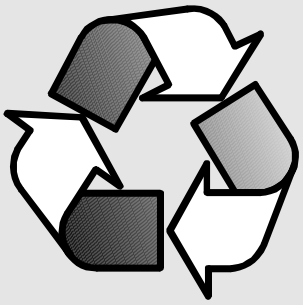
Solid Waste In Washington State



Tenth Annual Status Report

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Solid Waste and Financial Assistance Program
December 2001
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Solid Waste in Washington State

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Prepared by:

Washington State Department of Ecology
Solid Waste and Financial Assistance Program

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Acronyms

BACT	Best Available Control Technology
CESQG	Conditionally exempt small quantity generator
CDL	Construction, Demolition and Landclearing
CPG	Coordinated Prevention Grants
EPA	Environmental Protection Agency
ESHB	Engrossed Substitute House Bill
ESSB	Engrossed Substitute Senate Bill
EYC	Ecology Youth Corps
GA	Department of General Administration
HDPE	High-density polyethylene
HHW	Household Hazardous Waste
HWTR	Hazardous Waste and Toxics Reduction Program
LDPE	Low-density polyethylene
MFS	Minimum Functional Standards
MRF	Material Recovery Facility
MRW	Moderate Risk Waste
MSW	Municipal Solid Waste
NIMBY	Not In My Back Yard
PCS	Petroleum Contaminated Soils
PPG	Public Participation Grants
RCW	Revised Code of Washington
SQG	Small quantity generator
SSB	Substitute Senate Bill
SSHB	Second Substitute House Bill
SW&FAP	Solid Waste & Financial Assistance Program
WAC	Washington Administrative Code
WR/R	Waste Reduction/Recycling

Acknowledgments

This is the tenth annual status report prepared by the Solid Waste & Financial Assistance Program. I have had the lead responsibility for its preparation but could not have done it with out the help of the staff listed below. Special thanks go to the following Ecology staff for providing data and information for this annual report:

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Thanks to all who contributed.

Ellen Caywood
Environmental Planner
Solid Waste & Financial Assistance Program

Executive Summary

Summary of Findings

This annual solid waste report reflects conditions and activities in solid waste in Washington state. Chapter I discusses some emerging issues that Ecology is dealing with in the coming year including the progress toward revising the "State Solid Waste Management Plan", completion of revisions to the rule for solid waste facilities, chapter 173-350 WAC*, Minimum Functional Standards for Solid Waste Handling (MFS*), the litter prevention strategy and modifications to grant programs based on the findings of the Joint Legislative Audit and Review Committee (JLARC).

The remaining chapters of the annual report discuss the solid waste infrastructure in the state, the implementation of solid waste activities through grants to local governments, the statewide recycling survey, litter collection efforts, information on waste disposal and moderate risk waste. Some of the data is for 2000 (recycling and disposal information), while other data is current to late 2001 (litter pickup numbers and facility status). A brief summary of significant information is highlighted below.

❖ **Recycling**

- The 2000 recycling rate increased to almost 35% after remaining fairly stagnant at 33-34% since 1997. Poor markets continue to have an impact, as well as limited education program and reduced participation in recycling programs; however the recycled tonnage did increase by 305,916 tons in 2000.

❖ **Litter Collection Efforts**

- 2001 litter collection by Ecology Youth Corps (EYC) picked up a total of 61,126 bags of litter, about 916,000 pounds, with about 93,000 pounds recycled.

- Other state agency programs were coordinated by Ecology. During Fiscal Years 2000-2001, 2,561,464 pounds of litter and illegally dumped materials were collected by Departments of Corrections, Natural Resources, and Transportation.

- Our Community Litter Cleanup Program provides funds to local governments through contracts for local litter collection programs. During the third cycle (January 2000 – July 2001) local governments partnered with volunteer groups and worked with state and local offender crews and cleaned 40,148 road miles and 4,464 illegal dump sites. A total of 6,736,269 pounds of litter and illegally dumped materials were collected of which 768,991 pounds was recycled.

❖ **Waste Reduction/Recycling**

- Ecology provided over $16 million in Coordinated Prevention Grants to local governments for the 2000/01 cycle. These funds leveraged local matching funds to support over $26 million worth of solid and moderate risk waste projects.

- Ecology continues efforts with the building industry and local governments to promote a sustainable approach to building practices and the effects on the environment and human health.

- Changes continue in the way solid waste is managed. Organics are being composted and land applied for beneficial use. The recycling of industrial by-products for beneficial uses is increasing and the revised *Minimum Functional Standards* will address the new technologies.

- With the adoption of *Biosolids Management* (chapter 173-308 WAC) in 1998, Ecology worked with local governments on delegation agreements (fourteen by late-2001), with virtually all of the applicable facilities under provisional approval for a statewide permit, and 30 final approvals have been granted.

❖ **Recognizing Waste Reduction and Recycling Efforts**

- Ecology Director Tom Fitzimmons and Solid Waste & Financial Assistance Program Manager Cullen Stephenson presented $13,000 in cash awards to eleven schools winning the "Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools Awards" for the 2000-2001 school year. Each winning school was judged on the basis of comprehensive, efficient and innovative approaches to waste reduction and recycling during the school year.

- Ecology presented "Waste Reduction and Recycling Awards" at the Washington State Recycling Association Conference in May 2001. These awards recognize a wide variety of programs being instituted by state and local governments, the private sector, non-profit groups and individuals, that show a commitment to finding ways to reduce waste or recycle material.

❖ **Disposal of Solid Waste**

- In 2000, 21 municipal solid waste landfills accepted 4,659,582 tons of waste. One of those landfills closed in mid-2000.

- Currently 16 of Washington's 39 counties have an operating landfill. Most counties without their own landfills have long-haul contracts to either Roosevelt Regional Landfill in Klickitat County or one of three landfills in Oregon.
- Three incinerators burned 554,780 tons of waste in 2000, accounting for 11% of the waste disposed in state. Of the three operating incinerators, two are waste-to-energy, burning municipal solid waste.
- The amount of waste imported (191,405 tons) decreased and exported (1,240,485 tons) increased in 2000, with about six times as much waste exported as imported. The imported waste accounts for about 3% of the solid waste disposed and incinerated in Washington.
- The 20 operating municipal solid waste landfills reported in April 2001 a statewide permitted landfill capacity of 167 million tons, or approximately 36 years at the current rate of disposal. The majority of that permitted capacity (86%) is at private landfills, with Roosevelt Regional Landfill in Klickitat County accounting for 72% of the statewide capacity.

❖ **Moderate Risk Waste**

- In Washington state there are 42 programs that manage moderate risk waste.
- In 2000, Washington collected over 10.4 million pounds of household hazardous waste (HHW), over 8.2 million pounds of used oil (UO), and over 1 million tons of conditionally exempt small quantity generator (CESQG) waste, for a total of nearly 20 million pounds.

Chapter I Issues Facing Solid Waste

Beyond Waste--The State Solid Waste Strategic Plan

Ecology is currently revising the state solid waste plan (state plan) in compliance with RCW 70.95.260. The state plan revision is based on the vision that we can transition to a society that views wastes as inefficient uses of resources and believes that many wastes can be eliminated. Today's generation of waste is a problem in Washington.

At present:

- Approximately 2,840 pounds of solid waste and 44 pounds of hazardous waste per person per year are generated in Washington. This estimate includes only the wastes that are currently tracked by Ecology. Many waste materials are not reported.
- It has been estimated that up to 94% of the materials extracted for manufacture are wasted before the product is ever made.
- In 2000, over 6.4 million tons of solid waste were disposed of in Washington

In 2000, 6.4 million tons of solid waste was disposed of in Washington. From Spokane to Seattle, a distance of 284 miles, 6.4 million tons would cover I-90 over four lanes of traffic at a depth of 18 feet. [1]

[1] This calculation includes waste imported to Washington for disposal, but does not include waste exported out of state. See Table 6.11 for reference.

Unfortunately, current rates of resource harvesting and waste generation deplete natural resources faster than they can regenerate. Waste generation and disposal creates pollution to our air, land and waters. This environmental degradation affects habitat for humans and other species. Moreover, handling these waste materials poses health risks to workers. The waste that we generate in Washington is expensive, both in terms of generation (lost profit, using up resources) and in terms of disposal.

What we are doing today can not be sustained into the future. Despite our statewide emphasis on recycling, waste generation in Washington is on the rise. Landfills and dumps from previous years have not yet been adequately cleaned up, because of the high costs of doing so. In addition, prevention of waste is the highest priority established in state law, before recycling and disposal (RCW 70.95.010). This state plan revision is emphasizing what actions must be taken to better comply with this law.

To reduce waste generation and the amount of waste disposed in Washington will require an increased emphasis on the waste generated in the extraction, transportation, processing, manufacturing, wholesaling and retailing of products. Recent efforts to reduce waste have focused largely on consumer use and end disposal. This means that Ecology and local government agencies will seek to increase partnerships with business, industry and the non-profit sector to work on reducing waste in all phases of production.

Workgroups involving about sixty local government, private and non-profit representatives and Ecology staff developed issue papers[2]. In addition, a series of public round table meetings were held and a number of themes emerged as important for further consideration in the plan. Some of these ideas will increase the effectiveness of the current solid waste handling system, while others will help make the transition to the preferred future of eliminating as much waste as possible

Themes in common include:

- Looking at the complete costs of waste, including those borne by society, and using that information to educate about more sustainable choices.
- Providing consumer and industry incentives that promote: waste reduction, resource conservation, recycling, and low-impact product industries.
- Increasing the volumes, percentages, and range of materials being recycled, especially through market development.
- Promoting product stewardship, where reused/recycled materials will increasingly provide the needed resources for manufacturing.
- Identifying, assessing and cleaning up closed and abandoned landfills and dumps where needed.
- Using economic tools and influences to prevent waste through rate structures, tax credits, eliminating subsidies and other mechanisms.
- Educating all sectors of Washington's economy and society.

[2] "Washington State Solid Waste Plan Issues Identification" (Ecology Publication #01-07-001).

- Helping to secure adequate funding for local government solid waste programs.
- Influencing consumer purchasing.
- Continuing to emphasize prevention of littering and illegal dumping.
- Improving information available to local governments and the private sector for use in their goal-setting and planning activities.
- Reducing toxins through all possible means.
- Addressing regulatory issues and barriers to recycling.
- Researching waste prevention and recycling methods.

These ideas and themes will be looked into in greater detail and analyzed for appropriate state plan recommendations in the next phases of the state plan development.

Complementing the directive of the Solid Waste & Financial Assistance program to revise the solid waste plan, the Hazardous Waste and Toxics Reduction program is mandated under RCW 70.105 to revise the current hazardous waste state plan. The two programs are collaborating in these efforts and the strategic plans will be published together as a document entitled "Beyond Waste."

What's Next?

- **Establish an external workgroup to augment the State Solid Waste Advisory Committee's work in developing the state plan**
- **Evaluate various alternatives**
- **Develop a set of recommended actions**
- **Develop a proposed implementation schedule**
- **Comply with SEPA**
- **Issue a review draft of the plan**
- **Solicit comments and feedback**
- **Revise the plan**
- **Begin implementation**

Joining forces will facilitate the development of long-range strategic plans for properly handling both hazardous and solid wastes and for reducing them to the maximum extent possible. In the short term the plans should position Washington to be more effective in reducing wastes through revised policies and programs, including better service to the public business and government.

In the long-term the Beyond Waste project will guide Washington in a new direction, from containing and managing wastes to preventing wastes from being generated in the first place. Although moving beyond waste to re-use and reduction of materials will take many years, the existing waste handling systems must be maintained and operated efficiently in the interim.

To become involved with planning efforts for the state solid waste plan, or to get more information, please visit http://www.ecy.wa.gov/programs/swfa/index.html. State plan-related publications are also available to view online at this Web site.

Statewide Litter Prevention Strategy

The Solid Waste & Financial Assistance Program has been working on a comprehensive litter prevention strategy as an outcome of the statewide litter survey reported in 2000.

The most significant work in 2001 involved planning the comprehensive litter prevention strategy to change the behavior of litterers. Based on the findings of the litter survey, the campaign focuses on roadside litter deposited through the following behaviors: deliberate tossing of cigarette butts, beverage containers, and other packaging; uncovered and unsecured loads; and failure to clean out the beds of pickup trucks. Based on focus group research the campaign messages have an enforcement theme with information about littering fines and penalties. Key elements include a media campaign (television, print, and radio), operation of a litter hotline, a roadway and retail signage program, ongoing public relations, distribution of litterbags, and an enforcement plan.

Ecology is partnering with many state agencies and local governments as part of the campaign implementation. Our primary state agency partners are Washington Department of Transportation and Washington State Patrol. Other key agencies include Departments of Corrections, Licensing, Natural Resources, Transportation, and the Parks and Recreation Commission, and Washington Traffic Safety Commission. Ecology has also secured media partners, Belo (television) and Entercom (radio) to promote and air the media segments.

The campaign is scheduled to launch in the spring of 2002 and extend through 2003.

Revising the Minimum Functional Standards For Solid Waste

Chapter 173-304 WAC, *Minimum Functional Standards for Solid Waste Handling (MFS)* was promulgated in 1985, primarily focused on developing and operating environmentally safe solid waste disposal facilities.

In 1993, municipal solid waste landfill requirements were rewritten under a separate rule (chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills*) in response to new federal requirements.

The 1997 Legislature passed ESHB 1419 directing Ecology to review the solid waste permit system to determine how the use and reuse of materials can be improved. Areas reviewed include alternatives to statutory definitions, permitting requirements, risk assessment, and the overall regulatory system as it pertains to solid waste and recyclables. A final report, "ESHB 1419 Report Washington's Solid Waste Permit System",[3] was submitted to the appropriate legislative committees December 1997.

Subsequently, two pieces of legislation were passed in 1998 which directed Ecology to look further at different aspects of the solid waste regulatory structure. SSB 6203 directed Ecology to revise the solid waste rule to remove impediments to recycling and

[3] "ESHB 1419 Report Washington's Solid Waste Permit System", Washington State Department of Ecology, Solid Waste and Financial Assistance Program, Publication #97-505, Revised December 1997.

SHB 2960 to review the existing solid waste permitting system. The intent was to further encourage recycling and improve the solid waste permitting system.

Because of legislative direction, technological changes since 1985, and outdated references to municipal solid waste landfills, the Solid Waste & Financial Assistance Program (SW&FAP) embarked on a process to revise chapter 173-304 WAC, *Minimum Functional Standards for Solid Waste Handling (MFS)*.[4] There are three main areas of focus for the rule revision:

1. **Improve Rule Organization** - reading and interpreting the rule will be simplified. Cross-referencing sections within the rule will be minimized. Outdated references to municipal solid waste landfills will be removed and guidance documents, such as Technical Information Memoranda (TIM), will be incorporated as appropriate.

2. **Update Facility Standards and Definitions** - unclear definitions for terms such as "inert" will be revised and updated. Opportunities for application of more universal landfill standards will be identified. Permitting requirements for moderate risk waste (MRW) facilities that collect household hazardous waste will also be included. Specific facility requirements targeted for review include those for wastewater impoundments not subject to water quality permits and waste material piles.

3. **Meet Legislative Objectives** - ESSB 6203 directs Ecology to develop a process to exempt from permit requirements activities that beneficially use solid waste and pose no threat, or limited threat to human and environmental health. The legislation also directs the agency to explore methods for deferring solid waste permits to other environmental permits. The revision will also respond to directives from ESHB 1419 and SHB 2960.

SW&FAP has been working with an external advisory committee, has held open houses and formal presentations around the state to introduce stakeholders and the public to proposed changes. The draft rule will be issued for public comment in early 2002, with planned adoption in mid-2002.

Strategic Grant Investing - Achieving Environmental Outcomes

In 2000, the Joint Legislative Audit and Review Committee (JLARC) analyzed the process by which state natural resource agencies manage and distribute grants and loans. JLARC's findings focused on the increased need to apply "investment practices" in making environmental grants and loans, the result being a better return on the public's investment, greater efficiencies and ostensibly a more healthful environment.

The key finding of JLARC is: "Environmental investments are intended to produce a return of quality improvements in water, land or species resources. Without measurable returns, it is impossible to determine if investments have been effective."

[4] The new rule will retain the title *Minimum Functional Standards for Solid Waste Handling (MFS)* but will be renumbered to chapter 173-350 WAC.

As a result of HB 1785 which passed in 2001, output and outcome performance measures will be required in select grant and loan programs. This will require that grant recipients of Coordinated Prevention Grants incorporate activity and results based performance measures into the FY04 funding cycle.

The Solid Waste & Financial Assistance Program is working with stakeholders involved with our three different grant programs to define performance objectives and funding criteria.

The CPG program is developing pilot performance grants in early 2002 to test out the investment practice methodology. Those results will be combined with extensive stakeholder dialog beginning in the middle of 2002. By the middle of 2003, we expect to have new guidelines in place that will refine CPG so that the needs of both JLARC and local governments are met.

Public Participation Grants (PPG) and Remedial Action Grants (RAG) also will be modified to align more closely with JLARC audit findings. Both grant programs will be incorporating performance measures into their processes.

Chapter II Solid Waste Handling Infrastructure

This chapter describes the basic facilities making up the solid waste management infrastructure within Washington state. While disposal and recycling information is from 2000, the lists of facilities are current as of September 2001.

Once solid waste is generated, its handling can be categorized into three distinct classifications. Solid waste can either be: (1) landfilled; (2) intermediately handled - stored, transferred, processed; or, (3) incinerated. A fourth category, Ancillary-Other, explains anomalies to the three basic classifications of solid waste handling. Biosolids landspreading sites are not included in the total number of facilities.

Moderate risk waste is, by definition, excluded from regulation as dangerous waste, even though it may have the characteristics of dangerous waste. Moderate risk waste fixed facilities are regulated as interim solid waste handling sites.

Regulated solid waste facilities in the state are covered by three rules developed by Ecology. The first rule, chapter 173-304 WAC, *the Minimum Functional Standards* (MFS) identifies 16 distinct solid waste facility types, each with its own set of permitting criteria. This rule is currently being revised with planned adoption in 2002. There will be some changes to the facility types at that time.

The second rule pertains to municipal solid waste landfills, chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills*.

The third rule regulating solid waste handling facilities is chapter 173-306 WAC, *Special Incinerator Ash Management Standards*, which sets permitting, construction and operating standards for MSW incinerator ash monofills.

In this report, Ecology has identified 352 solid waste handling facilities in Table 2.1 (MRW facilities are not included in the number). Facility ownership in this chapter is categorized as either PUBLIC for those facilities owned by a recognized jurisdiction of government - a city, county or special purpose district - or as PRIVATE, for those facilities owned by corporations, partnerships or private individuals.

Table 2.1
Classification Table

Classification Facility Type	Statewide Total
Landfills	**73**
Ash Monofills	1
Inert/Demolition Waste Landfills	31
Limited Purpose Waste Landfills	16
Municipal Solid Waste Landfills	21 *
Woodwaste Landfills	4
Intermediate Classification	**266**
Compacting Stations	7
Compost Facilities	33
Drop Boxes	67
Piles	11
Recycling Facilities	54
Surface Impoundments	4
Transfer Stations	88
Tire Piles	2
Incineration	**3**
Ancillary/Other	**10**
Landspreading Disposal Facilities	6
Other Facilities	4
Total All Facilities	**352**

* Includes one MSW landfill constructed but not operating.

As an overview of the solid waste facilities in the state, Table 2.2 identifies the types and number of facilities and the county in which they are located. This table includes only those facilities that are separately permitted in chapter 173-304 WAC or chapter 173-351 WAC. Several other "facility types" exist but are co-located at another permitted facility. This is especially true for composting and MRW facilities. Future reports will identify all of the facility types, whether they are separately permitted or co-located with other facilities.

For a greater understanding of Washington's solid waste infrastructure, a closer examination of each solid waste infrastructure classification and applicable "type" sub-category follows. Maps showing the counties where the facilities are located are included for each category. See Appendix A for a map identifying counties.

Table 2.2
Solid Waste Facilities in Washington
Permitted Under Chapter 173-304 WAC or Chapter 173-351 WAC
(as of September 2001)

	LANDFILLS				INTERMEDIATE										
County	MSW Landfill	Wood Waste	Inert/Demolition	Limited Purpose	Ash Monofill	Compacting Station	Compost Facility	Drop Boxes	Piles	Recycling Facility	Surface Impoundments	Transfer Stations	Tire Piles	Incinerators	Other
Adams							1					2			
Asotin	1		1												
Benton	1		1					1		1		5			1
Chelan			3							1		3			
Clallam	1			2			1		1	1	1	3			
Clark				2						7		2			1
Columbia							1					1			
Cowlitz	1			1			2	1		4		1			
Douglas	1		2									1			1
Ferry												1			
Franklin	1								1			1			
Garfield			1									1			
Grant	2							15							
Grays Harbor		1	1	1					1	8		6	1		
Island			1			2				3		2			
Jefferson			1	1			1	1	1			1			
King	1		1				4	2		1		12			
Kitsap	1						1	5		2					
Kittitas			1						1		1	2			
Klickitat	1				1			2				3	1		

	LANDFILLS				INTERMEDIATE										
County	MSW Landfill	Wood Waste	Inert/Demolition	Limited Purpose	Ash Monofill	Compacting Station	Compost Facility	Drop Boxes	Piles	Recycling Facility	Surface Impoundments	Transfer Stations	Tire Piles	Incinerators	Other
Lewis			1				1	8		2		3			2
Lincoln										1		1			
Mason		1		1				3				1			
Okanogan	1	1										2			
Pacific								2				1			
Pend Oreille												3			
Pierce	3		3	3			2	1	3	10		10		1	1
San Juan								2			2				
Skagit						5	4	1				1			
Skamania										1		3			
Snohomish	1*	1	1				4	6		1		3			1
Spokane	1		7	1			3		1	1		3		2	
Stevens	1			1								4			
Thurston							1	3		5					
Wahkiakum								1							
Walla Walla	1						1								
Whatcom			1	2			1	6		4		4			1
Whitman			1	1			1			1					
Yakima	2		4				4	7	2			2			2
TOTAL	21	4	31	16	1	7	33	67	11	54	4	88	2	3	10

***The landfill in Snohomish County is permitted but not operating**

Landfill Classification

The regulated permanent disposal of solid wastes in landfills in Washington occurs in five types of facilities: (1) ash monofills; (2) inert/demolition landfills; (3) limited purpose landfills; (4) municipal solid waste landfills; and (5) woodwaste landfills. (See Table 2.3.) A short discussion of each landfill classification "facility type" and its relationship to the state's overall infrastructure follows. A more detailed discussion of waste types and amount disposed and incinerated, movement of waste into and out of state, as well as trends in waste management, is found in Chapter VI.

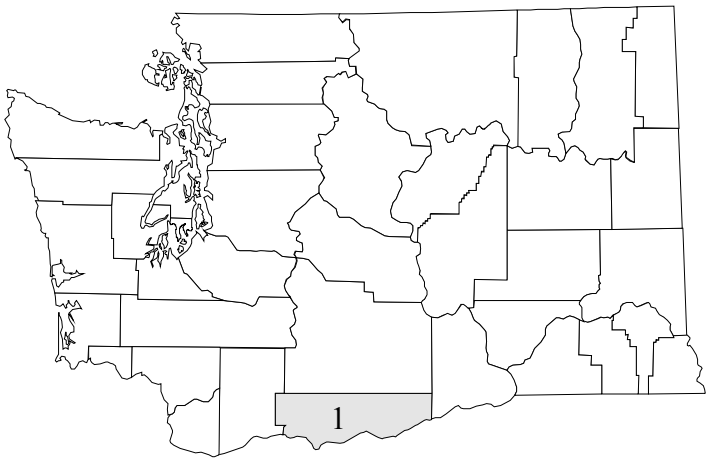
Table 2.3
Landfill Classification

FACILITY TYPE	TOTAL # STATEWIDE		TOTAL BY OWNERSHIP DESIGNATION			
	Active	Active	Public		Private	
	2000	2001	2000	2001	2000	2001
Ash Monofill	1	1	0	0	1	1
Inert/ demolition	31	31	11	11	20	20
Limited Purpose	16	16	1	1	15	15
Municipal solid waste	20	21	14	15	6	6
Woodwaste	4	4	0	0	4	4
TOTAL	72	73	26	27	46	46

Ash Monofills

Ash monofills are landfill units that receive ash residue generated by municipal solid waste incinerator/energy-recovery facilities. The *Incinerator Ash Residue Act*, chapter 70.138 RCW, gave direct permitting authority to Ecology, as well as giving the department the authority to develop rules to regulate the disposal of this ash. Under chapter 173-306 WAC, *Special Incinerator Ash Management Standards*, incinerators which burn more than 12 tons per day of municipal solid waste are required to have a Generator (Ash) Management Plan, approved by Ecology, in place prior to operation of a facility. The ash management plan identifies the location of ash monofills to be used for ash disposal.

Location of Ash Monofill



Public 0
Private 1
Total 1

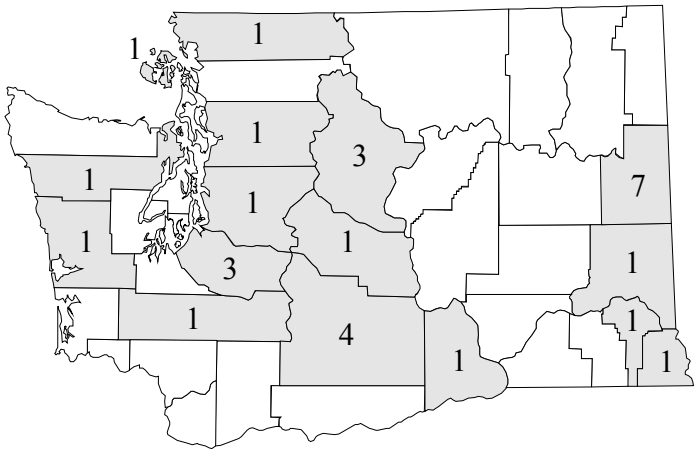
In 2001, there was only one permitted ash monofill in Washington, located at the Roosevelt Regional Landfill in Klickitat County. The monofill operates under a permit issued by Ecology, and received 102,048 tons of special incinerator ash in 2000.

Inert/Demolition Waste Landfills

Inert/Demolition Waste landfills are facilities which receive "more than two thousand cubic yards of inert wastes and demolition wastes."[5] These facilities are regulated under WAC 173-304-461.

Twenty-eight of the inert/demolition landfills reported 477,383 tons of waste in 2000. In 2001, there were 31 inert/demolition landfills listed for the state. Most (65%) of the inert/demolition landfills are privately owned and operated. Public inert/ demolition landfills make up 35% of this facility type.

Location of Inert/Demolition Waste Landfills



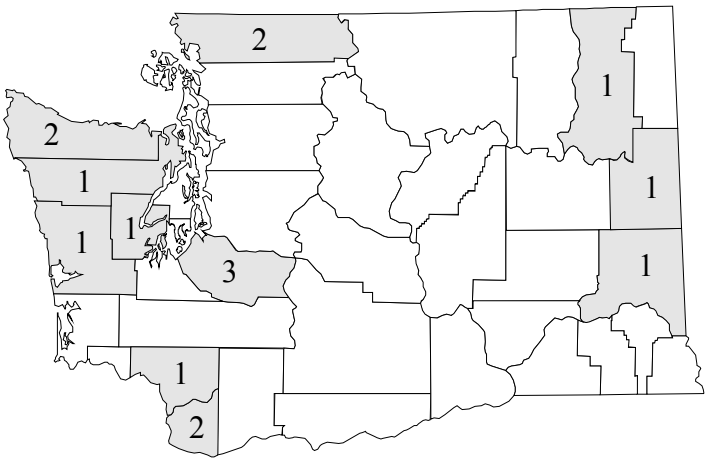
Public 11
Private 20
Total 31

[5] WAC 173-304-461(1)

Limited Purpose Waste Landfills
Limited purpose landfills are facilities that receive "solid wastes of limited types, known and consistent composition, other than woodwastes, garbage, inert waste and demolition waste."[6] These facilities are regulated under WAC 173-304-460(5). Limited purpose landfills are identified by the type of waste. In other words, the waste associated with a limited purpose landfill is unique to that facility.

