban on most CDL waste at King County facilities would remain in effect, and CDL waste would flow to private facilities without any contractual ties with King County. Private

companies may or may not develop a more geographically dispersed system of transfer stations. If not, King County could allow small commercial vehicles to dispose of appropriately sized CDL waste at its transfer stations (see Alternative 3). Without a King County contract requiring a greater level of recycling of CDL waste, there would likely be little incentive for private companies to promote recycling.

**Alternative 3**—Under this alternative, King County would again seek proposals for CDL waste handling from private vendors, and execute new contracts that would be in effect from 2004 to the end of the planning period. Similar to Alternative 2, in negotiating new contracts King County could incorporate provisions calling for increased recycling of CDL waste. The new contracts would require that larger loads be delivered to private facilities, but the disposal ban at King County facilities would be modified to allow small commercial vehicles to deliver appropriately sized CDL waste to those facilities. This would reduce transportation costs and fuel usage for small CDL waste generators, while having a relatively minor impact on transfer station maintenance costs, traffic congestion at transfer stations (see the Transportation section), and the remaining life of the Cedar Hills Landfill. Solid Waste Division staff estimated that the life of the landfill could be reduced slightly, probably no more than a month or two.

**Alternative 4**—This alternative would be similar to Alternative 3 in that King County would execute new contracts when the existing contracts expire. These contracts would promote increased recycling of CDL waste, so the amount of waste requiring disposal at private facilities would be expected to decrease. The disposal ban on most CDL waste at King County facilities would remain in place until the Cedar Hills Landfill closes, which would reserve the remaining life of the Cedar Hills Landfill for disposal of MMSW. After the Cedar Hills Landfill closes and waste export is implemented, CDL waste would be included in the waste export contracts, and King County could allow small commercial vehicles to dispose of appropriately sized CDL waste at its transfer stations (see impacts under Alternative 2, Scenario A, and Alternative 3).

### **Significant Unavoidable Adverse Impacts**

Acceptance of CDL waste at King County facilities under Alternative 2, Scenario A, would likely result in increased equipment and maintenance costs at transfer stations and the Cedar Hills Landfill; the need for additional staff at these facilities; and probably more frequent repair and replacement of transfer trailers. In addition, it could reduce the life of the Cedar Hills Landfill by as much as 1 year.

## **B. Special Wastes**

In addition to MMSW and CDL waste, King County also manages a number of special wastes: contaminated soil, asbestos-containing materials, biomedical wastes, treatment plant grit and vector wastes, wood waste, agricultural waste, and (on a limited basis) waste tires. All these special wastes are currently accepted at County facilities, although in some cases only at the Cedar Hills Landfill. With few exceptions, all of the special wastes require clearance under various waste acceptance policies and regulations before being disposed at County facilities. (2000Plan, Chapter 8)

No alternatives were developed for handling special wastes. Pending further study, some changes could be made in special waste collection at transfer stations. After the Cedar Hills Landfill closes, handling of special wastes would likely be shifted to the private sector, who would have to comply with the same or similar regulations applicable to County facilities. Special wastes constitute a very

small percentage of the County's total waste stream (2000 Plan, Chapter 8). Historically, there have been no significant impacts at County facilities associated with handling these wastes. Therefore, there is no reason to believe there would be significant impacts associated with handling special wastes at private facilities after the Cedar Hills Landfill closes.

The 2000 Plan recommends that the County evaluate the possibility of providing one transfer station that would accept small volumes of asbestos-containing materials from residents; and of providing a separate receptacle for disposal of small quantities of sharps generated by residents or small businesses at some or all transfer stations. If implemented, collection of these materials would comply with all applicable regulations to protect both the workers and the public. Collection of small amounts of these materials at transfer stations would help protect the public and the environment by reducing the potential for improper disposal.

The County will also evaluate long-term management solutions for vector wastes, including handling dry vector wastes at transfer stations and in waste export containers. There is insufficient information on potential management options to evaluate their potential environmental impacts.



**PART 7**

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**References and Information Sources**



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## Part 7. References and Information Sources

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**PART 8**

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**Distribution List**



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## Part 8. Distribution List

### Federal Agencies

Bonneville Power Administration  
Bureau of Indian Affairs  
EPA, District 10  
U.S. Fish and Wildlife Service

### Indian Tribes

Muckleshoot Tribe  
Snoqualmie Tribe  
Suquamish Tribe  
Tulalip Tribe

### State of Washington

Department of Ecology, Environmental Review  
Section  
Department of Ecology, SEPA Section  
Department of Fish & Wildlife, North Puget Sound  
Region  
Department of Natural Resources  
Department of Transportation, Northwest Region

### Regional Agencies

Puget Sound Clean Air Agency  
Puget Sound Regional Council  
Suburban Cities Association

### King County

Ron Sims, Executive  
County Council  
Maggi Fimia, District 1  
Cynthia Sullivan, District 2  
Louise Miller, District 3  
Larry Phillips, District 4  
Dwight Pelz, District 5  
Rob McKenna, District 6  
Pete von Reichbauer, District 7  
Greg Nickels, District 8  
Kent Pullen, District 9  
Larry Gossett, District 10  
Jane Hague, District 11  
David W. Irons, District 12  
Chris Vance, District 13  
Seattle/King County Department of Public Health,  
Environmental Health Division

### Local Jurisdictions

City of Algona: Ray Pullar, Director of Public  
Works  
City of Auburn: Sharon Conroy, Recycling Specialist  
City of Bellevue: Damon Diessner, Assistant  
Director, Utilities Department  
City of Bellevue: Connie Marshall, Councilmember  
City of Bellevue: Thomas Spille, Solid Waste  
Program Administrator  
City of Bellevue: Vicki VanDuyne, Solid Waste  
Program Administrator  
Town of Beaux Arts Village: Betty Heckendorn,  
Recycling Coordinator  
City of Black Diamond: Dan Del Santo, Director of  
Public Works  
City of Bothell: Cecelia Duncan, Public Works  
Administration Manager  
City of Burien: Dean Tatham, Recycling  
Coordinator  
City of Clyde Hill: Claudia Lauinger, Recycling  
Coordinator  
City of Clyde Hill: Philip G. Rourke, Mayor  
City of Covington: John Morast, Public Works  
Coordinator  
City of Covington: Pat Nevins, City Manager  
City of Des Moines: Gloria Gould-Wessen,  
Recycling Coordinator  
City of Duvall: Cecelia Boulais, Snoqualmie Valley  
Recycling Coordinator  
City of Duvall: Pat Fullmer, Councilmember  
City of Enumclaw: Mark Bauer, Director of Public  
Works  
City of Federal Way: Rob Van Orsow, Solid Waste  
& Recycling Coordinator  
Town of Hunts Point: Jan Brekke, Mayor  
City of Issaquah: David Fujimoto, Resource  
Conservation Coordinator  
City of Kenmore: Kristin Anderson, Recycling  
Coordinator  
City of Kent: Robyn Bartelt, Conservation Specialist  
City of Kirkland: Ann Scheerer, Recycling  
Coordinator  
City of Lake Forest Park: Sarah Phillips, Community  
& Intergovernmental Affairs Mgr.  
City of Maple Valley: John Starbard, City Manager  
City of Medina: Carl Burris, Public Works  
Superintendent  
City of Mercer Island: Glenn Boettcher, Solid Waste  
Coordinator  
City of Newcastle: Andy Takata, City Manager

