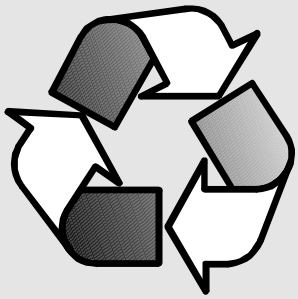
Solid Waste In Washington State



Ninth Annual Status Report

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Solid Waste and Financial Assistance Program
December 2000
Publication #00-07-037

Printed on Recycled Paper

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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
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 ninth 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),* planned litter prevention strategy, work of the Recycling Assessment Panel.

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 and information on waste disposal. Some of the data is for 1999 (recycling and disposal information), while other data is current to late 2000 (litter pickup numbers and facility status). A brief summary of significant information is highlighted below.

❖ Recycling

- The 1999 recycling rate remained low at 32.5% after an all time high of 39% in 1996. Poor markets continue to have an impact, as well as limited education program and reduced participation in recycling programs.

- The actual tonnage of materials recycled increased about 30,000 tons in 1999, but the overall disposal tonnage at municipal solid waste landfills and energy-recovery facilities increased about 380,000 tons, dropping the rate (determined by the tons recycled divided by the tons disposed).

- In response to the lower recycling rate first seen in 1997, Ecology formed the Recycling Assessment Panel to review recycling in the state and to develop an action plan to address the most significant barriers to recycling. The recommendations were provided to the Legislature in February 2000.

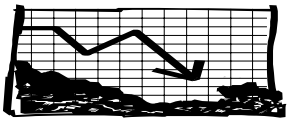
❖ Litter Collection Efforts

- 2000 litter collection by Ecology Youth Corps (EYC) picked up a total of 68,792 bags of litter and 69,360 pounds recycled.

- Other state agency programs were coordinated by Ecology. A total of 3,011,069 pounds of litter was collected by Departments of Corrections, Natural Resources, and Transportation.

- The Community Litter Cleanup Program provides funds to local governments through contracts for local litter collection programs. In the first round of contracts (1999) local governments partnered with volunteer groups and worked with state and local offender crews and cleaned 28,851 road miles and 2,662 illegal dump sites. A total of 3,355,000 pounds of litter was collected with 132,418 pounds recycled.

❖ **Waste Reduction/Recycling**



- Ecology provided almost $16 million in Coordinated Prevention Grants to local governments for the 2000/01 cycle. These funds leveraged local matching funds to support over $25 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 composting and land applied for beneficial use. The recycling of industrial by-products for beneficial uses is increasing and new standards are being developed to address the new technologies.

- With the adoption of *Biosolids Management* (chapter 173-308 WAC) in 1998, Ecology is working with local governments on delegation agreements (ten in place by mid-2000), over 90% of the applicable facilities are under a provisional approval for a statewide permit, and 15 final approvals have been granted.

- Staff at 1-800-RECYCLE redesigned their database to include information on electronic scrap recycling, and to increase the depth of information on recycling construction waste and plastics. The database also now lists vendors of products made from recycled construction waste

❖ **Recognizing Waste Reduction and Recycling Efforts**

- Ecology Deputy Director Dan Silver and Solid Waste & Financial Assistance Program Manger Cullen Stephenson presented $15,000 in cash awards to ten schools winning the "Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools Awards" for the 1999-2000 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 2000. 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 1999, 22 municipal solid waste landfills accepted 4,738,808 tons of waste. Two of those landfills closed in 1999, one closed in early 2000, and a new landfill opened in Pierce County in late 1999.

- 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 461,684 tons of waste in 1999. Of the three operating incinerators, two are waste-to-energy, burning municipal solid waste.

- The amount of waste imported (300,747 tons) and exported (1,109,191 tons) remained fairly stable in 1999, with about three and a half times as much waste exported as imported. The imported waste accounts for about 6% of the solid waste disposed and incinerated in Washington.

- With the opening of a new landfill in November 1999, the statewide permitted landfill capacity increased to 169 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 accounting for 71% of the statewide capacity.

❖ Moderate Risk Waste

- 19.8 million pounds of Moderate Risk Waste (MRW) was collected by the public collection system in 1999. Nearly half of this amount, 9.3 million pounds, was collected at used oil collection sites. The total amount of MRW collected and number of households served continues to increase.

- 7.22 % of all households used a household hazardous waste (HHW) collection facility or event in 1999 and many more households than this brought automotive fluids to a used oil collection site. On average, every household in the state delivered 8.6 pounds of HHW to the public MRW collection system in 1999.

- The most effective used oil collection programs are in the more rural parts of the state. In 1999 the leading counties on pounds collected of used oil per capita were: Asotin, Cowlitz, Jefferson, Klickitat, San Juan, Skamania, and Stevens Counties.

- The most effective HHW collection programs are in also in the more rural parts of the state. In 1999 the leading counties on a per capita collection basis for HHW collection were: Lewis, Kittitas, Klickitat, Skamania, and Yakima Counties.

Chapter I Issues Facing Solid Waste

Revising the State Solid Waste Management Plan

Ecology is leading an effort to revise the State Solid Waste Management Plan, which was last updated in 1991. RCW 70.95.260 directs Ecology to coordinate the development of a plan for all areas of the state that "look(s) to the future for twenty years as a guide in carrying out a state coordinated solid waste management program." Ecology is directed to work with other state agencies, local jurisdictions and other appropriate regional organizations to develop the plan.

The plan revision is expected to be completed by the summer of 2002. It will include an implementation plan and schedule for the recommendations made. Implementation will include a schedule and process for reviewing the plan every two years, as required by RCW 70.95.260.

To date, Ecology has worked with the state Solid Waste Advisory Committee (SWAC) and a number of local government representatives to identify changes that have occurred in the state's solid waste management system during the past decade. In addition, these participants have listed challenges and opportunities facing us, as well as characteristics of a desirable future solid waste management system.

From this input, a preliminary vision statement was drafted that looks much farther than twenty years into the future, to a system built around closed loop production, where excess material from one source becomes used as feedstock for another process. To move toward this vision, it will be necessary to significantly increase our emphasis on waste reduction. Twenty-year goals will be established, along with interim milestones, through the planning process.

Currently, several leading issues of interest and concern are being researched. Many additional issues have previously been identified and will also be addressed through the state plan. The issues being looked into include:

- authorities, roles and responsibilities of entities involved with solid waste management
- ways to reduce disposal
- aspects of the solid waste and recyclable collection systems
- methods to ensure environmental protection at disposal facilities
- ways to encourage waste reduction
- strategies for pursuing extended producer responsibility
- costs of the solid waste system in Washington
- opportunities for future recycling

During late 2000 and early 2001, broad stakeholder and public review will be requested to help prioritize issues and generate alternatives that address them.

Moving Toward Zero Litter

In 1997, a Litter Task Force was created to evaluate Washington's litter collection and prevention activities. Recommendations from the Task Force were incorporated as 1998 amendments to chapter 70.93 RCW, *Waste Reduction, Recycling, and Model Litter Control Act*. A major goal of the Litter Task Force was "zero litter".

This legislation directed Ecology to conduct a statewide litter survey, to be used to guide prevention and clean-up efforts. Previous litter surveys had been conducted by the State in 1982, 1983, 1985, 1987, and 1990. The Task Force concluded that previous data may not be representative of today's situation, although it recommended that the goals of previous surveys be carried forward. Specifically, the goals were to collect "usable data on current litter volumes, composition, sources, the groups contributing to the problem, effectiveness of litter prevention, and levels of littering in different areas of the state."

Three separate studies were conducted for this comprehensive litter survey from October 1998 through November 1999. Each study is detailed in separate volumes, which together create the complete litter report. [1] This study was designed to achieve the Task Force's goals by using three different methods to gather data about littering:

- ***Field research and sampling*** to determine the generation and composition of litter along roads and in selected public areas in Washington;
- ***Focus groups*** targeting admitted or potential litterers, designed to collect qualitative data regarding why Washington residents litter and to investigate litter prevention strategies; and
- ***A telephone survey*** of the general population to collect quantitative data regarding the types of people and situations that create littering behavior and to test litter prevention messages.

Chapter 70.93 RCW defines litter as "all waste material including but not limited to disposable packages or containers thrown or deposited as herein prohibited and solid waste that is illegally dumped, but not including the wastes of the primary process of mining, logging, sawmilling, farming or manufacturing." This definition is applied throughout the study. It is important to note that illegally dumped materials are included

[1] Volume 1 – Final Report (Publication No. 00-07-022) provides a summary of the entire litter study and summary is available on Ecology's Web site at http://www.wa.gov/ecology/biblio/0007022.html, Volume 2 – Litter Generation and Composition Report (Publication No.00-07-023), Volume 3 - Focus Group Report (Publication No. 00-07-024), and Volume 4 - Telephone Survey Report (Publication No. 00-07-025).

in the state's definition of litter. Illegal dumps themselves were not included in the study. However, if illegally dumped materials were found within the study area, they were included in the composition analysis.

Results published in May 2000, estimated that 16 million pounds of litter accumulate on state roadways each year. Six million additional pounds of litter accumulate in public areas, such as state and county parks and recreation areas.

The study also found that when asked, most people think of litter as paper, aluminum cans, and fast food waste. The Litter Study revealed that the problem goes beyond those assumptions. Glass beverage containers, construction and demolition waste, organic materials such as yard debris, and tires play a prominent role in the litter stream by weight. (See sidebar for some specific findings.)

Washington State Litter Facts

- **65 tons of cigarette butts are littered each year on interstates, state routes and county roads. That is 260,000,000 cigarette butts – enough to fill approximately 8,600 litterbags!**
- **Approximately 535 tons of metal and plastic automotive parts are littered each year in the types of sites included in this study – 154 tons (28 percent) of which were found in state and county parks and public recreation areas!**
- **884 tons of tires and tire scraps, representing 88,400 passenger car tires, are littered each year in the sites included in this study.**
- **1,731 tons of wood debris and 1,173 tons of organics (such as yard debris, stumps and branches) are littered each year in the types of sites included in this study.**
- **More than a quarter of a million pounds, or 7,500 cubic yards of PET (plastic) beverage containers, are littered on interstates, state routes and county roads each year. While almost four million pounds of glass beverage containers are littered each year, they only represent 5,000 cubic yards.**
- **415,000 pounds of paper packaging and 136,000 pounds of newspaper and magazines are littered on interstates, state routes and county roads each year.**
- **16 million pounds of litter each year statewide. Enhanced litter pickup efforts only collect about 4 million pounds. *Prevention is needed!***

Chapter 70.93 RCW sets a goal of zero litter. State and local governments cannot reach this goal through cleanup efforts alone. (See Chapter IV for results of Litter Programs in the state.) With stakeholder input, Ecology is reviewing the results and recommendations of the litter study and is currently developing a litter prevention strategy. Any prevention strategy will consider use of media, enforcement and educational tools. Possible initiatives include:

- A hard-hitting media campaign to raise the public's awareness of the negative financial, environmental and social effects of littering;

- A renewed emphasis on implementation of litter laws and penalties by law enforcement agencies; and
- Inclusion of anti-litter messages in waste prevention educational materials.

Revising the Minimum Functional Standards For Solid Waste

Chapter 173-304 WAC, *Minimum Functional Standards for Solid Waste Handling (MFS)* was promulgated in 1985 and was 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",[2] 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 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)*.[3] 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.

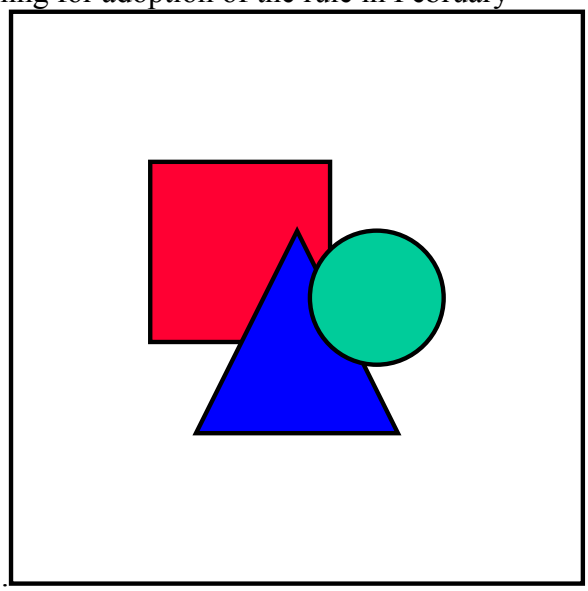
2. **Update Facility Standards and Definitions** - unclear definitions for terms such as "inert" will be revised and updated. Opportunities for application of more universal

[2] "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.
[3] The new rule will retain the title *Minimum Functional Standards for Solid Waste Handling (MFS)* but will be reunumber to chapter 173-350 WAC.