Thirteen limited purpose landfills that reported in 2000, accepted 646,662 tons of waste. The waste disposed in these facilities is usually generated by the owner of the landfill. Only one limited purpose landfill is publicly owned.

Limited Purpose Landfills



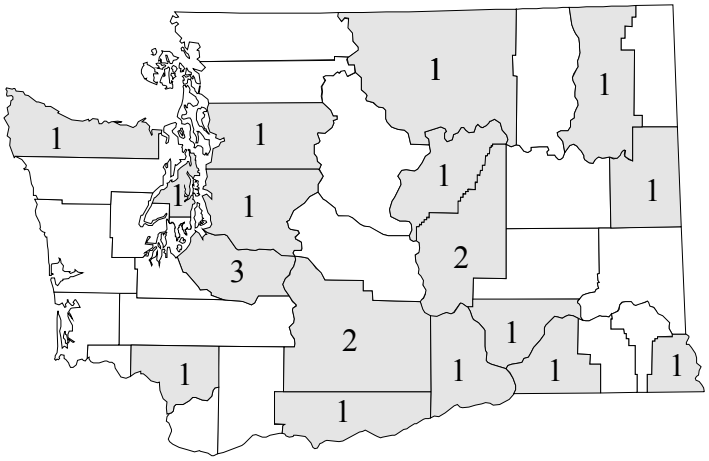
Public	1
Private	15
Total	16

Municipal Solid Waste Landfills
In 2000, 21 MSW landfills accepted 4,659,582 tons of waste. (See Chapter VI for additional discussion of waste types, amounts and sources.)

In 2001, of the 20 operating MSW landfills, the majority, 71%, of MSW landfills are operated by public entities. This has historically been true in Washington. Private MSW landfills constitute only 29% of this facility type. Even though most of the landfills are owned by public entities, the majority of landfill capacity (86%) is under the control of the private sector. (See the discussion on landfill capacity, in Chapter VI.)

[6] WAC 173-304-100(98)

Location of MSW Landfills



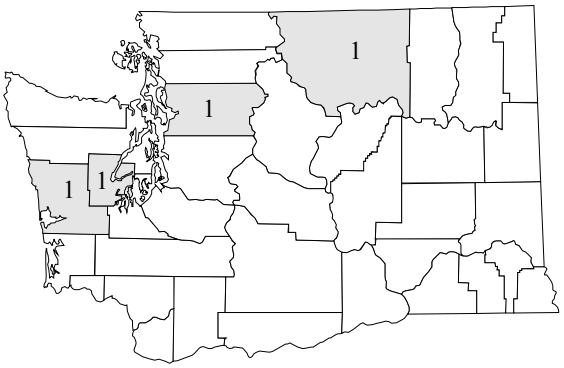
Public 15
Private 6
Total 21

Woodwaste Landfills
Woodwaste landfills are those facilities which landfill "more than 2,000 cubic yards of woodwaste, including facilities that use woodwaste as a component of fill."[7]
These facilities are regulated under WAC 173-304-462.

The MFS defines woodwaste as "solid waste consisting of wood pieces or particles generated as a by-product or waste from the manufacturing of wood products, handling and storage of raw materials and trees and stumps. This includes, but is not limited to, sawdust, chips, shavings, bark, pulp, hog fuel, and log sort yard waste, but does not include wood pieces or particles containing chemical preservatives such as creosote, pentachlorophenol, or copper-chrome-arsenate."[8]

In 2000, four woodwaste landfills reported 87,552 tons of waste. In 2001, four operating woodwaste landfills were listed in the state list, all privately owned.

Location of Woodwaste Landfills



Public 0
Private 4
Total 4

[7] WAC 173-304-462(1)

Intermediate Classification

Solid waste, prior to its final disposal or incineration, is often accumulated at a storage facility, consolidated at a transfer station, converted into a useful product, or prepared for recycling or disposal at a processing center. The storage, transfer or processing of solid wastes are regulated by the MFS and fall under the interim[9] or intermediate classification of solid waste handling facilities. Some moderate risk waste fixed facilities are regulated as interim solid waste handling sites.

Specifically, a storage facility primarily holds "solid waste materials for a temporary period"[10] while a processing center is in the operation of converting "solid waste into a useful product or to prepare it for disposal."[11] A transfer station, on the other hand, is a "permanent, fixed, supplemental collection and transportation facility, used by persons and route collection vehicles to deposit collected solid waste from off-site into a larger transfer vehicle for transport to a solid waste handling facility."[12]

The distinguishing characteristic of all interim or intermediate classification solid waste handling facilities is that they are not designed for final disposal. There are 10 types of intermediate facilities: (1) baling stations; (2) compacting stations; (3) composting facilities; (4) drop boxes; (5) moderate risk waste fixed facilities; (See Chapter VII) (6) piles; (7) recycling centers; (8) surface impoundments; (9) transfer stations; and (10) tire piles.

Bale Station
A bale station is a facility that processes loose solid waste into large bound bundles. The purpose of binding waste in this fashion is to place the bundles into lifts at a landfill. These facilities are regulated under WAC 173-304-410. Because this technology is often confused with compacting stations, and since bale stations are regulated under the same section of the MFS, to date no bale stations have been permitted as separate facilities.

Compacting Station
A compacting station is a facility which employs mechanical compactors to compress solid wastes into dense packets of material for shipment. These facilities are regulated under WAC 173-304-410.

Ecology identified seven compacting stations statewide in 2000. All compacting facilities are under public ownership and are affiliated with recycling operations. Compacting stations are located in the more urban, northwestern counties of the state. Larger urban centers are more inclined to use this technology to process large amounts of

[8] WAC 173-304-100(91)

[9] WAC 173-304-100(38)

[10] WAC 173-304-100(76)

[11] WAC 173-304-100(62)

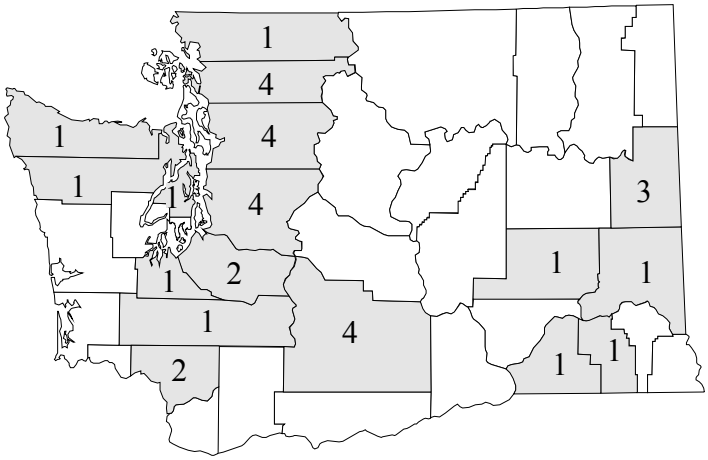
[12] WAC 173-304-100(82)

recyclables for shipment. Compactors are also used at transfer stations, though they are not permitted separately.

Compost Facilities
A compost facility is a facility which promotes the biological decomposition of organic solid waste, and other organic material, yielding a product for use as a soil conditioner. Composting is considered a key element of the state's strategy of reaching the statewide 50% recycling goal.

Compost facilities are currently regulated under two sections of the MFS: the pile standards (WAC 173-304-420), or the recycling facility standards (WAC 173-304-300). Jurisdictional health departments have the authority to decide under which standards, or combination of standards, compost facilities should be regulated. Most compost facilities are currently permitted under the more stringent pile standards due to their potential to generate leachate. There are 33 compost facilities identified statewide in 2001. Some of these are co-located at other solid waste facilities and may not have a separate permit.

Location of Compost Facilities



Public	14
Private	19
Total	33

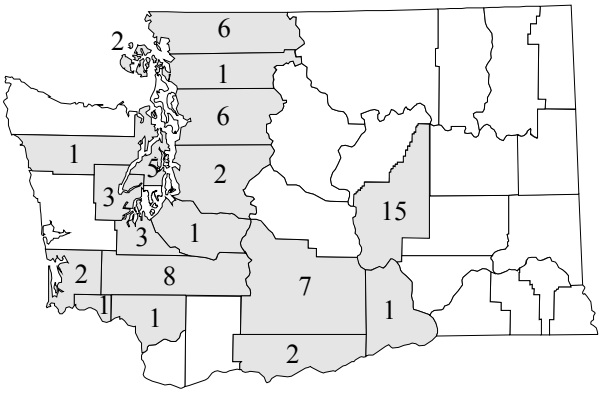
Drop Boxes
A drop box is defined in the MFS as "a facility used for the placement of a detachable container including the area adjacent for necessary entrance and exit roads, unloading and turn-around areas."[13] It is regulated under WAC 173-304-410.

[13] WAC 173-304-100(25)

Drop boxes normally serve the general public by receiving loose loads of waste that are transported to the site by an individual for later disposal or recycling. Typically drop boxes for household waste are located in the more rural portion of counties.

Ecology identified 67 operating drop boxes in 2001. The map depicts the profile of regulated drop boxes statewide. The majority, over 89%, are public and are primarily operated by county public works departments.

Location of Drop Boxes

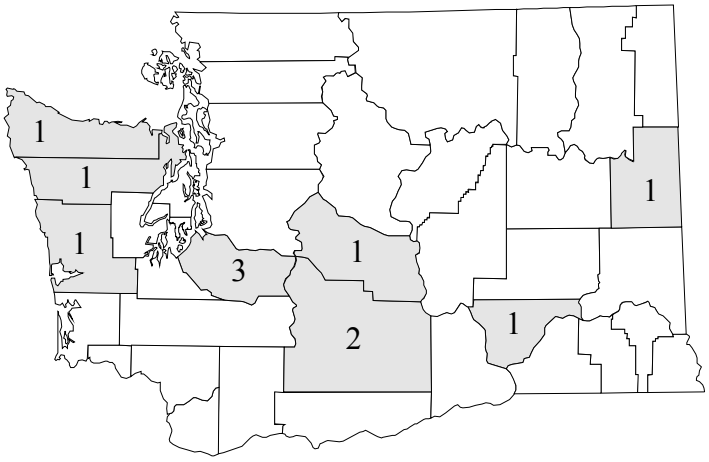


Public	59
Private	8
Total	67

Piles

A solid waste pile is described in the MFS as any "non-containerized accumulation of solid waste that is used for treatment or storage."[14] Pile storage/treatment areas are usually associated with the storage and processing of wastes requiring remedial actions, such as petroleum-contaminated soils. Pile facilities or areas used for storage and treatment are regulated by WAC 173-304-420. (Compost facilities can also be regulated under this section as discussed above.) Eleven privately owned piles (non-composting) were identified in 2001.

Location of Piles



Public	0
Private	11
Total	11

[14] WAC 173-304-100(56)

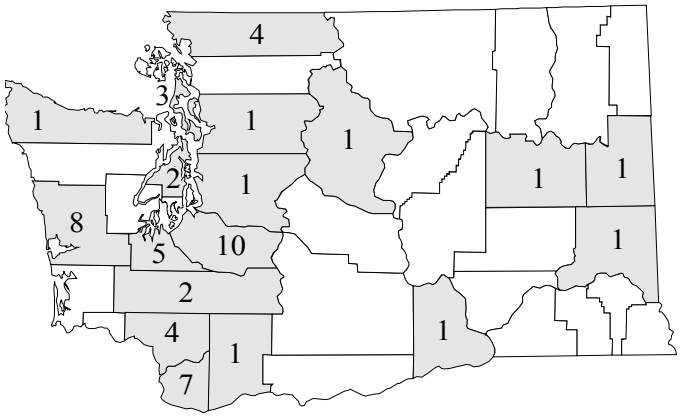
Recycling Facilities

A regulated recycling facility refers to an operation engaged in the collection and utilization of solid waste for the purpose of transforming or re-manufacturing the waste materials into usable or marketable materials for use other than landfill disposal or incineration. Chapter 70.95 RCW, the *Solid Waste Management Act* refers to "recyclable materials" as "those solid wastes that are separated for recycling or reuse, such as papers, metals, and glass, that are identified as recyclable material pursuant to a local comprehensive solid waste plan."[15] Recycling facilities are regulated under WAC 173-304-300.

It is important to note that many types of recycling facilities are not regulated by the MFS. For example, the regulations do not apply to single family residences and single family farms engaged in composting of their own wastes (exempt from any other regulations); facilities engaged in the recycling of solid waste containing garbage, such as garbage composting; facilities engaged in the storage of tires; problem wastes; facilities engaged in recycling solid waste stored in surface impoundments, which are otherwise regulated in the MFS (WAC 173-304-400); woodwaste or hog fuel piles to be used as fuel or raw materials stored temporarily in piles being actively used; nor do they apply to any facility that recycles or uses solid wastes in containers, tanks, vessels, or in any enclosed building, including buy-back recycling centers. Composting and land application of materials are regulated under other portions of chapter 173-304 WAC.

Because of the distinction between regulated recycling facilities and non-regulated activities that promote recycling, only 54 recycling facilities permitted under the MFS requirements were identified in 2001. The majority (93%) of the regulated recycling facilities were private facilities and public recycling facilities constituted 7% of this facility type.

Location of Recycling Facilities



Public	4
Private	50
Total	54

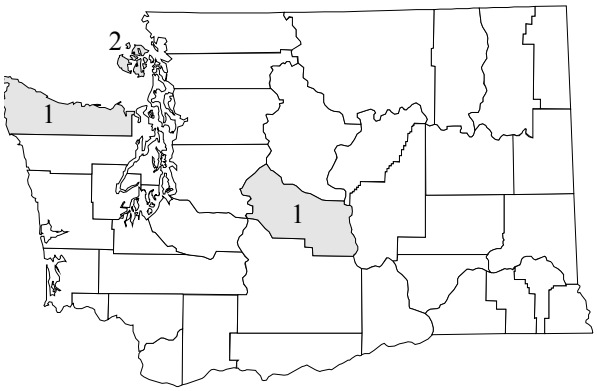
[15] RCW 70.95.030(14)

Surface Impoundments

A surface impoundment refers to "a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), and which is designed to hold an accumulation of liquids or sludges. The term includes holding, storage, settling, and aeration pits, ponds, or lagoons, but does not include injection wells."[16]

Some surface impoundments are regulated under WAC 173-304-430.[17] Ecology identified four regulated facilities in 2001. All four of these surface impoundment facilities were septage lagoons. The category remains in the intermediate classification pending interpretation or clarification under the biosolids rule. All four of the regulated surface impoundment facilities are publicly-owned.

Location of Surface Impoundments



Public	4
Private	0
Total	4

Transfer Stations

A transfer station is defined as "permanent, fixed, supplemental collection and transportation facility, used by persons and route collection vehicles to deposit collected solid waste from off-site into a larger transfer vehicle for transport to a solid waste handling facility."[18] The regulations applicable to transfer stations are contained in WAC 173-304-410.

Typically, transfer stations are areas where individual collection vehicles can be off-loaded, the waste stored for a short period of time and reloaded onto larger vehicles for transfer to the disposal facility.

In the past, transfer stations were generally located in larger, urban areas; however, with the new federal regulations applicable to municipal solid waste landfills, jurisdictions are now viewing transfer stations as an option to operating a landfill. Wastes can be collected at these centers for long-hauling to regional MSW landfills.

[16] WAC 173-304-100(80)

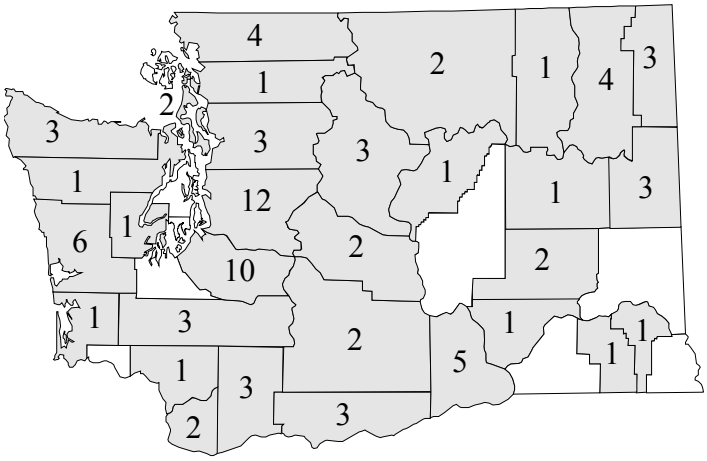
[17] Surface impoundment facilities permitted under federal, state or local water pollution control laws are excluded from regulation under WAC 173-304-430.

[18] WAC 173-304-100(82)

Transfer stations often have areas where the public can bring waste for disposal. Many also have recycling facilities and/or household hazardous waste collection areas. There were 88 regulated transfer stations operating in 2001.

The profile map shows that the majority of the transfer stations continue to be publicly operated entities, 65%.

Location of Transfer Stations

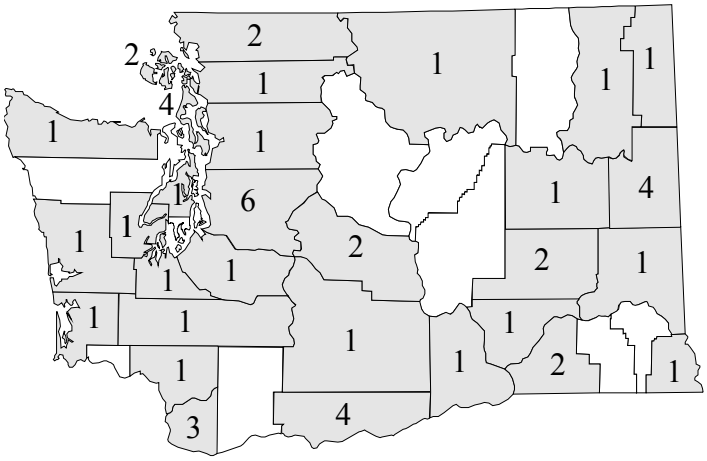


Public	57
Private	31
Total	88

Moderate Risk Waste Facilities

Moderate risk waste is, by definition, excluded from regulation as dangerous waste, even though it has the characteristic of dangerous waste. Moderate risk waste fixed facilities are regulated as interim solid waste handling sites. Some of these facilities are co-located at other types of permitted facilities, such as transfer stations and landfills, and do not receive a separate permit. See Chapter VII Moderate Risk Waste Collection System for additional information.

Location of MRW Sites



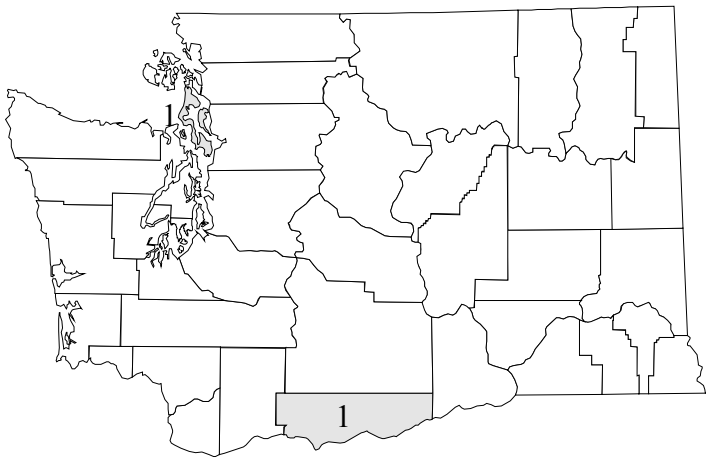
Public	42
Private	3
Total	45

Tire Piles

In Washington state, about four million used tires are generated each year. The used tires may be taken to tire pile storage facilities. A regulated tire pile facility in Washington is any tire pile that temporarily stores or accumulates more than 800 tires. Tire pile standards are contained in WAC 173-304-420.

A major problem with used tires has been illegal tire piles. This section, however, deals specifically with regulated tire piles. Ecology identified two permitted tire piles in the state in 2001, both privately owned.

Location of Permitted Tire Piles



Public	0
Private	2
Total	2

Incineration Classification

An energy recovery facility is considered a combustion plant which specializes in the "recovery of energy in a useable form from mass burning or refuse-derived fuel incineration, pyrolysis or any other means of using the heat of combustion of solid waste that involves high temperature (above twelve hundred degrees Fahrenheit) processing."[19] By definition, incineration as it applies to solid waste materials, means "reducing the volume of solid wastes by use of an enclosed device using controlled flame combustion."[20]

Energy recovery and incinerator facilities are regulated under WAC 173-304-440 applies to "all facilities designed to burn more than twelve tons of solid waste per day, except for facilities burning woodwaste or gases recovered at a landfill."[21]

[19] WAC 173-304-100(26)

[20] WAC 273-304-100(37)

[21] WAC 173-304-440(1)

In 2000, Ecology identified three regulated solid waste incinerator facilities that burned a total of 554,780 tons of waste.

One of the incinerators, Inland Empire Paper in Spokane, falls under the *Minimum Functional Standards* as a solid waste incinerator because they burn more than 12 tons of solid waste per day. At this facility, the waste is composed of the paper sludge from the pulp and papermaking process. The other two incinerators burned municipal solid waste.

In addition to solid waste handling permit requirements under the MFS, solid waste incinerators may be subject to regulations under chapter 70.138 RCW, the *Incinerator Ash Residue Act*. The rules implementing this, chapter 173-306 WAC, *Special Incinerator Ash Management Standards*, require certain solid waste incinerators to prepare generator (ash) management plans. These rules do not apply to the operation of incineration or energy recovery facilities that burn only tires, woodwaste, infectious waste, sewage sludge or any other single type of refuse, other than municipal solid waste. They also do not apply to facilities which burn less than 12 tons of municipal solid waste per day

Of the three solid waste incinerators still operating in 2000, two of these facilities were subject to both the requirements of chapter 173-304 WAC and chapter 173-306 WAC. These two, the Spokane Regional Waste-to-Energy Facility and the City of Tacoma Steam Plant, were required to have a generator ash management plan, approved by Ecology, which discusses the handling, storage, transportation and disposal of the incinerator ash. Both public facilities had approved generator ash management plans and solid waste handling permits.

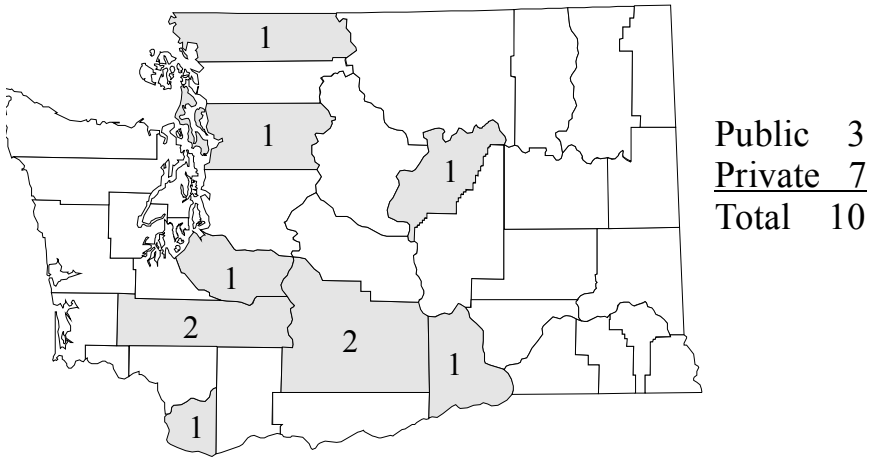
Ancillary - Other Classification

The classification of Ancillary - Other, is not covered or spelled out in regulation but is included here to explain certain anomalies discovered in the reporting process that may have an effect in subsequent reporting years. To qualify for inclusion in this category, a facility type must be either under regulatory modification, be exempted from regulation, or determined to be an obscure facility type needing reclassification or elimination outright.

Landspreading Disposal Facilities
A landspreading disposal facility under the MFS is a facility that applies sludges or other solid wastes onto or incorporates solid waste into the soil surface at greater than agronomic rates and soil conditioners/immobilization rates. Landspreading disposal facilities are regulated under WAC 173-304-450. There were six landspreading sites identified, as well as one sludge and one septage facility in 2001. (Many sites using biosolids for land application will be permitted under the new biosolids regulation discussed Chapter IV.)

Other Facilities
The "other" category of facility types is an actual category of the MFS and applies to "other methods of solid waste handling such as a material resource recovery system for municipal waste not specifically" identified elsewhere in the MFS. The specific regulations for "other" facilities are in WAC 173-304-470. This type of facility is basically a miscellaneous category which is designed to cover new solid waste technologies that are developed between MFS revisions. There were two sites included in the 2001 database. One treated PCS and one vactor waste.

Location of Landspreading and Other Facilities



Public	3
Private	7
Total	10

Operator Certification Program

In Washington state, solid waste landfills and incinerators are required to have certified operators on site at all times, per chapter 70.95D RCW*, Solid Waste Incinerator and Landfill Operators*. The Landfill and Incinerator Operator Certification program was created by the legislature in 1989, through the "Waste Not Washington Act". The implementation rule was adopted in June 1991, chapter 173-300 WAC*, Certification of Operators of Solid Waste Incinerators and Landfill Facilities*.

The requirements for having certified operators on site at all times apply to the following types of facilities: municipal solid waste landfills; inert and demolition landfills; limited and special purpose landfills; and all incinerators that burn solid waste. The law also requires that any person inspecting an applicable solid waste facility must be certified.

Course offerings began in 1992, with those taking the course and passing the test receiving certifications of competency for 3 years. Yearly training courses were held on landfill and incinerator operations until 1995. Direct funding for implementing this program at Ecology is not available. Because of reduced staffing, a home study course

was instituted. This not only reduced the level of effort for Ecology, it provided a cost savings to those who took the course. The certification training however no longer focuses on Washington specific issues for both operators and inspectors.

Over 1,000 persons have taken one or both courses since the programs inception. To date, a total of 535 people have been certified for landfill operations and 369 have been certified for incinerator operations. Certification renewals began in 1994.

In 2001, 88 certificates were up for renewal (49 landfill, 14 incinerator and 25 for both). Notices were sent out in September. Re-certification requests must be submitted to Ecology by years' end.

There continues to be a significant decrease in the number of persons taking the landfill course since 1995. The reduction in the number of certified landfill operators can be attributed to a reduction in the number of landfills since the program began. The number of persons taking the incinerator course has stayed fairly stable.

Chapter III Implementing Solid Waste Activities

Local Planning

Local solid waste planning is the cornerstone of solid waste management in Washington state. The state Legislature asks counties and cities to make sound solid waste handling decisions based on approved and "current" comprehensive solid waste management plans (RCW 70.95.110(1)).

These comprehensive plans detail and inventory all existing solid waste handling facilities within a county and provide an estimate of long-range needs for solid waste facilities projected over a 20-year period. The plans are intended to serve as a guiding document for a county to develop its infrastructure. Since 1989, counties and cities have been required to provide detailed information on waste reduction strategies and recycling programs and schedules for program implementation in the plans.

Ecology provides technical assistance to local governments in preparing and implementing their plans. Ecology also approves the plans. Table 3.1 identifies the local solid waste plans for each county and two cities, Seattle and Everett, that do individual plans. This table shows the status of each local comprehensive solid waste management plan for each county, organized by planning phases, the year the plans were last approved, the waste reduction/recycling goals and comments concerning future planning efforts as of August 2000.