City of Normandy Park: Lois Lee,  
Planner/Recycling Coordinator  
City of Pacific: Dan Carrite, Recycling Coordinator  
City of Redmond: Jerome Jin, Recycling  
Coordinator  
City of Renton: Linda Knight, Solid Waste  
Coordinator  
City of Sammamish: Michael Wilson, City Manager  
City of SeaTac: Soraya Chang, Waste Management  
Coordinator  
City of Shoreline: Ann Boyce, Recycling Coordinator  
City of Shoreline: Scott Jepsen, Mayor  
City of Shoreline: Linda Montgomery, Deputy Mayor  
City of Skykomish: Ted Cleveland, Mayor  
City of Tukwila: Rebecca Fox, Recycling  
Coordinator  
City of Woodinville: Sharon Hauser, Solid Waste  
Coordinator  
City of Yarrow Point: Sue Ann Spens, Recycling  
Coordinator

### **Organizations**

Automotive Machinist District 160, Local 289  
Boilermakers & Blacksmiths, Local 104  
Carpenters of Seattle, Local 131  
Four Creeks Unincorporated Area Council: Everett  
Wilcock, President  
Greater Maple Valley Area Council: Heidi  
Seidelhuber, Chair  
IBEW Local 46  
IFP&TE, Local 17  
Joint Crafts Council: John Williams,  
Secretary/Treasurer  
North Highline Unincorporated Area Council: Judy  
Duff, President  
Operating Engineers Local 302  
Professional & Technical Engineers, Local 17: Ray  
Goforth, Business Representative  
SEIU, Local 6  
Service Employees International Union, Local 6:  
Marc Earls, President  
Service Employees International Union, Local 6: Dan  
Gilman, Business Representative  
Solid Waste Advisory Committee  
William A. Beck, Vice Chair  
Robert Beckwith  
Stephanie Fenton-Delaurenti  
Jerry Hardebeck  
Laurence B. Istvan  
Nels Johnson  
Conrad Lee  
Deborah Natelson  
Max L. Pope  
Jessika Satori  
Bob Schille

Russell Sheldon  
Shirley Shimada  
Pamela Sommerville, Chair  
James K. Talbot,  
Mark Hooper  
Teamsters, Local 117E & P: Betty Sorbo, Business  
Representative  
Teamsters, Local 117  
Teamsters, Local 174  
Teamsters, Local 174: Bob Hasegawa,  
Secretary/Treasurer  
Vashon-Muury Island Community Council: Jake  
Jacobovitch, President  
West Hill Community Council: Don Stone, President

### **Private Utilities**

The Rabanco Companies  
Waste Connections, Inc.  
Waste Management, Inc.

### **News Media**

The Journal-American  
The Post-Intelligencer  
The Seattle Times

### **Local Libraries**

Issaquah Branch Library  
King County Library System  
Maple Valley Branch Library  
Newport Way Branch Library  
Renton Public Library  
Seattle Public Library

## **ATTACHMENTS**

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**ATTACHMENT A**

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**Environment of the Puget Sound Region**



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# Environment of the Puget Sound Region

## Earth

The Puget Sound region, which is located between the Olympic Mountains on the west and the Cascade Mountains on the east, is characterized by a series of parallel plateaus and valleys that trend predominantly north-south in the center of the region. The valleys are occupied by major rivers, lakes, and the marine waters of Puget Sound and its various extensions. This general physiographic pattern is interrupted by several east-west trending features, most notably the Issaquah highlands, a chain of hills extending from the North Bend area west toward Seattle. Valley floors are flat. Upland plateaus have moderately rolling topography. Topography tends to be steepest on the sides of major valleys, in the Issaquah highlands, and in the foothills along the west and east edges of the region.

Soils in the Puget Sound region reflect geologically recent glacial and alluvial (river and stream) activity as well as human activity. The original soils in urban areas concentrated in the central Puget Sound area have typically been modified by excavation and filling. River valleys are generally occupied by poorly drained, silty loams that commonly have a substantial organic content. Soils on upland areas between the valleys typically are coarser-grained sandy and gravelly sandy loams, but soils with high organic content do occur locally in depressions and along water bodies. Over extensive areas within the region, low permeability glacial till underlies surficial soils at typical depths of a few feet.

Local jurisdictions within the region have mapped geologically hazardous areas including landslide and erosion-prone areas, some abandoned mining areas, and seismic risk areas. Landslide and erosion-prone areas are associated primarily with steep slopes. Hazardous mining areas that may be subject to surface subsidence are associated primarily with past coal mining that occurred in the area from Newcastle through Renton and on south to Black Diamond.

The Puget Sound region is an area of substantial risk from major earthquakes. The primary hazards from earthquakes in the Puget Sound area are liquefaction of unconsolidated soils which diminishes the ground's capacity to support structures and landslides triggered by ground shaking. A high liquefaction potential is associated with saturated alluvial soils which occur over large areas of the major river valleys in the region and with areas of older fill in Seattle, Tacoma, and other urban areas.

## Air Quality and Odor

Weather in the central Puget Sound region is characterized by sunny, mild days during summer and cloudy, wet days during winter. January is typically the coldest month and July is usually the warmest month, with average temperatures in Seattle of 44.5°F and 75.1°F, respectively. Average nighttime temperatures range from the lower 30s during winter months to the mid-50s during summer months. Prevailing winds in are generally from the southwest. Occasional severe winter

storms produce strong northerly winds. Peak wind speeds in excess of 40 miles per hour tend to occur between November and March.

In the Puget Sound area, seasonal meteorological conditions, topography, and land uses largely control air quality by enhancing or preventing air pollutant dispersion. Wind prevents pollutants from concentrating, dispersing pollutants to areas of lower concentration. Periods of low wind velocity, however, allow pollutants to concentrate and temperatures to increase, causing chemical reactions between volatile organic compounds and nitrogen oxides, producing smog, the primary component of which is ground-level ozone. These conditions occur primarily during winter months when temperature inversions (i.e., when warmer air blankets cooler air, trapping pollutants) persist for as long as several days, often resulting in exceedance of local, state, and national air quality standards (PSCAA 1999).

Air contaminants that may occur at significant levels in urban areas include carbon monoxide, ozone, sulfur dioxide, nitrogen dioxide, and particulate matter. Large confined valleys are known for poor ventilation (due to high ground on either side of the valley), yet are also desirable locations for industrial development. The combination of these factors often results in high contaminant concentrations.

Cars and trucks produce approximately 90 percent of carbon monoxide in urban areas. Carbon monoxide levels are typically higher during the winter months, especially during air stagnation periods. Ozone and ground-level ozone, or smog, is formed near the ground when volatile organic compounds and nitrogen oxides react chemically. Ozone can lower resistance to colds and pneumonia and cause irritation to the nose, throat, and lungs. Emissions from motor vehicles, gasoline and paint vapors, aerosol products, and industry all contribute to ozone formation. Traffic and other pollutant sources add to existing smog, increasing pollutant density near pollutant sources. Sulfur dioxide is a colorless gas produced by industrial sites such as smelters, paper mills, power plants and steel manufacturing plants, and can cause a variety of respiratory diseases. Nitrogen dioxide is a poisonous gas formed from high temperature fuel combustion and subsequent atmospheric reactions. Nitrogen dioxide in ambient air has been connected with a range of respiratory diseases (U.S. EPA 1993; PSCAA 1999).

Two types of fugitive dust or particulate matter are monitored and regulated by federal, state, and local government: total suspended particulates and fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>). Particulate matter consists of small discrete solid or aerosol particles dispersed in the air. Wood smoke, wind-blown dust, and industrial emissions are the biggest sources of PM<sub>10</sub> and PM<sub>2.5</sub> (PSCAA 1999).

## **Air Quality Regulations**

In compliance with the 1990 Clean Air Act Amendments, Washington state adopted the Clean Air Washington Act in 1991, which includes ambient air quality standards for criteria air pollutants that are at least as stringent as the federal standards for protection of health and the environment. The Clean Air Washington Act is administered by the Washington Department of Ecology and, in the central Puget Sound region, the Puget Sound Clean Air Agency (PSCAA; formerly known as the Puget Sound Air Pollution Control Agency, or PSAPCA).