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.

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, has issued a draft rule for public comment in November 2000, and is planning for adoption of the rule in February



2001.

The Recycling Assessment Panel

The State of Washington established early leadership in solid waste reduction and recycling, triggered by the "Waste Not Washington Act" of 1989 (ESHB 1671). The top priorities for our state were established as waste reduction and recycling of source-separated materials. The law also set a goal of recycling 50 percent of the municipal solid waste stream by 1995. Significant public and private resources have been invested in the recycling infrastructure statewide, and the recycling rate has increased year-to-year. It reached a high of 39 percent in 1996, but dropped suddenly to 32.4 percent the following year.

Washington's recycling rate appears to have leveled off in the low 30% range. All indications are that this will remain the case indefinitely. The programs that pushed the recycling rate from 15% in 1986 to the present 32.5% lost funding in 1995. The county solid waste management plans that provided the architecture for that recycling growth have been implemented and brought residential curbside recycling to 83% of the state's population. At present, there is no mandate or funding to match the policy push brought by the Waste Not Washington Act in 1989.

California and Oregon have experienced similar patterns in their recycling rates during the 1990's with a similar leveling below the 1995-1997 recycling rate peaks. ("Recycling's Reality Check," *Governing*, October 2000.) California and Oregon share the same market influences as Washington being participants in the Pacific Rim recycling markets. The export market will have the greatest influence on the pacific states recycling rates for the foreseeable future.

Reasons for the drop are myriad. Increased waste generation, poor Pacific Rim markets, a drop in recycling participation by waste generators, and lost funding for education and awareness programs, all appear to contribute to reductions in recycling success. Yet the problem is not simple — some sectors are achieving the goals, while others are not. There are questions about the completeness and accuracy of the information, bringing into question the reporting methods and tracking approach. Residential recycling has reached new highs, but commercial recycling rates dropped the most, raising issues about building and maintaining sustainable markets for recyclables. Finally, the 50 percent recycling goal does not reflect the highest priority for Washington — waste reduction.

Washington is seen as a leader nationally in this field, and the falling rate concerned people and organizations with a stake in recycling's success. The Recycling Assessment Panel was convened by the Department of Ecology in September 1999 to assess the causes of the problem, and to identify, examine, and recommend actions to increase recycling. The panel recognized as a basic tenet that recycling is an important tool that can contribute to increasing and maintaining the overall quality of our environment, and maintaining a sustainable society. Various aspects of recycling can contribute to improved water quality, soil health, and fisheries habitat through beneficial use of resources, pollution prevention, and water conservation — all critical elements of maintaining Washington's quality of life, environment, and economic vitality. The panel identified specific, workable recommendations to increase source reduction, amount and types of recycling, and available markets for recycled materials. Their recommendations are intended to form a foundation for longer-term actions to increase sustainable recycling efforts in Washington. [4]

Members brought to the table their knowledge, issues, and willingness to work together on creative solutions that addressed their diverse interests. They heard presentations from

[4] Revitalizing Recycling in Washington – Recommendations of the Recycling Assessment Panel, Ecology Publication #00-07-009, February 2000.

experts in all aspects of recycling, and debated the pros and cons of different approaches to resolving identified problems. Several common themes arose in their deliberations:

- Recycling success is critical to the overall environmental sustainability of our state and contributes directly to solving other critical issues such as water quality, salmon recovery and air quality.

- Remarkable investments have been made in recycling to date; those investments can be reinvigorated and leveraged to rebuild and maintain momentum toward aggressive goals.

- Opportunities exist to expand traditional thinking about materials to be recycled, and to look more broadly than traditional solid waste streams at areas and disciplines (agriculture, water quality) in which even more progress can be made.

- Collaborative approaches involving industry, government, and citizens are the only way to maximize the effectiveness of recycling system, to the benefit of all Washington's citizens.

- Solid waste is uniquely important as a bridge between citizens and environmental stewardship. Most of our wastes are not actively managed by citizens, creating a disconnect. Solid wastes, on the other hand, are actively managed. Garbage is put under the sink – then into cans – whether into recycling bins or the garbage receptacle. This active management gives each of us a stronger link to the impacts of our daily lives.

Recent initiatives (I601 and I695) have made it clear that obtaining new funds for these recommendations would be unlikely. A great deal of effort was made by panel members to examine carefully each of the recommendations being developed to determine where private-public resources could be maximized, state resources could be reprioritized, or where no funding would be required. Each of the recommendations contains information on what funding and resources would be required for implementation. The panel deliberated and carefully chose to move forward only those recommendations that would have the most significant impact on the state's recycling rate.

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 1999, the lists of facilities are current as of July 2000.

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. There is a new regulation proposed to deal exclusively with those types of sites.

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. (See Chapter VII Moderate Risk Waste Collection System)

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 early-2001. 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 354 solid waste handling facilities in Table 2.1 (MRW facilities are not included in the number - see Chapter VII). 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	**74**
Ash Monofills	1
Inert/Demolition Waste Landfills	31
Limited Purpose Waste Landfills	16
Municipal Solid Waste Landfills	21 *
Woodwaste Landfills	4
Intermediate Classification	**265**
Compacting Stations	7
Compost Facilities	32
Drop Boxes	67
Piles	11
Recycling Facilities	54
Surface Impoundments	4
Transfer Stations	88
Tire Piles	2
Incineration	**3**
Ancillary/Other	**12**
Landspreading Disposal Facilities	6
Other Facilities	6
Total All Facilities	**354**

* 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. In addition 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 2000)

	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			

	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
Klickitat	1				1			2				3	1		
Lewis			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	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	32	67	11	54	4	88	2	3	12

*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.

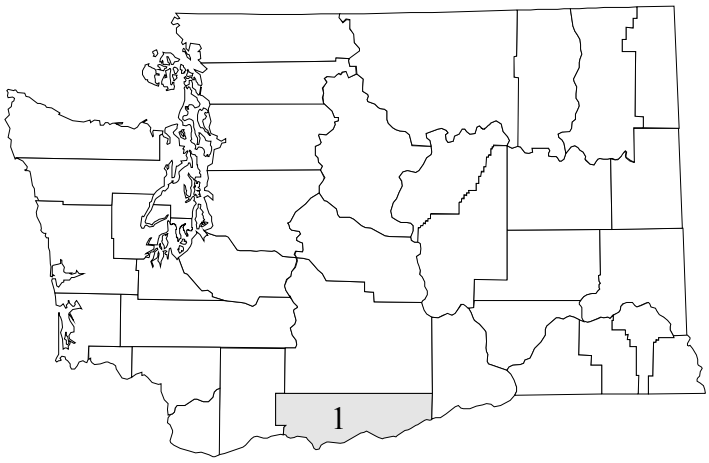
Table 2.3
Landfill Classification

FACILITY TYPE	TOTAL # STATEWIDE		TOTAL BY OWNERSHIP DESIGNATION			
	Active	Active	Public		Private	
	1999	2000	1999	2000	1999	2000
Ash Monofill	1	1	0	0	1	1
Inert/ demolition	31	31	10	11	21	20
Limited Purpose	16	16	1	1	15	15
Municipal solid waste	22	20	16	14	6	6
Woodwaste	4	4	0	0	4	4
TOTAL	74	72	27	26	47	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

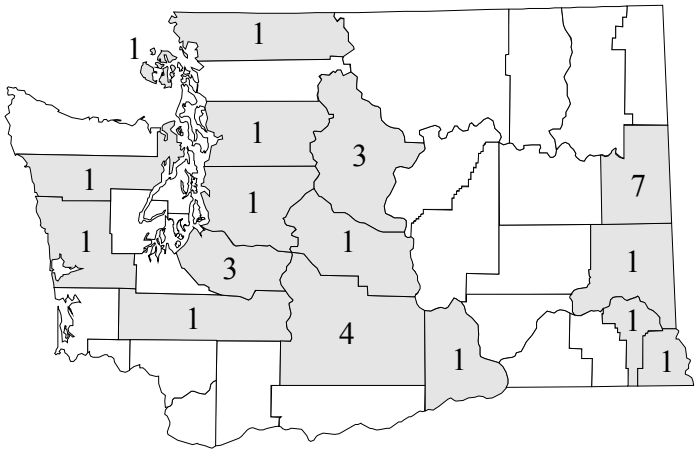
In 2000, there was only one permitted ash monofill in Washington, located at the Roosevelt Regional Landfill in Klickitat County. The monofill operates under a permit issued by Ecology, and received 120,171 tons of special incinerator ash in 1999.

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-seven of the inert/demolition landfills reported 536,155 tons of waste in 1999. In 2000, 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



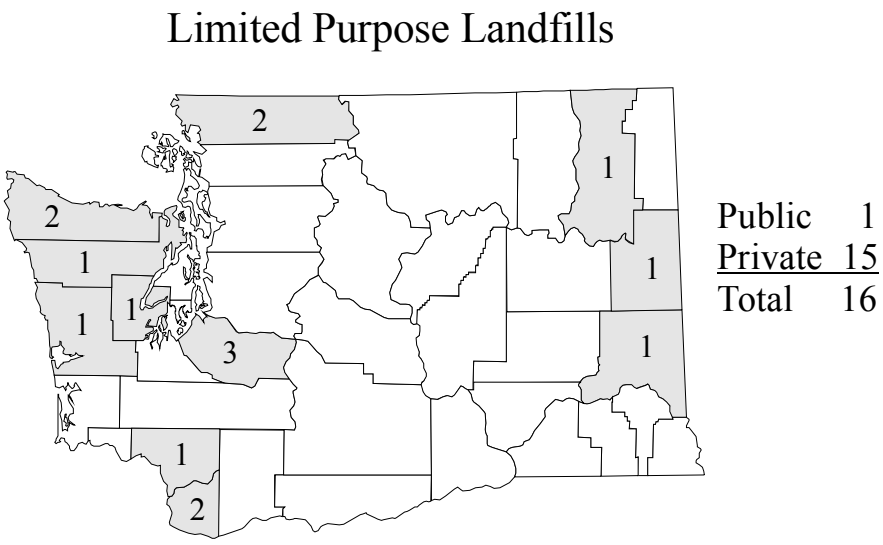
Public 11
Private 20
Total 31

[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 1999, accepted 569,747 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.



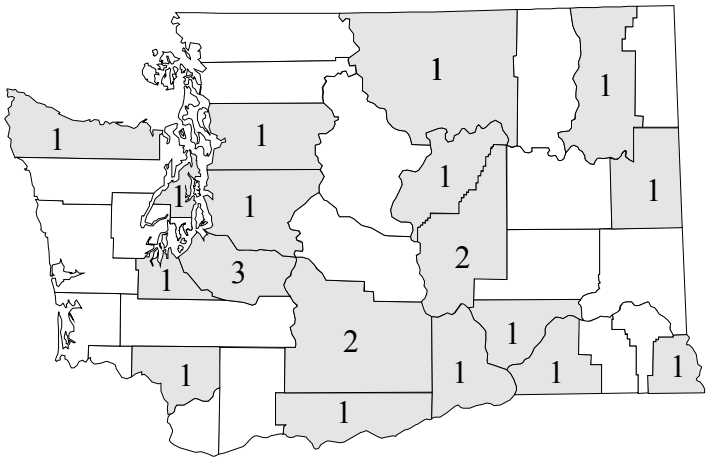
Municipal Solid Waste Landfills

In 1999, 22 MSW landfills accepted 4,738,808 tons of waste. (See Chapter VI for additional discussion of waste types, amounts and sources.)

In 2000, of the 20 operating MSW landfills, the majority, 73%, of MSW landfills are operated by public entities. This has historically been true in Washington. Private MSW landfills constitute only 27% 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 14
Private 6
Total 20

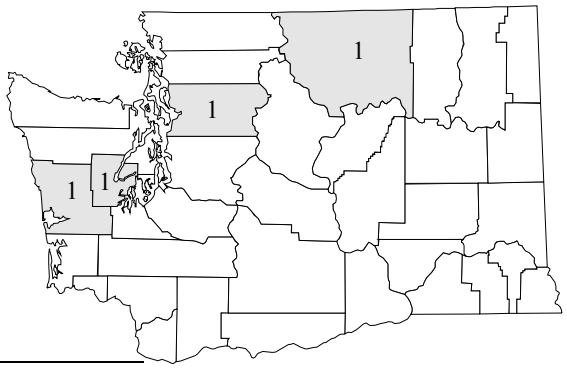
Woodwaste Landfills

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 1999, three woodwaste landfills reported 102,484 tons of waste. In 2000, 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)

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

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.