Table 3.1
Current Status of Solid Waste Plans in Washington

COUNTY PLANNING STATUS BY PHASES (as August 2000)			
COUNTY	**CURRENT STATUS (date last approved)**	**WR/R GOAL**	**COMMENTS**
PHASE I			
King	Yes - 1994	50% by 1995 65% by 2000	Recycling goals being reevaluated in update scheduled for completion in 2000. County reached 50% recycling in 1995. The draft plan lists different goals for different recycling alternatives.
Seattle	Yes - 1999	recycle or compost: 60% by 2008	
Kitsap	Yes - 2000	supports the state goal of reaching 50% recycling.	.
Pierce	Yes - 1993	50% WRR by 1995	Currently updating plan
Snohomish	Yes - 1990	50% by 1999	Currently updating plan with scheduled completion in 2000.The new .plan calls for 50% recycling by approximately 2008, but also calls for reexamining the goal.
Everett	Yes - 1996	35% recycling by 2005 3% to 5% WR	

COUNTY PLANNING STATUS BY PHASES (as August 2000)			
COUNTY	**CURRENT STATUS (date last approved)**	**WR/R GOAL**	**COMMENTS**
Spokane	Yes - 1998	50% Recycling by 2008	
PHASE II			
Clallam	Yes - 1993	20% by 1996 40% long range goal	Adopted by County Commissioners 8/2000
Clark	Yes - 1994	50% WRR by 1995	Currently updating plan
Cowlitz	Yes - 1993	50% WRR by 1995	Probably write an amendment
Grays Harbor	Yes - 1992	50% WRR by 1995	Currently updating plan
Island	Yes - 1994	Assist the State in achieving its goal of 50%	Currently updating plan with final approval expected in 2000.
Jefferson	Yes - 1993	Minimum 29% long range	
Lewis	Yes - 1993	18% WRR by 1995	Currently updating plan
Mason	Yes - 1998	35% WRR by 1998	Implementation
Pacific	Yes - 1992	32% WRR by 1996	Currently updating plan
San Juan	Yes - 1996	50% by 1995	
Skagit	Yes - 1994	50% or better by 1995	Currently updating the plan with draft expected late 2000/early 2001.
Skamania	Yes - 1992	40% WRR by 1998 50% long range goal	Currently updating plan
Thurston	Yes - 1993	Increase recycling rate by 2.5% by 2005	Update complete, waiting final approval
Wahkiakum	Yes - 1994	20% WRR by 1996	
Whatcom	Yes - 1999	50% diversion	
PHASE III			
Adams	Yes - 1993	50% WR/R BY 2012	Currently updating plan
Asotin	Yes - 1998	26% by 1997	
Benton	Yes - 1994	35% by 1995	Currently updating plan
Chelan	Yes - 1995	26% by 1995	Beginning plan update
Columbia	Yes - 1994	20% WR/R by 1996	Currently updating Plan
Douglas	Yes - 1994	25% by 1995	Currently updating plan
Ferry	Yes - 1993	35% WR/R by 1995 50% WR/R by 2013	Preparing to update plan
Franklin	Yes - 1994	35% R by 1995 5% WR by 1998	Preparing to update plan
Garfield	Yes - 1993	26% WR/R by 1997	Currently updating plan
Grant	Yes - 1995	22% WR/R by 2000	Amended plan 1999
Kittitas	YES- 1999	50% by 2006 (in update)	
Klickitat	Yes - 2000	50% diversion	
Lincoln	Yes - 1992	35% WR/R by 1997	Amended plan 1999
Okanogan	Yes - 1993	30% by 2000	Currently updating plan
Pend Oreille	Yes - 1994	45% WR/R by 2015	Preparing to update plan
Stevens	Yes - 1994	36% WR/R by 2012	Currently updating plan
Walla Walla	Yes - 1994	40% by 2002	Currently updating plan
Whitman	Yes - 1997	40% WR/R by 2001	
Yakima	Yes - 1994	35% by 1995	Currently updating plan

In addition to solid waste plans, local governments were required to prepare moderate risk waste plans. By January 1992, the last of the 32 plans (representing all of Washington's jurisdictions) was approved. (See Chapter VII Moderate Risk Waste Collection System for more details.) Although not required, many counties are updating their plans.

Financial Assistance to Local Governments

In addition to regulation and technical assistance, Ecology helps to ensure proper waste management by financial assistance through grants and interagency agreements (IAA). Ecology helps local governments fulfill their role as waste managers by providing financial assistance in the form of Coordinated Prevention Grants to develop, implement and enforce their local solid and moderate risk waste management plans.

A new financial assistance program entitled "Community Litter Cleanup Program" began in 1998. The program assists local government through interagency agreements to pay for the cost of picking up litter and cleaning up illegal dumps on public land and public places.

Coordinated Prevention Grants (CPG)
Most of the local solid and moderate risk waste projects supported by grants are funded through the Coordinated Prevention Grant program. Ecology launched this consolidated program of prevention grants for waste management in 1992. Since then, local governments have received over $99.1 million in grants to fund solid and moderate risk waste activities.

The coordinated structure encourages local governments to work together to examine their waste management needs and decide the activities they will propose for grant funding. Ecology allocates the available funds for countywide areas, using a base amount for each county plus a per capita amount, minus the enforcement allocation. These allocations are not entitlements. Local governments must submit satisfactory applications that meet eligibility requirements.

Grant recipients must provide a cash match of at least 25 to 40 percent of the total eligible costs of their projects. The lower match amount is available to counties with high unemployment and low per capita income (also referred to as economically disadvantaged).

This is the second year of the two-year grant cycle, running from January 1, 2000 through December 31, 2001. The total amount awarded for the two years was $16.7 million, with $852,997 of that amount awarded this year for six new grants and 35 amendments to grants awarded last year. These grant funds support over $26 million in solid and moderate risk waste projects.

The waste management activities that the Coordinated Prevention Grant Program funded for the current 2000/01 cycle are broken down in the following categories:

	2000 -2001
Hazardous Waste Planning	$ 138,642
Household Hazardous Waste Implementation	$ 790,833
Household Hazardous Waste Collection and Disposal	$ 5,669,426
Small Quantity Generator Implementation	$ 966,072
Solid Waste Planning	$ 282,043
Solid Waste Enforcement	$ 3,171,240
Groundwater Monitoring Wells	$ 1,500
Waste Reduction and Recycling – Activities	$ 3,982,377
Waste Reduction and Recycling – Capital	$ 1,409,656
Moderate Risk Waste - Capital	$ 290,970
Biomedical Waste Planning	$ 1,500
Total	$ 16,704,259

A Sample of Coordinated Prevention Grants Results for the Year 2000

The biggest spending category and busiest activity in CPG is for Household Hazardous Waste (HHW) Collection & Disposal. During the year 2000 a total of 14.5 million pounds of HHW was collected including:

- **Used lubricating oil** constituted over half of the total, with 8.7 million pounds, or 1.175 million gallons. Ninety three percent of the total was recycled for its energy value or rerefined. Seven percent was contaminated and required disposal.

- **Auto batteries** was the number two category by weight, totaling 1.33 million pounds, or 38,000 batteries. Over 99% of the total was recycled.

- **Latex paint** came in third with 1.27 million pounds, or 138,000 gallons. Over 70% was recycled.

- **Oil paint** was next with 1.16 million pounds, or 126,000 gallons. Over 60% went for energy recovery, 30% was recycled, and 10% was disposed.

- **Other flammables** and **solvents** totaled 918,000 pounds, nearly 70% of which went for energy recovery.

- **Antifreeze** totaled 422,694 pounds or 52,837 gallons, 94% of which was recycled.
  - Other categories included acids, bases, household batteries, pesticides, and used oil filters.

Changes in the Coordinated Prevention Grants Program

During the year 2000, Ecology convened a representative group of recipients for several meetings to discuss the program and suggest changes. Some of the suggested changes were incorporated into the guidelines for the 2002-2003 grant cycle. They include the elimination of the economically disadvantaged category of local government and setting the standard matching funds requirement for all grantees at 25%. Other changes are the elimination of a supplemental cycle with separate guidelines and timelines. Funds over and above the original allocations will now be applied for in the original applications, and the funding decisions will be made simultaneously with the original awards. A major eligibility change is that operational costs for recycling will now be eligible.

Further changes in the program are expected in response to the report by the Joint Legislative Audit Review Committee. The report indicates that the Legislature desires a movement away from making allocations for eligible governments and towards a competition for grant funding based on prospective results. Such changes will not affect grants made for the 2002-2003 cycle. Another factor which will influence the direction of the grant program is the State Solid Waste Plan, which is expected to completed during the 2002-2003 cycle.

Community Litter Cleanup Program

Legislation passed in 1998 (SSB 3058) directs Ecology to provide twenty percent of litter account appropriations to local community cleanup efforts. In response, the Community Litter Cleanup Program (CLCP) was developed and implemented in 1998 with the goal of providing help to local government with the growing problems of litter and illegal dumps. Now entering its 4th cycle, the CLCP continues to be a key element of statewide litter cleanup programs.

Table 3.2
Community Litter Cleanup Program Cycles

1st Cycle	April 1998 - December 1998
2nd Cycle	January – December 1999
3rd Cycle	January 2000 – June 2001
4th Cycle	July 2001 – June 2003

During the third cycle, 39 out of the 41 eligible jurisdictions participated.22

In the third cycle, $2.16 million was dedicated to the program, with each recipient eligible to receive approximately $45,000. The table below highlights the work accomplished during third cycle.

[22] Solid waste planning jurisdictions are eligible to participate in the program. This includes the 39 counties plus the cities of Seattle and Everett. All participated except Asotin and Okanogan Counties.

Table 3.3
Statistics from the Community Litter Cleanup Program
January 2000 – June 2001

Volunteer Hours	37,078
Correctional Crew Hours	197,706
Supervisor Hours	55,550
TOTAL HOURS	**290,334**
Road Miles Cleaned	40,148
Acres Cleaned	10,519
Pounds of Litter Picked Up	**2,836,663**
Pounds of Illegally Dumped Materials Picked Up	**3,130,611**
Pounds of Material Recycled	768,991
Number of Specific Dump Sites Cleaned Up	4,464

In January 2001, the CLCP received Governor Locke's Award for Service and Quality Improvement, in recognition of the tremendous impact the program has had on the cleanliness of the state. Besides the tremendous amounts materials picked up through the program, the use of offender crews provides significant savings to local jails and returns labor value to participating communities. In addition to getting litter and illegal dumps cleaned up and putting offenders to work, a success of the program is getting individuals and businesses involved at the local level, and building a sense of stewardship.

$2,715,673 ($2,351,400 for cleanup, $87,465 for educational activities and $276,808 for "Tools & Trucks") from the Waste Reduction, Recycling and Litter Control Account was provided for the fourth cycle, spanning the '01-'03 biennium. Most projects began July 2001.

Grants to Citizens

Public Participation Grants (PPG)
Washington's chapter 170.105D RCW*, Hazardous Waste Cleanup - Model Toxics Control Act*, provides for a Public Participation Grant program. These grants make it easier for people (groups of three or more unrelated individuals or not-for-profit public interest organizations) to be involved in two types of waste grant issues:

- The cleanup of hazardous waste sites.
- Carrying out the state's solid and hazardous waste management priorities.

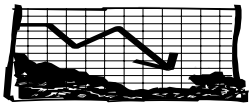
Public Participation Grant projects motivate people to change their behavior and take action that will improve the environment. These projects create awareness of the causes and the costs of pollution. They provide strategies and methods for solving environmental problems. This highly competitive program applies strict criteria to applications, awarding grants to projects that prevent pollution and produce measurable benefits to the environment.

Changes were made in the grant program that aligned the program more closely with the state's biennial funding scheme and provided applicants the opportunity for two-year funding in the 2001-2003 biennium.

Only three grants were issued from July 1, 2000 through June 30, 2001. Changes to the application process and timing of the grant awards delayed issuance of other new grants until after the beginning of Fiscal Year 2002. These three grants were awarded to finish the previous year's application cycle, providing $20,000 for cleanup of a hazardous waste site and $27,300 for carrying out solid and hazardous waste management priorities. These projects helped people:

For the July 1, 2001 through June 30, 2003 grant period, Ecology initially offered 29 groups/organizations Public Participation grants, for a total of $829,000. One of the grant recipients declined the grant offer due to changes in their organizational focus. This left 28 groups/organizations accepting the grant offers for a final total of $812,000. These funds provided seventeen (17) grants for cleanup of hazardous waste sites and eleven (11) grants for carrying out solid and hazardous waste management priorities.

Chapter IV Waste Reduction/Recycling



Ecology's Efforts

Washington State has established priorities for solid waste management in the *Solid Waste Management Act*, chapter 70.95 RCW (see sidebar). Waste reduction is the highest priority, followed by recycling. The statute defines waste reduction as, "reducing the amount or toxicity of waste generated or reusing materials." Strategies include purchasing less and promotion of the reuse of products. Recycling is defined as; "transforming or re-manufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration".

SOLID WASTE MANAGEMENT PRIORITIES
Chapter 70.95 RCW

1. Waste reduction.
2. Recycling, with source separation of recyclable materials as the preferred method.
3. Energy recovery, incineration, or landfilling of separated waste.
4. Energy recovery, incineration, or landfilling of mixed waste.

Ecology is working in several areas of waste reduction/recycling. The Solid Waste & Financial Assistance Program's (SW&FAP's) regional Recycling Specialists help counties and cities implement the waste reduction and recycling recommendations within their local solid waste management plans. Efforts are underway to manage the organics waste stream and work has continued with sustainable building initiatives.

Assistance to Local Governments

Technical Assistance

Over the last decade, SWFAP staff has provided technical assistance to local government to develop strong programs and provide basic levels of waste reduction, recycling, composting, MRW management and environmental education throughout the state. Now that recycling infrastructure and successful government programs are in place, Ecology is shifting its emphasis to technical assistance programs designed to maximize waste reduction and recycling and to begin moving upstream in the area of waste generation by promoting the principles of sustainable resource management.

One of these programs will offer technical assistance services to business, industry, agriculture, local governments and public institutions as a collaborative effort to reduce the generation of solid wastes and to beneficially use or recycle the solid wastes generated. Site specific opportunities and challenges associated with reducing natural resource consumption and waste generation, reusing and recycling wastes, preventing pollution and implementing efficiencies in operations will be evaluated by SWFAP staff. Collaborative partnerships between the facility, Ecology and appropriate solid waste management professionals or technical experts from the public and private sector will be used to identify and implement options for process improvement and materials or waste handling. This

program should also help facilities comply with environmental regulations and permit requirements and, potentially, save money.

The technical assistance services program will be initiated by implementing several pilot projects across the state. Case studies will be prepared to document program implementation; outcomes and lessons learned, and will be used to refine the program for future implementation. An ultimate goal of the program is to develop a toolbox of case studies, directory of options and approaches that have been successful and other resource materials for local government and stakeholder use.

Organic wastes and residues represent a large solid waste stream that can be diverted to a variety of beneficial uses including improving soil health, increasing soil moisture retention, reducing surface water runoff and soil erosion and adding nutrient value to soils and feeds. Thus, emphasis for initial development and pilot project implementation of the technical assistance services program will be placed on the organic waste streams associated with the food processing industry and agricultural operations. As the program is refined, it will be expanded to provide technical assistance services to other types of business, industry and institutions interested in reducing natural resource consumption and waste generation, reusing and recycling wastes, preventing pollution and implementing efficiencies in their operations.

Training Courses and Workshops

Related to this basic level of assistance is providing local government with opportunities for the training they need for job performance. SW&FAP Recycling Specialists continually work to build capacity within local government staff. Technical training includes such topics as working with the media, public education, sustainability, as well as informational workshops such as *the Minimal Functional Standards for Solid Waste Facilities (MFS)* revisions, used oil collection and fluorescent lamp recycling.

Solid Waste Professional Meetings

Another valuable tool is "Solid Waste Professional Meetings" held quarterly in each region. These meetings offer Ecology and local government staff an opportunity to meet and share information. This networking opportunity allows local government staff the ability to draw on each other's expertise, share successful ideas and programs and keep each other from having to "reinvent the wheel". Most importantly, these meetings include roundtable discussions aimed at solving specific problems through county-to-county technical assistance discussions.

Planning and Grants Assistance

Ecology's Recycling Specialists assist grant officers in determining appropriate activities for the Coordinated Prevention Grant Program, Community Litter Cleanup Program, and solid waste enforcement grant program. Staff also help planners review the waste reduction and recycling portions of local solid waste and moderate risk waste plan revisions.

Education and Outreach

Ecology's SWFAP conducts several activities aimed at public education as well as recognition for outstanding waste reduction and recycling programs in government, business and schools. All of the education and outreach efforts listed here, along with technical assistance and training, work together to promote waste reduction and recycling in Washington State.

Recycling Information Line

Ecology operates 1-800-RECYCLE to help citizens find ways to reduce waste and recycle. In 2000, over 15,000 callers were assisted. While many callers simply want to know where and how to recycle common items (those taken by recycling centers and local curbside programs), others have questions of a more complex nature. The information line can suggest alternatives to hazardous household products, and direct callers to locations for the safe disposal of household hazardous waste. Information on used oil recycling and used oil haulers is provided, along with information on locations for the recycling of construction, demolition and landclearing debris. Referrals are made to companies that offer commercial pickup for business recycling. Targeted waste streams, such as electronic scrap, continue to offer the information line increased opportunities.

While many local governments operate information lines within their own areas, the statewide information line continues to serve as a first contact for many. Ecology's statewide information line can also provide callers with information on specialized recycling opportunities beyond their own city or county.

A database is maintained by periodically contacting all recyclers to determine commodities accepted, fees if any, and hours. The database has recently been expanded to include recyclable electronic items, and also lists vendors of products made from recycled construction waste. Links to local government and recycling company Web sites are now listed. Basic household recycling information from the database can be found at the information line's own Web site: http://1800recycle.wa.gov.

Other specific databases on the SWFAP homepage provide information on using recycled-content building materials and sustainable building materials (http://www.ecy.wa.gov/programs/swfa/cdl/index.html) and information about solid waste facilities and disposal data (http://www.ecy.wa.gov/programs/swfa/index.html).

The 1-800-RECYCLE Web site also includes a WebPage developed for kids of all ages. "Fun with Recycling" has neat links to other environmental education sites and fun environmental games to play. It also has interesting trivia facts on different recyclable materials. Check it out at http://1800recycle.wa.gov/kids/index.htm.

SWFAP Newsletters

The Solid Waste and Financial Assistance Program has combined its four regional newsletters into one statewide quarterly newsletter. The first edition of *The Closed-Loop*

Scoop debuted in January 2001. The newsletter provides a mechanism to relay important information to public works departments, health districts, private recyclers and other clients and stakeholders. All SWFAP staff and local government personnel are encouraged to contribute articles to help readers stay current on legislative matters, share program successes and ideas, and announce upcoming meetings. The newsletter is sent to over 800 individuals and organizations across the state; those parties with e-mail addresses receive their copy electronically. *The Closed-Loop Scoop* can also be found on the Ecology SWFAP Homepage, http://www.ecy.wa.gov/programs/swfa/index.html.

Washington State Recycling Association Support-
SWFAP staff serves as a board member of the Washington State Recycling Association, a trade association, whose mission is "to be the vision and voice of recycling in Washington state". The association plays a vital role in promoting recycling and provides a forum for networking and information sharing through its annual conference, newsletters, e-mail updates and workshops. Staff co-chair a education committee who is working on the development a "hot topics" campaign that tries to link recycling to other environmental issue that may get more attention.

Earth Day
SWFAP staff provide technical assistance to local governments in order to help plan, organize, implement and promote community Earth Day events. Earth Day activities provide an opportunity for Ecology staff and local government to get the word out to the public about the importance and benefits of waste reduction, recycling and proper solid waste management.

America Recycles Day
The Mission of America Recycles Day is to hold an annual national awareness event to promote the social, environmental and economic benefits of recycling and buying recycled. The goals are to increase the purchase of products made from recycled materials and increase recycling throughout America. The 2000 theme was “For Our Children’s Future…Buy Recycled Today”. Ecology staff helped local governments implement the fourth annual national America Recycles Day on November 15th by promoting a statewide public school poster contest and providing assistance for hundreds of local community events promoting buying recycled products.

“Walk Our Talk”
Ecology's Waste Reduction and Recycling committee was formed in 1999. Its mission is to "To identify and increase opportunities to reduce waste and improve recycling, and to provide information and education to staff so they can model their behavior after Ecology's sustainability principles". Waste sorts conducted in 2001 showed a reduction of the amount of recyclables in the waste stream and an increase in % recycled. The agency is above the 50% goal, recycling 63% of our waste. In order to encourage waste reduction, awareness of our waste, and free up janitorial time to help monitor our recycling and sort contamination, the committee started a program where staff dump their own trash into

central garbage cans. The committee is monitoring this change and reporting back to management on the results. Other projects include the development of a Environmentally Preferable Purchasing Policy and Guidelines, identifying composting options and the development of a waste reduction and recycling plan for the headquarters facility that can be used as a model for other agencies and facilities.

Ecology's Waste Reduction and Recycling Committee recently decided to shift recycling collection service at the Lacey building to Weyerhaeuser. Weyerhaeuser is able to offer a less expensive service because it is the end user of the paper materials. Although the company is interested only in the fiber, it offers full-service recycling because many businesses want a "one-stop" recycling service. Partnerships allow the company to recycle the other materials collected, such as aluminum, glass and plastics. Because of the switch, the Waste Reduction and Recycling Committee will save the agency $6,000 per year. Since the success of the committee work, General Administration is also investigating switching service providers potentially leading to even greater savings for the state.

Organics

Organics continue to be a major portion of the waste stream. New methods of handling these materials are being used by the public and private sector. Ecology is addressing several portions of the organic waste stream and the new handling methods used for the management of those wastes, including composting, biosolids management and the land application of solid wastes for beneficial uses.

Composting

Composting is considered a key element of the state's strategy of reaching the statewide 50% recycling goal. Operators expanding or developing compost facilities face potentially inconsistent requirements from various regulating entities. To support the composting industry in facing these challenges, Ecology developed the "Compost Facility Resource Handbook" and issued the final document in November 1998. The handbook is a guidance document that describes the current regulatory framework for compost facilities and provides criteria for baseline facility designs and management practices.

Ecology has incorporated many of the facility designs and operating standards from the handbook into draft language for the new solid waste rule under development, Chapter 173-350 WAC, *Minimum Functional Standards for Solid Waste Handling* (MFS). The structure of the new section for composting facility standards will include categorical exemptions for those composting activities posing little or no environmental risk. All exempt facilities will have to meet performance standards and other terms and conditions for protecting the environment. Another important component of the new composting section is a set of compost quality criteria. Finished product must meet the criteria in order to be considered "composted material," and no longer subject to solid waste handling requirements. Ecology's goal in creating a new section for compost facility standards is to promote composting while protecting the environment. (See Chapter I for a discussion of the MFS revision project.)

Biosolids

In the spring of 1998, Ecology issued a new rule, chapter 173-308 WAC*, Biosolids Management*, and a new statewide general permit for biosolids management. Since that time, staff have been focusing on three workload areas:

- State program delegation to local health departments
- Permit program implementation
- Technical assistance

Local Delegation

By late 2001, we expect that approximately fourteen local jurisdictional health departments will have accepted some degree of delegated authority to work with Ecology on implementation of the state biosolids program. Local funding and workload issues have been barriers to delegation. An unanticipated barrier has been continued concern regarding implementation of the septage management portion of the state program. Ecology expects that the pace of delegation will be slow in the coming year, but will continue working toward developing viable local partnerships through delegation agreements. Resolution of certain issues pertaining to septage management could improve prospects for local partnerships.

Permit Program

Ecology estimates there are about 350 Treatment Works Treating Domestic Sewage statewide (these are the facilities which are subject to permitting under the state biosolids program). Most of these are publicly owned treatment works (municipal sewage treatment plants). Several of these facilities manage their biosolids at commercial farming operations that are also subject to the state permitting program. All facilities are obligated to comply with any applicable requirements of the state rule, regardless of their status under the permit system.

Treatment works come under the biosolids permit system in two phases. The first phase, called "provisional approval," obligates a facility to comply with all applicable requirements of the statewide general permit. The second phase – final approval – is the process whereby facility specific requirements beyond those required under the rule or basic general permit are developed and put in place. This process is necessarily slower due to the complexity of reviewing individual permit applications with limited staff resources. Virtually all facilities are now under provisional approval, and about thirty final approvals of coverage under the statewide permit have been granted as of October 2001.

Permitting of septage land application sites and beneficial use facilities has consumed a disproportionate amount of staff time. Ecology expects the pace of permit issuance to continue improving as the program matures and agency staff and those at regulated facilities become more familiar with the permit process and requirements. Resolution of difficulties encountered in responding to septage permit applications would speed the overall permit issuance process.

Technical Assistance
Staff provide a broad range of technical assistance to the regulated community, local government officials, consultants, and other interested parties. Technical assistance activities include phone consultations, field visits, attendance at meetings, and presentations at workshops and conferences. Continued heavy workload is expected in the technical assistance area, especially as program staff push forward with permitting. Staff will continue working to balance technical assistance against permit program implementation so that a measure of success can be achieved on both fronts.

Year Ahead
The state program was developed around a minimum budget. Therefore resources are strained and the agency does not expect this to change. The approach using a statewide general permit and Notice of Intent to obtain provisional coverage has worked well. Dealing with septage management issues and beneficial use facility permitting has been a significant drain on resources. Proposals for beneficial use facility permits seem to have tapered off, although the department is still working with several. Septage permitting has been the major impediment to more efficient and expedient permitting, overall. The department is preparing a strategy to improve performance in this area. As a first step, Ecology has submitted a supplemental budget request to the 2002 Legislature. We have the support of major fee payers for the request, and the funds would be drawn from the existing fund balance.

Staff are frequently and increasingly called upon to provide their expertise in the management of organic residuals other than biosolids. This is consistent with observations of a growing preference for composting and land application of organic residuals (sometimes in combination with biosolids), as opposed to landfilling. SW&FAP will have to balance this workload with other obligations. Ecology has not yet requested delegation of federal program authority from U.S. EPA, but hopes to do so in 2002.

Sustainable Building Program

During the biennium, Solid Waste and Financial Assistance staff worked To ensure continued operation of the Recycled Building Materials Exchange (RBME) service and participated in formation and development of the Cascadia Green Building Council. Solid Waste staff also developed a graduate-level, two-semester course in Sustainable Design and Construction through Washington State University. SWFAP staff also recruited and coordinated the efforts several sustainable design experts in contributing to the design of an innovative low-income, multi-family housing project.

Litter Programs

Chapter 70.93 Revised Code of Washington, the Waste Reduction Recycling and Model Litter Control Act, places Ecology in the leadership role of managing statewide litter programs. Work during 2000 and throughout 2001 focused on planning the first statewide litter prevention campaign in over ten years while maintaining significant levels of litter and illegal dump cleanup. Core elements of the litter programs remain:

- Administering allocations from the Litter Account;
- Strengthening partnerships with other state agencies;
- Facilitating communication and coordination of litter control and prevention activities; and,
- Deploying the Ecology Youth Corps.

Administering Allocations from the Litter Account
A litter programs coordinator tracks progress in litter prevention and pickup, manages the budgeting process for litter pickup programs, and serves as a central resource for collecting and sharing litter information. Legislation directs the allocation of litter funds as follows: twenty percent to fund the Community Litter Cleanup Program (CLCP), thirty percent to fund waste reduction and recycling efforts within Ecology, and fifty percent to fund litter clean-up efforts. Besides funding the Ecology Youth Corps (EYC), the fifty- percent dedicated to clean-up efforts also funds litter activities carried out by other state agencies. Funding for the upcoming litter prevention campaign also comes from the fifty percent.