PSCAA regulates odorous emissions (through section 9.11 of Regulation I), which prohibits emission of any air contaminant in sufficient quantity, character, or duration to be injurious to human health, property, or plant or animal life. Section 9.11 also requires that odors not interfere with enjoyment of life or property.

Except for particulate matter (PM<sub>10</sub>), the Puget Sound region is currently in compliance with (i.e., is an attainment area for) all six criteria pollutants monitored by PSCAA (carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter). Part of Seattle's Duwamish area is still technically in nonattainment for PM<sub>10</sub>, even though PSCAA has collected several years of clean air monitoring data in the area (Sound Transit 1999).

In 1997 (the most recent year with complete data), no violations of any ambient air quality standard were measured. In July 1999, there was one exceedance of the ozone standard in Kent, and one PM<sub>10</sub> reading near Enumclaw that was considered "unhealthful for sensitive groups." The highest PSCAA-recorded levels of carbon monoxide in 1999 most commonly occurred in the University District monitoring station (1307 NE 45<sup>th</sup> Street), but even these levels were in the "moderate" to "good" range (PSCAA 1999).

## Water

### Surface Water

The east side of the central Puget Sound watershed (Snohomish, King, and Pierce counties) includes five major drainage basins. These are (1) the Stillaquamish drainage basin; (2) the Snohomish-Snoqualmie drainage basin; (3) the Cedar River-Lake Washington drainage basin; (4) the Green River basin; and (5) the White-Puyallup drainage basin. In addition, numerous small drainages along the saltwater margins in the westernmost portions of Snohomish and King counties are grouped together as Puget Sound drainages.

The state of Washington classifies surface waters of the state as part of its promulgation of water quality standards (Washington Administrative Code [WAC] chapter 173-201A). The classifications are based on existing water quality and beneficial uses of the individual water bodies. Most rivers and streams in the region are classified either AA (extraordinary quality) or A (excellent quality). Exceptions are the Duwamish River from the confluence of the Green and Black rivers to Elliott Bay and the lowermost one mile of the Puyallup River, which are classified B (good quality). In general, the lower portions of rivers and streams in the western (more developed) half of both counties are classified A, while the upper portions of major rivers and the tributaries of these upper portions are classified AA. The state of Washington classifies all lakes as Lake Class under WAC 173-201A. In addition to rivers, streams, and lakes, wetlands are a significant surface water resource in the region. Surface water in the Puget Sound region ultimately discharges into the marine waters of Puget Sound.

Puget Sound is an estuary connected to the Pacific Ocean by the Strait of Juan de Fuca. Most of Puget Sound is classified as Class AA (extraordinary quality) marine water by Ecology (WAC 173-201A). Inner Elliott Bay east of Pier 91 and Duwamish head, are rated Class A (excellent quality), Everett Harbor off the mouth of the Snohomish River is rated Class B (good), and Commencement Bay off the mouth of the Puyallup River is rated Class B and C (fair).

## **Ground Water**

Major supplies of ground water typically are found in deposits of porous sediments. These deposits are most commonly sands and gravels associated with glacial outwash deposits and with stream-laid deposits in major valleys (King County 1987; EES 1991). Surface recharge of ground water is most significant in areas of porous soils, particularly large river and stream valley floors underlain by porous alluvial deposits. In addition, although much of the upland drift plains in the central Puget Sound area are underlain by relatively impermeable till, significant portions of the upland areas are underlain by more porous soils (e.g., Everett soils formed in outwash sands and gravels), and therefore these are significant recharge areas.

Ground water quality data are limited, although no major overdrafts or human-caused occurrences of ground water pollution have been identified. Nonetheless, recent studies have identified localized problems, including elevated levels of nitrate, naturally elevated levels of arsenic, and seawater intrusion (e.g. EES 1991).

## **Plants and Animals**

Native habitats within the central Puget Sound region include coniferous and broadleaf forests, lakes and streams, wetlands, and marine waters. Development has modified or supplanted portions of these originally continuous native habitats, in particular forests and wetlands, and, in the more developed areas, created a mosaic of habitat fragments. These habitat fragments are interspersed with areas having limited or no vegetation. In general, the degree of development and the associated degree of habitat modification increases from the more rural east and west edges of the region toward the more urbanized center adjacent to Puget Sound. Wildlife distribution reflects habitat patterns with wildlife less tolerant of humans confined primarily to the more rural portions of the region and native and exotic wildlife more tolerant of humans dominating the more urbanized areas.

An array of policies and regulations related to habitat preservation and the avoidance of impact are in place at the local, state, and federal level. These policies and regulations limit the extent of impacts allowed to some habitats, e.g. wetlands and streams, while requiring mitigation for those impacts that are allowed. Other policies and regulations target specific animal and plant species. For example, the federal Endangered Species Act (ESA) provides protection to several plant and animal species, including chinook salmon and bull trout, that occur in the region. ESA provisions require a showing of limited or no impact to protected species before a development can proceed.

## **Noise**

Noise impacts are described as excessive or unwanted sound. Noise is measured using a weighted logarithmic scale to better approximate how the human ear responds to different sound levels. The unit of noise measurement is the A-weighted decibel, or dBA. Sound levels from different sources combine logarithmically. For example, two noise sources, each producing a sound level of 50 dBA, combine to produce a sound level of 53 dBA. Similarly, a doubling in traffic on a street increases sound levels by about 3 dBA, which is the smallest change in noise level perceptible to the average human ear (City of Bellevue 1993).

Most local jurisdictions establish limits on the levels and durations of noise crossing property boundaries. Allowable maximum sound levels typically depend on the land use zone of the source of the noise and that of the receiving property. Local jurisdictions typically identify a number of noise sources or activities that are exempt from the maximum allowable noise limits. These commonly include sounds created by vehicles traveling on public roads, and sound created by warning devices (such as reverse gear alarms) when not operated continuously for more than brief continuous periods. Also, sounds from construction equipment and blasting are typically exempt from noise limits during daytime hours.

For those activities or sources that are exempt from the local jurisdiction noise limits, federal criteria are useful in evaluating noise impacts. For example, for residential areas, the FHWA defines a traffic noise impact as a traffic noise level approaching or exceeding 67 dBA. In addition, the U.S. Environmental Protection Agency (EPA) has established noise criteria for determining impacts based on sound increases from a proposed action. Under these criteria, an increase of 0 to 5 dBA is considered a "slight" impact; an increase of 5 to 10 dBA is a "significant" impact; and an increase of more than 10 dBA is a "very serious" impact.

In general, ambient noise levels are highest in urban areas and near roadways, construction sites, and similar noisy locations. Ambient levels in urban areas are typically 60 dBA or higher, while noise levels in rural areas away from particularly noisy locations may be 50 dBA or lower (EPA 1974).

## Land Use

The intensity and density of land uses within the central Puget Sound region is generally lowest toward the east and west peripheries and highest toward the center along Puget Sound where the major cities are located. The region's urban growth area, designated pursuant to the state Growth Management Act, overlies the central, more urbanized north-south spine of the region. Within this area, a mosaic of interlocking urban areas typically includes residential uses and a variety of nonresidential uses, including major commercial and industrial centers. To the west and east of this regional spine, in the less densely populated areas, suburban and rural residential, resource, and open space lands separate scattered urban centers. Local comprehensive plan designations and zoning generally reflect these underlying land use patterns.

## Transportation

The roadway network in the central Puget Sound region includes several major limited-access highways (e.g., Interstates 5, 405, and 90 as well as several state routes), local two- to multi-lane arterial roadways, and local, typically two-lane, distribution roads and streets. The density of the roadway network and the traffic volumes on individual roadways generally parallel the density and intensity of land use in the region, with the highest road densities and traffic volumes occurring in the major urban areas. Portions of major highways in the region sustain traffic volumes in excess of 100,000 vehicles per day, while roadways in the least populated peripheries of the region may experience traffic volumes of several hundred or fewer vehicles per day.