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

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

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

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

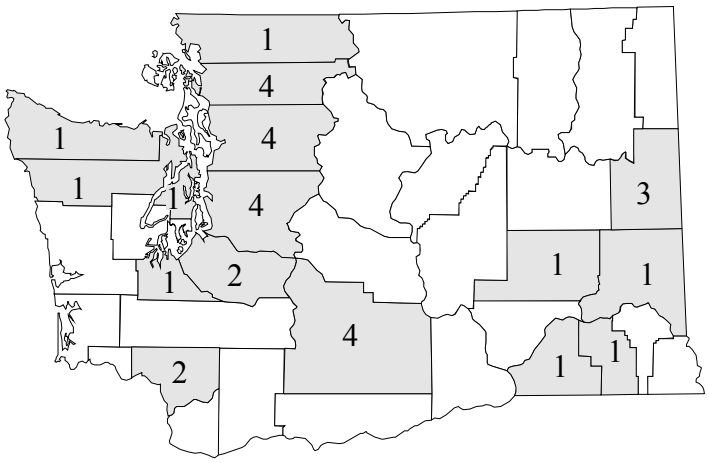
Larger urban centers are more inclined to use this technology to process large amounts of recyclables for shipment. Compactors are also used at transfer stations, though they are not permitted separately.

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 32 compost facilities identified statewide in 2000. 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	18
Total	32

Drop Boxes

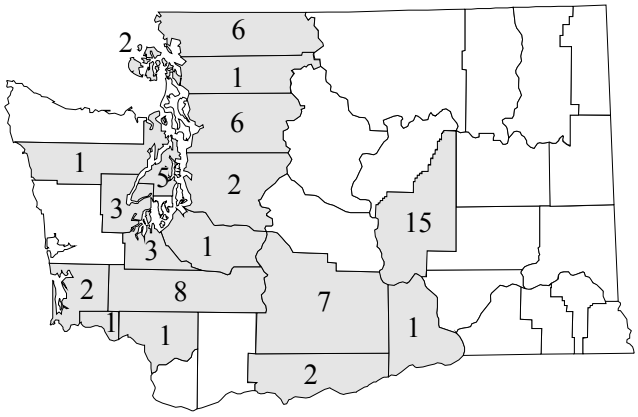
A drop box is defined in the MFS as "a facility used for the placement of a detachable container including the area adjacent for necessary entrance and exit roads, unloading and turn-around areas."[13] It is regulated under WAC 173-304-410.

[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 areas of the state.

Ecology identified 67 operating drop boxes in 2000. 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

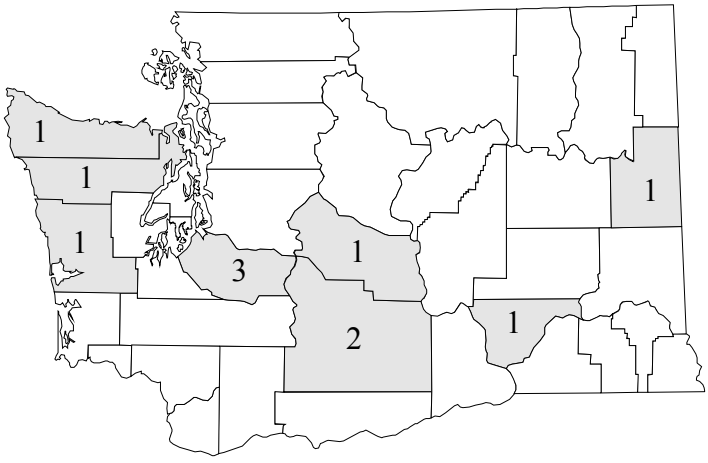


Public	60
Private	7
Total	67

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 2000.

Location of Piles



Public	0
Private	11
Total	11

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

Recycling Facilities

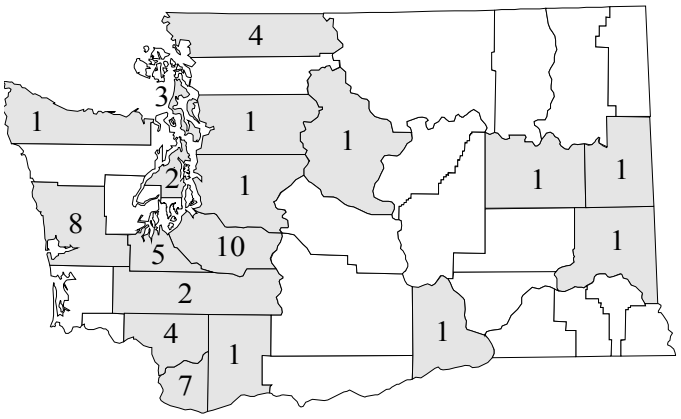
A regulated recycling facility refers to an operation engaged in the collection and utilization of solid waste for the purpose of transforming or re-manufacturing the waste materials into usable or marketable materials for use other than landfill disposal or incineration. Chapter 70.95 RCW, the *Solid 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 2000. The majority (93%) of the regulated recycling facilities were private facilities and public recycling facilities constituted 7% of this facility type.

[15] RCW 70.95.030(14)

Location of Recycling Facilities



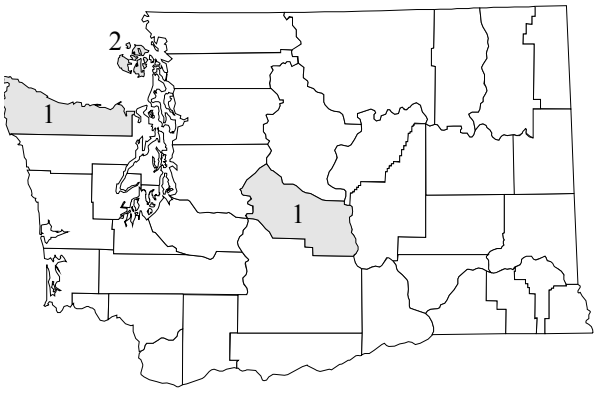
Public	4
Private	50
Total	54

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 2000. 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

[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.

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.

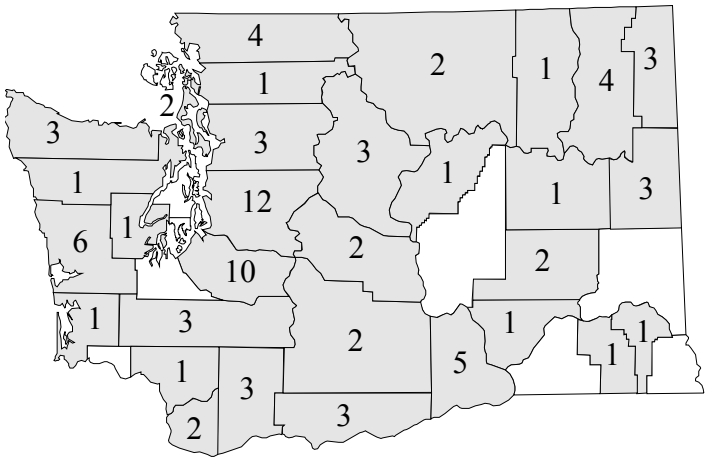
Typically, transfer stations are areas where individual collection vehicles can be off-loaded, the waste stored for a short period of time and reloaded onto larger vehicles for transfer to the disposal facility.

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.

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 2000.

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

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

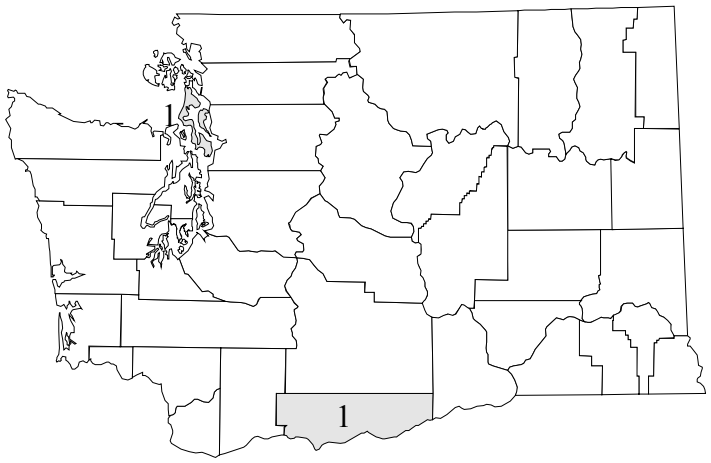
are regulated as interim solid waste handling sites. Some of these facilities are co-located at other types of permitted facilities, such as transfer stations and landfills, and do not receive a separate permit. See Chapter VII Moderate Risk Waste Collection System for additional information.

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 2000, both privately owned.

Location of 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]

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

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

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]

In 1999, Ecology identified three regulated solid waste incinerator facilities that burned a total of 461,684 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 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. This classification includes: (1) Exempted-Tribal Facilities; (2) Landspreading; and (3) Other.

Exempted Facilities

Exempted facilities, for the purpose of this report, are those solid waste handling facility types that are identified under Washington statute or rule but are either (1) not under the jurisdiction of state or local governments, such as Tribal solid waste facilities; or (2) are

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

exempted for consideration by other federal, state or local laws, such as woodwaste facilities which fall under Department of Natural Resources rules. One such facility was identified in 2000.

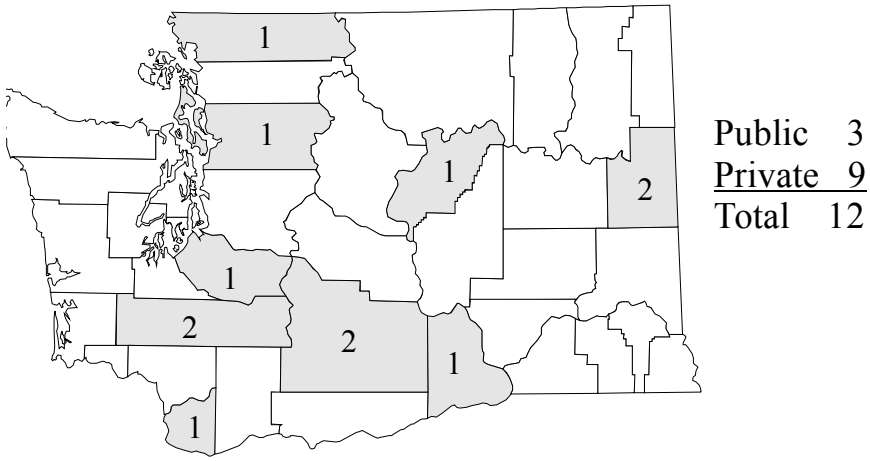
Landspreading Disposal Facilities

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 two landspreading sites identified, as well as one sludge and one septage facility in 2000. (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 three sites included in the 2000 database. One treated PCS, one vactor waste and one medical waste.

Location of Other Facilities



Public	3
Private	9
Total	12

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 950 persons have taken one or both courses since the programs inception. To date, a total of 525 people have been certified for landfill operations and 350 have been certified for incinerator operations. Certification renewals began in 1994.

In 2000, 6 certificates were up for renewal (3 landfill and 3 incinerator). 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 70.95110(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 planing 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 reaxamining the goal.
Everett	Yes - 1996	35% recycling by 2005	

COUNTY PLANNING STATUS BY PHASES (as August 2000)			
COUNTY	**CURRENT STATUS (date last approved)**	**WR/R GOAL**	**COMMENTS**
		3% to 5% WR	
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	30% WRR by 1996	Plan in final adoption phase
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	40% WRR by 1995 60% by 2000	Preparing to update plan
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	
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 - 1991	50% by 1995	Currently updating plan
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	Beginning plan update

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.)

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.

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 $98.6 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 first year of the two-year grant cycle, running from January 1, 2000 through December 31, 2001. The amount awarded was $15,845,262, to support a total of $25,010,698, or 63 percent worth of 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
Hazardous Waste Planning	$	144,417
Household Hazardous Waste Implementation	$	690,108
Household Hazardous Waste Collection and Disposal	$	5,641,177
Small Quantity Generator Implementation	$	968,997
Solid Waste Planning	$	287,156
Solid Waste Enforcement	$	2,846,260
Groundwater Monitoring Wells	$	1,500
Waste Reduction and Recycling – Activities	$	3,976,645
Waste Reduction and Recycling – Capital	$	1,137,732
Moderate Risk Waste - Capital	$	149,770
Biomedical Waste Planning	$	1,500
Total	$	15,845,262

Changes in the Coordinated Prevention Grants Program

Modifications made to the Coordinated Prevention Grant program for the 2000/01 cycle included a reversion to the fixed amount plus per capita amount formula-based funding allocation.