The following pages focus on litter cleanup and prevention activities funded by the fifty percent. Information on the Community Litter Cleanup Program funded by the twenty percent can be found in Chapter III. Information on recycling activities funded by the thirty percent can be found in this chapter.

Statewide Litter Prevention
The most significant work in 2001 involved planning a comprehensive litter prevention strategy to change the behavior of litterers. Based on research conducted in 1999, the campaign focuses on roadside litter deposited through the following behaviors: deliberate tossing of cigarette butts, beverage containers, and other packaging; uncovered and unsecured loads; and failure to clean out the beds of pickup trucks. Based on focus group research the campaign messages have an enforcement theme with information about littering fines and penalties. Key elements include a media campaign (television, print, and radio, operation of a litter hotline, a roadway and retail signage program, ongoing public relations, distribution of litterbags, and an enforcement plan.

Ecology is partnering with many state agencies and local governments as part of the campaign implementation. Our primary state agency partners are Washington Department of Transportation and Washington State Patrol. Other key agencies include those represented on the workgroup (described below), Department of Licensing, and Washington Traffic Safety Commission. Ecology has also secured media partners, Belo (television) and Entercom (radio) to promote and air the media segments.

The campaign is scheduled to launch in the spring of 2002 and extend through 2003.

Partnerships with Other State Agencies
The state workgroup continued to function, meeting several times a year to review activities, improve coordination, and discuss future funding. (The workgroup is comprised of representatives from Departments of Corrections, Natural Resources, Transportation, and the Parks and Recreation Commission.) Using a consensus process, the workgroup negotiated $1.097 million in interagency agreements to fund litter activities carried out by the state agencies during the '99 - '01 biennium, and $1.030 for the '01-'03 biennium. Table 4.1 below shows the funding provided through interagency agreements for each biennium.

Table 4.1
Interagency Agreements between Ecology and
Other State Agency for Litter Activities
July 1, 1999– June 30, 2003

Agency	FY00/01	FY02/03
Dept. of Corrections	$492,000	$466,000
Dept. of Natural Resources	$497,000	$468,000
Dept. of Transportation	$78,000	$70,000
Parks & Recreation	$30,000	$26,000
TOTAL	**$1,097,000**	**$1,030,000**

Department of Corrections
The Department of Corrections runs community based correctional litter crews as well as crews based from correctional institutions. These crews pickup litter on state roads, on state lands, and in local communities, providing valuable cleanup service. The '99-'01 interagency agreement between Ecology and Corrections provided funding ($492,000) for year-round correctional crews in Spokane, Ellensburg, Wenatchee, an administrative position in Seattle, and half-year crews in Monroe and Connell. Table 4.2 summarizes activity of those crews. In the '01-'03 agreement, Ecology provides $466,000 for crews in Spokane, Ellensburg, Wenatchee, Pasco and an administrative position in Seattle (dropping the institutional crews).

Table 4.2
Department of Corrections Litter Removal Activity
'99 – '01 Biennium

	FY00	FY01
Hours of Work (supervisor and offender)	50,719	45,546
Pounds of Litter & Illegally Dumped Materials Removed	813,578	908,892
# of illegal dump sites cleaned	345	571
Miles of road cleaned	7,641	5,058
Acres cleaned	2,203	2,394

Department of Natural Resources

The Department of Natural Resources Camps Program, in partnership with Department of Corrections, puts offender crews to work on state lands. As illustrated by the data in Table 4.3, this program continues to have a tremendous impact on the cleanup of litter and illegally dumped materials on state-owned forests. The '99-'01 interagency agreement between Ecology and DNR provided funding ($497,000) for part time crews at the following camps: Naselle, Larch, Cedar Creek, Mission Creek, Monroe, Olympic, and Airway Heights. The funding also went towards a study that aimed to quantify the magnitude of illegal dumping in state forests and recommended a more coordinated and standardized agency response. The report became available in August 2001. In the '01-'03 agreement, Ecology provides $468,000. Funding for cleanup crews is expanded to include contracted and volunteer crew activities as well as some enforcement activities.

Table 4.3
Department of Natural Resources Litter Removal Activity
'99 – '01 Biennium

	FY00	FY01
Hours of Work (supervisor and offender)	22,114	33,493
Pounds of Litter Removed	104,603	143,190
Pounds of Illegally Dumped Materials Removed	192,116	399,087
# of illegal dump sites cleaned	174	535
Miles of road cleaned	1,282	3,269
Acres cleaned	160	122

Department of Transportation

The Department of Transportation (DOT) is responsible for picking up litter along state roads including the bags of litter collected by Ecology Youth Corps, Department of Corrections, and Adopt-a-Highway groups. The '99-'01 interagency agreement between Ecology and Transportation provided funding ($78,000) to offset the costs of disposal and to purchase trailers. Table 4.4 summarizes the litter work accomplished by Transportation crews in the '99-'01 biennium.

Ecology and DOT's partnership to combat litter continues to grow stronger, as DOT has offered support to the litter campaign. DOT has pledged to replace approximately 200 out-of-date highway litter signs with new ones that state the campaign slogan and the toll-free litter hotline phone number. In the '01-'03 agreement, Ecology provides $70,000 to offset DOT's disposal costs.

Table 4.4
Department of Transportation Litter Removal Activity
'99 – '01 Biennium

DOT Region	Amount of Litter Disposed (Cubic Yards)		Total Pickup Costs (Labor/Equipment)*	
	FY00	**FY01**	**FY00**	**FY01**
Northwest	4,017	5,281	$261,921	$417,879
North Central	1,084	1,013	$76,660	$65,134
Olympic	642	1,627	$189,859	$256,784
Southwest	751	4,456	$251,614	$271,301
South Central	2,163	4,994	$182,705	$223,486
Eastern	1,692	2,367	$194,939	$237,035
Total	**10,349**	**19,738**	**$1,157,698**	**1,471,619**
*Does not include disposal costs				

Parks and Recreation Commission

The Parks and Recreation Commission (Parks) traditionally uses litter funds on waste reduction recycling efforts as well as litter control. Most litter collection is done by park rangers, park users, and volunteers. Parks used the $30,000 provided through the '99-'01 interagency agreement to purchase recycling equipment and signage at two state parks and to buy litter cleanup supplies. For the '01-'03 agreement, Ecology has set aside $26,000 to fund activities that have yet to be determined.

Ecology Youth Corps

Fiscal year 2001 marked the 26th year of operation for the Ecology Youth Corps (EYC). Under chapter 70.93 RCW, the *Waste Reduction, Recycling, and Model Litter Control Act*, the EYC operates as a "…litter patrol program to employ youth from the state to remove litter from places and areas that are most visible to the public…" The Act finds that the proliferation of litter discarded around the state is a public health hazard and impairs the healthful, clean and beautiful environment.

EYC operates two types of crews, median crews and youth crews. Median crews are composed of young adults 18 years and older who clean complex and challenging areas such as highway median strips, barriered interchanges, and other high traffic areas. Some median crews begin operation as early as spring and run through the end of fall, while others work solely in the spring or fall.

The EYC Youth crews consist of 14–17 year old youth who clean shoulder areas and interchanges of major state and interstate highways as well as city and county roads, public access areas, school grounds and other public areas. Summer Youth crew members work one four-week session at the beginning of summer, with a complete turnover of crews occurring mid-summer. Weekend crews work weekends in the Eastern region at various times during the year.

Statewide, a total of 92 different EYC litter crews were deployed from July 1, 2000 through June 30, 2001:

- 88 Summer Youth crews
- 19 Median crews
- 2 Weekend Youth crews

Crews were based in the following counties:

NWRO: King, Kitsap, Skagit, Snohomish, and Whatcom.
SWRO: Clark, Grays Harbor, Lewis, Mason, Pacific, Pierce, Thurston.
ERO: Adams, Asotin, Grant, Ferry, Franklin, Garfield, Spokane, Stevens, and Whitman.
CRO: Benton, Chelan, Kittitas, Klickitat, Okanogan, and Yakima.

This fiscal year crews were responsible for picking up a grand total of 61,126 bags of litter over a total of 13,677 road miles and 223 acres. This is the equivalent of 458 tons of litter, or 122,252 cubic feet. Of this total amount of litter 8,354 bags were recycled. Crews recycled a total of 93,178 lbs. or 46.6 tons of materials (Table 4.4).

Table 4.5
Recycling Totals from EYC Crews

Recyclable	Pounds
Aluminum	18,875 lbs.
Metal	24,994 lbs.
Glass	39,589 lbs.
Plastics	7,181 lbs.
Misc.	2,539 lbs.

The Ecology Youth Corps also ensures that youth learn about the environment. Crews learn about waste reduction, litter abatement, recycling, composting, and other environmental issues such as global warming, water quality, salmon recovery and the principles of sustainability.

Looking Ahead

Despite increased litter pickup activities over the last four years, Washington's litter problem continues to worsen. Litter is more than an aesthetic problem. It threatens human health and safety, degrades the environment, and creates a poor image for our State. While approximately 7 million pounds of litter and illegally dumped materials were picked up in 2000, our research estimates that over 22 million pounds are littered on state roadways and in public areas each year. Data from WSDOT also indicates that in many areas of the State roads are dirtier than ever. It has become evident that Washington will not meet its goal of zero litter through cleanup efforts alone. A litter prevention campaign is desperately needed.

Now that a prevention strategy has been developed, Ecology will devote significant resources to implementing it. Ecology will continue to build on partnerships with state agencies, local governments, and businesses to extend the reach and impact of the campaign over the next two years. The challenge will be finding a balance between implementing the prevention campaign and maintaining a basic level of cleanup. We will be carefully monitoring all elements of the prevention campaign in attempts to measure its impact.

Recognizing Waste Reduction and Recycling Efforts

Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools
On May 4, 2001, at a ceremony in the St. Martin's Worthington Center, Ecology Director Tom Fitzimmons welcomed and congratulated the award recipients. Solid Waste & Financial Assistance Program Manager Cullen Stephenson presented $13,000 in cash awards to 11 schools. Each winning school was judged on the basis of comprehensive, efficient, and innovative approaches to waste reduction and recycling during the 1998-99 school year. The 2000 ceremony was attended by over 100 school children.

Several of this year's winning schools had also won awards in past years. They continue to build on previous accomplishments and win new recognition, this time for improving their award winning programs.

Award winning schools carry out active waste reduction and recycling programs during the school year. Each school also has an education component to support their waste reduction and recycling goals, often based on Ecology's waste management teacher training and curriculum package, "A-Way with Waste." In varying numbers, each school recycles aluminum and other metals, glass, cardboard and mixed paper, white paper, newsprint, food wastes, and plastic. The schools also practice many classroom and office waste reduction techniques, such as making two-sided copies, purchasing recycled products, reuse of surplus items, etc. Some of the additional innovative activities include:

- creative art projects using materials that are typically recycled or thrown-away;
- using glass and plastic containers for everything from sorting supplies to conducting hydroponic experiments;
- parting-out or striping discarded computers of useable materials then using the materials to rebuild existing computers; and
- developing a model program for other schools to follow.

Many schools practice environmental stewardship with school-based beautification projects. School recycling programs often extend into the local communities. In several cases the school program is the largest recycling effort the community has, and the reason why local citizens, businesses, and tribes are staying involved in the recycling effort.

Table 4.6 shows this year's recipients, their location, and the award they received. For detailed information about the schools' recycling program, contact the Recycling Coordinator at the school.

Table 4.6
2000-2001 Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools Awards

School	Location
Outstanding Waste Reduction and Recycling Programs ($2,500 each)	
Mt. Baker Junior/Senior High School	Deming, Whatcom County
Toppenish Middle School	Toppenish, Yakima County
Best Waste Reduction Program ($1,000 each)	
Trout Lake School	Trout Lake, Klickitat County
Eisenhower Middle School	Everett, Snohomish County
Acme Elementary School	Deming, Whatcom County
Best Recycling Program ($1,000 each)	
Chelan Middle/High School	Waldron Island, San Juan County
Mill A School	Toppenish, Yakima County
Capital High School	Olympia, Thurston County
Sunnyside High School	Sunnyside, Yakima County
Stratton Elementary School	Newport, Pend Oreille County

Since our public schools make up approximately a fifth of Washington's population, it is important that Ecology continue to conduct outreach activities such as the school awards program. Such a large segment of our state's population cannot be ignored if we hope to reach our recycling goal of 50 percent.

The number of applicants remained low and those schools repeatedly participate. Because of this Ecology has decided to postpone the school awards program for one year. This decision was not easy since this awards program has had a positive impact on our environment. The good news is that during this time we will be reviewing the program and making changes that reflect our vision of a sustainable environment. We hope for even more positive impacts in the future.

Waste Reduction and Recycling Awards
Each year, Ecology presents "Waste Reduction and Recycling Awards" at the Washington State Recycling Association Conference. These awards recognize a wide variety of programs being instituted by state and local governments, the private sector, non-profit

groups and individuals, that show a commitment to finding ways to reduce waste or recycle material. Table 4.7 lists the award winners for 2001.

Table 4.7
2000 Waste Reduction & Recycling Awards for Local Government and Businesses

Best Small-Business Program (under 100 employees)

A-1 Builders, Inc.

The award for the best program for companies with fewer than 100 employees goes to **A-1 Builders, Inc**. and its "Journey Toward Sustainability" program. A-1 Builders is a full-service building/remodeling company with a very strong environmental ethic. It uses a system called "The Natural Step" to work toward its goal of sustainability. This system focuses on productivity to meet human needs, without systematically diminishing nature or natural resources.

The company's design division creates spaces and products that promote waste prevention, reduction and recycling, and the construction division diverts waste during demolition and construction. A-1 walks "our" talk. From a client's first visit to the office to completion of the project, responsible product stewardship is evident.

Contracts with clients are detailed. They include avoiding scarce, irreplaceable or endangered resources; using durable materials; creating healthy spaces; efficiently using energy and water; and selecting materials that generate the least amount of pollution and protect natural habitats.

Best Large-Business Program (more than 100 employees)

Albertson's

Albertson's uses its size and influence to promote recycling programs in order to re-use natural resources, reduce operating costs and minimize effects on the environment. The company manages solid waste with pollution-prevention in mind. Albertson's is constantly reviewing store and distribution-center practices to reduce the amount of waste that is generated and to use natural resources more efficiently.

Albertson's recycles a long list of items, including cardboard, plastic shrink wrap, plastic grocery bags, bakery buckets, used cooking oil, meat and bone scraps, single-use cameras, printer cartridges, metal scrap, wooden-pallet scrap, used computer and electronic equipment, oil, and antifreeze. It also collects vegetable and fruit waste for composting.

Albertson's stores collect plastic grocery bags, dry-cleaning bags and plastic newspaper wrappers for recycling. To encourage recycling, all new and remodeled stores display a plastic-lumber bench and a sign that indicates the bench contains 3,900 plastic grocery bags.

Additionally, the company proves that recycling does pay. During the current remodel of Albertson's corporate headquarters, recycling 80 tons of carpet saved Albertson's $10,000 in waste-disposal costs. On a national scale, Albertson's recycled 318,000 tons of cardboard, saving $27 million in disposal costs and generating $30 million in recycling revenues.

Best Large-Government Program (population more Spokane Regional Solid Waste System

Kitsap County's Solid-Waste Division

Kitsap County's Solid-Waste Division and its public-education campaign called "Alternatives to Outdoor Burning." Honorable mention was given to the Puget Sound Clean Air Agency, which helped the county with the campaign. The Kitsap County Solid-Waste Division had the foresight to plan for the waste that would pile up after the state's permanent burn-ban went into effect at the end of last year. The county offered the following alternatives to outdoor burning:

- Curbside recycling of yard debris in all burn-ban areas
- Yard-debris collection at drop-box locations
- Home-composting education and outreach

The county also published lists of:

- Residential chipper services
- Commercial drop locations for stumps and brush
- Mobile chipper services for land-clearing debris

The county prepared citizens before the ban was mandatory, and enhanced its own ability to handle the increased volume of material. Private services were notified and alerted about the potential for new business and also given time to prepare. All in all, it was a well-organized effort and campaign.

Best Federal Facility

U.S. Naval Air Station at Whidbey Island

The **U.S. Naval Air Station at Whidbey Island** continues to expand its program and test new ideas to reduce the amount of waste heading to landfills. Two years ago, the Navy hired a compost operator, Brian Giles, to help plan and implement a composting project – targeting food waste from restaurants, commissaries and its cafeteria, along with grass and yard-debris from the 1,550 homes at the naval base.

In June 2000, the "Navy Whidbey Recycle" program began operating the Navy's first in-vessel composting facility. The forced-air system speeds the composting process within a large in-vessel container. Within the first three months, 150 tons of organic material were diverted from landfills. The facility expects to increase its composting to 1,800 tons annually.

Special Recognition Award for Achievement

Radiance Herbs & Massage

Employees at **Radiance Herbs & Massage** recognize that one of their jobs is the ethical and conscientious selection of products and services. The store offers hundreds of herbs, teas, spices, pot-purrs and body-care products in bulk. Loyal customers re-use existing containers, saving both money and resources.

Employees constantly generate ideas to re-use and reduce the materials that come into the store. They communicate with their product suppliers to reduce over-packaging and make sure existing packaging is recyclable. One employee even collects food waste to compost at home.

Space for recycling can be a challenge for a small business, and Radiance works with neighboring businesses to share storage space for recyclables, making it easier for the recycling company to pick up the materials.

The store recycles 80 percent of its waste by volume, and prevents waste by offering bulk products. It is not always easy to do the right thing, Radiance makes the extra effort to conserve our state's resources.

Special Recognition Award for Achievement

King County's Solid-Waste Division's Computer Recovery Program

King County's Solid-Waste Division sponsored this project in partnership with Seattle Public Utilities and the local hazardous-waste-management program. It was developed to address the lack of re-use and recycling opportunities for electronic equipment, especially computers. The computer recovery project started as a network of computer-repair and resale shops, local nonprofit groups, computer retailers, and government agencies that offered 34 locations where residents and businesses could take equipment to be donated, upgraded or recycled.

During the four-month pilot phase of the program, 6,217 broken monitors were turned in. This equates to approximately 93 tons of monitors that were diverted from the landfill. Another 45 tons of other computer equipment were re-used or recycled.

The project also stimulated the local recycling economy. As a result of this project, local recycler "Total Reclaim" expanded it business and opened a new 12,000-square-foot facility to process broken computer monitors. This project provides an excellent example of inter-government cooperation and partnering with private industry to develop creative solutions to common problems. This is a program that can be modeled across the state and the nation.

Chapter V The 2000 Recycling Survey for Washington

In 1989, the Legislature, in amending the *Solid Waste Management Act* (chapter 70.95 RCW) set a state recycling goal of 50%, to be achieved by 1995. They also stated that recycling should be made at least as affordable and convenient to citizens as garbage disposal.

In response, local governments began putting in place various forms of recycling ranging from drop boxes to curbside collection of a variety of recyclable materials. In the year 2000, over 150 cities and counties offered curbside collection of recyclable materials such as glass, paper, and metals while (count) an increasing number are offering curbside collection of yard waste. The availability of recycling collection programs in the commercial sector is also increasing.

Recycling Rates

Each year since 1987, Ecology has conducted a survey to measure the statewide recycling rate. Information is provided by local governments, haulers, recyclers, brokers and other handlers of materials from the recyclable portion[23] of the waste stream that are collected for recycling.

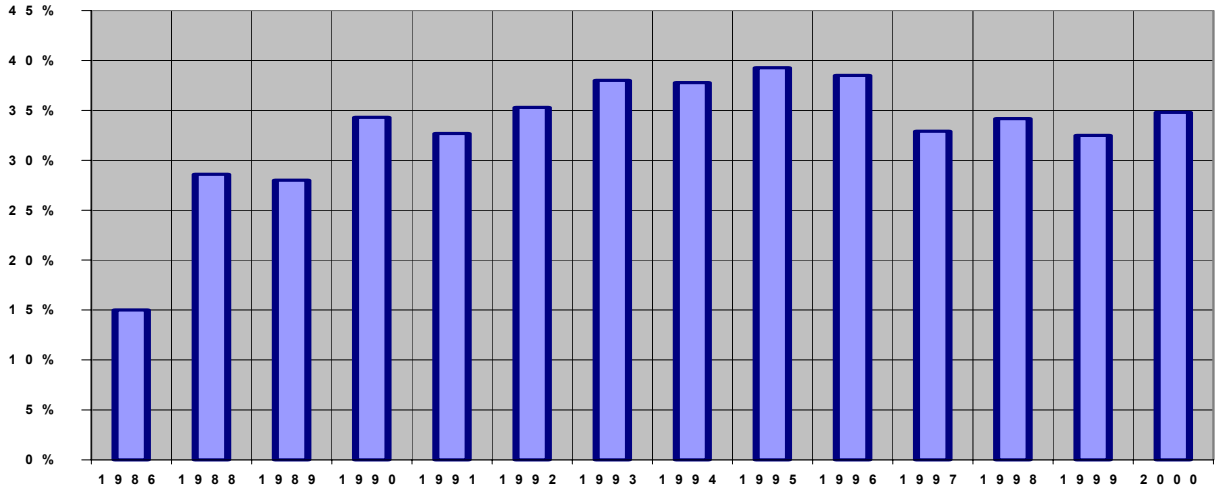
From 1987 to 1993, the measured statewide recycling rate increased from 23% to 38%. This increase had been fairly steady, with a slight dip in 1991. In 1994 the measured recycling rate remained steady at 38%. In 1995, the recycling rate resumed its climb to 39% and in 1996 the recycling rate leveled at 39%. The1997 recycling rate dropped to 33% as a result of poor paper fiber market in Asia and a continued glut in the metals market. The poor paper and metal market trends continued in 1998, but improved enough to raise Washington's recycling rate to 34%. Although markets improved in 1999, the disposed tonnage increased enough to drop the recycling rate to 33%. Markets continued to improve in 2000, and the collected recycling tonnage increased by over 300,000 tons, raising the recycling rate to 35% (See Figure 5.1)

Although cities and counties have mostly "built" the collection infrastructure initiated by the Waste Not Washington Act, recycling rates have not reflected market conditions as much as expected. Some of the factors which could be influencing this trend include: education and attitudes about recycling, lack of media attention on recycling and concerns over landfills, convenience and cost of recycling, more disposable income thus more spending on consumer goods, product/packaging design and decreased landfill tipping fees. Another important factor which can influence the recycling rate is the willingness of recyclers to report their collected tons to the Department of Ecology. State

[23] The recyclable portion of the waste stream is municipal solid waste as defined by the Environmental Protection Agency in the *Characterization of Municipal Solid Waste in The United States: 1996 Update*. This includes durable goods, nondurable goods, containers and packaging, food wastes, and yard trimmings. It does not include industrial waste, inert debris, asbestos, bio-solids, petroleum contaminated soils, or construction, demolition, and landclearing debris disposed at municipal solid waste landfills and incinerators.

law requires collectors of recyclable materials to report what they collect, however, there are no penalties for those who do not comply.

Figure 5.1
Recycling Rates 1986-2000



As of this writing, 82% of the State's population has access to curbside recycling services, which are intended to be as convenient as disposal. Most of the people who do not have curbside services do have access to drop-box recycling. The State's population is growing, with about 373,500 new people since 1995. SWFAP believes that this group may not participate as much in recycling programs since they were not exposed to the waste reduction and recycling outreach programs run by Ecology and the counties in the early 1990's. Also, the new members of Washington's population were not exposed to the media attention that waste issues received in the early 1990's.

Recent studies and changes in Olympia, Tacoma, and Seattle collection programs have shown opportunities for significant increases in customer base and efficiency in their refuse and recycling collection. Education efforts in the Olympia and Tacoma curbside programs, which went along with recent changes in collection service, brought significant increases in participation rates for curbside as well as drop-off collection centers. The apparent affect of these educational efforts tapered off within the year to show a much less significant increase in growth for 2000.

Non-residential sector recycling, or commercial recycling in a competitive environment is increasing every year. Based on tonnage figures reported by recyclers who provide service to the non-residential sectors, these programs seem to be highly successful in diverting large volumes of materials away from disposal with minimal government regulation or oversight.

2000 Recycling Survey Process and Results

There are several problems in obtaining all of the information needed to prepare a complete and accurate recycling survey. In spite of these obstacles, Ecology believes the results are reliable based on review of draft numbers sent to local governments, and comparisons to waste characterization, disposal data, and commodity end-user information.

Recycling survey forms are sent to recycling firms, haulers and local governments to obtain information about types and quantities of recyclable materials collected. However, since reporting is not mandatory, and there is no penalty for not returning the information, some firms do not respond. Other firms respond with estimates of the amount and origin of the materials, which call into question the accuracy of the survey. These factors make it difficult to compile good recycling information for specific counties. The difficulties also create the need for intensive cross-checking of the data, which is done through a process of communication with the end-users of recyclable materials and local governments to develop aggregate figures for each commodity, which are compared to the survey results collected.

Table 5.1 provides the results of the 1997-2000 statewide recycling surveys.

The trend of the latter part of 1999 and into the year 2000 with regard to the lagging recycling rate would show that economic and environmental policies are not yet in full alignment with regard to recycling. For example, market prices for both virgin and recycled materials do not always reflect the full societal and environmental costs associated with obtaining and processing those materials. Distortions such as subsidies can affect the economic competitiveness of recycling. Government policies and regulations can play a significant role in ensuring that the prices of virgin and recycled commodities reflect their actual environmental and societal costs.

A new method for reporting survey information was tested from April to July of 2001. Respondents were able to enter their tonnage information on the Internet. Ecology was hoping that this service would help get the information faster and allow the finalizing of a recycling rate earlier in the year. Several problems with this system led to its abandonment in July and a return to the former system.

Even with the detailed instructions provided on the web-site, there is a possibility for error in entering each survey, which is greatly reduced when there is one person designated for the data entry. Giving reporters the possibility to directly enter the data greatly increased the amount of errors and time required to double check the data. Less than 5% of reporters used the Internet system, which is far less than Ecology's expectations.

For January of 2002, the survey form along with instructions will be available on the Internet to print and fill out by manually, or to type on-line and e-mail to Ecology. A tally form for recyclers to keep track of monthly amounts collected is also being

developed and should be available in January. This form will provide a simple method of tracking tonnage for those companies who have expressed such a need.