Under the state Growth Management Act concurrency requirement, local jurisdictions in the region must assure that adequate roadways, and other transportation facilities, are available to meet the requirements of new development. The specific thresholds for determining roadway adequacy vary somewhat from jurisdiction to jurisdiction, but generally reflect considerations of roadway capacity, traffic volumes, and safety. Currently, portions of many roadways throughout the central Puget Sound region are inadequate to support the traffic demands placed on them, and improvements of inadequate roadways may be required before new development can occur.

## **Public Services and Utilities**

Puget Sound Energy and Seattle City Light provide electrical service in King County. Puget Sound Energy provides natural gas. Water supply is provided either by municipal agencies or independent water districts; in areas not served by either of these providers, ground water is the primary water source. Municipal agencies or sewer districts provide wastewater collection. The King County Department of Natural Resources, Wastewater Treatment Division (formerly Metro), provides transport and treatment of wastewater in much of King County, although some rural areas still rely on septic systems. The King County Department of Natural Resources, Solid Waste Division, provides a full range of solid waste services in the region. Drainage collection and drainage is provided by municipal agencies in incorporated areas and usually by King County in unincorporated areas. Telecommunications and fiber-optic services are probably the fastest growing utility in King County and are provided by numerous companies, including US West, AT&T, MCI/WorldCom, Electric Lightwave, Inc., Sprint, Pacific Fiber Link, and others.

Fire protection and emergency medical services are either provided by municipal fire departments or by various King County fire districts. Law enforcement is provided by municipal agencies in incorporated parts of the county or by the King County Sheriff in unincorporated areas.

## ATTACHMENT B

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### Supplemental Tables



**Table B-1. Estimated Average Vehicle Trips at King County Transfer Stations, Unrecorded Self-Haul of No-Fee Recyclables, 1998 and 1999**

Transfer Station	1998 Total Self-Haul Recyclables, tons	1998 Estimated Unrecorded Self-Haul Recyclables, tons	1998 Estimated Unrecorded Self-Haul Trips/Year	1998 Estimated Unrecorded Self-Haul Trips/Week	1998 Estimated Unrecorded Self-Haul Trips/ Weekday	1998 Estimated Unrecorded Self-Haul Trips/ Weekend Day	1999 Estimated Unrecorded Self-Haul Trips/ Weekday	1999 Estimated Unrecorded Self-Haul Trips/ Weekend Day
Algona	0	0	0	0	0	0		
Bow Lake	568	57	2272	44	5	10	5	10
Enumclaw	589	59	2356	45	4	12	5	12
Factoria	465	47	1860	36	4	7	4	7
First NE	1100	110	4400	85	10	17	11	17
Houghton	692	69	2768	53	6	13	6	13
Renton	611	61	2444	47	5	12	5	12
Vashon	1427	499	19978	384	43	85	44	86

Notes:

1998 total recyclables tonnage at transfer stations was provided by the Solid Waste Division. Based on observations by Division staff, it was assumed that 35% of the total recyclables delivered to the Vashon Transfer Station are self-hauled by people who bypass the cashier's booth because their loads consist only of no-fee recyclables, and are therefore not recorded as transactions. Vashon has a much higher incidence of this type of activity, although it is decreasing as more households subscribe to curbside services. At other transfer stations, it was assumed that only 10% of total recyclables tonnage is delivered by self-haulers whose loads consist only of no-fee recyclables.

The average weight of a load of self-hauled no-fee recyclables was assumed to be 100 lbs, based on an estimate by Solid Waste Division staff.

Estimated trips are one-way trips (in plus out). 1999 trips were estimated by increasing 1998 trips in proportion to the increase in recycling between 1998 and 1999 (2000 Plan, Appendix A-1, Table 1).

**Table B-2. Estimated average weekday CDL-related traffic at King County transfer stations if CDL waste currently delivered to private facilities is accepted, 2010**

TS Name	Percent MMSW	Miles to Black River Facility	Miles X Percent MMSW	Weighted Percent of CDL to KCTS	CDL Tons to TS, 2010	CDL Tons per Week	CDL Tons per Weekday	Commercial CDL Trips per Weekday	KC Transfer CDL Trips per Weekday	Total CDL Trips per Weekday
Algona	13.4%	15	2.01	17.5%	27,385	527	95	79	12	91
Bow Lake	17.4%	3	0.52	4.5%	7,112	137	25	21	3	24
Enumclaw	2.9%	25	0.72	6.2%	9,757	188	34	28	4	32
Factoria	23.0%	10	2.30	20.0%	31,336	603	108	90	13	104
First NE	8.3%	21	1.74	15.1%	23,748	457	82	69	10	79
Houghton	25.6%	15	3.84	33.4%	52,318	1,006	181	151	22	173
Renton	9.4%	4	0.38	3.3%	5,123	99	18	15	2	17
Totals	100%		11.51	100.0%	156,780	3,015	543	452	67	519
Private					77,220					
				Total	234,000					

Notes:

Estimated trips are one-way trips (in plus out). For purposes of estimating average commercial vehicle trips at King County transfer stations if CDL waste currently delivered to private facilities were accepted, it was assumed that:

- Approximately 67% of the CDL waste that would otherwise have gone to private CDL waste handling facilities would be taken to King County transfer stations, and the remainder would continue to be taken to private facilities. (Solid Waste Division staff estimate that one-third to two-thirds of the CDL waste stream would be taken to County facilities. The upper end of the range was used so as not to underestimate traffic impacts.)
- The Vashon Transfer Station would not receive additional CDL-related trips, because CDL waste generated on the island is currently delivered to the Vashon station rather than to private facilities. The distribution of CDL waste among the other King County transfer stations was assumed to be the same as the percent distribution of MMSW among these stations, but adjusted to reflect the relative distance of transfer stations from Rabanco's Black River CDL Waste Transfer Station. In other words, the calculations took into consideration that CDL waste generators may choose to take their CDL waste to the Black River Transfer Station if that station is as close, or nearly as close, as the nearest King County station.
- Approximately 234,000 tons of CDL waste would be disposed in 2010, based on projections by the Solid Waste Division (2000 Plan, Table 8-2).
- It is estimated that 90% of the CDL waste disposed would be disposed on weekdays, because that is when most CDL activity occurs.
- The average weight of a load of CDL waste would be 2.4 tons, based on the Solid Waste Division's CDL waste monitoring program in 1994 (King County 1995)
- The average weight of a cubic yard of CDL waste in 2010 would be 500 lbs. The weight can range from 500 to 750 pounds per cubic yard, depending on how much of the heavier material is removed for recycling (King County 1991). The use of 500 reflects a greater emphasis on recycling CDL waste, as recommended in the 2000 Plan.
- King County transfer vehicles have a capacity of approximately 65 cubic yards (King County 1991).

**Table B-3. Estimated Average Weekday CDL Waste Truck Trips at Black River Transfer Station, 2010**

	1999 Total CDL, Private Tons	1999 CDL Black River Tons	% CDL Black River	2010 Total CDL, Private Tons	2010 CDL Black River Tons	2010 Black River Tons CDL/ Day	2010 Black River CDL Trips/ Day
<b>Weekday</b>	188,460	80,370	43%	210,600	89,812	345	288
<b>Weekend</b>	20,940	8,930	43%	23,400	9,979	96	80
<b>Totals</b>	209,400	89,300	43%	234,000	99,791		

Notes:

Data on the total tonnage of CDL waste disposed at private facilities and the tonnage delivered to Black River were taken from 2000 Plan, Tables 8-1 and 8-2.