The current cycle also began eligibility for biosolids/septage activities for jurisdictional health authorities that have accepted delegation under chapter 173-308 WAC, *Biosolids Management*. Local planning needs regarding biomedical waste are now also eligible for grant funding.

Progress report formats were only slightly changed for the current biennium. There is a continued emphasis on obtaining accurate data on the work accomplished under CPG.

Whereas CPG was once partially funded by the Hazardous Waste Assistance Account and the Solid Waste Management Account, currently the only source of funding is the Local Toxics Control Account. This means that CPG can no longer be looked to as a source of funds for general solid waste capital construction or operations.

2000-01 Coordinated Prevention Grant Supplemental Cycle

In April 2000, Ecology announced the opening of the application period for the 2000-01 Coordinated Prevention Grant Supplemental Cycle. After reviewing applications in July, it was determined that an additional $632,000 would be committed, to be split almost evenly between Solid Waste Enforcement and general Solid and Hazardous Waste Activities.

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. 1999 represented the CLCP program's first full year of operation, and 40 out of the 41 eligible jurisdictions participated.[22]

In calendar year 1999, $1.31 million was dedicated to the program, with each recipient eligible to receive $32,000. Table 3.2 below highlights the work accomplished during 1999.

Table 3.2
Statistics from the Community Litter Program

Calendar Year 1999	
Volunteer Hours	*9,134*
Correctional Crew Hours	*117,450*
Supervisor Hours	*33,392*
TOTAL HOURS	*159,976*
Road Miles Cleaned	*28,851*
Acres Cleaned	*10,567*
Pounds of Litter and Illegally Dumped Materials Picked Up	***3,355,000***
Pounds of Material Recycled	*132,418*
Number of Specific Dump Sites Cleaned Up	*2,662*

In September 1999, meetings were held around the state to gather input from interested parties on how the program can operate most effectively. The results from these meetings were used in the revision of the 2000-01 Community Litter Cleanup Program Guidelines.

$2,162,999 ($1,880,999 regular and $282,000 for "Tools & Trucks") from the Waste Reduction, Recycling and Litter Control Account was provided for the biennium (FY99-01), with forty-one interagency agreements written for projects beginning in January 2000.

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.

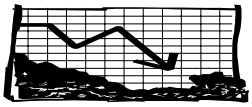
[22] Solid waste planning jurisdictions are eligible to participate in the program. This includes the 39 counties plus the cities of Seattle and Everett. All participated in 1999 except Asotin County.

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 will align the program more closely with the state's biennial funding scheme and provide applicants the opportunity for two-year funding in the 2001-2003 biennium.

From July 1, 1999 through June 30, 2000, Ecology awarded 17 Public Participation grants, for a total of $302,700. These funds provided ten grants for cleanup of hazardous waste sites and seven 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 have also focused on several aspects of the managing the organics waste stream and work has continued with sustainable building initiatives.

Assistance to Local Governments

Technical Assistance

The first priority of Ecology staff is to provide ongoing "technical assistance" (TA) to local government Recycling Coordinators with the tasks of designing, implementing and evaluating waste reduction and recycling programs. The wide range of possible program areas includes waste reduction, reuse, recycling, moderate risk waste, public education, backyard composting and business assistance.

Training Courses and Workshops

Related to this basic level of TA 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 flourescent lamp recycling.

Solid Waste Professional Meetings

Another valuable tool are "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 1999, over 16,000 callers were assisted. In addition to the traditional recycling calls from the public, which are referred to recycling centers or to local curbside programs, calls of a more complex nature are also received. Alternatives to using products that produce household toxic wastes are suggested, and methods and locations for the safe disposal of household hazardous waste are provided. Information on used oil recycling and used oil haulers is provided. For businesses, information on locations for the recycling and disposal of construction, demolition and landclearing debris is provided, and referrals are made to companies that offer commercial pickup for business recycling.

While many local governments have developed their own information lines, the statewide information line continues to serve as a first contact for many. Ecology's statewide information line can also provide a caller with information on specialized recycling opportunities in other cities or counties.

A database is maintained by periodically contacting all recyclers to determine commodities accepted, fees if any, and hours. The information from the can be found at http://1800recycle.wa.gov. Targeted waste streams, such as construction and demolition, offer the information line increased opportunities. The database has recently been

expanded to include a greater range and specificity of recyclable materials, as well as some products made from recycled construction, demolition, and landclearing debris. Also included is information on electronic scrap recycling, and more information on recycling construction waste and plastics. The database also now lists vendors of products made from recycled construction waste

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/swhome.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: .

Recognizing Waste Reduction and Recycling Efforts

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 federal, 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 awards winners for 2000.

Additionally, all of Washington's public schools received applications to apply for Ecology's annual Waste Reduction and Recycling Public School Awards. The annual awards program was established by the legislature in 1989 as part of the Waste Not Washington act, and is administered by Ecology's Solid Waste and Financial Assistance Program. Over 105 Washington schools have received cash awards over the years. Table 4.6 identifies the 199-2000 school award winners.

WSRA Conference Assistance

Every year, SW&FAP Recycling Specialists assist the Washington State Recycling Association (WSRA) in planning and producing their annual conference. Staff help in the organization of sessions that cover a wide variety of issues important to the recycling industry and community. Success of the conference can be measured by attendance levels and the WSRA survey results from the conference presenters, exhibitors, and attendees. In 2000, the conference was held in Pasco. The 2001 Conference is scheduled for Yakima.

SWFAP Newsletters

Each of Ecology's four regional offices produces a quarterly newsletter, which is published and sent to approximately 550 individuals and organizations across the state. 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. The newsletters provide an avenue for stakeholders to stay current on legislative matters, share program successes and ideas, and announce upcoming meetings. All stakeholders with e-mail addresses will receive their newsletter electronically. Copies of the regional newsletters can also be found on the Ecology SWFAP Homepage, http://www.wa.gov/ecology/swfa/swhome.html.

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 has established a Waste Reduction and Recycling committee to review agency practices and come up with recommendations on how to improve our efforts. The mission of the committee is "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". To date the group has revamped the recycling rooms, developing more user friendly signage and standardized the room layout. A mini-bin garbage can was piloted by our executive managers and Toxics cleanup program to determine their usability and educational value. The committee is now working on recommendations to increase environmentally preferable purchasing practices and to improve our reuse of supplies.

Looking Ahead

Over the last decade, SWFAP staff have provided techanical asistance to local government, which has assisted in developing strong basic levels of waste reduction, recycling, composting, MRW management and environmental education throughout the state. With the recycling infastructure and local government programs now in place, Ecology can be proactive and move into other areas. Promoting the theme of

sustainability, future work will involve the areas of product stewardship, packaging reduction, and environmentally preferable purchasing, In fact, a "Sustainability Job Alike Group" of Ecology's SW&FAP staff will develop and implement direct technical assistance programs in the above areas to continue to maximize waste reduction and recycling, but also move upstream in the arena of waste generation. We will be looking at organics waste reduction with large agri-business and government institutions.

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"[23] 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.

The Compost Facility Resource Handbook highlights those areas of the current chapter 173-304 WAC, the *Minimum Functional Standards for Solid Waste Facilities (MFS)* involving composting that need updating. Ecology will use the handbook during development of a new section in the MFS on compost facility standards. The new standards will use a tiered approach to regulate compost facilities based on feedstock type and volume. Ecology's goal 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 focussing on three workload areas:

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

[23] "Compost Facility Resource Handbook – Guidance for Washington State", November 1998, Publication #97-502.

Local Delegation

By late 2000, ten local health departments have entered into delegation agreements 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 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.

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 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. More than 90 percent of applicable facilities have submitted the required Notice of Intent to obtain provisional approval of coverage under the statewide 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. About 15 final approvals of coverage under the statewide permit have been granted by September 2000. 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 improve significantly over the next 18 months as the program matures and agency staff and those at regulated facilities become more familiar with the permit process and requirements.

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. In August 2000, the department released an updated version of its *Biosolids Management Guidelines* – WDOE 93-80. The revised guidelines reflect current state and federal rule requirements, along with updated guidance on subjects such as agronomic rate determinations. Continued heavy workload is expected in the technical assistance area, especially as program staff push forward with permitting. Staff will work 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. The department will bring the less than 10 percent of facilities which have not submitted the required Notice of Intent under the permit program during the coming year.

Dealing with septage management issues and beneficial use facility permitting has been a significant drain on resources. SW&FAP will be looking at better ways to prioritize applications and distribute staff efforts and in the coming year, and may also examine the possibility of amending the permit fee structure.

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. Ecology does expect to submit a request for delegation of federal program authority to U.S. EPA sometime in the year 2001.

Sustainable Building Program

Construction demolition and landclearing debris (CDL) reduction, reuse and recycling programs have progressed within the Solid Waste & Financial Assistance Program (SW&FAP) to address the larger issue of sustainable design and construction practices. This emphasis on program activities, which promote a sustainable approach to building, has made SW&FAP a highly visible expression of the agency's goal of "Support sustainable communities and natural resources ."

Working through various partnerships, SW&FAP has developed firsthand relationships with architects, building owners, private construction contractors, waste haulers and recyclers as well as their professional association to raise awareness of sustainable building principles, to promote higher waste management standards, more thorough waste reduction and more recycling within the construction industry.

In the past biennium three major objectives were accomplished:

1. **Documentation** through several case study projects that sustainable building practices work to reduce waste generation by the construction industry.
2. **Formation of working trust/based relationships** with industry professional and trade organizations and academic institutions that can help to create the logistical infrastructure for permanent behavior change in the design and construction industries.

3. **Development or support materials** and initiation of an effort to create a certification training for sustainable design and construction.

Documentation

With assistance from SW&FAP staff, local governments have rapidly been developing detailed documentation of the dollar value of sustainable design and construction practices applied to specific public and private construction projects. This documentation is then used as a tool to persuade others in the industry to experiment with sustainable design and construction practices.

Formation of working trust/based relationships
In order to leverage resources and to provide the most effective sustainable building program services, SW&FAP staff invest a great deal of effort to facilitate partnerships amongst various organizations involved in sustainable building issues. Organizations and associated activities include:

- **Construction Demolition and Land Clearing Debris (CDL) Council** which has yielded many sustainability efforts to the more appropriate auspices of the **US Green Building Council**, which is working to achieve mutual objectives of both groups to mainstream sustainable building practices within the Washington state construction industry. CDL Council members, including SW&FAP staff were instrumental in forming the Cascadia Chapter of the US Green Building Council.

- **Cascadia Green Building Council.** This chapter of the US Green Building (USGBC) Council became official in the summer of 1999, and will serve Washington, Oregon and British Columbia in promotion of sustainable building. The USGBC and its Cascadia Chapter share the same mission: the initiation, development, and accelerated implementation of green building concepts, technologies and principles. SW&FAP staff serve on the Board of Directors and were actively involved in the Chapter formation. The Chapter and its members have elected to adopt the Northwest Sustainable Building Action Plan (the Plan) developed by many sustainable building advocates in this region. Ecology participated throughout the Plan development and served as the lead in for the Public Education portion of the plan. Beyond development of a 5-year plan, hiring a project manager, procuring office space for the Chapter, and raising funds, the chapter has three main areas of focus in implementing the Plan; developing guidelines, incentives, and industry education programs.

- **Sustainable Design and Construction Certification Work Team.** SW&FAP staff assembled and continue to facilitate the work of a team from Washington State University, Community Colleges of Spokane, Avista Utilities and City of Spokane, which is working to bring a successful sustainable design and construction training program from Puget Sound to the Spokane region.

- **Sustainable Housing Innovation Partnership.** SW&FAP taff are helping to facilitate several aspects of the design and implementation of a program being developed by Spokane Sustainable Housing Innovation Partnership (SHIP). SHIP is committed to build hundreds of low- to moderate income, subsidized and market rate, multi-family and single-family units as well as community retail and recreation facilities in a resource efficient and sustainable fashion. Property is secured and two community design charettes have been presented, the first at least partly facilitated by SW&FAP staff, who remain involved in the marketing of the project and recruitment of technical experts in sustainable design and construction to be used as consultants to the project.