Table 5.1
State Tonnage by Commodity: 1997-2000 Washington State Recycling Surveys[24]

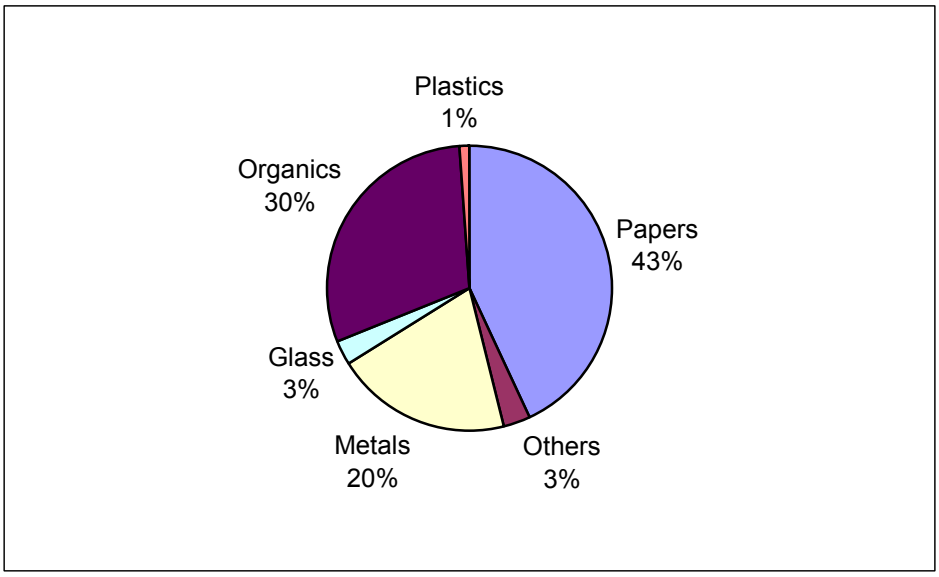
Commodity	1997	1998	1999	2000
Newspaper	187,044	200,447	168,832	**219,716**
Corrugated Paper	392,314	344,885	478,074	**495,470**
High Grade	56,245	69,435	61,212	**59,976**
Mixed Waste Paper	194,201	207,225	253,428	**273,494**
Aluminum Cans	19,601	12,716	14,357	**17,945**
Tin Cans	15,149	13,003	12,339	**22,632**
Ferrous Metals	300,068	225,372	241,367	**357,220**
Nonferrous Metals	45,568	55,384	30,956	**51,273**
White Goods	15,126	12,233	28,524	**35,427**
Computers	N/A	N/A	N/A	**255**
Refillable Beer Bottles	633	261	63	**0**
Container Glass	79,566	113,076	58,517	**84,062**
PET Bottles	4,965	3,031	2,910	**5,100**
LDPE Plastics	1,693	1,341	2,225	**4,032**
HDPE Containers	3,835	3,889	3,253	**5,491**
Other Recyclable Plastics	13,945	1,608	3,971	**6,512**
Aseptic Packaging	N/A	N/A	N/A	**98**
Other Rubber Materials	N/A	N/A	N/A	**55**
Vehicle Batteries	15,294	7,743	15,142	**10,757**
Tires	5,520	211	625	**12,218**
Used Oil	7,299	1,235	6,352	**8,353**
Yard Waste	384,848	608,127	525,454	**450,761**
Food Waste	75,020	92,391	72,646	**73,895**
Wood Waste	265,887	115,289	142,786	**215,211**
Textiles (Rags, clothing, etc.)	11,046	3,979	12,524	**15,961**
Fluorescent Light bulbs	N/A	N/A	167	**160**
Gypsum	56,373	31,062	29,896	**36,692**
Photographic Films	22	0	81	**6**
Total Recycled	2,151,608	2,123,946	2,156,856	**2,462,772**
Total Disposed[25]	4,386,397	4,088,100	4,480,761	**4,610,914**
Total Generated	6,538,005	6,212,046	6,637,617	**7,073,686**
Recycling Rate	33%	34%	32%	**35%**

[24] Detail may not add due to rounding.
[25] The amount of material disposed represents only the quantity defined "recyclable portion" of the waste stream and excludes industrial, inert, asbestos, bio-solids, petroleum contaminated soils, and construction, demolition and landclearing debris disposed at municipal solid waste landfills and incinerators.

Commodities and Market Trends

The recycled materials stream breaks down to six general categories (Figure 5.2). Paper products make up 43 percent of the total recycled, organic material (including yard waste, wood waste and food waste) is next with 30 percent. Metals come in third with 20 percent of the total stream. The other categories make up just 7 percent of the total collected: glass accounts for 3 percent, plastics for 1 percent and others for 3 percent of the total.

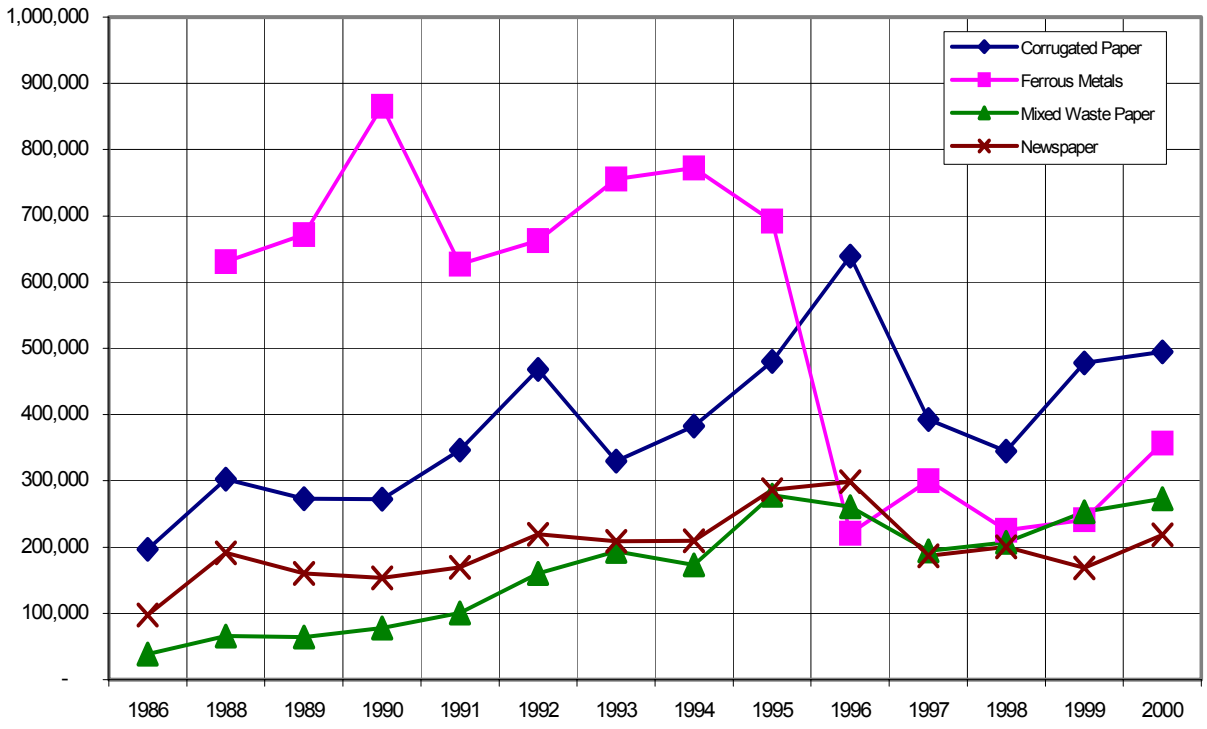
Figure 5.2
Recycled Materials Stream - 2000



The slight climb in the recycling rate since 1999's ten-year low is a hopeful indication that the markets are on their way to recovering, and the rate will resume it's upward trend of the early to mid 1990's.

The four commodities which traditionally make up the largest tonnage collected for recyclables, or "Big Four" commodities, which are corrugated paper, ferrous metals, mixed waste paper, and newspaper, all increased in the tonnage collected for the year 2000 (Figure 5.3). The market for corrugated paper showed a sharp increase in mid-2000, which rapidly dropped later in the year, for a slight net increase in the tonnage collected. Ferrous metals showed more than a 30 percent increase in tonnage collected from 1999 to 2000, which still does not make up for the sharp drop in 1996, when the Asian markets fell and recyclers started showing more reluctance to report their tonnage to the Department of Ecology. Mixed waste paper is climbing steady since 1997, after a slight drop from highs in 1995 and 1996. This could be due to market improvement and

Figure 5.3
"Big Four" Commodities (Tons)



an increase in co-mingled collection on curbside and commercial collection programs. Newspaper collection has fluctuated after an all-time high in 1996. The newspaper market in 2000 peaked around mid-year and declined afterward for a slight increase in collected tons.

Tonnage of organic material as applies to the recycling rate decreased for 2000. Although the total for wood waste and food waste increased, the total for yard waste decreased enough to bring down the figure for organics as a whole. This trend can be partly attributed to a severe drought.

Plastic collection increased greatly in 2000 for all types, which could be attributed to the increased collection on curbside programs, and more aggressive commercial collection programs.

New commodities, which are included in the recycling rate for the first time, include aseptic packaging and computers. Aseptic packaging has been added as a commodity to several curbside programs, including the City of Seattle, in the past year. The commercial collection of computers and parts (or electronics recycling) is a rapidly growing industry in the urban areas. The industry will likely continue to grow as we see an increase in the awareness of how these products are disposed of and as the length of their useful life decreases due to changes in technology.

Glass, tin cans and container plastics all had increased tonnage of more than 30 percent in 2000. Though the markets increased for most of these materials (the glass market staying stable) the increased collection could be attributed to greater efficiency and participation on curbside programs.

The use of refillable bottles as tracked by the recycling survey has diminished to zero for 2000. This option of using refillable bottles (the majority of the volume in past years has been in beer bottling) has become too costly for business owners and they have gone out of use almost completely. The exception to their complete demise is that some dairies are continuing to use refillable milk bottles, as a response to customer demands and in spite of them being more costly to use.

Benefits of Recycling

The public attention that issues such as energy conservation and greenhouse gas emissions have recently received has been much greater than the attention given to recycling as compared with the early 1990's. There are many parallels with how recycling relates to other environmental issues, and the goal in focusing on each one leads to a single desired outcome. Thus, we can hope to draw more attention to the necessity of recycling and how it contributes to a sustainable future by linking it with other issues of concern.

Table 5.2 shows some of the environmental benefits of recycling based on the actual tonnage of commodities diverted from the waste stream in the year 2000 (as compared to using virgin materials). The energy saved from the actual tons of material recycled for fourteen commodities totaled 23,090,336 BTU's or 4,238,975 barrels of oil (nearly a barrel per person per year). The amount of greenhouse gases going into the atmosphere was reduced by 1,281,925 metric tons carbon equivalent (MTCE).

In addition to greenhouse gases, recycling can reduce a range of pollutants from entering the air and water. This benefit accrues again because of reduced fossil fuel use and because recycled materials have already been processed once.

The environmental impact of recycling on the amount of wastes diverted from landfills and incinerators is a direct benefit for Washington State, in reducing the amount of leachate introduced into groundwater systems and reducing the amount of pollutants released into the air and water. Recycling diverted 3,909,294 tons of material from landfills and incinerators in 2000. This figure includes traditionally recycled materials, as well as those that have not been traditionally included, such as asphalt, concrete and used oil burned for fuel. Recycling has been shown to produce less of 27 different types of air and water pollutants, compared with using virgin materials in manufacturing and disposing wastes.[26] And, by substituting scrap materials for the use of trees, metal ores,

[26] Based on information from sources including U.S. EPA, the Environmental Defense Fund, Franklin Associates, Ltd., the Tellus Institute and the Steel Recycling Institute (Northeast Recycling Council).

minerals, oil and other virgin materials, recycling reduces the pressure to expand forestry and mining production.

Table 5.2
Energy Savings and Greenhouse Gas Impacts from Recycling
In Washington State – 2000
(Relative to energy required for virgin production)*

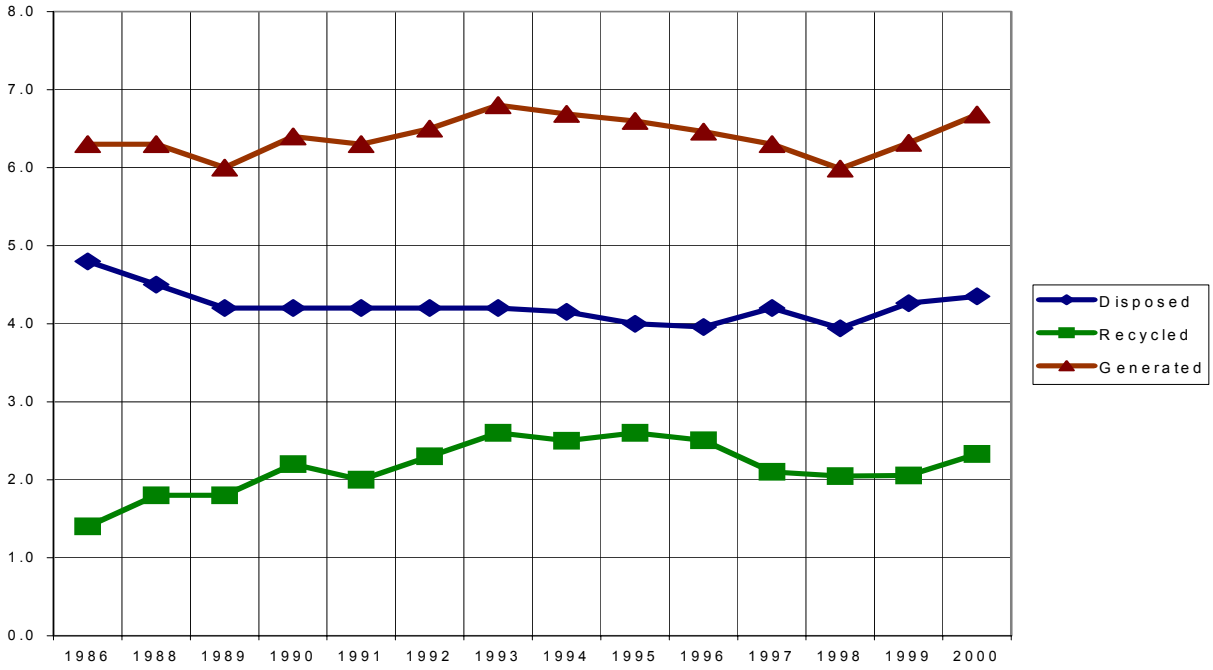
Material/Grade	Tons Recovered	BTUs Saved (in millions)	Barrels of Oil Saved	Tons Greenhouse Gases Reduced (MTCE)
Aluminum	17,945	2,719,852	499,317	70,131
Newsprint	219,716	2,110,834	387,512	138,680
Mixed Waste Paper	333,470	4,638,047	851,463	437,833
Cardboard	495,470	3,571,694	655,700	359,667
Glass	84,062	302,488	55,531	8,962
Steel Cans	22,632	506,636	93,009	12,953
Ferrous Metals	392,647	8,789,719	1,613,636	224,716
PET	5,100	145,718	26,751	3,383
HDPE	5,491	94,563	17,360	2,216
LDPE	4,032	98,639	18,108	2,150
Other Plastics	6,512	112,146	20,588	2,628
Food Scraps	73,895	N/A	N/A	1,705
Yard Waste	450,761	N/A	N/A	10,082
Other Organics**	304,889	N/A	N/A	6,819
Total		**23,090,336**	**4,238,975**	**1,281,925**

*Based on the following sources: Energy Information Administration State Energy Data Report; NERC environmental benefits model; Washington State Department of Ecology 2000 Recycling Survey.
**Includes wood wastes and other wastes destined for composting.

Individual Waste Generation

Figure 5.4 illustrates an average of how each person in the state contributes to the municipal solid waste stream. These numbers are about 2 pounds per person above the national averages for the categories of disposal, recycling, and generation. The difference is accounted for by a different ferrous metal measurement by Washington and the relatively larger amounts of yard and wood waste than the national average. Along with county review and end-use information these numbers provide a good check for the state's recycling numbers. In 2000, each resident of the state generated 6.68 pounds of solid waste per day - 4.35 pounds were disposed and 2.33 pounds were recovered.

Figure 5.4
Pounds Disposed, Recycled and Generated Per Person/Day



Diversion as a Measurement Option

Ecology has measured a very specific part of the solid waste stream since 1986. It is roughly the part of the waste stream defined as municipal solid waste by the Environmental Protection Agency.[27] However, Ecology has noted very large increases of recovery in "non-MSW" waste streams, most notable are the growing industries in recycling asphalt, concrete, and other construction, demolition and landclearing debris.

Ecology has begun to include other types of materials in the recycling survey, and is looking at ways to include them in future recycling rates. There are several obstacles to calculating a recycling rate for these other materials at present. The wastes are not well characterized and there is no definitive information on the total volume of waste generated. This lack of information makes it impossible to calculate a recycling rate for these materials.

The recycling rate as calculated by the state is a fairly narrow measure of municipal solid waste. Increasingly, Washington counties and cities have been putting efforts into waste streams outside of the traditional municipal solid waste stream. The best example is for the construction and demolition waste streams. Many of these materials are now being recycled including asphalt, asphalt roofing shingles, concrete, road asphalt, dimensional lumber, various metals, and more. Knowledge of this waste stream is increasing. King

[27] The recyclable portion of the waste stream is municipal solid waste as defined by the Environmental Protection Agency in the *Characterization of Municipal Solid Waste in The United States: 1996 Update*. This includes durable goods, nondurable goods, containers and packaging, food wastes, and yard trimmings. It does not include industrial waste, inert debris, asbestos, bio-solids, petroleum contaminated soils, or construction, demolition, and landclearing debris disposed at municipal solid waste landfills and incinerators.

County[28], the City of Seattle and Clark County have all done sampling of this waste streams and have comparable results

Woodwaste is another large waste stream in Washington and an increasing percentage of it is being used in new wood and paper products and as a feedstock in composting operations. In agriculture, waste materials are being composted and processed for land application as soil amendments. All of these uses of waste materials avoid disposal for more beneficial use.

However, it is difficult or impossible to figure a recycling rate for many of these materials because either we don't know the total amount of waste generated or the beneficial use does not meet the state's definition of recycling.[29]

In order to address these beneficial solid waste activities that reduce disposal of natural resources the state has begun collection of information about the beneficial use solid waste outside the scope of MSW or the result of processes that avoid disposal but do not meet the definition of recycling. The methodology is a simple as collecting the number of tons of material that are going to beneficial use as opposed to disposal. Many recycling survey respondents have voluntarily listed this information on the recycling survey in the past, and beginning in 2000 Ecology has asked more specifically for this information. Reporting recycling in the non-MSW waste types, however, is not required by state law, therefore the tonnage will depend on the willingness of the recyclers to report. For 1999 and 2000, the materials in Table 5.3 were reported.

Ecology will continue to collect more of this information on future surveys. For the most part, these materials are collected and processed outside of the traditional residential and commercial waste stream and were not well addressed in the Waste Not Washington Act of 1989. Still, Ecology recognizes the creative efforts of local governments and businesses in addressing these wastes. This is not an exhaustive list nor are the numbers complete for these material categories. This information has been sent to us voluntarily by local governments and local businesses. We will work towards making this information more comprehensive and complete in the coming years.

Table 5.3
Materials Not Included in the Recycling Survey/Diverted Tons

Material	1999 Tons	2000 Tons
Anti-freeze	1,329	2,475
Asphalt and Concrete	49,136	893,218
Asphalt roofing shingles	10,334	14,412

[28] *Waste Monitoring Program: Construction, Demolition & Land Clearing Waste*, King County Solid Waste Division, January 1995.
[29] Revised Code of Washington 70.95.030 (16) "Recycling" means transforming or remanufacturing waste materials into usable or marketable materials for use other than landfill disposal or incineration

Bricks	12	0
Composting Furnish	N/A	89,678
Construction , demolition and landclearing debris	145,593	376,684
Household Batteries	23	39
Industrial Batteries	41	738
Miscellaneous	N/A	374
Oil Filters	1.4	835
Oyster Shells	1,563	0
Paint	N/A	40
Railroad Ties	N/A	121
Rebound Carpet Pad	18	97
Reuse - Clothing & Household items	N/A	524
Reuse – Construction & Demolition items	N/A	1,257
Reuse – Miscellaneous	N/A	198
Street Sweepings used in Asphalt Production	N/A	10,000
Topsoil	N/A	22,812
Used Oil for Energy Recovery	6,256	33,021
Total Diverted	**214,306**	**1,446,522**

Chapter VI Disposal of Solid Waste in Washington

One of the goals of this report is to identify the types and quantities of solid waste disposed in the various types of landfills and energy recovery facilities in the state. This includes waste imported into the state for disposal and waste exported to Oregon.

Landfilling is the basic method of final disposal and includes five types of landfills - municipal solid waste landfills, woodwaste landfills, limited purpose landfills, inert/demolition landfills and ash monofills.

As part of the annual reporting requirements of chapter 173-304 WAC, *the Minimum Functional Standards (MFS)* and chapter 173-351*, Criteria for Municipal Solid Waste Landfills*, forms were sent to the various types of landfills for them to report the types and quantities of waste they received for disposal. The categories of solid waste specified on the form were municipal, demolition, industrial, inert, commercial, woodwaste, sewage sludge, asbestos, petroleum contaminated soils, tires, special waste and other. The facilities were also asked to report the source of their waste: out-of-county, out-of-state or out-of-country.

In addition, three landfills in Oregon accept waste from Washington, Finley Butte, Wasco and Columbia Ridge. Waste information from each facility is used in preparing this report.

The other method of waste disposal in Washington is energy-recovery facilities. Annual report forms were also sent to these facilities. The same type of waste information was requested.

Municipal Solid Waste Landfills

Amount of Waste Disposed in Municipal Solid Waste Landfills

In 2000, 21 municipal solid waste landfill accepted waste totaling 4,659,582 tons.[30] Of the 21 landfills, 16 were publicly owned, and five were privately owned.

Six of the 21 landfills received over 100,000 tons of waste in 2000. The two largest landfills in Washington, Cedar Hills in King County and Roosevelt Regional Landfill in Klickitat County received 947,174 tons and1,856,862 tons, respectively. In 2000, only one landfill received less than 10,000 tons, compared with 12 MSW landfills in 1994.

[30] Throughout this report, different disposal amounts are discussed. These numbers vary based on the types of facilities being discussed, the source of the waste and the purpose of the discussion. For example, the recycling survey only accounts for "traditional" municipal waste in the disposed amount used to calculate the statewide recycling rate. See discussions in Chapter V and this chapter for further information.

This trend (Figure 6.1) indicates that the smaller facilities have been closing in response to more stringent regulations.

Figure 6.1
MSW Landfill Size
(Number of Landfills Based on Disposed Tons Per Year)

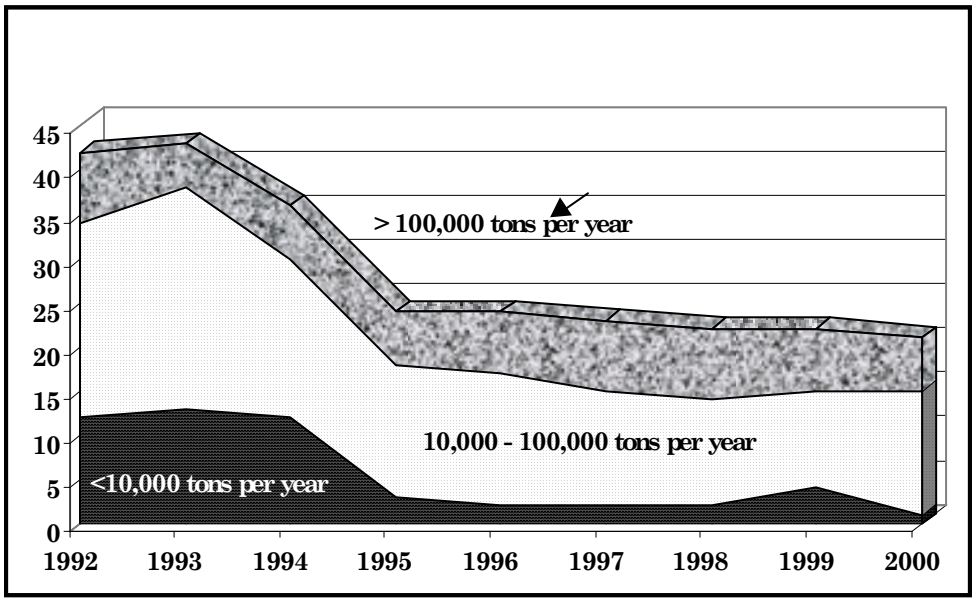


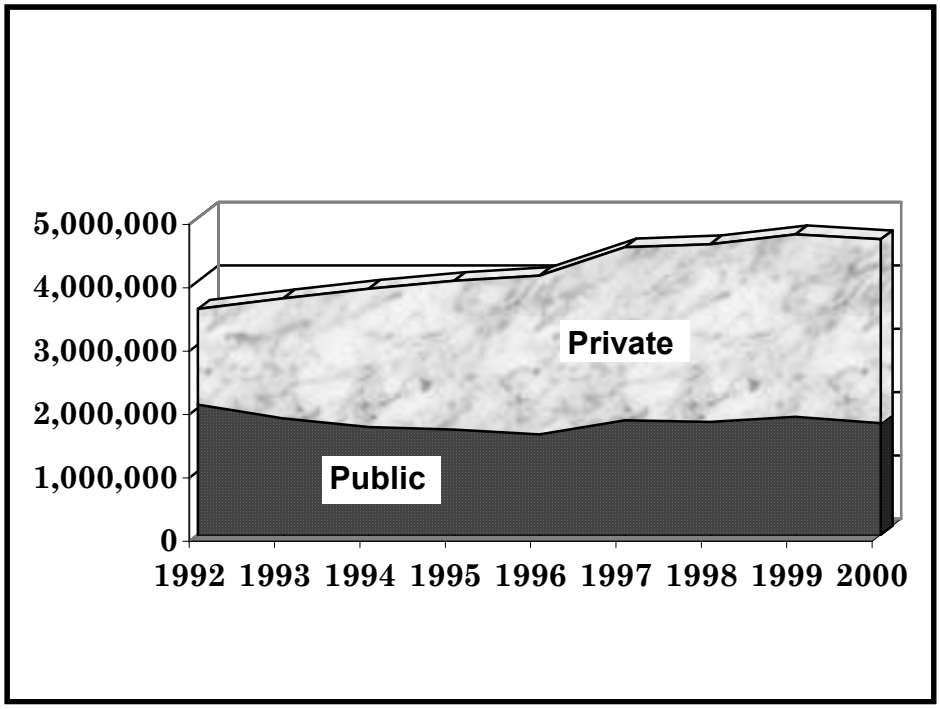
Table 6.1 shows the relationship of waste disposed to public/private ownership. As the table illustrates, 1,758,050 tons of solid waste disposed went to publicly owned facilities (38%), with the remaining 2,901,532 tons going to private facilities (62%).

Table 6.1
Waste Disposed in MSW Landfills – Public/Private

OWNERSHIP	NUMBER OF MSW LANDFILLS		AMOUNT OF WASTE DISPOSED (Tons)		% TOTAL WASTE DISPOSED	
	1991	2000	1991	2000	1991	2000
PUBLIC	36	15	2,696,885	1,758,050	69	38
PRIVATE	9	6	1,192,207	2,901,532	31	62
TOTAL	45	21	3,889,092	4,659,582	100	100

The amount of waste disposed in MSW landfills shows movement from the publicly owned facilities to those owned by the private sector (see Figure 6.2). The trend has continued since 1991, when the state first started tracking this type of information. The amount of waste disposed in the private facilities has increased from 31% since 1991 to 62% in 2000. The majority of this increased amount can be accounted for by the private Roosevelt Regional Landfill in Klickitat County.

Figure 6.2
Comparison of Waste Disposed for Public and Private Facilities (tons)



Types of Waste Disposed in Municipal Solid Waste Landfills
Traditionally, many people think of the waste disposed in MSW landfills as being mostly household waste.[31] Annual facility reports show that a much wider variety of waste is disposed of in the MSW landfills. These wastes need to be considered in terms of remaining available capacity. Fourteen of the 21 landfills reported a significant amount of solid waste disposed, other than municipal solid waste. Demolition, industrial, inert, commercial, woodwaste, sludge, asbestos, petroleum contaminated soils (PCS) and tires were the major waste streams. (A few landfills report all types of waste under the general "municipal" category so exact amounts cannot be determined.) Table 6.2 shows changes in waste, types and amounts disposed in MSW landfills from 1992 through 2000. (See Appendix B Table B.1 for specific MSW facility data).

[31] "Household waste" as defined in chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills*, means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas).