Estimated average weekday CDL waste truck trips are one-way trips (in plus out). Trips were estimated based on the following assumptions: 90% of CDL waste is delivered on weekdays, because that is when most CDL activity occurs; and the average load of CDL waste taken to private facilities weighs 2.4 tons based on CDL waste monitoring by King County (1995).

**Table B-4. Estimate of average weekday traffic added to King County transfer stations if regional direct haul is eliminated  
(From King County transaction records)**

<b>Item</b>	<b>Amount</b>
Average weekday regional direct transactions at Cedar Hills, 1999	= 34.2 transactions
Average tons per regional direct transfer truck load, 1999	= 22.06 tons
Average tons per commercial packer load to transfer stations, 1999	= 5.75 tons
1999 MMSW disposal	= 927,336 tons
Projected 2010 disposal (Draft Plan, Figure 3-3)	= 1,090,000 tons
Ratio of 2010 disposal to 1999 disposal (1,090,000/927,336)	= 1.18
34.2 loads X 22.06 tons per load	= 754 tons/average weekday
754 tons/5.75 tons per packer load	= 131 commercial packer loads, 1999
131 loads X 1.18	= 156 commercial packer loads, 2010
156 loads X 2 trips per load	= 312 commercial packer trips, 2010 (approximately 310 trips)
34.2 regional direct transactions at Cedar Hills (1999) X 1.18	= 40 transactions in 2010
40 X 2	= 80 transfer trailer trips
80 transfer trailer trips + 310 commercial packer trips	= approximately 390 total average weekday trips added to King County transfer stations in 2010 if regional direct haul is eliminated

**Table B-5. Estimated number of transfer trailer trips required to deliver King County's MMSW to a replacement landfill, incinerator, or private intermodal facilities (if waste export is implemented), 2012.**

Item	Amount
<b>Data provided by Solid Waste Division staff:</b>	
Average weight of uncompacted transfer trailer load	= 17.5 tons
Average weight of compacted transfer trailer load	= 23.5 tons
Average weight of commercial packer truck load	= 5.75 tons
<b>Estimate of Average Weekday Transfer Trailer Trips</b>	
From Table 5-1:	
Total weekday transfer trailer trips to Cedar Hills (County + regional direct) in 2010	= 321 trips (if Houghton and Renton transfer station loads were also compacted, there would be 297 trips)
Total weekday commercial trips to Cedar Hills	= 21 trips X 5.75 tons/load/23.5 tons/load = 5 transfer trailer equivalent trips (compacted)
Total weekday trips to Cedar Hills to/from Cedar Falls dropbox	= 5 trips X 17.5 tons/load/23.5 tons/load = 4 transfer trailer equivalent trips (compacted)
Total equivalent transfer trailer trips (compacted loads) in 2010	= 297 + 5 + 4 = 306
From Figure 3-3 in Draft Plan, disposed MMSW in 2012/disposed MMSW 2010	= 1.01
Total equivalent transfer trailer trips (compacted loads) in 2012	= 306 X 1.01 = 309 trips
<b>Estimate of Average Weekend Day Transfer Trailer Trips</b>	
From Table 5-1:	
Total weekend day transfer trailer trips to Cedar Hills (County + regional direct) in 2010	= 136 trips (if Houghton and Renton transfer station loads were also compacted, there would be 127 trips)
Total weekend day commercial trips to Cedar Hills	= 4 trips X 5.75 tons/load/23.5 tons/load = 1 transfer trailer equivalent trips (compacted)
Total weekend trips to Cedar Hills to/from Cedar Falls dropbox	= 11 trips X 17.5 tons/load/23.5 tons/load = 8 transfer trailer equivalent trips (compacted)
Total equivalent transfer trailer trips (compacted loads) in 2010	= 127 + 1 + 8 = 136
From Figure 3-3 in Draft Plan, disposed MMSW in 2012/disposed MMSW 2010	= 1.01
Total equivalent transfer trailer trips (compacted loads) in 2012	= 136 X 1.01 = 137 trips



**ATTACHMENT C**

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**Supplemental Information  
on the Cedar Hills Landfill**





King County  
Solid Waste Division  
Department of Natural Resources  
King Street Center  
201 South Jackson Street, Suite 701  
Seattle, WA 98104-3855  
(206) 296-6542

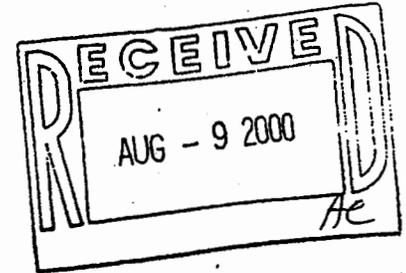
# RECEIVED

AUG 07 2000

DEPARTMENT OF NATURAL RESOURCES  
SOLID WASTE DIVISION

August 7, 2000

TO: Mark Buscher, Program Analyst IV  
FM: Shirley Jurgensen, Supervising Engineer *DA*  
RE: Cedar Hills Regional Landfill Information



The purpose of this memorandum is to transmit the requested information regarding the Cedar Hills Regional Landfill:

**What changes have occurred at Cedar Hills since 1996 to the landfill gas collection system and operation?**

#### **Infrastructure Improvements**

- **Landfill Header System Upgrades and Redundancies** – Primary Header System has been replaced and redundancies installed. The system has been looped and a series of shutoff valves installed such that should a break occur landfill gas can continue to be collected even while repair is being performed. A major break occurred in 1996, which prevented collection of landfill gas from a portion of the main hill prior to repair. The new system upgrades will diminish the possibility of breakages and will allow gas to be collected because of the looping built in. A backup portable flare and vacuum source was purchased in 1997 to improve operational responses to unanticipated system breakages.
- **Power System Upgrades** – The power supply to the North Flare Station has been replaced and an emergency generator installed. The prior power supply was frequently interrupted and landfill gas could not be collected during power outages. An emergency generator was installed in 1997 and the power supply was upgraded in 1999. The new power supply will result in much less frequent power outages and the emergency generator will allow continued operation during a power outage.
- **Flare Station Upgrades** – A fourth flare and higher horsepower vacuum sources were added in 1998. The fourth flare allowed continued operation during routine maintenance. A fifth flare is being added in 2000 to allow continued operation during maintenance activities of longer duration. Higher horsepower vacuum and redundant vacuum sources have been added. The higher horsepower improves the ability to collect landfill gas and the redundant vacuum sources have been added to provide backup for unanticipated equipment problems.



### **Operational and Design Improvements**

- **Water management improvements** – beginning with the first phase of final cover installed in 1997, peak flows were designed to be attenuated outside of the waste management unit. Prior to the first phase of final cover, peak flows were attenuated within the waste management unit. This resulted in accelerated production of landfill gas and occasional water blockages in gas collection and transmission pipes. As a result of experiences with water blockages in Area 4, more frequent cleanouts and separate condensate and leachate conveyances have been added in the upper lifts of Area 4 and will be installed in Area 5.
- **Phased Closure** – Beginning in 1997 final cover was installed over completed portions of Area 4 each construction season. The cover provides a barrier to gas escape, increasing the efficiency of the collection system. Area 5 will also have phased installation of final cover.
- **Operational Flexibility** – the design of gas collection for Area 5 allows for collection of landfill gas from both ends of individual gas collectors. This increases the vacuum available for each collector and allows gas to continue to be collected even if there is a failure at one end. The header system design for Area 5 is flexible enough to allow increased numbers of gas collectors to be easily installed should they be required. A problem in Area 4 was that the age of the refuse before gas collectors were installed. Smaller than forecasted waste deliveries resulted in the initial lifts in Area 4 having exceptionally long lives. Area 5 has a smaller basal area and its design recognizes adjustments to planned frequency of landfill gas collectors in response to tonnage.
- **Operational Organizational Change** – Supervision of the landfill operations and landfill gas control have centralized under a single supervisor to better coordinate between ongoing refuse placement and landfill gas control installation and operation.
- **Quarterly Surface Monitoring** – Under the Area 5 PSCAA permit over 26 miles of the landfill surface in a 30meter by 30 meter grid is walked with a landfill gas monitor every quarter. If landfill gas is detected above threshold values, a more concentrated surface sweep is performed to identify the source of the landfill gas and necessary repairs are performed. Experience to date has indicated that the landfill gas monitoring is capable of detecting landfill gas at levels below the odor threshold.