- **Resource Efficient Building and Remodeling Council.** SW&FAP staff helped Council members complete a re-orientation of this group from direct technical assistance to construction projects to a sponsor of educational forums and resource for expertise to other sustainable design and construction organizations and projects. The direct technical assistance demand after successful projects early in the organization's development rose to a level this all-volunteer organization is unable to meet. In the coming biennium, the goal is to increase the number and professional breadth of membership. At some time in the future, the Council may reassess its ability to again offer direct technical assistance. In the meantime, it has been an effective information disseminator and participant in other project groups.

- **Northwest EcoBuilding Guild:** SW&FAP staff continued to work with this organization, which is committed to promotion of sustainable building practices within the building industry, primarily residential designers and builders in the Pacific Northwest. Efforts in Eastern Washington continue to focus on creation of several new chapters. A new chapter was formed in Ellensburg and other chapters are being explored in Moscow, Idaho and Missoula, Montana. The Chapters also make themselves available to community-based programs and projects to share their expertise in sustainable design and construction and offer regular public and professional education workshops

Development of support materials and resources:

- **CDL Toolbox.** SW&FAP staff played a prominent role in the preparation and distribution of the *CDL Toolbox* a large loose-leaf guide and resource materials to assist local governments in setting up sustainable building programs. This guide was debuted and distributed at professional gatherings of local government waste coordinators.

- **Sustainable Building Toolbox Web Site.** SW&FAP staff developed a Web site devoted to the topic of sustainable design and construction in the Pacific Northwest with the express purpose of supporting efforts to move to more sustainable practices within the industry in the region. [get address]

- **Sustainable Design and Construction Certification Program.** SW&FAP staff assembled and leads a team determined to expand the geographic availability of a successful, comprehensive six-month training program in sustainable design and construction practices. This team in 2000 was completing a proposal to convert the program to use in an academic context as well as a more compartmentalized series of subject-specific workshops, all designed to lead to some sort of universally accepted and recognized certification as sustainable design and construction advisors for participants.

- **Local Government LEED Standard.** SW&FAP staff are assembling a team in Spokane County that will attempt by Spring 2001 to develop and promulgate to the local design and construction community a voluntary version of the increasingly popular Leadership in Energy and Environmental Design (LEED) Standard to be applied to bids on government funded construction projects.

- **State agency sustainable building:** Department of Ecology works in partnership with the Department of General Administration's (GA) Division of Engineering and Architectural Services to establish Washington state as a leader in sustainable building efforts: Some of the activities initiated to date include:

  - Providing or facilitating education opportunities for state project managers, contractors and clients such as the Sustainable Building Seminar, jobsite recycling workshop, salvage and reuse workshop, and organized tours of sustainable facilities.
  - Developing contract language and specifications for waste reduction, salvage and recycling requirements on state building projects. The goal is to make these strategies standard practice on all state jobs.
  - Providing technical assistance on specific projects including the UW/CCC Bothell Campus, and the State Liquor Control Board Warehouse
  - Developing Sustainable Design and Construction Services description and fee schedule to promote GA sustainable building services and establish funding sources for project assistance.

Litter Programs

In 1998, the Legislature passed the *1998 Litter Act* (SSHB 3058), amending chapter 70.93, RCW, the *Waste Reduction, Recycling and Model Litter Control Act*. The legislation established several changes in the implementation and administration of statewide litter programs. The legislation clearly put Ecology in the leadership role of coordinating between various industry organizations and all the state agencies and local governments that receive funding from the Litter Account. Work during 1999 and throughout 2000 has focused on continued implementation of the legislation including:

- Administering allocations from the Litter Account;

- Enhancing relationships with other state agencies (Natural Resources, Corrections, Parks, and Transportation)
- Facilitating communication and coordination of litter control and prevention activities;
- Conducting the biennial litter survey; and,
- Deploying the Ecology Youth Corps.

Administering Allocations from the Litter Account

A litter programs coordinator within Ecology's Solid Waste & Financial Assistance Program (SW&FAP) 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. The legislation provides Ecology with clear direction on how litter funds are to be allocated: 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.

This section focuses 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, Implementing Solid Waste Activities. of this report. Information on recycling activities funded by the thirty percent can be found in other portions of this report.

Enhanced Relationships with Other State Agencies

Late in 1998, Ecology formed a state agency workgroup comprised of representatives from Departments of Corrections, Natural Resources, Transportation, and the Parks and Recreation Commission. The workgroup meets several times a year to discuss funding, reporting, coordination, and prevention issues. 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 '00 - '01 biennium. Funding was available for operational as well as capital expenditures ("Tools & Trucks"). In the first year of the biennium, Ecology worked with the state agencies on reporting standards and accountability of the work accomplished with litter monies was greatly improved. Table 4.1 shows the funding provided through interagency agreements for the '00-'01 biennium.

Table 4.1
Interagency Agreements between Ecology and Other State Agencies for Litter Activities

July 1, 1999– June 30, 2001			
Agency	**Operational**	**Capital**	**Total**
Dept. of Corrections	$492,000	-	$492,000
Dept. of Natural Resources	$435,000	$62,000	$497,000
Dept. of Transportation	$53,000	$25,000	$78,000
Parks & Recreation	$30,000	-	$30,000
TOTAL	**$1,010,000**	**$87,000**	**$1,097,000**

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 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.

Table 4.2
Department of Corrections Litter Removal Activity

July 1, 1999– June 30, 2000	
Hours of work (supervisor and offender)	42,585
Pounds of litter removed	621,062
# of illegal dump sites cleaned	342
Miles of road cleaned	6,185
Acres cleaned	2,203

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. The crews focus on removal of illegally dumped materials from state-owned forests, as well as other forest maintenance tasks. The interagency agreement between Ecology and Corrections provided funding ($497,000) for part time crews at the following camps: Naselle, Larch, Cedar Creek, Mission Creek, Indian Ridge, Olympic, and Airway Heights. It also provided money for a vehicle to transport the crews. In the summer of 2000, the Indian Ridge facility transferred operations to Monroe. Table 4.3 summarizes the activity of those crews.

Table 4.3
Department of Natural Resources Litter Removal Activity

July 1, 1999– June 30, 2000	
Hours of work (supervisor and offender)	22,114
Pounds of litter removed	294,334
# of illegal dump sites cleaned	174
Miles of road cleaned	1,282
Acres cleaned	161

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 passage of I-695 resulted in cuts to DOT's maintenance budget, which covers litter activities, but impacts to collection and disposal of litterbags, and administration of the Adopt-a-Highway program were minimized. The interagency agreement between Ecology and Transportation provided funding ($78,000) to offset the costs of disposal and to purchase trailers. As we enter the next biennium, Ecology will work with Transportation to develop solutions, to ensure efficient and effective litter pickup continues. Table 4.4 summarizes the litter work accomplished by Transportation crews.

Table 4.4
Department of Transportation Litter Removal Activity

July 1, 1999– June 30, 2000		
DOT Region	**Amount of Litter Disposed (Cubic Yards)**	**Total Pickup Costs (Labor/Equipment)***
Northwest	4,017	$261,921
North Central	1,084	$76,660
Olympic	642	$189,859
Southwest	751	$251,614
South Central	2,163	$182,705
Eastern	1,692	$194,939
Total	**10,349**	**$1,157,698**
*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. The interagency agreement between Parks and Ecology provided funding ($30,000) for specific litter prevention programs at three State Park Environmental Learning Centers. Additionally, the funding was used to offset the cost of disposal of litter and illegally dumped materials. Plastic recycle bin liners and certificates of appreciation for dedicated park volunteers were also purchased.

Coordination of Litter Activities

The Legislation directed Ecology to serve as the coordinating and administrating agency for all state agencies and local governments receiving funds for waste reduction, recycling and litter control. Department of Ecology Youth Corps, Department of Corrections and Adopt-a-Highway groups were already picking up litter. With the addition of Community Litter Cleanup Program (CLCP) crews in 1998, there were more litter cleanup crews on the roads than ever before. Facilitating communication and cooperation between programs was more important than ever.

In the spring and early summer 2000, litter coordination meetings were held in each of Ecology's four regional offices. The goals of the meetings were:

- to facilitate coordination between organizations to achieve the most effective and efficient litter pickup;
- to learn about each organization's litter program;
- to develop litter pickup priorities; and
- to gain information that will help in crew deployment decisions.

The meetings were very well attended by representatives from Ecology, DOT, Corrections, and local government participants in the CLCP program. Pertinent safety and funding issues received top billing, but establishing contacts and finding opportunities for collaboration were also prominent discussion items. The meetings will be continued each year.

Litter Survey

The Legislation directed Ecology to conduct a litter survey each biennium, starting July 1999. The goal of the litter survey is to gain information about litter composition, litter generation rates, and about littering behavior. This information will help Washington reach its "zero litter" goal, and help Ecology coordinate cleanup efforts and develop better overall litter prevention and control programs. In addition, results of the litter survey will provide baseline information against which to measure progress in litter reduction. More information about the litter survey can be found in Chapter I, Issues Facing Solid Waste.

Ecology Youth Corps

Fiscal year 2000 marked the 25th 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 119 EYC different litter crews were deployed from July 1, 1999 through June 30, 2000:

- 84 Summer Youth crews
- 31 Median crews
- 4 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, and Wahkiakum.

ERO: Adams, Asotin, Grant, Ferry, Franklin, Spokane, Stevens, and Whitman.

CRO: Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogon, and Yakima.

This fiscal year crews were responsible for picking up a grand total of 68,792 bags of litter over a total of 5,639 road miles and 2,564 acres. This is the equivalent of 516 tons of litter, or 137,584 cubic feet. Of this total amount of litter 8,585 bags were recycled. Crews recycled a total of 69,360 lbs. or 35 tons of materials (Table 4.5).

Table 4.5
Recycling Totals from EYC Crews

Recyclable	Pounds
Aluminum	19,089 lbs.
Metal	16,848 lbs.
Glass	26,167 lbs.
Plastics	4,221 lbs.
Misc.	3,035 lbs.

Looking Ahead

In the coming year, planning and implementing a long-term litter prevention strategy will be top priority. Activities for the remainder of the biennium will focus on developing anti-litter slogans and messages. Ecology will be partnering with local government, other state agencies, and business interests in the creation of Washington first anti-litter media campaign in 10 years.

Recognizing Waste Reduction and Recycling Efforts

Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools Awards

On May 12, 2000, at a ceremony in the state Capitol rotunda, Ecology Deputy Director Dan Silver welcomed and congratulated the award recipients. Ecology's Solid Waste & Financial Assistance Program Manager Cullen Stephenson presented $15,000 in cash awards to twelve schools. Each winning school was judged on the basis of comprehensive, efficient, and innovative approaches to waste reduction and recycling during the 1999-00 school year. The 2000 ceremony was attended by 150 school children.

All of Washington's 1,700 public schools received applications to apply for the Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools Awards. The annual awards program was established by the Legislature in 1989 as part of the Waste Not Washington Act, and is administered by Ecology's Solid Waste and Financial Assistance Program. A total of 123 cash awards have been received by Washington schools over the past eleven years.

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
- using left-over lunches to feed area wildlife or sent home to families with hungry pets.

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 4.5 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
1999-2000 Terry Husseman Outstanding Waste Reduction and Recycling in Public Schools Awards

School	Location
Outstanding Waste Reduction and Recycling Programs ($2,500 each)	
Cashmere Middle	Cashmere, Chelan County
Discovery Elementary	Gig Harbor, Pierce County
Best Waste Reduction Program ($1,000 each)	
Mount Baker Junior/Senior	Deming, Whatcom County
Harmony Elementary	Bellingham, Whatcom County
Kendall Elementary	Deming, Whatcom County
Wilson Creek Jr./Sr.	Wilson Creek, Grant County
West Valley High	Yakima, Yakima County
Best Recycling Program ($1,000 each)	
Waldron Island K-12	Waldron Island, San Juan County
Toppenish Middle	Toppenish, Yakima County
Sadie Halstead Middle	Newport, Pend Oreille County
Walla Walla High	Walla Walla, Walla Walla County
Woodinville High	Woodinville, King 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 awards program coordinator, in conjunction with fellow Ecology staff and local government contacts, developed and implemented a plan to revitalize the school awards program within existing resources. Unfortunately, these efforts did not result in a measurable increase in participation. Ecology is again looking at the program to see how to improve participation.

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 2000.

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

Best Small-Business Program (under 100 employees)
GenTech Dentist of Vancouver WA

This business stands out as a model for dentists' offices throughout the state, even the country. The dental industry has recently begun recognizing the potential in implementing environmentally-friendly practices in day to day operations.