Table 6.2
Waste Types Reported Disposed in MSW Landfills

WASTE TYPES	1992 (Tons)	1993 (Tons)	1994 (Tons)	1995 (Tons)	1996 (Tons)	1997 (Tons)	1998 (Tons)	1999 (Tons)	2000 (Tons)
Municipal Solid Waste*	2,694,800	2,641,551	2,725,084	2,777,030	2,807,998	3,083,286	3,222,639	3,421,415	3,336,745
Demolition Waste	250,144	331,231	459,979	382,513	375,412	385,412	446,172	437,005	569,239
Industrial Waste	101,607	44,471	150,218	161,779	145,617	163,431	159,781	232,905	88,841
Inert Waste	1,027	0	31,248	5,154	30,061	117,512	107,452	23,875	19,349
Commercial Waste	143,466	180,691	92,498	142,258	109,093	173,863	158,256	129,070	93,752
Woodwaste	60,523	98,595	22,668	37,850	57,667	57,128	60,383	68,889	47,087
Sewage Sludge	64,311	33,854	64,364	66,728	49,205	72,741	67,419	62,920	47,783
Asbestos	8,247	7,076	11,819	7,859	7,965	9,558	10,684	9,666	7,922
Petroleum Contaminated Soils	224,560	273,429	249,552	255,288	254,414	444,260	288,407	312,247	231,290
Tires	na	1,288	1,815	28,712	12,787	14,912	19,130	12,581	43,188
Special	na	na	Na	na	10	6	904	0	437
	na	na	na	na	na	na	na	na	239
Other**	12,053	113,869	69,371	136,644	233,526	10,809	40,880	28,235	173,711
TOTAL	3,560,738	3,726,055	3,878,615	4,001,815	4,083,755	4,532,918	4,582,107	4,738,808	4,659,582

* Some facilities include demolition, industrial, inert, commercial and other small amounts of waste types in the MSW total.

** Some of the "other" types of waste reported include non-municipal ash, auto fluff and white goods.

In reviewing the types of waste that were disposed in the MSW landfills in 2000, increased amounts were reported for the categories of demolition, tires and "other". All other categories showed some decreases with the most significant drop in inert waste.

Waste-to-Energy/Incineration

Three waste-to-energy facilities/incinerators statewide burned 544,780 tons of solid waste. Of that amount, 8,721 tons were identified as woodwaste at the Inland Empire Paper facility in Spokane. This is the only incinerator reporting that does not burn municipal solid waste. In 2000, almost 11% of solid waste was incinerated statewide. The highest percent of waste incinerated in the state was 12% in 1995. (See Appendix B, Table B.2 for specific incinerator data.)

Ash Monofill

For waste-to-energy facilities or incinerators that are regulated by chapter 173-304 WAC and chapter 173-306 WAC (see in Chapter II), the ash generated must be disposed in a properly constructed ash monofill. In 2000, there were two energy recovery/ incinerators that meet these criteria.[32] All of the municipal solid waste incinerator ash 102,048 tons from those facilities was disposed at the ash monofill at the Roosevelt Regional Landfill in Klickitat County.

[32] Three energy-recovery facilities closed in 1998 and 1999.

Trends in Municipal Solid Waste Disposal Methods

The two basic ways to dispose of solid waste are landfilling and burning. (See Map A for the location of MSW landfills and energy recovery facilities.)

Map A: Location of MSW Landfills & Energy Recover Facilities (as of October 2001)

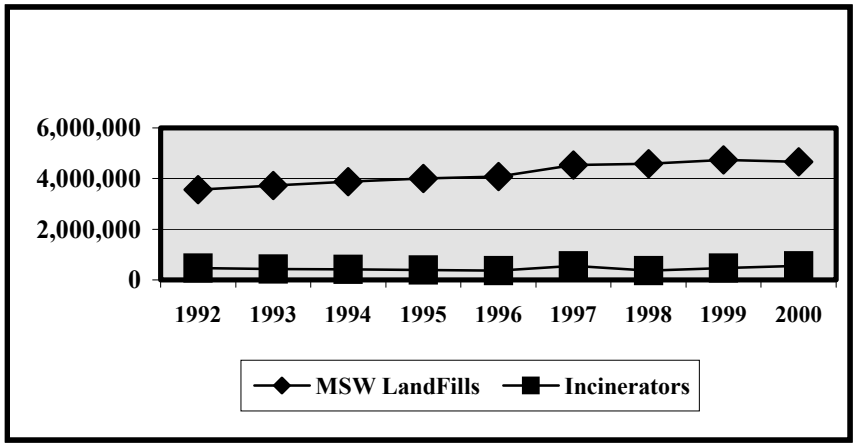
A comparison of the amount of solid waste disposed in municipal solid waste landfills and waste-to-energy facilities and incinerators in 2000 is shown in Table 6.3.

Table 6.3
Waste Disposed in MSW Landfills
and Incinerators in 2000

FACILITY TYPE	TONS	PERCENT (%)
MSW Landfills	4,659,582	89%
Incinerators	554,780	11%
TOTAL	5,214,362	100%

The largest change in disposal methods over the past few years has been between landfilling and energy recovery/incineration. In 1991, 98% of the waste was disposed in MSW landfills and 2% was incinerated. The highest percent of incinerated waste in the state, 12%, occurred in 1995. That decreased to 7% in 1998, with a slight increase to 9% in 1999 and 11% in 2000. (See Figure 6.3)

Figure 6.3
Comparison of Solid Waste Landfilled & Incinerated
1991 through 2000 (in tons)



The amount of waste incinerated will likely remain fairly stable, with only two operating municipal solid waste energy-recovery facilities, and no new facilities planned.

Inert/Demolition, Limited Purpose and Woodwaste Landfills

In addition to municipal solid waste landfills, there are three other types of landfill types in the state: inert/demolition, limited purpose, and woodwaste.[33] These three types of landfills are discussed in Chapter II. Annual report forms received from these types of landfills show a variety of waste types disposed, as seen in Tables 6.4 - 6.6.

[33] These three landfill types are currently regulated under chapter 173-304 WAC, *Minimum Functional Standards for Solid Waste Handling (MFS)*. Revisions to the regulations, to be completed in 2002, will reclassify landfill types to inert and limited purpose categories only. See Chapter 1 for additional information about the *MFS* revision process.

Table 6.4 shows the waste types and amounts reported by 28 inert/demolition landfills. (In the revised Minimum Functional Standards, inert waste will be specifically defined for disposal at "Inert" Landfills.) There was an increase in demolition and petroleum contaminated soils and a decrease in inert waste as well as the overall total. Some facilities may be over-reporting disposal numbers since much of the material coming on-site is being recycled, for example as aggregate. Ecology will be gathering additional information in the future to better distinguish disposal versus recycling tonnages at some of these facilities. (See Appendix B, Table B.3 for specific inert/demolition landfill data.)

Table 6.4
Waste Types and Amount Disposed at Inert/Demolition Landfills

WASTE TYPES	1992	1993	1994	1995	1996	1997	1998	1999	2000
Municipal	0	0	0	0	0	0	0	0	0
Demolition	750,627	168,066	157,758	103,903	133,469	262,793	180,268	173,088	259,255
Industrial	0	0	0	0	0	121	0	0	0
Inert	139,366	272,047	200,172	121,943	226,362	326,331	252,506	344,444	180,337
Commercial	0	0	0	0	0	0	0	0	0
Wood	609	120	0	167	39	0	156	336	536
Sludge	0	0	0	0	0	0	0	0	0
Asbestos	0	12	4	0	0	0	4	0	3
PCS	0	16,233	19,179	18,295	846	10,285	60,545	17,265	34,742
Tires	0	500	0	0	33	618	449	414	471
Other	14,486	2,260	740	33,125	58,953	1	600	605	2,039
TOTAL (tons)	905,088	459,238	377,853	277,433	419,702	600,149	494,528	536,155	477,383

Table 6.5 shows the types and amounts of waste reported disposed at 15 limited purpose landfills. There was a slight increase in industrial, inert, "other" and the overall total, and a decrease in demolition, wood and tires. (See Appendix B, Table B.4 for specific limited purpose landfill information.)

Table 6.5
Waste Types and Amount Disposed at Limited Purpose Landfills

WASTE TYPES	1992	1993	1994	1995	1996	1997	1998	1999	2000
Municipal	0	0	0	0	0	0	0	0	0
Demolition	13,698	12,894	95,568	151,230	180,529	85,916	98,072	84,140	71,203
Industrial	194,689	17,680	212,008	315,930	371,496	277,419	225,779	262,021	278,224
Inert	44,572	37,274	104,419	138,577	141,759	109,174	112,714	136,352	205,902
Commercial	0	25,019	0	0	0	0	0	0	0
Wood	94,541	156,261	86,088	58,628	22,660	14,589	7,700	8,853	3,205
Sludge	0	0	21	0	0	2,275	0	1,103	0
Asbestos	0	0	226	797	512	1,310	1,058	1,549	1,654
PCS	0	99,360	82,279	148,932	98,221	121,066	56,407	8,837	7,159
Tires	0	0	0	0	29,227	434	559	59	25
Other	35,615	59,259	60,642	40,797	65,675	83,600	124,607	66,833	79,291
TOTAL (tons)	383,115	407,747	642,251	874,116	910,078	695,783	628,896	569,747	646,662

Table 6.6 shows the waste types and amounts reported at woodwaste landfills. A high demand for wood products has increased the reuse and recycling of woodwastes that had been disposed in the past. Some woodwaste landfills are actually "mining" materials disposed in the past. These operations will be evaluated further to determine how to more accurately determine the amount of material disposed. (In the revised Minimum

Functional Standards, woodwaste landfills will no longer be a separate category.) Four woodwaste landfills reported in 2000. There was an increase in demolition and industrial waste and a decrease in woodwaste and the overall total. (See Appendix B, Table B.5 for specific woodwaste landfill data.)

Table 6.6
Waste Types and Amount Disposed at Woodwaste Landfills

WASTE TYPES	1992	1993	1994	1995	1996	1997	1998	1999	2000
Municipal	0	0	0	0	0	0	0	0	0
Demolition	57,328	20,775	0	8,600	18,780	17,718	21,313	25,121	32,182
Industrial	0	0	0	0	0	0	0	0	15,120
Inert	0	0	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0	0	0
Wood	122,381	96,708	93,310	105,080	81,886	69,498	36,777	75,668	33,452
Sludge	0	0	0	0	0	0	0	0	0
Asbestos	0	0	0	0	0	0	0	0	0
PCS	0	0	0	0	0	0	0	0	0
Tires	0	0	0	0	0	0	0	0	0
Other	1,785	4,614	3,213	2,079	2,031	8,109	1,320	1,695	622
TOTAL (tons)	181,494	122,097	96,523	115,759	102,697	95,325	59,410	102,484	87,552

Movement of Solid Waste

Movement of Waste Between Counties

All landfills and incinerators were asked to report the source, types and amounts of waste they received from out-of-county. Eight of the 21 active MSW landfills reported receiving over 1.8 million tons of solid waste from other counties in 2000.

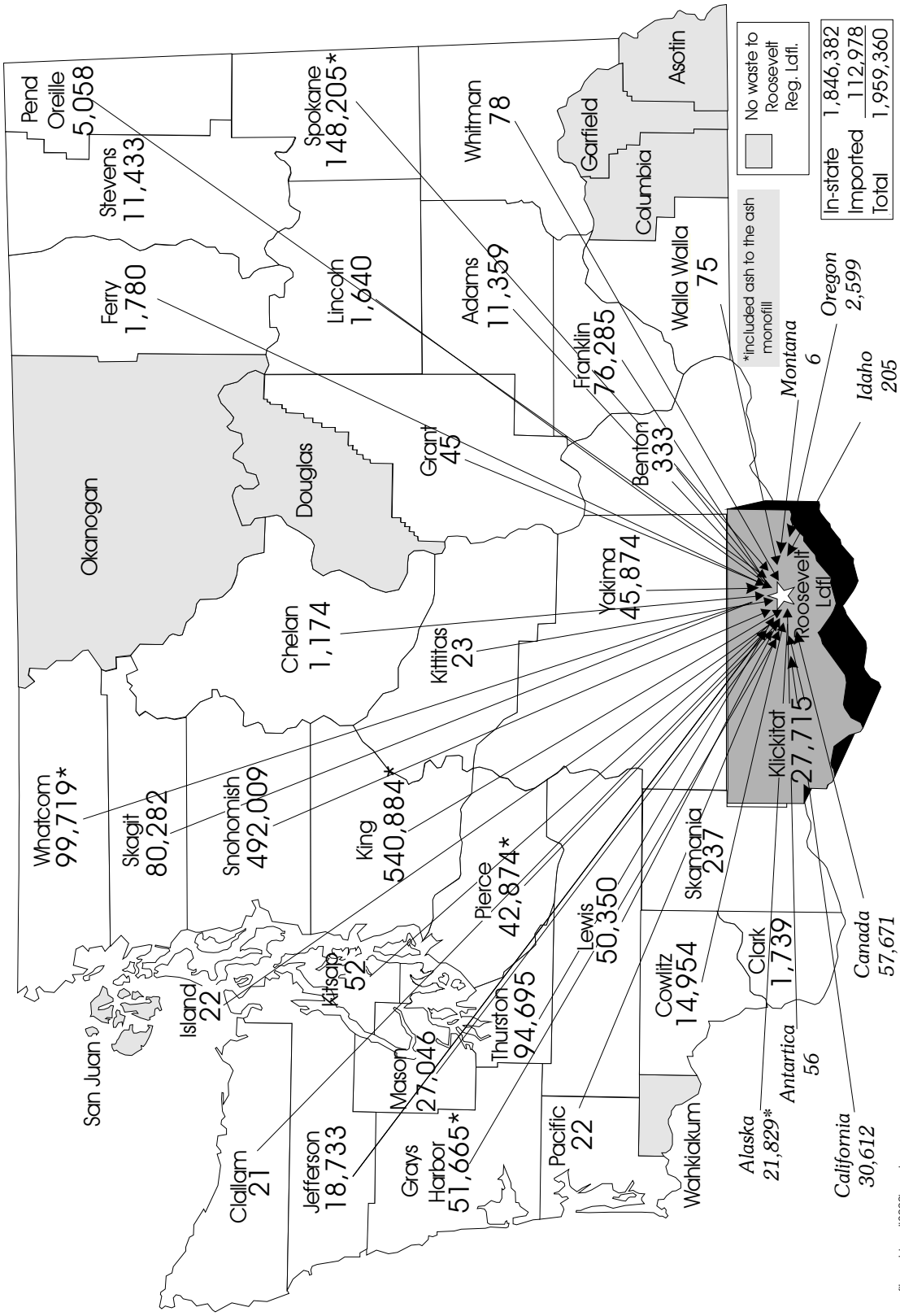
Some of the municipal solid waste movement was because of closer proximity to a neighboring county's landfill, especially for the smaller landfills which received municipal waste from other counties without there own landfills. Some of the waste disposed from other counties was non-municipal waste such as PCS, demolition and asbestos.

With the closure of many local landfills because of the new state/federal regulations, Roosevelt Regional Landfill in Klickitat County, and to a lesser extent, Oregon's regional landfills, have become the chosen disposal option. The Roosevelt Regional Landfill received some type of solid waste from 33 of the 39 Washington counties and also from out-of-state and out-of-country (see Map B). For many counties that still have operating MSW landfills, Roosevelt Regional Landfill has become an option to dispose of some of their non-municipal waste, thus saving local landfill capacity for future need. Fifteen of the 33 counties rely on Roosevelt for the majority of their MSW waste disposal and two other counties send a significant portion of their MSW to Roosevelt. Six counties and the City of Seattle send the majority of their MSW waste to Oregon facilities.

In addition to waste movement to MSW landfills, two of the waste-to-energy facilities received 4,787 tons of waste (MSW and demolition) from beyond their home county. Seven inert/demolition landfills received 8,384 tons of waste (inert, demolition and PCS) and four limited purpose landfills received 36,893 tons of waste (asbestos, inert,

demolition, PCS, industrial) from other counties. One woodwaste landfill received 6,300 tons of demolition waste from other counties.

Map B: 2000 Solid Waste to Roosevelt Regional Landfill (in Tons)



Waste Imported from Outside the State

Washington state landfills and incinerators were also asked to report the source, types and amounts of waste received from out-of-state or out-of-country. In 2000, a total of 145,561 tons of solid waste, about 3% of the waste disposed and incinerated in Washington, was imported from beyond the state's boundaries for disposal at municipal solid waste landfills and energy recovery facilities. The amount of waste imported for disposal has remained fairly stable at 6% since 1996. Accounting for much of the drop in imported waste in 2000 was the termination of a contract between Roosevelt Regional Landfill and California entity.

The types of waste received from out-of-state for disposal are shown in Table 6.7. The majority of this waste (112,527 tons) went to Roosevelt Regional Landfill. Of that 30,612 tons were imported from California, compared to181,394 tons in 1999, with the remainder from Alaska, Oregon, Montana and Canada.

Nez Perce County, Idaho, disposed of 24,000 tons of MSW in the Asotin County Landfill. This disposal is considered incidental movement because Asotin County, Washington, and Nez Perce County, Idaho, prepared a joint local comprehensive solid waste management plan to meet the requirements of Washington state statute and have an agreement for joint use of the landfill.

In addition to the MSW landfills, two incinerators received 9,028 tons from out-of-state. Three limited purpose landfills imported a total of 19,824 tons of waste from predominately Oregon and Idaho. The Weyerhaeuser limited purpose landfill in Cowlitz County received most of this waste (18,269 tons), waste resulting from their other wood processing operations in Oregon. Two inert/demolition landfills received 26,018 tons from out of state with 25,000 tons going to Poe Asphalt and Paving Inc. in Spokane.

Table 6.7
Out-of-State Waste Disposed in Washington

TYPE OF WASTE	QUANTITY (TONS)		
	1991	1999	2000
Municipal Solid Waste	24,475	243,292	116,365
Demolition	1,412	11,529	25,322
Industrial	0	39,547	32,044
Woodwaste	208	21	21
Sludge	36	0	0
Asbestos	0	478	715
Petroleum Contaminated Soils	0	3,652	1,511
Tires	0	2,228	2,296
Medical	na	0	0
Other	0	0	3,131
TOTAL	26,131	300,747	191,405

Waste Exported from the State

Another aspect of solid waste movement is the amount exported from Washington to another state for disposal. In 2000, a total of 1,240,485 tons of waste generated in Washington was disposed in Oregon landfills, an increase from 705,608 tons in 1992. Table 6.8 compares the waste amounts and types exported and imported.

Major exporters of municipal solid waste in Washington included the City of Seattle (475,407 tons of MSW), Benton County, Clark County, Island County, Pacific County, San Juan County, Skamania County, Whatcom County, Whitman County, and a portion of Pierce and Snohomish County. Reasons for exportation out-of-state are related to the closure of local landfills, and negotiation of favorable long-haul contracts.

Table 6.8
Comparison of Imported-to-Exported Waste for all Solid Waste Facilities

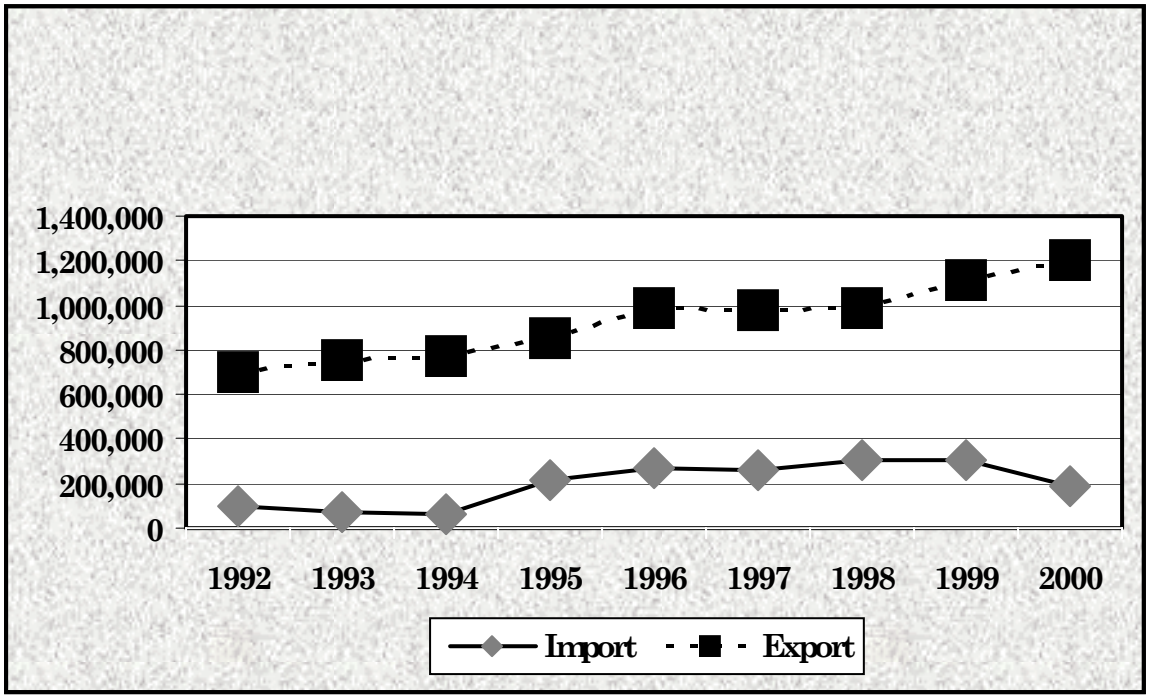
TYPE OF WASTE	IMPORTED		EXPORTED	
	1999	2000	1999	2000
Municipal Solid Waste	243,292	116,365	832,421	949,685
Demolition	11,529	25,322	92,768	93,540
Industrial	39,547	32,044	112,735	129,986
Woodwaste	21	21	0	0
Sludge	0	0	0	0
Asbestos	478	715	3,778	4,439
Petroleum Contaminated Soils	3,652	1,511	62,015	54,787
Tires	2,228	2,296	0	0
Medical Waste	0	0	5,474	6,109
Other	0	3,131	0	1,939
TOTAL	300,747	191,405	1,109,191	1,240,485

Trends in Interstate Waste Movement for Washington

The first significant movement of waste across Washington state boundaries started in 1991. In mid-1991, the City of Seattle started long-hauling waste to the Columbia Ridge Landfill in Arlington, Oregon. In late 1991, the Roosevelt Regional Landfill began operating in Klickitat County, Washington, accepting waste from British Columbia, Idaho, and Oregon.

As can be seen in Figure 6.4, Washington exports have been much higher than imports since 1991. With the loss of the California contract at Roosevelt Regional Landfill, waste imports dropped from a high of 307,850 in 1998, to 191,405 tons in 2000. Exported waste amounts increased slightly in 2000, with about six and a half times as much waste exported to Oregon's landfills, Columbia Ridge, Wasco and Finley Buttes, than is imported to Washington for incineration or disposal.

Figure 6.4
Trend of Imported/Exported Solid Waste



Determining the Amount of Solid Waste Disposed

The figure arrived at for the amount of solid waste disposed varies depending upon the types of wastes included, the source of waste generation or the types of facilities included in the calculation.

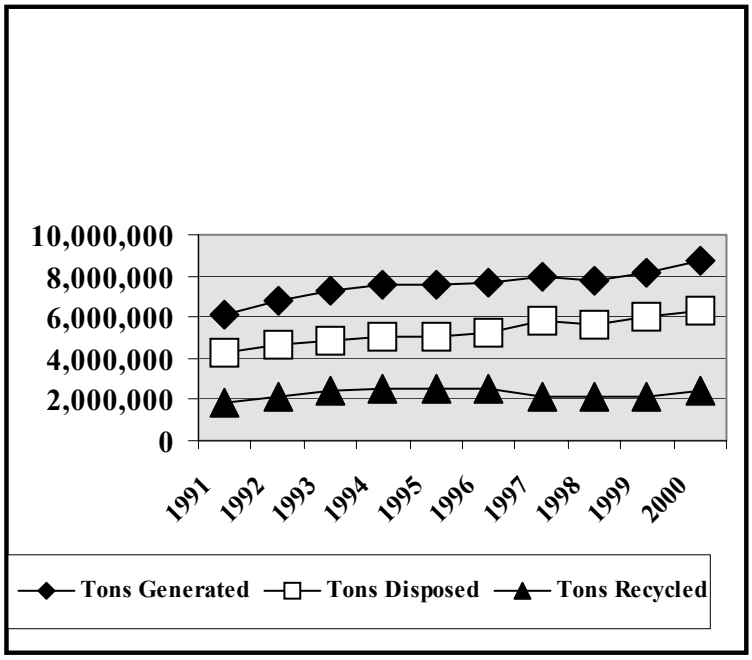
Waste Generated by Washington Citizens for Disposal at MSW Facilities

Since 1987, Ecology has conducted a recycling survey that has reported the amount of waste generated, recycled and disposed each year. This waste stream was the "recyclable waste stream" made up of waste types included in the recycling categories, but not including sludge, asbestos, petroleum contaminated soils, construction and demolition, or industrial waste (when it could be specifically identified[34]). It was also typically the waste stream generated and reported by municipalities (cities and counties). The report for the recycling survey included waste that was disposed of outside of Washington, but excluded imported waste.

[34] Some facilities and government entities that report information for the annual recycling survey on waste generated and disposed include other waste in with the total for municipal solid waste. These waste types are typically inert, demolition, industrial, and commercial.

Figure 6.5 shows the amount of waste recycled, disposed and generated in Washington. It is based on waste disposed at MSW landfills and incinerators in Washington and Oregon, excluding imported waste. All types of waste are included in the disposal numbers. The trend until 1997 showed an increase in the amounts generated, recycled, and disposed. The recycling rate remained fairly flat from 1997 to 1999. In 2000, there was an increase in the recycling rate, along with an increase in the disposal rate.

Figure 6.5
Washington State Trends in Solid Waste Generated, Recycled & Disposed (in tons)



Washington State's population has continued to grow since disposal numbers were tracked in 1991 (see Table 6.9). The increased population has had a correlated increase in waste disposed. In 1995, the per capita disposal rates (0.93 tons/person/year) decreased from the 1994 level (0.95 tons/person/year). In 1997, the per capita disposal rate increased to 1.03 tons/person/year. There was also a significant decrease in the recycling rate per person, from 0.47 tons/person/year in 1995 to 0.38 tons/person/year in 1997. In 2000, there was an increase in the per capita disposal rate to 1.09 tons/person/year. There was also an increase in the recycling rate to 0.42 tons/person/year.

Table 6.9
Washington State Population

1991	5,000,385
1992	5,116,685
1993	5,240,900
1994	5,334,400
1995	5,429,900
1996	5,516,800
1997	5,606,800
1998	5,685,300
1999	5,757,400
2000	5,803,400

Figure 6.6 analyzes the trends in per capita generation, recycling and disposal. This looks at the number of tons per year generated, recycled and disposed by each person. The total is not what each person produces at each household, but includes all residential, business, commercial and industrial waste generated in the state that is disposed of in municipal solid waste landfills and incinerators. Table 6.10 shows the per capita numbers (pounds/person/day) from 1991 through 2000.

Figure 6.6
Washington State Trends in Solid Waste
Generated, Recycled & Disposed (tons/person/year)

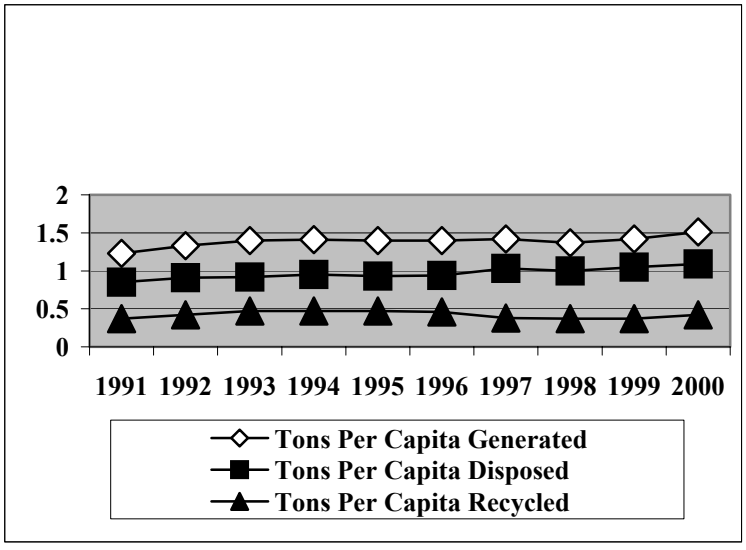


Table 6.10
Per Capita Disposed, Recycled and Generated Numbers
(pounds/person/day)

Per Capita	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Disposed[35]	4.67	4.96	5.07	5.16	5.12	5.16	5.66	5.45	5.73	5.96
Recycled	2.05	2.30	2.58	2.56	2.56	2.51	2.10	2.05	2.05	2.33
Generated	6.72	7.26	7.65	7.72	7.68	7.67	7.76	7.50	7.78	8.28

As the population continues to increase, the total amount of waste generation has continued to grow. The revised State Solid Waste Plan, to be completed in July 2003, will provide the vision for reducing the amount and impact of waste and will focus efforts on waste prevention and reduction by state and local government and citizens of the state.