### **What operational changes have occurred since 1996 to reduce vibrations?**

Allegations were made in the class action lawsuit of ongoing vibrations; however, only two incidents are documented. One in January of 1997 related to an effort to redistribute landfill gas between flares to increase vacuum on Area 4. The second occurred in September of 1999 when a flexible coupling failed at the North Flare Station. The coupling was fixed within two hours of receipt of the first complaint.

There are also allegations of chronic vibrations (window shaking). These have not been verified. However, an acoustical evaluation of the north flare station is being performed which will look at individual components of the north flare station including blowers, piping and flares for noise as well as vibrations.

**What operational changes have occurred since 1996 to reduce birds?**

The system of bird poles and lines between bird poles has been modified. The prior system was more susceptible to wind, ice and snow loads. The existing system is also somewhat susceptible to these loads but is more easily and quickly restored.

Both the prior system and the new system were effective in keeping birds out of the refuse but they did not necessarily reduce the number of birds on-site. Large numbers of birds continue to flock to the landfill at certain times of the year and congregate outside of the active area. A number of strategies have been employed to discourage the birds including broadcasting distress calls. These are initially effective; however, their effectiveness decreases over time.

**What is the history of odor complaints logged by PSAPCA/PSCAA?**

Only two complaints were received in 1999 and none to date in 2000.

Year	Cedar Hills Odor Complaints	Cedar Grove Odor Complaints
1990	22	5
1991	8	0
1992	10	24
1993	21	45
1994	43	217
1995	47	327
1996	199	380
1997	468	3178
1998	86	179+
1999	2	176+

**What is the nature of any citations or violations received from Puget Sound Clean Air Agency during the '90s?**

Year	Number of Violations	Nature of Violation
1990	0	
1991	0	
1992	0	
1993	0	
1994	0	

1995	0	
1996	1	1. Failure to install temperature recorder for the Southeast Pit flare within the time frame established in the PSCAA Notice of Construction. We were one day late.
1997	2	1. Lack of automatic igniter for a passive flare 2. Building remodel which did not properly anticipate encountering asbestos.
1998	1	1. Failure to cap stubbed out pipes for future connection to the active gas collection system.
1999	1	1. Failure of private contractor to obtain proper clearance for fuel tank installation.

What is the nature of any citations or violations received from Ecology during the 90's?

None were received.

Summary of the nature of any unsatisfactory inspection reports received from Seattle/King County Department of Public Health during the '90s

Year	Satisfactory Reports	Unsatisfactory Reports	Nature of Unsatisfactory Report
1990	39	1	1. Leachate flow into northwest rocklined stormwater pond (4/13/90)
1991	44	4	1. Leachate flow due to break through of temporary berm separating leachate from stormwater at northwest corner of Area 3 (4/5/91). 2. Leachate flow uncontrolled from north slope toe of Area 3 (4/10/91). 3. Leachate flow into northwest rocklined stormwater pond (4/16/91). 4. Passive flares out and low flow of leachate into northwest lined pond (5/20/91).
1992	32	7	1. Passive flares out (1/6/92). 2. Strong landfill gas odors and disconnected piping (3/9/92). 3. Landfill gas odors especially intersection of Area 2/3 with Area 4 (4/21/92). New collection pipe later installed. Area of employee incident.

			4. Landfill gas odors especially intersection of Area 2/3 with Area 4 (4/22/92). New collection pipe later installed. Area of employee incident.
			5. Landfill gas odors especially intersection of Area 2/3 with Area 4 (4/28/92). New collection pipe later installed. Area of employee incident.
			6. Landfill gas odors (same as previous) and staining near Pump Station #4 (5/4/92).
			7. Landfill gas odors (same as previous) (5/11/92).
1993	29	0	
1994	39	0	
1995	41	1	1. Bird wires had been down for some time and needed repair (1/6/95).
1996	33	9	1. Leachate overflow from manhole (2/8/96). Very high rainfall and later found incorrect impeller installed for one of the pumps at pump station 1.
			2. Odor from leachate breakouts on Area 4 (2/22/96).
			3. Odor from leachate breakouts on Area 4 (3/4/96).
			4. Landfill gas odor Area 4 (10/25/96).
			5. Landfill gas odor Area 4 (11/18/96).
			6. Landfill gas odor Area 4 (12/5/96).
			7. Landfill gas odor Area 4 and birdlines ineffective due to height (12/9/96).
			8. Landfill gas odor Area 4 and birdlines ineffective due to height (12/16/96).
			9. Landfill gas odor Area 4 (12/31/96).
1997	34	7	1. Landfill gas odor Area 4 (1/14/97).
			2. Landfill gas odor Area 4 (1/21/97).
			3. Landfill gas odor Area 4 (1/27/97).
			4. Landfill gas odor Area 4 (2/5/97).
			5. Landfill gas odor and disconnected pipe (2/11/97).
			6. Landfill gas odor Area 4 and birdlines ineffective (2/19/97).
			7. Presumed leachate escape from odor mitigation project area (7/9/97).

Mark Buscher  
August 7, 2000  
Page 6

1998	45	1	1. Odors from leachate weeps Area 4 (3/10/98).
1999	38	0	
2000 to date	10	0	

If you have any questions, please call me on extension 6-4417.

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cc: Rodney G. Hansen, Manager  
Geraldine Cole, Planning and Communications Manager  
Beth Humphreys, Program Analyst  
Kevin Kiernan, Engineering Services Manager



**CH2MHILL**

CH2M HILL  
777 108th Avenue NE  
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98009-2050  
Tel 425.453.5000  
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September 17, 1999

Mr. Kevin Kiernan  
King County Solid Waste Division  
600 Yesler Building  
400 Yesler Way  
Seattle, WA 98104

Post-It® Fax Note	7671	Date	# of pages ▶
To	Art Campbell	From	Shirley J
Co./Dept.		Co.	Herrera
Phone #	←	Phone #	441-9090
Fax #		Fax #	441-9108

**Subject: Air Dispersion Analysis for Cedar Hills Area 5**

Dear Mr. Kiernan:

As requested, CH2M HILL performed an air quality dispersion modeling analysis of landfill gas emissions. Specifically, the analysis focused on the gas generated by the Cedar Hills Regional Landfill Area 5, proposed to begin accepting waste this year, and four specific constituents as requested by the Puget Sound Clean Air Agency (PSCAA). These four constituents are acrylonitrile, hydrogen sulfide, methylene chloride and vinyl chloride. This letter report provides a description of the methods used for the analysis and a summary of the results.

**Emission Estimation**

The landfill gas generation rate was calculated annually beginning with the first year Area 5 will accept waste (1999) through 2004 using the USEPA first-order decay landfill gas (LFG) production model. Default parameters from USEPA's AP-42 document and a 50% methane content were used to derive the LFG generation rate curve for Area 5. The LFG generation rate of 2018 cubic feet per minute (cfm) was used for this analysis as it represents the highest annual generation rate predicted for Area 5. The generation rate and constituent emission concentration were used to calculate the constituent-specific emission rates from the landfill in grams per second. The landfill gas capture efficiency was conservatively estimated at 75%, which means 25% of the landfill gas is assumed to be emitted as a fugitive gas to the atmosphere. The actual capture efficiency at the time of the peak gas generation rate is expected to be greater than 75%, since part of Area 5 will have received final cover by that time.