GenTech has made an impressive commitment, putting in place systems and policies that greatly reduce its effect on the environment. Using recent technological advances they have been able to:

- recycle and filter water, reducing their water consumption by up to 75 percent;
- reduce their paper usage by 90 percent. Patients fill out one form that is scanned into the system, shredded, then recycled. All their charts exist in cyberspace, saving them considerably in paper and folders, as well as storage space. Most of their insurance claims are filed electronically;
- eliminate the release of hazardous sludge into the municipal water supply by contracting with a recycler to remove 99 percent of the amalgam and mercury wastes produced by the removal of fillings;
- and switch to non-polluting, digital x-rays.

GenTech is working with Clark County Public Works to showcase its practices to the community and local dental-assistant schools. We are grateful to GenTech for spreading the word about the waste-reduction possibilities opening up to dental offices.

Best Large-Business Program (more than 100 employees)
Seattle University

Seattle University's solid-waste management activities include waste reduction, recycling, reuse, buying recycled-content products, community education and outreach programs, on-site student learning activities, collaboration with outside businesses, resource conservation, and sustainable building practices.

The campus Surplus Store established in 1994 sells surplus furniture, used computers and other items to the public

The University has eliminated the use of chemical pesticides and is the only campus in Washington designated as a Wildlife Sanctuary.

A new recycling center, built in 1998, houses the bulk of recycled materials collected on campus. The University diverted 623 tons of recyclable material from its waste stream in 1999. From recycling and the other programs the University saved more than $330,000.

In order to gain support from students and staff, the University has implemented an environmental-education program. The activities within the program include a free oil change program; free parking for car-poolers; waste-reduction ideas and prizes; an online newsletter; Earth Week activities, new-employee orientation; and support for student environmental clubs.

In keeping with their ecological mission, Seattle University will build its new student center using the US Green Building Council's "Leadership in Energy and Environmental Design" guidelines.

Best Small-Government Program (population under 75,000)
The North Chelan Recycling Center and the Chelan Valley Community Service Work Group

The North Chelan County Recycling Center serves an area 60-miles wide, and a population of less than 10,000 people. The recycling center operates drop boxes in three small towns, a drop-off buy-back recycling processing center, curbside collection for businesses in North Chelan County and an aggressive public-education program.

Since 1988, the Community Service Work Group has educated area communities about waste reduction, recycling, and buying recycled items. The group strives to provide recycling opportunities to rural areas and sponsors cleanup events, collection drives and compost training.

Since 1989, the Center has recycled more than 20 million pounds of materials from its small, rural population. It organized and implemented the clean up of the old Chelan Dump and worked with the community groups to realize the North Chelan County litter cleanup events of the last six years.

Public education and partnerships have been the key to their success.

Best Large-Government Program (population more than 75,000)
The Spokane Regional Solid Waste System

The Spokane Regional Solid Waste System has had exceptional waste-reduction and recycling programs in place for more than 10 years. The Solid Waste System is responsible for creating and managing waste programs for the entire county; more than 400,000 people.

Spokane has boasted a recycling rate above 40 percent for the last several years. City and county curbside pick up totals more than 15,000 tons annually. Three full-service transfer stations recycle another 3,250 tons annually. Convenient and inexpensive yard waste drop-off and composting sites recycle another 27,000 tons of material that is wholesaled to nurseries throughout Spokane. And the list goes on.

The Solid Waste System employees are forward thinking when it comes to education, too. The "Recycling RAP" is published 10 times per year and distributed to more than 3,000 school students. In-class recycling presentations and Waste-to-Energy Plant facility tours are provided to schools.

In 1999, information regarding the System's business-waste audit program was sent to more than 1,250 companies and 42 detailed audits were performed. The weight diverted from the city's commercial waste steam, as a result, is estimated at 5,244 tons.

Best Federal Facility
US Department of Energy Solid Waste Recycling at Hanford

The US Department of Energy for it's solid waste recycling at the Hanford site. With more than 10,000 employees and covering approximately 560 square miles, Hanford's enormous infrastructure could potentially generate large quantities of solid waste.

To counter this, the US Department of Energy has established goals to encourage pollution prevention and resource conservation. One such goal is to recycle at least 33 percent of the materials that would otherwise be disposed of as solid waste. Annually, Hanford is now recycling almost twice that amount: 63 percent. Hanford recycling programs transferred more than 2.6 million pounds of recyclable material to offsite recyclers in 1999. Considering current waste-disposal costs, more than one million dollars in savings has been achieved.

Pollution prevention, source reduction, re-use and recycling have all been integrated into the day to day activities at Hanford over the past 10 years. Materials that are recycled include fluorescent lamps, office furniture mercury switches, cardboard, batteries, propylene glycol, light ballast, scrap metal, software, pallets, tires, and, of course, paper.

Special Recognition Award for Achievement
City of Richland

Nearly five years ago, the **City of Richland** established an environmental-education program. The city's goal was to develop an outreach program that would encourage and promote solid-waste reduction, reuse, recycling, composting, household hazardous-waste disposal and basic environmental awareness.

A primary focus of this outreach was introducing ways to conserve the city-owned landfill.

The city hired Gail Baasch as its Environmental Education Coordinator. She created an extensive and successful program that reaches thousands of citizens through workshops and presentations. Gail works in partnership with other community agencies to achieve these goals.

The program includes a grant-funded Shop SMART workshop, and composting workshops. The Tri-Cities Earth Day, organized by the City of Richland, boasts numerous beautification projects, hikes, tours, contests, collection events and a park celebration. This year's event included 90 exhibit booths, two stages of entertainment, river activities and a national championship skydiving team.

The creativity and partnerships that have been formed have improved quality of life, not only in Richland, but also in the entire Mid-Columbia region.

Chapter V The 1999 Recycling Survey for Washington

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

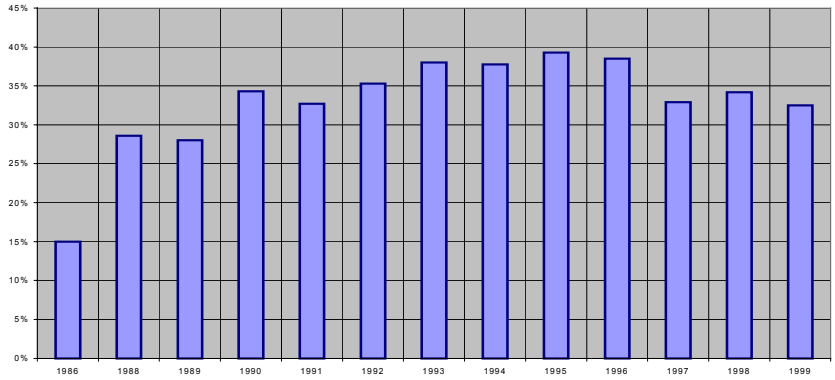
In response, local governments began offering its citizens various forms of recycling ranging from drop boxes to curbside collection of a variety of recyclable materials. In 1999, over 100 cities and counties offered curbside collection of recyclable materials such as glass, paper, and metals while an increasing number are offering curbside collection of yard waste.

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[24] 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% (38.95%). 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 trend continued in 1998, but improved enough to raise Washington's recycling rate to 34.1%. Although the collected recycling tonnage increased about 30,000 tons in 1999, the disposed tonnage increased about 380,000 tons to drop the recycling rate to 32.5%. (See Figure 5.1)

Figure 5.1
Recycling Rates 1986-1999



[24] 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,

We can expect the recycling rate to reflect market conditions in the near future because counties and cities have "built" the collection infrastructure initiated by the Waste Not Washington Act. Only one new curbside program was added in 1999 (Walla Walla). As of this writing, 91% of the state's population has access to recycling services that are at least as convenient as disposal.

The State's population continues to grow with about 327,500 new people since 1995. The Department 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 1990 to 1995.

There also appears to be a need for many programs to be evaluated for sign up and set out rates. 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.

1999 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. The footnotes explain some of the discrepancies with individual commodities.

Recycling survey forms are sent to recycling firms and haulers 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. Others, because they want to protect the confidentiality of who purchases their materials, do not complete the entire survey which leads to difficulties such as under counting or double counting of materials. These factors make it very difficult to compile good recycling information for specific counties.

Table 5.1 provides the results of the 1997-1999 statewide recycling surveys.

A major change in the collection of the information is scheduled for January 2001. Respondents will be able to enter their tonnage information on the Internet. The web pages and security system are being built as of this writing. Ecology is hoping that this service will help get the information in faster and allow the finalizing of a recycling rate earlier in the year.

petroleum contaminated soils, or construction, demolition, and landclearing debris disposed at municipal solid waste landfills and incinerators.

Table 5.1
State Tonnage by Commodity: 1997-1999 Washington State Recycling Surveys[25]

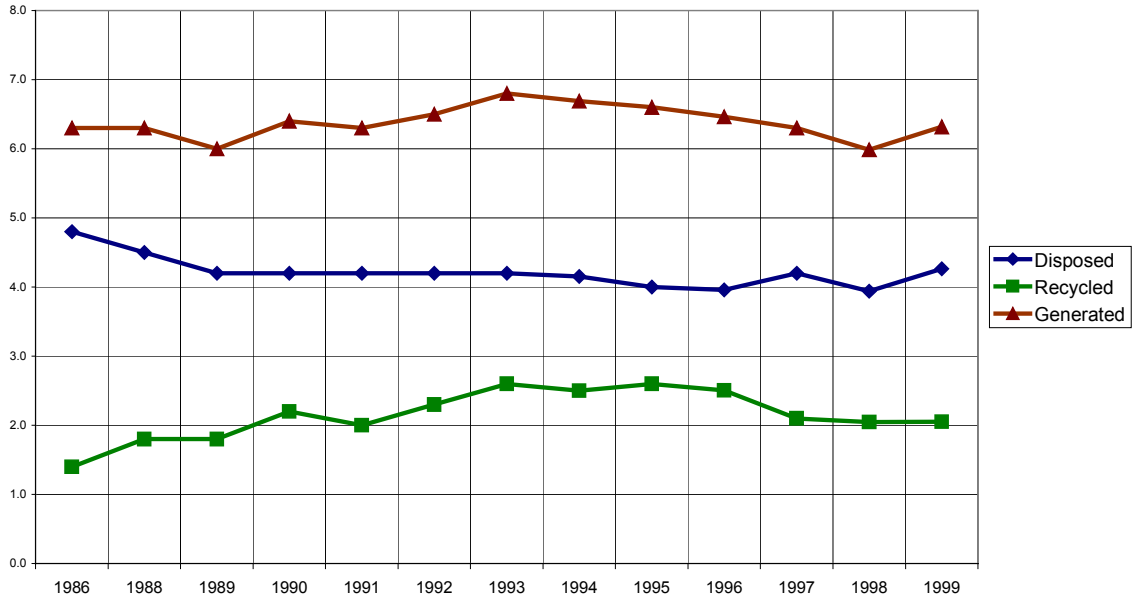
Commodity	1997	1998	1999
Newspaper	187,044	200,447	**168,832**
Corrugated Paper	392,314	344,885	**478,074**
High Grade	56,245	69,435	**612,12**
Mixed Waste Paper	194,201	207,225	**253,428**
Aluminum Cans	19,601	12,716	**14,357**
Tin Cans	15,149	13,003	**12,339**
Ferrous Metals	300,068	225,372	**241,367**
Nonferrous Metals	45,568	55,384	**30,956**
White Goods	15,126	12,233	**28,524**
Refillable Beer Bottles	633	261	**63**
Container Glass	79,566	113,076	**58,517**
PET Bottles	4,965	3,031	**2,910**
LDPE Plastics	1,693	1,341	**2,225**
HDPE Containers	3,835	3,889	**3,253**
Other Recyclable Plastics	13,945	1,608	**3,971**
Vehicle Batteries	15,294	7,743	**15,142**
Tires	5,520	211	**625**
Used Oil	7,299	1,235	**6,352**
Yard Waste	384,848	608,127	**525,454**
Food Waste	75,020	92,391	**72,646**
Wood Waste	265,887	115,289	**142,786**
Textiles (Rags, clothing, etc.)	11,046	3,979	**12,524**
Fluorescent Light bulbs			**167**
Gypsum	56,373	31,062	**29,896**
Photographic Films	22	0	**81**
Total Recycled	2,151,608	2,123,946	2,156,856
Total Disposed[26]	4,386,397	4,088,100	4,480,761
Total Generated	6,538,005	6,212,046	6,637,617
Recycling Rate	32.91%	34.19%	32.49%

[25] Detail may not add due to rounding.
[26] 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.