Total Waste Disposed in Washington State
The three other categories of landfills for which information was obtained this year include woodwaste, inert/demolition and limited purpose. The waste disposed in these facilities is more typically generated by the private sector (business and industry). There is a significant amount of waste that is disposed of in-state that is not included in the disposal numbers discussed above.

To gain a more complete picture of solid waste disposal in the state, it is necessary to include all categories of waste that are disposed or incinerated in Washington state landfills and incinerators. This includes waste imported from out-of-state, but does not include exported waste. When all categories are included, 6,425,959 tons of waste were disposed of in all types of landfills and incinerators in Washington in 2000 (see Table 6.11).

Table 6.11
Total Amounts of Solid Waste Disposed in Washington

DISPOSAL METHOD	1993	1994	1995	1996	1997	1998	1999	2000
Municipal Solid Waste Landfills	3,726,055	3,878,615	4,001,815	4,083,755	4,532,918	4,582,107	4,738,808	4,659,582
Incinerated Waste	431,928	421,626	397,588	365,464	551,006	369,778	461,684	554,780
Woodwaste Landfills	122,097	32,625	115,759	102,697	95,325	59,410	102,484	87,552
Inert/Demolition Landfills	834,238	657,614	479,638	873,195	600,149	494,528	536,155	477,383
Limited Purpose Landfills	407,747	642,251	874,116	910,078	695,783	628,896	569,747	646,662
TOTAL	5,522,065	5,632,731	5,868,916	6,335,189	6,475,181	6,134,719	6,408,878	6,425,959

With the implementation of the revised Minimum Functional Standards for Solid Waste Handling, there will no longer be a woodwaste category of landfill, inert waste allowed for disposal at Inert Waste Landfills will be very specifically defined and there will be

[35] Disposed amounts include all waste generated from Washington disposed in MSW landfills and incinerators, both instate and exported.

additional requirements on Limited Purpose Landfills. This will likely result in the closure of several existing landfills. Waste formerly disposed there could move into the municipal solid waste landfill system and hopefully there will be increase recycling and reuse of materials.

Future Capacity at Municipal Solid Waste Landfills

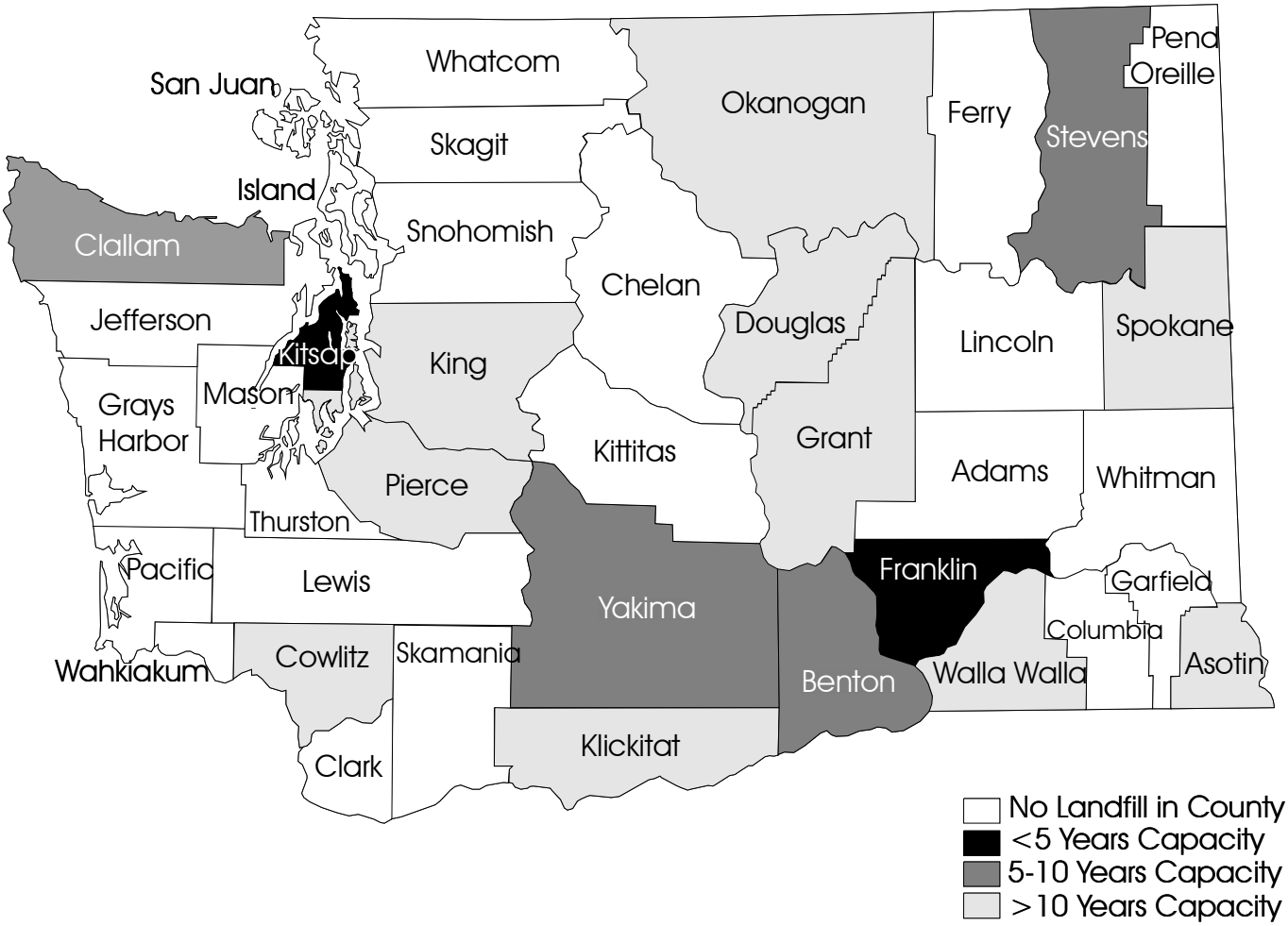
There are currently 20 municipal solid waste landfills operating as of September 2000. (See Map A for the location of operating MSW landfills and incinerators.) The amount of remaining capacity for the 20 MSW landfills was determined by asking the facilities to report remaining permitted capacity, as well as the expected closure date. In 2001, the facilities estimated about 167 million tons, or 36 years, of capacity at the current disposal rate.[36] In 1994, facilities reported approximately 181 million tons of remaining capacity, about 49 years of remaining capacity statewide.[37] Changes in permit conditions, early landfill closures and projections of fewer expansions, and changing volumes affect remaining capacity, which has fluctuated the past several years. Of the 20 currently operating landfills, only 11 have greater than 10 years of remaining permitted capacity. (See Table 6.12 for an estimated number of facilities with specified remaining years of life.) Map C shows the counties and the remaining years of capacity of their MSW landfills.

Table 6.12
Estimated Years to Closure for MSW Landfills

YEARS TO CLOSURE	% OF TOTAL REMAINING CAPACITY	NUMBER OF FACILITIES	PUBLIC	PRIVATE
Less than 5 years	1%	4	1	3
5 to 10 years	4%	5	5	0
Greater than 10 years	95%	11	8	3
TOTALS		20	14	6

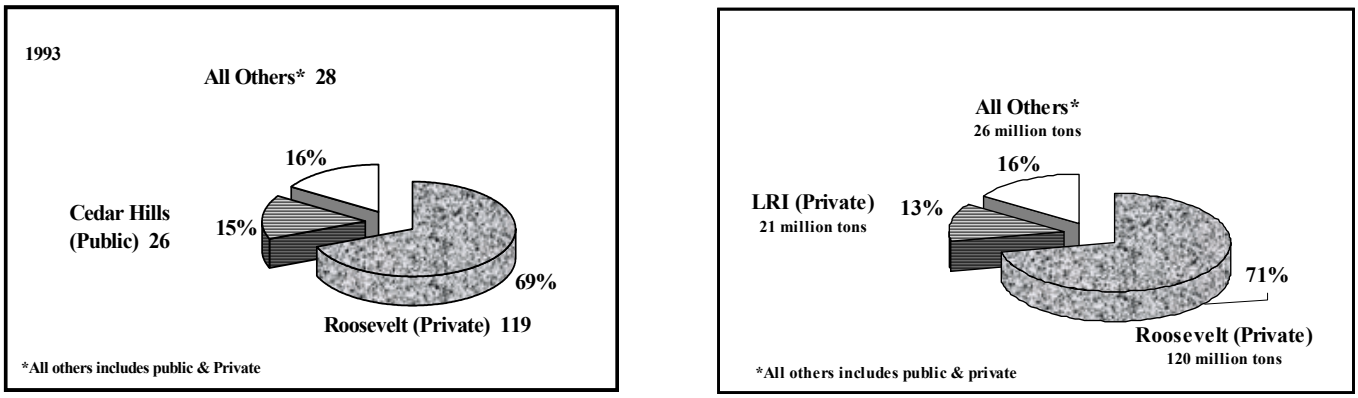
[36] This does not include a site in Adams County that has been permitted for 90,000,000 tons. Construction start of this facility is undecided at this time.
[37] *Solid Waste in Washington State - Third Annual Status Report*, Department of Ecology, Publication #94-194, December 1994.

Map C: Remaining Permitted MSW Landfill Capacity (as of April 2000)



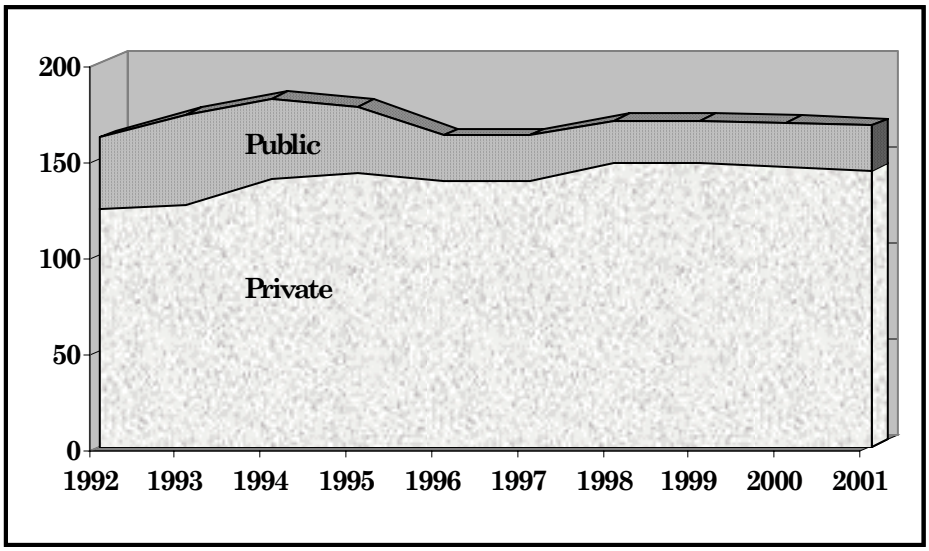
2001 capacity numbers indicated that 95% of the remaining capacity was at landfills with greater than 10 years to closure. Fourteen of the 20 operating MSW landfills are publicly owned with 14% of the remaining capacity (23 million tons). 86% of the remaining permitted capacity (144 million tons) is at the six privately-owned facilities, compared to 73% in 1993. The majority of the capacity, about 72% of the total statewide capacity, is at the privately owned Roosevelt Regional Landfill in Klickitat County. Another 13% of the statewide total capacity is at newly constructed, privately owned landfill in Pierce County, 6% at the publicly owned Cedar Hills landfill in King County, with the remaining 9% of capacity spread among the remaining 17 landfills in the state (see Figure 6.7).

Figure 6.7
Comparison of Remaining Permitted Capacity
1993 and 2001



The remaining capacity at private landfills has exceeded that for public facilities since the amounts were tracked in 1992. Private facility capacity showed a slight decrease in 2001 (Figure 6.8).

Figure 6.8
Remaining Capacity MSW Landfills
(public/private in million tons)

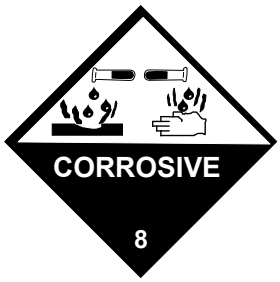


Besides the amount of remaining capacity, the availability of that capacity needs to be considered. The Roosevelt Regional Landfill is operated to accept waste from a wide variety of locations (see Map B). In 2000, the facility received some type of solid waste

from 33 counties in Washington, including the majority of the solid waste from fifteen counties. Waste was also received from Alaska, California, Oregon, and British Columbia. Other landfills in the state are operated to accept the majority of waste from the county in which they operate. In order to reserve the capacity for local citizen needs, some are also using the regional facility for some of their disposal needs.

The 36 year estimate of total remaining permitted capacity is based on the amount of waste disposed in MSW landfills in 2000. This amount will vary depending upon waste reduction and recycling activities, population growth or decline, as well as the impact of waste being imported into the state for disposal or additional waste which is currently disposed out-of-state, being disposed in-state. As discussed previously, there has been an increase in the types of waste, other than municipal waste, being disposed of in MSW landfills. Part of this is the liability concern (that is, it is better to pay a higher cost and transport further to dispose in a well designed landfill). As requirements change for other types of landfills in the revised *Minimum Functional Standards for Solid Waste Handling Facilities*, some of those facilities may close and there will likely be an increase in the types and amounts of materials recycled, as well as a shift of the types of solid waste moving to the MSW landfills for disposal.

Chapter VII Moderate Risk Waste Collection System



The term "moderate risk waste" was created by revisions to Washington State's 1986 Hazardous Waste Management Act (RCW 70.105). MRW is a combination of household hazardous waste (HHW) conditionally exempt small quantity generator (CESQG) waste. HHW is considered waste that was generated in the home, while CESQG is small quantities of business or non-household waste. Both HHW and CESQG waste are exempt from hazardous waste regulations.

MRW FACTOIDS

- Total MRW collection in 2000 was 20 million pounds.
- The average amount of HHW disposed by the 8% of all households that used a HHW collection event or fixed facility was 66 pounds (this does not include the uncounted participants and large quantities of MRW brought to used-oil sites).
- The counties that collected the most used oil per capita were Stevens, Cowlitz, Pacific, Douglas, Lewis, and Franklin.
- The counties that had the largest percentage of participation per housing unit at HHW events or facilities were Klickitat, Spokane, Pend Oreille, Island, and Jefferson.
- The counties that properly disposed or recycled the most MRW per capita were Yakima, Klickitat, Jefferson, Kittitas, and Stevens.

MRW collections started in the early 1980's primarily as HHW-only events, also known as "round-ups." These events usually transpired once or twice a year. In the late 1980's permanent collection facilities, now know a fixed facilities, began to replace the collection events in order to fulfill the need for year-round collection. These efforts resulted in a larger number of customers served, decreased costs, and increased reuse and recycling of MRW. HHW has been the primary focus of MRW collection programs until recently. Efforts are beginning to produce an increase in the collection of CESQG waste at facilities. Currently there are eighteen public MRW programs that collect CESQG waste.

The 1988 Model Toxics Control Act in Washington State provides a large part of the funding for public MRW programs. Funds are used to meet the planning and implementation requirements for local hazardous waste (MRW) programs in each local jurisdiction.

By 1991 all local governments in the State of Washington had submitted MRW plans. Aspects included in every local MRW plan are CESQG Technical & Disposal Assistance, MRW Public Education, MRW Enforcement and HHW Collection.

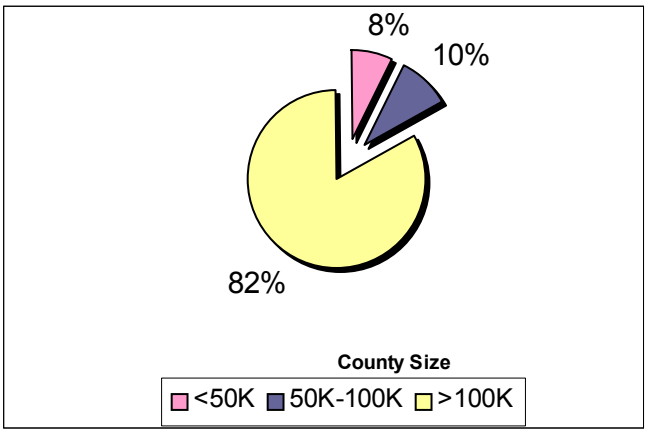
Accuracy of Data Collection

Ecology has created and does circulate a standard reporting form to all MRW programs; however, the reported data can vary depending on a program's collection process, how the data is reported, and how the reported data is interpreted.

For the 2000 reporting year all programs complied with submitting the required annual reports for year 2000; however, not every program reported all the required information. This report will note key areas where there is unusual data or anomalies.

Year 2000 Data

Figure 7.1
Percent of State Population by County Size



This year's report focuses on year 2000 data with some comparisons to the data published in last year's report. This is the first year that data is broken out comprehensively by county (See Table 7.8). In an attempt to provide useful information for individual programs, it was determined that data would be presented in categories by county size. Figure 7.1 and Table 7.1 indicates a distinction between counties with a population of less than 50 thousand, 50 thousand to 100 thousand, and populations greater than 100 thousand.

In Washington State there are 42 programs that manage MRW. All programs are required to provide individual MRW reports. These programs include all 39 counties. King County generates four reports: King County Waste Mobile and Used Oil Collection System, Seattle Solid Waste Utility (HHW), Port of Seattle (HHW) and Seattle City Light (CESQG). King County data is segregated from Seattle data in the form of Seattle Solid Waste Utility, Port of Seattle, and Seattle City Light, and these programs report as three separate programs. Some counties combine reports. Columbia County data is included with Walla Walla County data and Garfield County data is included with Asotin County data. Wahkiakum County data is included with Cowlitz County data except for one used oil site report for Wahkiakum County.

Many HHW collection systems are approaching stability. There are no remaining large counties without a permanent HHW collection facility (or fixed facility). Some programs continue to explore or are expanding. It is unclear to what extent local programs will be accepting increasing quantities of CESQG, electronics, and other types of MRW wastes not typically accepted in the past. CESQG waste is being accepted by more local programs each year.

Table 7.1
Individual County Population by Size

<50K		50K-100K		>100K	
Adams	16,428	Chelan	66,616	Benton	142,475
Asotin*	22,948	Clallam	64,525	Clark	345,238
Douglas	32,603	Cowlitz*	96,772	King*	1,173,660
Ferry	7,260	Grant	74,698	Kitsap	231,969
Franklin	49,374	Grays H	67,194	Pierce	700,820
Jefferson	25,953	Island	71,558	Skagit	102,979
Kittitas	33,362	Lewis	68,600	Snohomish	606,024
Klickitat	19,161	Walla Walla*	59,244	Spokane	417,939
Lincoln	10,184	50K-100K total	569,207	Thurston	207,355
Mason	49,405			Whatcom	166,814
Okanogan	39,564			Yakima	222,581
Pacific	20,984			SeattleSWU	563,374
Pend Oreille	11,732			>100K total	4,881,228
San Juan	14,077				
Skamania	9,872				
Stevens	40,066				
Whitman	40,740				
<50K total	443,713				

- **Populations were combined: Garfield w/ Asotin; Wahkiakum w/ Cowlitz; Columbia w/ Walla Walla**
- **King excludes Seattle**
- **Seattle SWU is Seattle only**

MRW Collected

As shown in Table 7.2, Washington collected over 10.4 million pounds of HHW, over 8.2 million pounds of used oil (UO) from collection sites, and over 1 million pounds of CESQG waste, for a total of nearly 20 million pounds of MRW collected in 2000.

Table 7.2
Year 2000 Total Pounds Collected Per Waste Category

HHW lbs. (no UO Sites)	Used Oil lbs. (Collection Sites)	HHW lbs. (including UO Sites)	CESQG lbs.	Total MRW lbs.
10,469,392	8,263,484	18,732,875	1,064,361	19,797,236

The totals in Table 7.2 reflect a slight decrease from an estimated 20.4 million pounds of MRW collected in 1999. This decrease as shown in Table 7.3 is due in part because of a one million pound drop in used-oil collections between the two years that was only partially covered by the increasing HHW collection.

Table 7.3
Total Pounds per Waste Category for Years 1998, 1999, 2000

Collection Year	HHW lbs. (no UO Sites)	Used Oil lbs. (Collection Sites)	CESQG lbs.	Total MRW lbs.
1998	~9.6M	~9.2	~500K	~19.3M
1999	~9.9M	~9.3M	~637K	~20.4M
2000	~10.5M	~8.3M	~1.1M	~19.8M

Figure 7.2
HHW (no UO sites) Pounds Per Participant by County Size

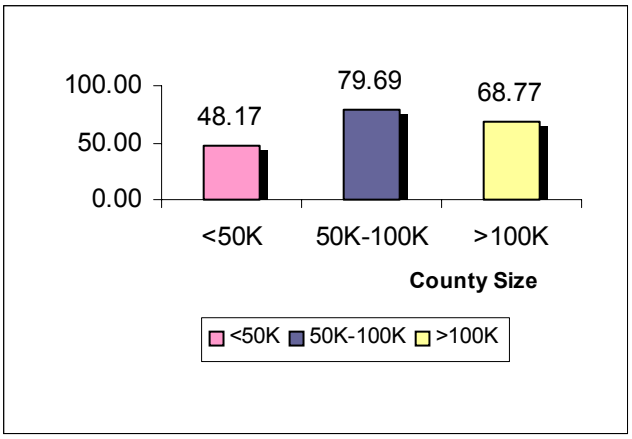


Figure 7.2 shows the total pounds of HHW (no UO sites) collected per participant by county size in 2000. The average pounds collected statewide per participant for HHW collections was 66.

Household Hazardous Waste

As shown in Table 7.4, the dominant types of HHW collected in 2000 were non-contaminated used oil, oil-based and latex paint, flammable liquids and lead acid batteries. These specific waste types accounted for 80% of the estimated 10.5 million pounds of HHW collected in 2000. These are the same top five HHW types as in 1998 and 1999.

With the exception of lead acid batteries, the dominant types of HHW collected in 1999 were the same.

Table 7.4
HHW Dominant Waste Types Collected in 2000

Waste Type	Total Lbs.
Oil-Non-Contaminated	2,499,686
Oil Based Paint	1,795,596
Latex Paint	1,500,937
Flammable Liquids	1,357,014
Lead Acid Batteries	1,217,023
Total	8,370,256

Table 7.5 shows the top five counties with the highest collections of HHW (not including contaminated-oil, oil filters and antifreeze collected from UO sites) in pounds per capita for 1998, 1999, 2000.

Table 7.5
High Collections of HHW (no UO Sites) Pounds Per Capita by County in 1998-2000

HHW 1998			HHW 1999			HHW 2000		
County	Size	Lbs./Capita	County	Size	Lbs./Capita	County	Size	Lbs./Capita
Stevens	<50K	5.07	Skamania	<50K	4.14	Klickitat	<50K	5.96
Klickitat	<50K	4.95	Yakima	>100K	4.00	Pend Oreille	<50K	4.78
Jefferson	<50K	3.61	Kittitas	<50K	3.97	Benton	>100K	3.97
Chelan	50K-100K	3.43	Lewis	50K-100K	3.62	Yakima	>100K	3.82
Yakima	>100K	3.34	Klickitat	<50K	3.02	Kittitas	<50K	3.61

Conditionally Exempt Small Quantity Generator Waste

Figure 7.3
Percent of Total CESQG Pounds Collected by County Size

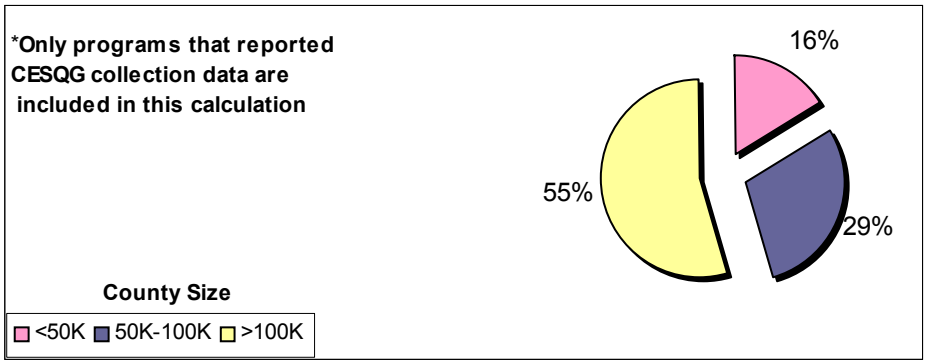


Figure 7.3 shows collection efforts (measured in % of total pounds) of CESQG waste by county size.

There are eighteen local MRW programs that collect CESQG waste from the public. Counties that sponsor CESQG waste collections are Asotin, Benton, Clallam, Clark, Cowlitz, Douglas, Grant, Grays Harbor, Island, Jefferson, Kitsap, San Juan, Skagit, Snohomish, Whatcom, and Yakima. Also Included in CESQG waste totals for year 2000 are data from Philip Services. Philip Services primarily serves CESQG's in three counties: King, Pierce and Clark.

As shown in Table 7.6 the dominant types of CESQG waste collected in 2000 were non-contaminated oil, flammable liquid, oil based and latex paint. These specific waste types accounted for 70% of the 1 million pounds of CESQG waste collected in 2000.

Table 7.6
CESQG by Waste Type Collected in 2000

Waste Type	Total lbs. CESQG
Oil Non-Contaminated	288,393
Flammable Liquids	211,143
Oil Based Paint	157,920
Latex Paint	98,494
Antifreeze	77,353
Lead Acid Batteries	36,528
Flammable Liquids, aerosols	21,853
Oil Filters Crushed	21,730
Other Dangerous Waste	20,442
Bases	19,570
Oil Contaminated	19,190
Crushed Cans	18,277
Other Non Hazardous	12,726
Acids	11,620
Dry Cell Batteries	7,543
Oil Filters	7,236
Flammable Liquids Poison	6,945
Pesticide/Poison Liq	3,705
Pesticide/Poison Sol	2,787
CFC/ Freon filters	2,526
CFC/ Freon	2,090
Flammable Solids	1,390
Oxidizers	947
Flammable Gas	826
Flammable Liq. Pois., aerosols	712
Chlorinated Solvents	690
Flammable Gas Poison	22
Organic Peroxides	22
Reactives	12
TOTALS	**1,064,361**

Used Oil Sites

In 2000, reported used oil collection sites yielded 8,263,484 pounds of used oil, oil filters and antifreeze. Used oil collection by county size showed variability in pounds per capita. For example, Stevens County with a population of 40,066 collected 156,364 pounds of used oil, oil filters and antifreeze from 11 sites, while Clark County with a population of 345,238 collected 189,536 pounds of used oil, oil filters and antifreeze from nine sites (or about 0.6 lbs/capita). See Table 7.7 for highest collections in pounds per capita by county size for 1998, 1999 and 2000.