Landfill gas concentrations were estimated for vinyl chloride and methylene chloride using the data collected during landfill gas sampling events from August 1988 to October 1998. If the landfill gas sample analysis showed that a compound was not detected, then the sample concentration for that compound was assumed to equal one-half the detection limit. The LFG sample data from each sampling event was adjusted to 50% methane and then averaged. The sampling event averages were averaged to determine the concentration used in the impact analysis. All landfill gas sample analyses conducted during the source testing events in the August 1988 through October 1998 period were used, including an outlier value for vinyl chloride concentration that was reported in October 1998. The outlier value differed from the mean of other vinyl chloride data by more than ten standard

deviations, suggesting that the result was anomalously high. Therefore the vinyl chloride concentration average used in this analysis may be higher than the actual vinyl chloride concentration in the gas that will be produced by Area 5. The vinyl chloride and methylene chloride test concentrations and corrections for methane concentration are shown in Attachment 1. Since there is no site-specific data available which indicates the concentration of hydrogen sulfide or acrylonitrile, these were estimated using default concentrations for LFG constituents from USEPA AP-42 (revised November 1998), Section 2.4 Municipal Solid Waste Landfills.

### **Model Selection**

The USEPA Industrial Source Complex Short-Term Dispersion Model (ISCST3, version 99155) was used in the air quality modeling analysis to evaluate pollutant concentrations.

### **Modeling Options and Assumptions**

ISCST3 was run with the regulatory default options as recommended in the Guideline on Air Quality Modeling (GAQM, EPA-450/2-28-027R, July 1986). ISCST3 allows the selection of either rural or urban dispersion coefficients. The Auer (1978) land-use classification was used to determine the dispersion mode for this analysis. Under the Auer scheme, if more than 50 percent of the land area within 3 kilometers of the facility has a urban land use classification, the urban dispersion coefficients should be used. The urban lands are industrial, commercial, and compact residential areas that have limited areas of vegetation due to the presence of buildings or paving. All other land use types, like common single family residential areas, undeveloped areas, and agricultural areas would be considered rural. Because more than 50 percent of the land use within three kilometers around the facility is rural, the ISCST3 model was run using the rural dispersion coefficients.

Area 5 was characterized in the model as a rectangular, ground-level area source. The rectangle chosen was aligned with the longer side in the east-west direction, and with side lengths which approximate the longest distance across Area 5 in both the north-south and east west directions.

The model was run to calculate 1-hour, 24-hour and annual average concentrations using a 1 gram per second (g/sec) emission rate. The resulting maximum off-property concentrations were multiplied by the actual g/sec emission rate for the four constituents to obtain the estimated maximum concentration for each. These were then compared to odor thresholds and Acceptable Source Impact Levels (ASILs) as specified in the Puget Sound Clean Air Agency's Regulation III, revised November 14, 1998.

### **Meteorological Data**

Surface meteorological data collected at SeaTac airport was processed with upper air data collected at the Quillayute station to obtain a set of model-ready data. Five years of data, 1986-1989 and 1991, were obtained electronically from the EPA Technology Transfer Network (TTN) website. These were concatenated into one file for use with the ISCST3 model. Mixing heights less than 30 meters for hourly data were replaced with a mixing height of 30 meters.

### Receptors

Two sets of receptors were used: a set of coarse grid receptors to identify the area that the maximum impact occurs, and a fine set to identify the maximum impact. The initial coarse grid was a rectangular grid centered on the facility with a 100-meter spacing between receptors. This grid extended approximately 1000 meters around the landfill property boundary. This distance was chosen since the maximum off-property impact from ground level, fugitive releases typically occurs at or near the property boundary. To obtain further resolution of the maximum impact, a fine grid with 25-meter spacing was placed at the point of maximum coarse grid impact. Concentrations from all sources were evaluated at ground level (that is, no "flagpole" receptors).

### Results

The maximum predicted off-property concentration for each of the four constituents is shown in Table 1 for the averaging period that corresponds to that of its ASIL. The results indicate that none of the four will exceed their ASIL at any off-property receptor. Table 2 shows the maximum 1-hour off-property concentrations as compared to odor detection and threshold limit values. None of the four constituents analyzed are predicted to exceed their respective odor threshold at any off-property receptor.

Constituent	Maximum Impact ( $\mu\text{g}/\text{m}^3$ )	ASIL ( $\mu\text{g}/\text{m}^3$ )	Averaging Period
Acrylonitrile	0.010	0.015	Annual
Hydrogen Sulfide	0.282	0.9	24-hour
Methylene Chloride	0.028	0.56	Annual
Vinyl Chloride	0.009	0.012	Annual

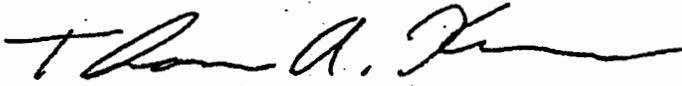
Mr. Kevin Kiernan  
Page 4  
September 17, 1999

<b>Constituent</b>	<b>Maximum 1-Hour Concentration (ppm)</b>	<b>Odor Threshold (ppm)</b>
Acrylonitrile	0.0002	17
Hydrogen Sulfide	0.0012	0.0081
Methylene Chloride	0.0003	250
Vinyl Chloride	0.0001	3000

The input and output files for the ISCST3 model are provided on an accompanying diskette. Please call me any time at 425-453-5005 ext. 5228 if you have any questions regarding this report.

Sincerely,

CH2M HILL



Thomas A. Kraemer, P.E.  
Project Manager

**ATTACHMENT D**

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**Comments to the Draft EIS  
and Responses**



September 12, 2000

King County Solid Waste Division  
Department of Natural Resources  
King Street Center  
201 South Jackson Street, Suite 701  
Seattle, WA 98104-3855

Attention: Mark Buscher, Project Coordinator

Subject: Draft Environmental Impact Statement 2000 King County Comprehensive Solid Waste Management Plan

This letter is being sent on behalf of, and with the approval of, the South Rose Hill/Bridle Trails Neighborhood Association of Kirkland.

Having read the Final 1992 Comprehensive Solid Waste Management Plan and the Draft Copy of the 2000 Plan we have some concerns regarding the Houghton Transfer Station. The 1992 Plan stated that the Houghton Transfer Station would be closed and the operation relocated elsewhere. The residents who raised concerns about the Transfer Station were told no permanent improvements were going to be made to the Houghton Transfer Station since it was going to be shut down. The Draft 2000 Plan not only does away with the 1992 Plan of eliminating the Houghton Transfer Station, it shows expansion and upgrades so it can be operated indefinitely. This change in the Plan and in the philosophy has a major impact on residents who live in the neighborhoods surrounding the Transfer station.

The 1992 Plan included the following Transfer Station siting criteria:

- Zoning - "...transfer stations are most compatible with light industrial or commercial uses and least compatible with residential uses."
- State and National Parks - "...transfer station should be located no closer that 1,000 feet to a State or National Park."
- Residential Neighbors - "The least compatible land uses would be residential land; land uses with sensitive receptors, such as schools, nursing homes, or hospitals, and recreational land. The type of recreational use that would be sensitive in this context is activity-oriented recreation with concentrated use patterns."

September 12, 2000

In reality, the Houghton Transfer Station is:

- Zoning - "located within a residential zone"
- State or National Parks - "located within 60 feet of Bridle Trails State Park"
- Residential Neighbors:
  1. Residences abut the East and West perimeters of the Houghton Transfer Station.
  2. A licensed day care center abuts the East perimeter of the Transfer Station.
  3. The north perimeter abuts the (Solid Waste approved) Santana Sports Park for youth soccer and Little League Baseball, with usage a combined nine months out of the year.