Individual Waste Generation

Figure 5.1 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 are 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 1999 each resident of the state generated 6.32 pounds of solid waste per day - 4.26 pounds were disposed while we recovered 2.05 pounds.

Figure 5.2
Pounds Disposed, Recycled and Generated Per Person/Day



Diversion as a Measurement Option

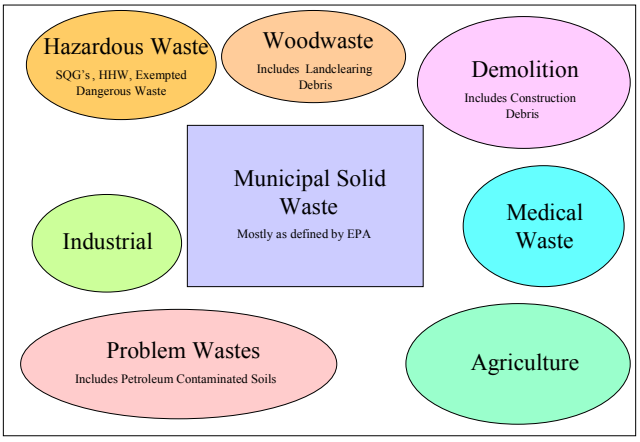
Ecology has measured a very specific part of the solid waste stream since 1986. It is roughly the part of the waste stream defined as municipal solid waste by the Environmental Protection Agency.[27] However, Ecology has noted very large increases of recovery in "non-MSW" waste streams, the most notable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

Ecology is looking at ways to include other types of materials in future recycling rates. The main obstacle to calculating a recycling rate for these other materials at present is that 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 (Figure 5.3). 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 roofing shingles, concrete, road asphalt, dimensional lumber, various metals, and more. Knowledge of this waste stream is increasing. King County[28] and the City of Seattle have both done sampling of this waste streams and have comparable results. Clark County will finish a study in early 2000.

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.

Figure 5.3
The Universe of Solid Waste



[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,

The Universe of Solid Waste

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. For 1999, the materials in Table 5.2 were reported.

Table 5.2
Materials Not Included in the Recycling Survey

Material	Tons
Anti-freeze	1,329
Asphalt and Concrete	49,136
Asphalt roofing shingles	10,334
Bricks	12
Construction , demolition and landclearing debris	145,593
Household Batteries	23
Industrial Batteries	41
Oil Filters	1.4
Oyster Shells	1,563
Rebound Carpet Pad	18
Used Oil for Energy Recovery	6,256

Ecology will try to collect more of this information in the future. 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 for 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.

petroleum contaminated soils, or construction, demolition, and landclearing debris disposed at municipal solid waste landfills and incinerators.

[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

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 1999, 22 municipal solid waste landfill accepted waste totaling 4,738,808 tons.[30] Of the 22 landfills, 16 were publicly owned, and six were privately owned.

In analyzing the size of the MSW landfills it was found that of the 22, seven received over 100,000 tons of waste in 1999. The two largest landfills in Washington, Cedar Hills in King County and Roosevelt Regional Landfill in Klickitat County received 925,350 tons and 2,298,899 tons, respectively. In 1999, four landfills received less than 10,000

[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.

tons, compared with 12 MSW landfills in 1994. 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)

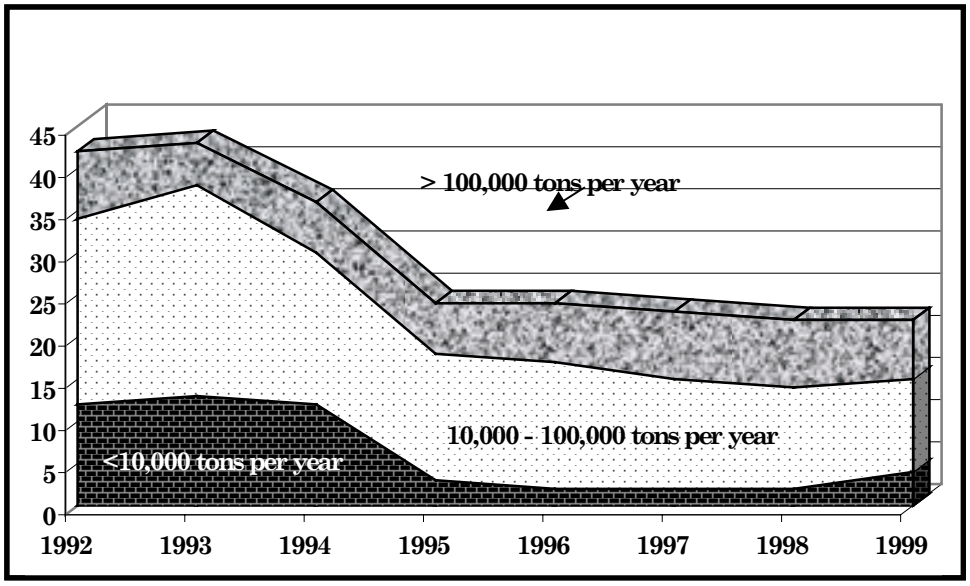


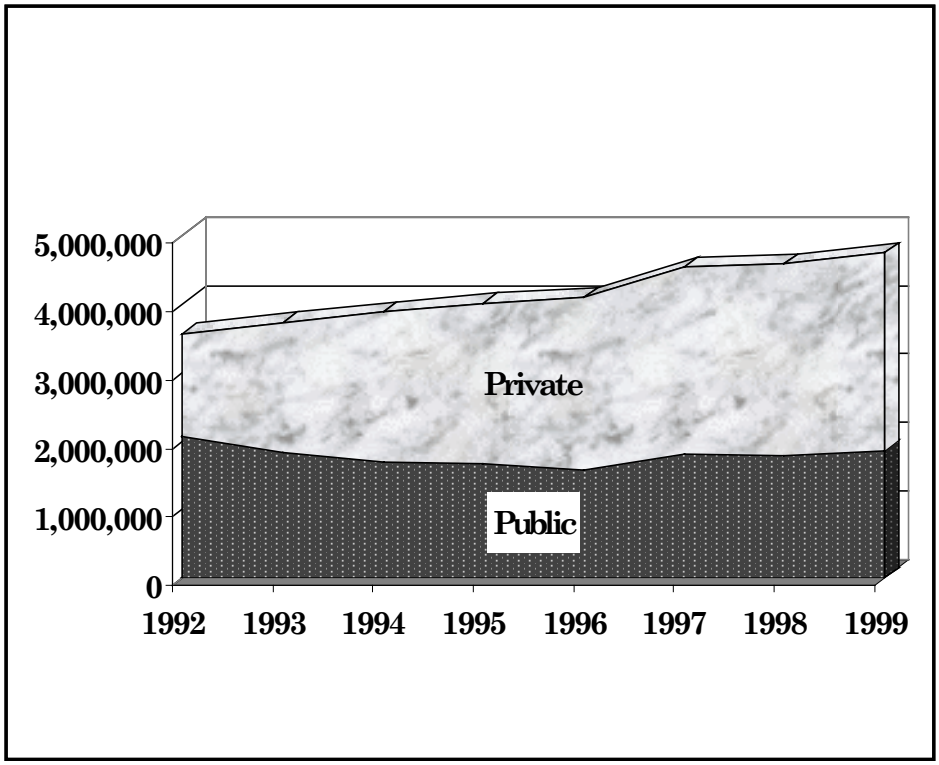
Table 6.1 shows the relationship of waste disposed to public/private ownership. As the table illustrates, 1,859,709 tons of solid waste disposed went to publicly owned facilities (39%), with the remaining 2,879,099 tons going to private facilities (61%).

Table 6.1
Waste Disposed in MSW Landfills – Public/Private

OWNERSHIP	NUMBER OF MSW LANDFILLS		AMOUNT OF WASTE DISPOSED (Tons)		% TOTAL WASTE DISPOSED	
	1991	1999	1991	1999	1991	1999
PUBLIC	36	16	2,696,885	1,859,709	69	39
PRIVATE	9	6	1,192,207	2,879,099	31	61
TOTAL	45	22	3,889,092	4,738,808	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 61% in 1999. 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. Fifteen of the 22 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 1999. (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)
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
Demolition Waste	250,144	331,231	459,979	382,513	375,412	385,412	446,172	437,005
Industrial Waste	101,607	44,471	150,218	161,779	145,617	163,431	159,781	232,905
Inert Waste	1,027	0	31,248	5,154	30,061	117,512	107,452	23,875
Commercial Waste	143,466	180,691	92,498	142,258	109,093	173,863	158,256	129,070
Woodwaste	60,523	98,595	22,668	37,850	57,667	57,128	60,383	68,889
Sewage Sludge	64,311	33,854	64,364	66,728	49,205	72,741	67,419	62,920
Asbestos	8,247	7,076	11,819	7,859	7,965	9,558	10,684	9,666
Petroleum Contaminated Soils	224,560	273,429	249,552	255,288	254,414	444,260	288,407	312,247
Tires	na	1,288	1,815	28,712	12,787	14,912	19,130	12,581
Special	na	na	Na	na	10	6	904	0
Other**	12,053	113,869	69,371	136,644	233,526	10,809	40,880	28,235
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

* 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 and white goods.

In reviewing the types of waste that were disposed in the MSW landfills in 1999, increased amounts were reported for the categories of MSW, industrial, woodwaste and petroleum contaminated soils. 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 461,684 tons of solid waste. Of that amount, 8,467 tons was 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 1999, almost 9% of solid waste 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 1999, there were two energy recovery/ incinerators that meet these criteria.[32] All of the municipal solid waste incinerator ash (120,171 tons) from those facilities was disposed at the ash monofill at the Roosevelt Regional Landfill in Klickitat County.

[32] Three energy-recovery faciliites 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 September 2000)

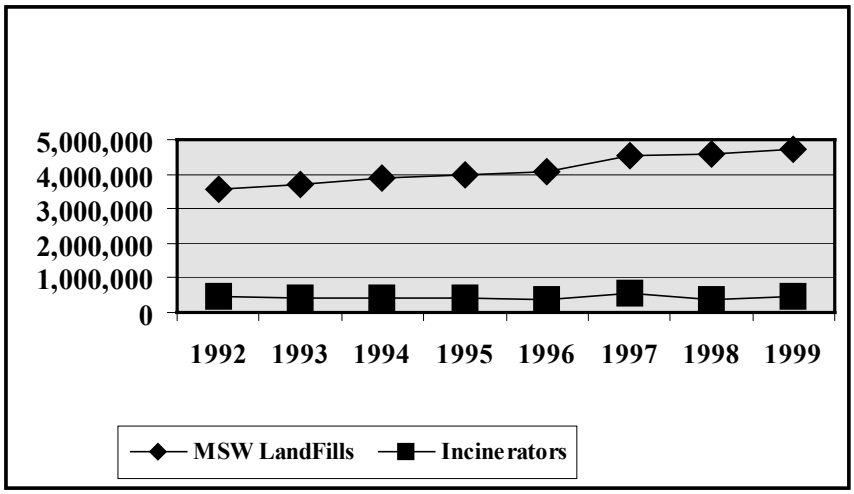
A comparison of the amount of solid waste disposed in municipal solid waste landfills and waste-to-energy facilities and incinerators in 1999 is shown in Table 6.3.