Figure 7.4
Used Oil Pounds Per Capita Collected by County Size

Figure 7.4 shows the average pounds per capita of used oil, oil filters and antifreeze collected at used oil sites by county size. Counties with populations less than 50 thousand collected 2.3 lbs/capita; counties between 50 thousand and 100 thousand collected 1.8 lbs/capita; and counties with populations over 100 thousand collected 1.3 lbs/capita.

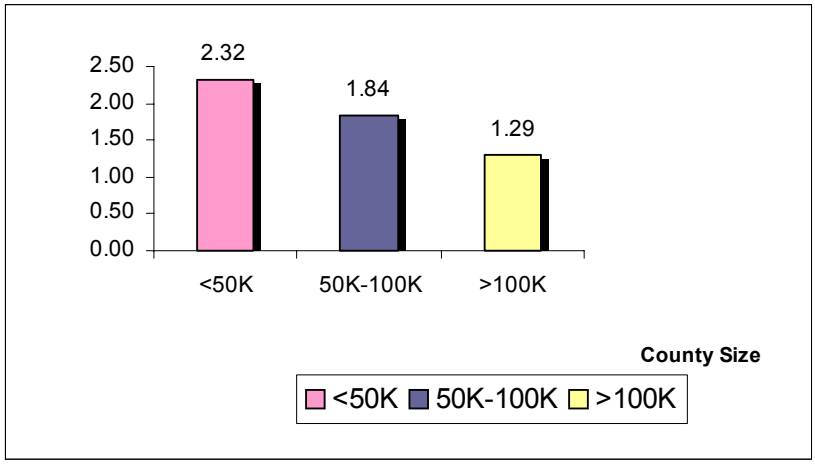


Table 7.7 shows the top six counties with the highest collections in pounds per capita of used-oil, oil filters and antifreeze at used-oil collection sites for 1998, 1999, and 2000.

Table 7.7
High Collection Counties, Used-Oil Sites Pounds Per Capita by County Size

Used Oil Sites - 1998			Used Oil Sites - 1999			Used Oil Sites - 2000		
County	Size	Lbs./Capita	County	Size	Lbs./Capita	County	Size	Lbs./Capita
Chelan	50K-100K	5.1	San Juan	<50K	6.1	Stevens	<50K	3.9
Stevens	<50K	3.9	Asotin	<50K	4.2	Cowlitz	50K-100K	3.7
Klickitat	<50K	3.8	Stevens	<50K	4.0	Pacific	<50K	3.6
San Juan	<50K	3.6	Klickitat	<50K	3.7	Douglas	<50K	2.9
Jefferson	<50K	3.5	Cowlitz	50K-100K	3.1	Lewis	50K-100K	2.8
Asotin	<50K	3.5	Jefferson	<50K	3.0	Franklin	<50K	2.7

Statewide Level of Service

The US Census Bureau reports that as of 2000 there were an estimated 2,180,551 Housing Units[38] in Washington State. MRW Annual Reports revealed there were 155,473 participants in HHW collection in 2000 excluding numbers for Adams, Skagit and Whitman because this information was not provided. The actual number of households served is much larger due to the fact that most used oil sites do not record or report numbers of participants (Spokane is the exception). Because some participants that are counted at events or by facilities bring HHW from multiple households, the number of households served can be estimated by adding ten percent to the participant values for an estimated 171,020 households served in 2000. This number represents nearly 8% (7.8%) of all households in Washington State. This is an increase from 1999 when an estimated 7.2% of Washington households were served.

Table 7.8, on the following page, shows participant levels and amounts of HHW and total MRW collected by county.

[38] This information was downloaded from Website http://quickfacts.census.gov/hunits/states/53cty.html.

Table 7.8
Various Data by County

COUNTY	HOUSING UNITS	HHW Participants	% Participant /Housing Unit	HHW Cost /Participant	HHW lbs. /Participant	HHW & UO Sites Ttl. lbs.	MRW Ttl. lbs.
Adams	5773	**Number of Participants Not Reported**				29,525	29,525
Asotin*	10,399	770	7%	$ 71.24	24	18,701	18,931
Benton	55,963	3,565	6%	$ 47.65	159	769,174	789,654
Chelan	30,407	476	2%	$ 173.24	124	119,630	119,630
Clallam	30,683	770	3%	$ 72.98	61	209,781	213,008
Clark	134,030	3,672	3%	$ 73.07	229	1,029,973	1,029,973
Cowlitz*	40,416	1,729	4%	$ 87.27	93	512,745	523,320
Douglas	12,944	381	3%	$ 79.81	83	125,895	129,264
Ferry	3,775	26	1%	$ 72.92	52	5,047	5,047
Franklin	16,084	150	1%	$ 132.50	59	143,330	143,330
Grant	29,081	473	2%	$ 89.48	103	72,409	74,042
Grays Harbor	32,489	879	3%	$ 107.62	74	64,990	90,021
Island	32,378	3,308	10%	$ 40.47	36	255,925	313,989
Jefferson	14,144	1,415	10%	$ 51.24	62	150,759	157,159
KingPOS*	N/A	100	0%	$ 12.00	26	20,368	20,368
King*	471,713	41,162	9%	$ 89.87	87	4,740,140	4,740,140
Kitsap	92,644	3,068	3%	$ 151.58	102	636,749	668,953
Kittitas	16,475	463	3%	$ 103.54	260	191,220	191,220
Klickitat	8,633	8,576	99%	$ 4.83	13	122,816	122,816
Lewis	29,585	947	3%	$ 72.54	256	397,921	397,921
Lincoln	5,298	150	2%	$ 73.33	29	4,305	4,305
Mason	25,515	531	2%	$ 81.91	122	145,304	145,304
Okanogan	19,085	195	1%	$ 265.69	196	38,220	38,220
Pacific	13,991	130	1%	$ 474.75	76	84,733	84,733
Pend Oreille	6,608	1,020	15%	$ 31.15	55	56,092	56,092
Pierce	277,060	8,669	3%	$ 37.54	146	1,612,137	1,612,137
San Juan	9,752	397	4%	$ 91.51	101	66,533	70,639
Skagit	42,681	**Number of Participants Not Reported**				350,935	375,378
Skamania	4,576	128	3%	$ 115.75	155	49,706	49,706
Snohomish	236,205	9,486	4%	$ 52.31	91	1,493,568	1,596,142
Spokane	175,005	34,000	19%	$ 10.97	10	1,019,331	1,019,331
Stevens	17,599	524	3%	$ 46.63	113	215,792	215,792
Thurston	86,652	5,583	6%	$ 6.45	57	876,208	887,877
Walla Walla*	23,165	1,481	6%	$ 87.30	42	124,431	124,431
Whatcom	73,893	3,353	5%	$ 48.93	53	252,822	320,769
Whitman	16,676	**Number of Participants Not Reported**				46,790	46,790
Yakima	79,174	4,654	6%	$ 1.93	183	1,380,674	1,901,304
Seattle SWU*	270,524	13,242	5%	$ 45.37	80	128,921	128,921
CESQG Only*							171,779
Statewide	N/A	155,473	N/A	N/A	N/A	18,719,603	19,783.964

- **Housing units as well as reported data were combined for the following counties: Asotin includes Garfield; Cowlitz includes Wahkiakum; and Walla Walla includes Columbia.**
- **King excludes Seattle.**
- **KingPOS represents Port of Seattle serving approximately 100 residential/pleasure boats.**
- **Seattle SWU represents Seattle Solid Waste Utility.**
- **CESQG Only represents Seattle City Light and Philip Services (Clark, Pierce and King).**

Collection by Waste Category and Type

Table 7.9 provides summary information on total pounds collected in all three categories of MRW by waste types.

Table 7.9
Total Pounds of MRW Collected by Waste Category

Waste Type	HHW	CESQG	UO Sites
Acids	56,683	11,620	
Acids, aerosols	-	-	
Antifreeze	285,283	77,353	215,392
Bases	73,474	19,570	
Bases, aerosols	1,030	-	
CFC/ Freon	2,071	2,090	
CFC/ Freon filters	5,117	2,526	
Chlorinated Solvents	3,913	690	
Crushed Cans	125,659	18,277	
Dry Cell Batteries	115,204	7,543	
Flammable Solids	24,649	1,390	
Flammable Liquids	1,357,014	211,143	
Flammable Liquids, aerosols	229,047	21,853	
Flammable Liquids Poison	57,215	6,945	
Flammable Liq. Pois., aerosols	375,554	712	
Flammable Gas	20,480	826	
Flammable Gas Poison	4,338	22	
Flammable Gas Pois., aerosols	9,829	-	
Latex Paint	1,500,937	98,494	
Lead Acid Batteries	1,217,023	36,528	
Oil-Based Paint	1,795,596	157,920	
Oil Contaminated	119,742	19,190	
Oil Filters	31,377	7,236	38,957
Oil Filters Crushed	1,105	21,730	
Oil Non-Contaminated	2,499,686	288,393	8,009,135
Oil with Chlorides	-	-	
Oil with PCBs	500	-	
Other Dangerous Waste	24,427	20,442	
Organic Peroxides	403	22	
Oxidizers	17,434	947	
Personal Protect. Equip.	1,165	-	
Pesticide/Poison Liq	156,630	3,705	
Pesticide/Poison Sol	203,836	2,787	
Reactives	3,375	12	
Other Non Hazardous	161,266	12,726	
Totals	10,469,392	1,064,361	8,263,484

*HHW numbers include Port of Seattle data. CESQG numbers include Seattle City Light and Philip Services.

Trends in Collection

As fixed facilities continue to gain popularity, the numbers of collection events are decreasing. Some programs are eliminating collection events altogether or using hybrid mobile collection systems. Reasons for this shift include: increased cost of collection events per amount of waste collected, fixed facilities providing a sense of permanence and normality to the collection of MRW, and increased operation efficiencies with fixed facilities.

Mercury Waste Streams and Other Waste Streams

MRW collection programs are well established statewide. Many of these programs are exploring management of various other components of municipal solid waste. Mercury-containing lamps and electronic wastes are two of these emerging waste types.

There is a need to pay attention to the collection of mercury waste streams. Fluorescent and high intensity lamps contain small amounts of mercury. There will be an estimated 35 tons of mercury discharged into the atmosphere from the 550 million lamps currently in use by Americans (Greskovich 1997).

Used electronics are also of concern. Components in a number of electrical and electronic products are known to contain one or more of the following substances: mercury, lead; cadmium; embedded batteries; and polychlorinated biphenyls (PCBs).

As technology continues to lead to better electronic products, and as more people become financially able to obtain these popular commodities, disposal of the leftovers as well as their components becomes a concern for Ecology and local solid waste managers. For example, in the European Union an estimated four percent of their municipal solid waste stream is electronics, other electrical devices and appliances as of 1999. By the year 2010, predictions for this waste sub-stream will double (Ecology 1999).

Annual Reporting

Local programs are required to submit MRW report forms annually. For the past few years, Ecology has requested annual reports be received by March for previous calendar year collections. The information received from local programs through the MRW annual reports provides Ecology with data on MRW infrastructure, collection trends, cost, waste types received by collection events and fixed facilities, and the final disposition of MRW. This data is translated into the information contained in Chapter 7 of Ecology's Solid Waste Annual Status Report and is specifically designed to be useful to those who operate or work MRW programs within Washington State.

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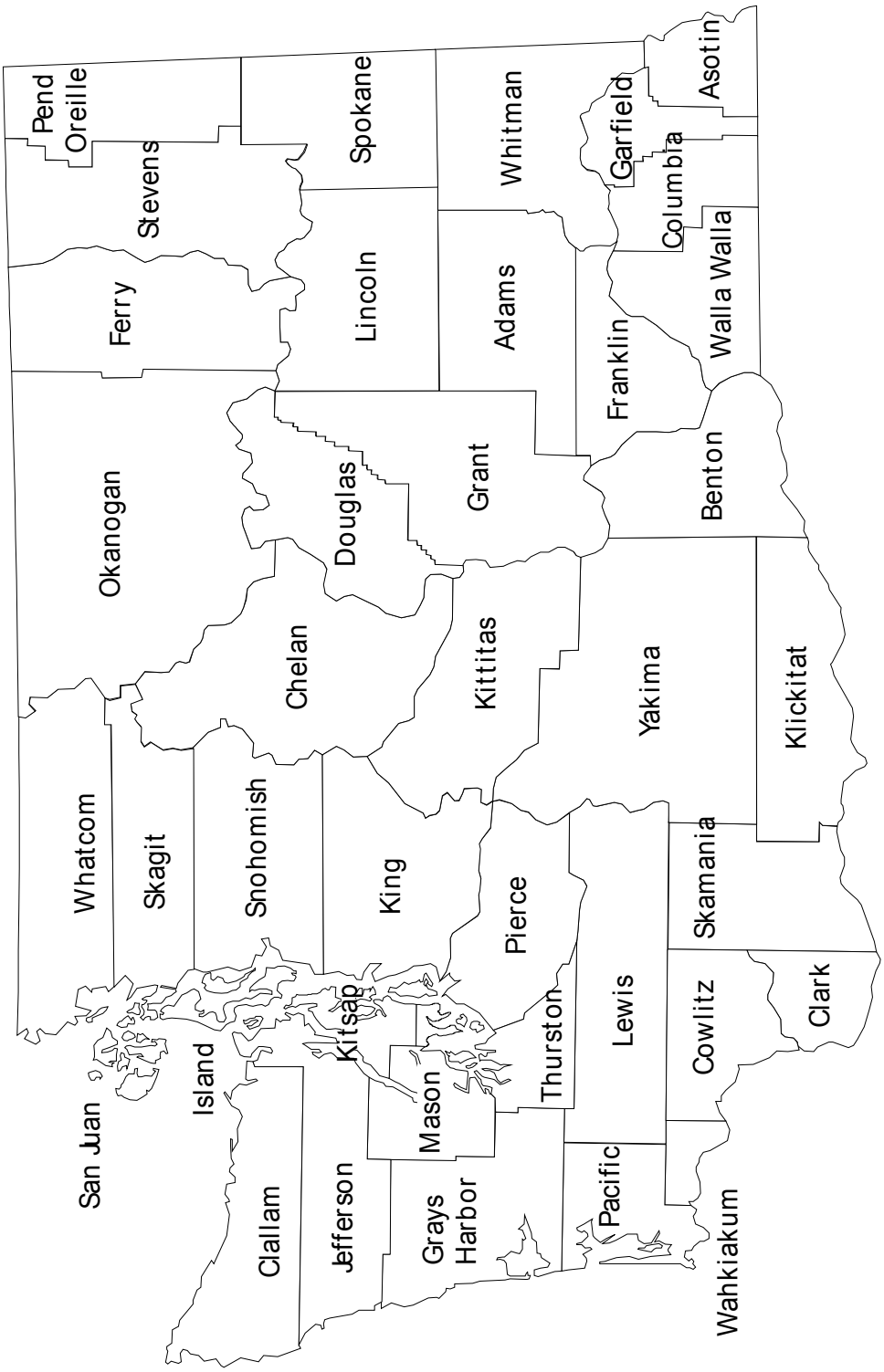
APPENDIX A
STATE MAP WITH COUNTY NAMES



State Map with County Names

APPENDIX B
FACILITY SPECIFIC DISPOSAL DATA FOR 2000

Table B.1 2000 Total Waste Disposed in Municipal Solid Waste Landfills

Facility Name	County	Municipal Solid Waste	Demolition Waste	Industrial Waste	Inert Waste	Commercial Waste	Wood Waste	Sewage Sludge	Asbestos	PCS	Tires	Special	Medical	Othe	Total Waste
304th Street Landfill/Land Recovery Inc. (LRI)	Pierce	386,959	3,847	0	0	30,443	16	530	14	0	0	0	182	99,433	**521,424**
Asotin County MSW Landfill	Asotin	38,106	0	0	0	0	0	0	0	0	0	0	0	0	**38,106**
Cedar Hills Landfill	King	945,175	0	0	0	0	0	0	124	187	0	0	0	1,688	**947,174**
Cheyne Road Landfill	Yakima	58,703	0	0	0	0	1,031	41,696	0	0	246	0	0	500	**102,176**
Cowlitz County Landfill - B	Cowlitz	47,765	2,860	6,533	0	24,500	0	0	11	0	0	0	0	0	**81,669**
Delano Landfill	Grant	3,960	300	0	500	525	0	0	0	0	0	0	0	0	**5,285**
Ephrata Landfill	Grant	77,165	0	0	0	0	0	0	0	0	103	0	0	0	**77,268**
Fort Lewis Landfill #5	Pierce	34,499	0	0	2,209	0	4,659	218	57	0	0	0	0	0	**41,642**
Greater Wenatchee Reg Landfill &	Douglas	104,690	0	0	0	0	0	633	74	8,191	254	437	0	0	**114,279**
Hawks Prairie Landfill (stopped	Thurston	48,211	0	0	0	0	0	0	7	0	0	0	0	0	**48,218**
Horn Rapids Landfill	Benton	25,637	6,100	1,309	5,353	20,508	1,972	878	0	6	13	0	0	359	**62,135**
New Waste Inc. Landfill	Franklin	1,669	1,028	0	320	6,064	688	0	177	1,557	2	0	0	1,252	**12,757**
Northside Landfill	Spokane	5,818	6,871	0	193	0	0	0	0	0	0	0	3	0	**12,885**
Okanogan Central Landfill	Okanogan	22,350	16	0	0	0	14	0	0	0	11	0	0	79	**22,471**
Olympic View Landfill	Kitsap	157,545	52,333	0	10,606	0	0	0	2,091	61,955	1,245	0	0	68,793	**354,568**
Port Angeles Sanitary Landfill	Clallam	28,041	7,725	0	0	10,660	0	1,422	11	537	0	0	0	0	**48,396**
Roosevelt Regional Landfill-MSW	Klickitat	1,063,038	488,160	74,619	0	0	24,952	2,406	4,303	158,837	40,548	0	0	0	**1,856,862**
Stevens County Landfill	Stevens	21,771	0	6,380	0	1,052	0	0	0	20	295	0	0	0	**29,518**
Sudbury Road Landfill	Walla Walla	58,517	0	0	0	0	0	0	225	0	61	0	54	0	**58,858**
Tacoma, City of Landfill	Pierce	48,580	0	0	0	0	0	0	17	0	0	0	0	0	**48,597**
Terrace Heights Landfill	Yakima	158,544	0	0	168	0	13,756	0	811	0	409	0	0	1,606	**175,293**
Facility Count:	**22**	**3,336,743**	**569,240**	**88,841**	**19,349**	**93,752**	**47,088**	**47,783**	**7,922**	**231,290**	**43,187**	**437**	**239**	**173,711**	**4,659,581**

Table B.2 2000 Total Waste Disposed Energy Recovery/Incinerators

Facility Name	Municipal Solid Wst-Inc	Demolition Wst-Inc	Industrial Wst-Inc	Inert Wst-Inc	Commercial Wst-Inc	Wood Wst-Inc	Sewage Sludge-Inc	Biomedical Wst-Inc	Tires-Inc	Special Wst-Inc	Other-Inc	Total
City of Tacoma Steam Plant	63,640	21,769	1,088	0	0	176,549	0	0	0	0	2,071	**265,117**
Inland Empire Paper	0	0	0	0	0	8,721	0	0	0	0	0	**8,721**
Spokane Regional Waste to Energy Facility	280,942	0	0	0	0	0	0	0	0	0	0	**280,942**
	344,582	**21,769**	**1,088**	**0**	**0**	**185,270**	**0**	**0**	**0**	**0**	**2,071**	**554,780**

Table B.3 2000 Total Waste Disposed Inert-Demolition Waste Landfills

Facility Name	Demolition	Industrial	Inert	Commercial	Wood	Sewage	Asbestos	PCS	Tires	Special	Other	Total Waste
Adams Street Inert Waste Disposal Site	0	0	2,875	0	0	0	0	0	0	0	0	**2,875**
ALCOA Inert Waste/Demolition Landfill	0	0	3,786	0	0	0	5	0	0	0	0	**3,791**
Anderson Demolition Site	44,390	0	0	0	0	0	0	3,406	0	0	1,865	**49,661**
Asotin County I & D Landfill	2,036	0	0	0	0	0	0	0	0	0	0	**2,036**
Asphalt & Gravel Products Excavation Demo Landfill	8,538	0	154	0	251	0	0	0	0	0	0	**8,943**
Box Canyon Site	2,000	0	7,688	0	0	0	0	0	0	0	0	**9,688**
Busy Bee Landfill	9,606	0	5,220	0	0	0	0	0	0	0	0	**14,826**
Caton Inert & Demo Landfill	5,153	0	426	0	285	0	0	0	0	0	0	**5,864**
Central Pre-Mix Site (8th & Carnahan)	0	0	12,500	0	0	0	0	0	0	0	0	**12,500**
Centralia Mining CDL	0	0	442	0	0	0	0	0	471	0	0	**913**
Chester Landfill	28,121	0	4,184	0	0	0	0	0	0	0	0	**32,305**
City of Kennewick Inert/Demo Landfill	326	0	2,358	0	0	0	0	0	0	0	0	**2,684**
County Construction Recyclers, Inc.	30,939	0	3,789	0	0	0	0	0	0	0	0	**34,728**
Coupeville Demolition LF	1,440	0	360	0	0	0	3	0	0	0	0	**1,803**
CSR Associated	86,993	0	0	0	0	0	0	31,336	0	0	0	**118,329**
Douglas County Lux Pit (Nile-99.1)	0	0	18,625	0	0	0	0	0	0	0	0	**18,625**
Fillion Inert/Demo Site	4,670	0	0	0	0	0	0	0	0	0	0	**4,670**
Garfield County Inert/Demo Landfill	437	0	0	0	0	0	0	0	0	0	0	**437**
Indian Island CDL Landfill	269	0	0	0	0	0	0	0	0	0	0	**269**
Inland Asphalt Landfill	0	0	78,859	0	0	0	0	0	0	0	0	**78,859**
Inland Crestline Recycling	0	0	11,219	0	0	0	0	0	0	0	0	**11,219**
Kaiser-Mead Inert & Demolition Site	3,000	0	225	0	0	0	0	0	0	0	0	**3,225**
Kittitas County Inert & Demo Landfill	1,979	0	0	0	0	0	0	0	0	0	0	**1,979**
McChord Demolition Landfill (permit 27-025)	0	0	0	0	0	0	0	0	0	0	0	**0**
McChord Inert Waste Landfill (Permit 27-104)	0	0	3,125	0	0	0	0	0	0	0	0	**3,125**
Pipkin/Handley Landfill	1,356	0	2,781	0	0	0	0	0	0	0	0	**4,137**
Poe Asphalt Paving Inc	0	0	25,000	0	0	0	0	0	0	0	0	**25,000**
Prosser Inert/Demo Landfill	44	0	188	0	0	0	0	0	0	0	174	**405**
Tolt Backwash Solids Landfill	0	0	0	0	0	0	0	0	0	0	0	**0**
Walla Walla College I&D Landfill	0	0	8,759	0	0	0	0	0	0	0	0	**8,759**
Whitman College Site	27,959	0	0	0	0	0	0	0	0	0	0	**27,959**
Yakima Training Center Inert/Demo Landfill	0	0	321	0	0	0	0	0	0	0	0	**321**
	259,255	**0**	**192,883**	**0**	**536**	**0**	**8**	**34,742**	**471**	**0**	**2,039**	**489,934**

Table B.4 2000 Total Waste Disposed Limited Purpose/Special Use Facilities

Facility Name	Demolition Waste	Industrial Waste	Inert Waste	Commercial Waste	Wood Waste	Sewage Sludge	Asbestos	PCS	Tires	Special Waste	Other	Total Waste
Arco	0	147	0	0	0	0	0	1,002	0	0	1,113	**2,262**
Dickson - CDL - So 50th & Tyler St	0	0	800	0	0	0	0	0	0	0	0	**800**
Dickson -East 48th & Waller Road Fill Site	0	0	160,121	0	0	0	0	0	0	0	0	**160,121**
Graham Road Recycling & Disp	48,561	12,452	26,322	0	1,318	0	1,608	4,044	25	0	7,525	**101,854**
Intalco Aluminum Corp	1,562	5,366	3,997	0	0	0	0	0	0	0	670	**11,595**
Kettle Falls Generating Station Wood Ash Landfill	0	0	0	0	0	0	0	0	0	0	36,255	**36,255**
Lady Island Limited Purpose Landfill	0	0	8,079	0	1,853	0	0	0	0	0	0	**9,932**
Lawson Limited Purpose Site	0	0	0	0	0	0	0	0	0	0	26,897	**26,897**
Port Townsend Paper	0	0	0	0	0	0	0	0	0	0	6,831	**6,831**
Simpson Dayton Landfill	0	25,879	0	0	0	0	0	0	0	0	0	**25,879**
Weyerhaeuser Regional Landfill	21,080	234,380	0	0	34	0	0	2,112	0	0	0	**257,606**
Whitman Co. Limited Purpose Landfill	0	0	2,797	0	0	0	41	0	0	0	0	**2,839**
	71,203	278,224	202,116	0	3,205	0	1,649	7,159	25	0	79,291	**642,871**

Table B.5 2000 Total Waste Disposed for Woodwaste Landfills

Facility Name	Demolition Waste	Industrial Waste	Inert Waste	Commercial Waste	Wood Waste	Sewage Sludge	Asbestos	PCS	Tires	Special Waste	Other	Total Waste
Northwest Hardwoods	0	0	0	0	369	0	0	0	0	0	0	**369**
Quality Veneer & Lumber	0	0	0	0	5,807	0	0	0	0	0	622	**6,429**
Simpson Matlock Landfill	0	15,120	0	0	0	0	0	0	0	0	0	**15,120**
Stafford Creek Woodwaste Landfill	32,182	0	0	0	33,452	0	0	0	0	0	0	**65,634**
	32,182	**15,120**	**0**	**0**	**39,628**	**0**	**0**	**0**	**0**	**0**	**622**	**87,552**

Table B.6 2000 Total Waste Composted

Company	County	Yard waste	Other wood waste	Sawdust	Biosolids	Vegetative food waste	Manure	Post consumer food waste	Mixed MSW	Other	Total Composted
Bailand Farms YW Composting	Snohomish	11,000	0	0	0	0	4,000	0	0	0	**15,000**
Cedar Grove Composting, Inc.	Snohomish	8,541	0	0	0	0	0	0	0	0	**8,541**
Cedar Grove Composting, Inc.	King	130,269	21,693	0	0	15,096	0	0	0	0	**167,058**
Columbia Compost	Columbia	1,178	0	0	0	0	0	0	0	0	**1,178**
Cowlitz County Public Works	Cowlitz	2,462	3,450	0	5,180	0	0	0	0	0	**11,092**
Dykstra Composting Facility	Skagit	0	0	0	0	0	0	0	0	500	**500**
Johnson Agriprises	Adams	0	0	0	0	1,998	1,611	0	0	2,163	**5,772**
Lamb-Weston, Inc.	Franklin	0	0	0	0	2,500	0	0	0	870	**3,370**
LRI	Pierce	53,166	0	0	451	505	3,605	0	0	0	**57,727**
Pacific Topsoils	Snohomish	35,631	0	0	0	0	0	0	0	0	**35,631**
Skagit Soils	Skagit	7,100	0	0	0	0	0	0	0	600	**7,700**
Soil Life Systems, Inc	Walla Walla	0	0	0	0	0	6,917	0	0	22,440	**29,357**
Spokane Regional Solid Waste System	Spokane	19,280	0	0	0	0	0	0	0	0	**19,280**
Thurston County Solid Waste	Thurston	9,476	0	0	0	0	0	0	0	0	**9,476**
Washington State University	Whitman	0	0	0	280	19	10,471	74	0	2,256	**13,100**
		278,102	***25,143***	***0***	***5,911***	***20,118***	***26,604***	***74***	***0***	***28,829***	**384,782**