We know that the Houghton Transfer Station is and will continue to be, a major asset for the Solid Waste Division of King County. From the statistics contained in the 1992 and Draft 2000 Plans, the usage of the Houghton Transfer Station continues to grow. The Houghton Transfer Station also appears to be the most used of all the Transfer Station sites. However, since it does reside within a residential area, we feel that it is incumbent on the County to upgrade the Transfer Station to mitigate the problems associated with this operation. At a minimum we would like to see the following improvements:

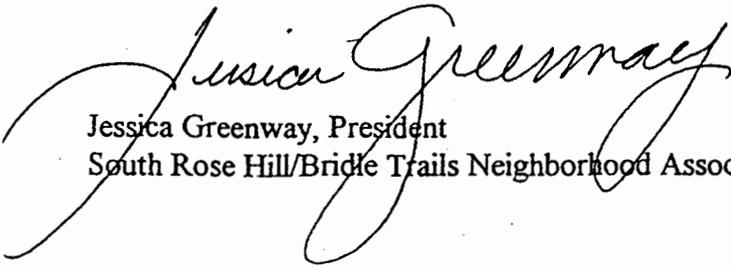
1. Enclose the actual "dumping" structure.
2. Install a "mist" type dust, odor, and emissions suppression system.
3. Enclose the complete Houghton Transfer Station property with a sound wall.

Increased truck traffic and loads requiring compacting by 2010 makes this upgraded project a necessity. We feel these improvements are essential to reduce the amount of noise, odor, dust, and emissions produced at the station and to reduce the impact on the neighborhood in which it resides.

In reality it appears that the Houghton Transfer Station is going to be a permanent fixture within the Bridle Trails neighborhood. Therefore, King County Solid Waste must plan and budget to eliminate the health and environmental hazards and annoyances associated with operating the Transfer Station within a populated, residential zone.

We appreciate your consideration of our concerns and requested improvements. We look forward to your response.

Sincerely,



Jessica Greenway, President  
South Rose Hill/Bridle Trails Neighborhood Association

**Jessica Greenway, President, South Rose Hill/Bridle Trails Neighborhood Association,  
letter dated September 12, 2000**

**Comment:** Since the Houghton Transfer Station is located in a residential area, the County should upgrade the station to mitigate problems associated with its operation, including noise, odor, dust, and emissions. At a minimum, mitigation should include the following improvements: (1) enclose the actual dumping structure, (2) install a mist type dust, odor, and emissions suppression system, and (3) enclose the complete Houghton Transfer Station property with a sound wall.

**Response:** The Solid Waste Division is committed to operating the Houghton Transfer Station in a manner consistent with its location in a residential neighborhood. Before implementing improvements at the Houghton station, the Solid Waste Division will prepare a Facility Master Plan. The Facility Master Plan will be subject to detailed project-specific environmental review, including technical analyses of noise, traffic, odor and dust emissions, and other relevant issues. As part of the environmental review and permitting process, the Division will seek input from the South Rose Hill/Bridle Trails Neighborhood Association and the City of Kirkland to determine which mitigation measures would be most effective in reducing operational impacts on the adjacent community.

Part 4B of the EIS under Noise provides a programmatic discussion of the types of measures that could potentially be implemented at branch transfer stations to reduce noise impacts from operations. Such measures include enclosing noisy operations; providing adequate roof clearance for commercial trucks to dump loads; using mufflers on bulldozers operating in the waste collection pit; monitoring noise levels at the site boundary and making sure they do not violate King County or local noise standards (if so, further mitigation would be implemented); and minimizing the use of reverse gear alarms on operational equipment and vehicles.

As discussed in Part 4B of the EIS under Air Quality/Odor, dust is minimized at County transfer stations by such measures as prohibiting dusty loads of waste, and spraying waste handling areas with a mist as necessary to suppress dust. Odor emissions are minimized by prohibiting highly odorous loads of waste, minimizing storage time of waste on site, using leak-resistant waste containers, and regular washdown of waste handling areas and the inside of waste containers. Although the Houghton Transfer Station does not currently have an automatic misting system such as that installed at some of the newer or upgraded transfer stations, water is sprayed manually as necessary to control dust and wash down waste handling areas. During development of the Facility Master Plan, the Solid Waste Division will evaluate the need for an automatic misting system. Such a system was recently installed at the Bow Lake Transfer Station as part of the implementation of the Facility Master Plan for that station.



October 17, 2000

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DEPARTMENT OF NATURAL RESOURCES  
SOLID WASTE DIVISION

Mr. Mark Buscher  
King County Solid Waste Division  
Department of Natural Resources  
King Street Center  
201 South Jackson Street, Suite 701  
Seattle, WA 98104-3855

Subject: Draft 2000 King County Comprehensive Solid Waste Management Plan and Draft Environmental Impact Statement

Dear Mr. Buscher:

The City is writing in response to the Draft 2000 King County Comprehensive Solid Waste Management Plan and accompanying Environmental Impact Statement.

The City supports the comments submitted to you by Jessica Greenway, President of the South Rose Hill/Bridle Trails Neighborhood Association, in a letter dated September 12, 2000 (enclosed) regarding the mitigation of the site and roadway to accommodate the County's planned transfer station improvements. The City agrees that the resultant air, odor, and noise pollution be mitigated to ease the burden of this facility on Kirkland's Bridle Trails residents. Mitigation would include measures such as enclosing the dumping area to reduce odor emissions, installing a system to reduce waste emissions into the air, and providing sound wall barriers.

In addition, the City is concerned that adequate service levels continue to be provided to self-haulers and those who recycle bulky materials. Reduced levels of service could result in illegal dumping and additional traffic between Kirkland and other self-haul facilities. The City would like to ensure that the implications resulting from these changes are addressed. Ann Scheerer of the City's Public Works department will be in contact with you to plan for these mitigation efforts.

Sincerely,  
KIRKLAND CITY COUNCIL

A handwritten signature in black ink, appearing to read "Larry Springer".

By Larry Springer, Mayor

C: Jessica Greenway, President, South Rose Hill/Bridle Trails Neighborhood Association

Enclosure  
C:\Data\Solid Waste\Houghton Transfer Station 2.doc



**City of Kirkland, letter dated October 17, 2000**

**Comment:** The City of Kirkland concurs with Jessica Greenway's comments (see above). In addition, the City is concerned that adequate service levels continue to be provided to self-haulers and those who recycle bulky materials. Reduced service levels could result in illegal dumping and additional traffic between Kirkland and other self-haul facilities.

**Response:** As discussed in Section 6 of the 2000 Comprehensive Solid Waste Management Plan, the County recognizes that providing adequate self-haul services at County transfer stations is necessary. The Plan recommends reducing the demand for self-haul services by enhancing educational and outreach programs, and possibly providing incentives, to increase subscription levels for curbside collection of MMSW and recyclables. In customer surveys, one reason customers commonly give for self-hauling is they believe it is cheaper than curbside collection. However, collection rate information obtained from the Washington Utilities and Transportation Commission and the cities that contract for collection service show that the minimum fee at the transfer stations exceeds the average curbside collection rate. The County believes that educating the self-hauling public on the cost issue, and perhaps providing incentives, will encourage them to subscribe to curbside collection.

Another reason customers give for self-hauling is that they have a large amount of garbage or items too big for curbside pickup. The County recognizes that to reduce the demand for this type of self-haul service at transfer stations, it must provide convenient, economical alternatives. To that end, the County will explore a number of strategies, including encouraging commercial haulers to provide economical, on-call service for oversized items and larger loads; community cleanup events; and encouraging recycling and reuse through special local collection events and other means.

With the recommended strategy of reducing demand for self-haul services by encouraging subscription to curbside services and providing convenient, economical alternatives for disposal of bulky waste and large loads, the types of impacts you are concerned about would not occur.