Table 6.3
Waste Disposed in MSW Landfills
and Incinerators in 1999

FACILITY TYPE	TONS	PERCENT (%)
MSW Landfills	4,738,808	91%
Incinerators	461,684	9%
TOTAL	5,200,492	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. (See Figure 6.3)

Figure 6.3
Comparison of Solid Waste Landfilled & Incinerated
1991 through 1999 (in tons)



The amount of waste incinerated will likely remain fairly stable, with the permanent closure of three energy-recovery facilities since 1998, 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 2001, 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 27 inert/demolition landfills. There was a decrease in demolition and petroleum contaminated soils and an increase in inert waste. 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 verus 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
Municipal	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
Industrial	0	0	0	0	0	121	0	0
Inert	139,366	272,047	200,172	121,943	226,362	326,331	252,506	344,444
Commercial	0	0	0	0	0	0	0	0
Wood	609	120	0	167	39	0	156	336
Sludge	0	0	0	0	0	0	0	0
Asbestos	0	12	4	0	0	0	4	0
PCS	0	16,233	19,179	18,295	846	10,285	60,545	17,265
Tires	0	500	0	0	33	618	449	414
Other	14,486	2,260	740	33,125	58,953	1	600	605
TOTAL (tons)	905,088	459,238	377,853	277,433	419,702	600,149	494,528	536,155

Table 6.5 shows the types and amounts of waste reported disposed at Limited Purpose landfills. There was a slight decrease in the overall tonnages with 15 landfills reporting. (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
Municipal	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
Industrial	194,689	17,680	212,008	315,930	371,496	277,419	225,779	262,021
Inert	44,572	37,274	104,419	138,577	141,759	109,174	112,714	136,352
Commercial	0	25,019	0	0	0	0	0	0
Wood	94,541	156,261	86,088	58,628	22,660	14,589	7,700	8,853
Sludge	0	0	21	0	0	2,275	0	1,103
Asbestos	0	0	226	797	512	1,310	1,058	1,549
PCS	0	99,360	82,279	148,932	98,221	121,066	56,407	8,837
Tires	0	0	0	0	29,227	434	559	59
Other	35,615	59,259	60,642	40,797	65,675	83,600	124,607	66,833
TOTAL (tons)	383,115	407,747	642,251	874,116	910,078	695,783	628,896	569,747

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.) Five woodwaste landfills reported in 1999. (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
Municipal	0	0	0	0	0	0	0	0
Demolition	57,328	20,775	0	8,600	18,780	17,718	21,313	25,121
Industrial	0	0	0	0	0	0	0	0
Inert	0	0	0	0	0	0	0	0
Commercial	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
Sludge	0	0	0	0	0	0	0	0
Asbestos	0	0	0	0	0	0	0	0
PCS	0	0	0	0	0	0	0	0
Tires	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
TOTAL (tons)	181,494	122,097	96,523	115,759	102,697	95,325	59,410	102,484

Movement of Solid Waste

Movement of Waste Between Counties

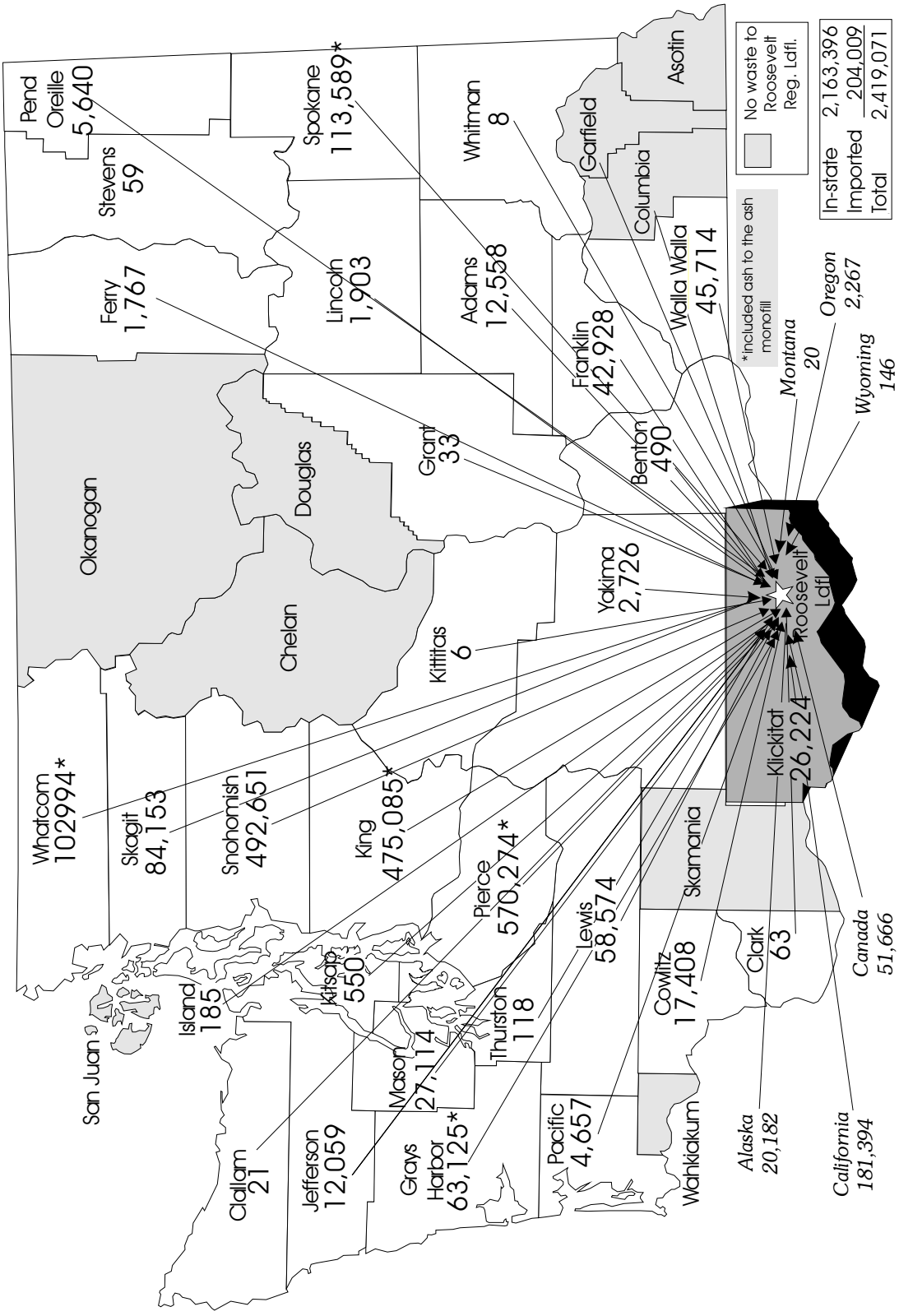
All landfills and incinerators were asked to report the source, types and amounts of waste they received from out-of-county. Ten of the 22 active MSW landfills reported receiving over 2.3 million tons of solid waste from other counties in 1999.

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 32 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 32 counties rely on Roosevelt for the majority of their MSW waste disposal and four other counties send a significant portion of their MSW to Roosevelt. Five 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 44,624 tons of waste (MSW and woodwaste) from beyond its home county. Eight inert/demolition landfills received 19,464 tons of waste (inert and demolition) and four limited purpose landfills received 146,224 tons of waste (asbestos, inert, demolition, PCS, industrial) from other counties.

Map B: 1999 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 1999, a total of 300,747 tons of solid waste, about 6% 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, about the same percentage since 1996. In 1994, 67,113 tons of waste, 1% of the disposed amount, was imported.

The types of waste received from out-of-state for disposal are shown in Table 6.7. The majority of this waste (255,673 tons) went to Roosevelt Regional Landfill. The majority of that (181,394 tons) was imported from California, with the remainder from Alaska, Oregon, and Canada. Roosevelt also received the majority of out-of-state demolition waste, PCS and tires. The amount of waste imported to Roosevelt Regional Landfill has remained fairly stable for the last few years.

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 11,560 tons from out-of-state. Three limited purpose landfills imported a total of 21,060 tons of waste from predominately Oregon and Idaho. The Weyerhaeuser limited purpose landfill in Cowlitz County received most of this waste (19,832 tons), waste resulting from their other wood processing operations in Oregon.

Table 6.7
Out-of-State Waste Disposed in Washington

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

Waste Exported from the State

Another aspect of solid waste movement is the amount exported from Washington to another state for disposal. In 1999, a total of 1,109,191 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 (473,968 tons of MSW), Benton County, Clark County, Island County, San Juan County, Skamania County, Whitman County, and a portion of 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

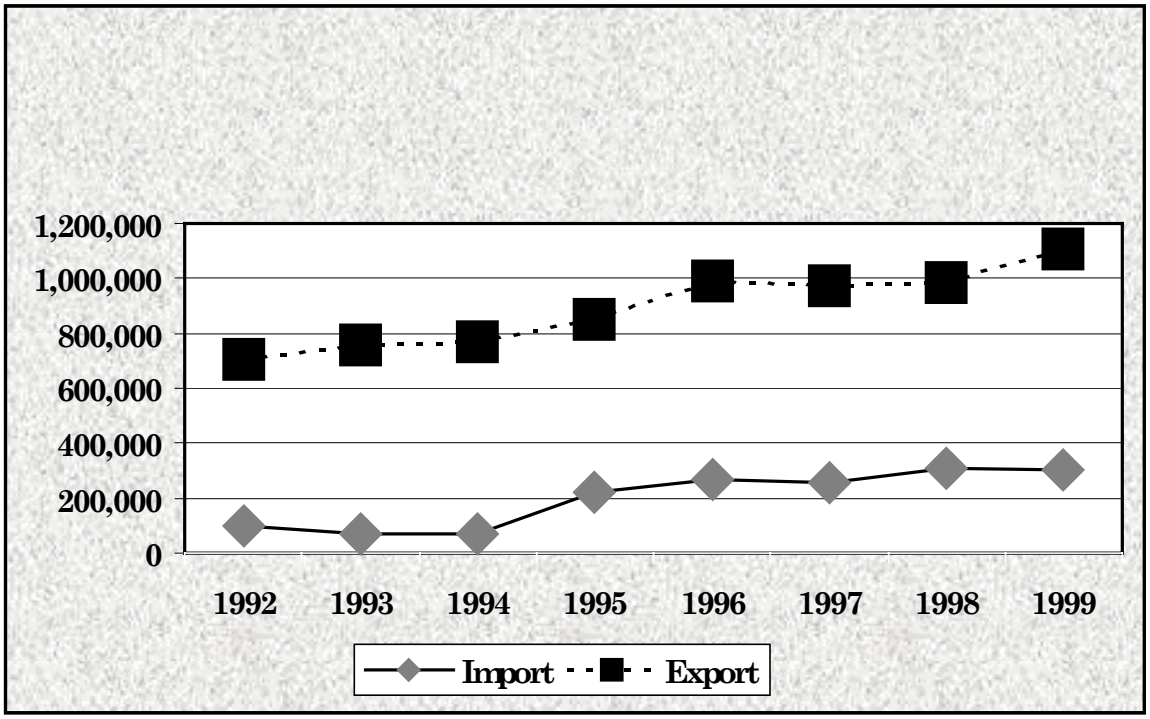
TYPE OF WASTE	IMPORTED		EXPORTED	
	1998	1999	1998	1999
Municipal Solid Waste	235,408	243,292	801,663	832,421
Demolition	14,245	11,529	94,546	92,768
Industrial	28,032	39,547	57,556	112,735
Woodwaste	207	21	0	0
Sludge	23	0	0	0
Asbestos	637	478	2,856	3,778
Petroleum Contaminated Soils	19,831	3,652	24,999	62,015
Tires	7,202	2,228	0	0
Medical Waste	1,432	0	5,204	5,474
Other	828	0	0	0
TOTAL	307,850	300,747	986,824	1,109,191

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. Exported waste amounts increased slightly in 1999, with about three 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

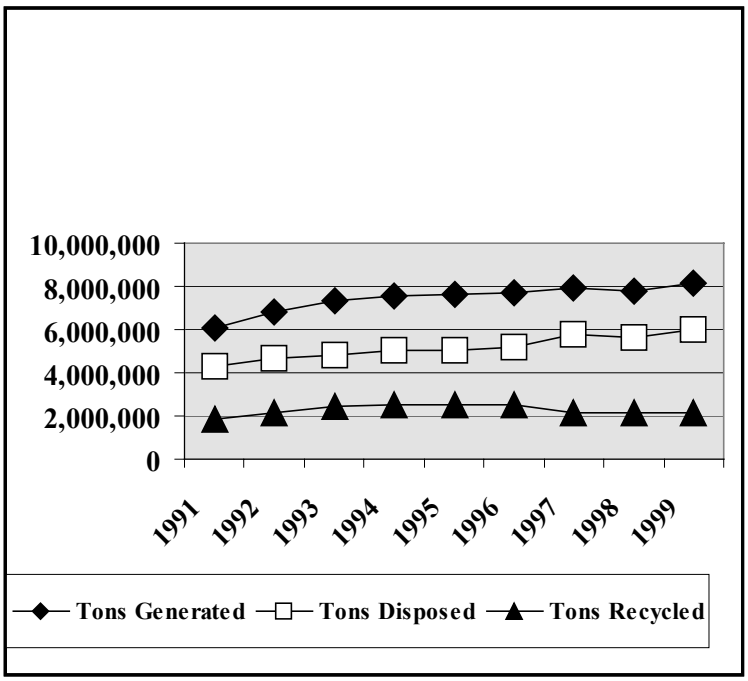
Since 1987, Ecology has conducted a recycling survey that has reported the amount of waste generated, recycled and disposed each year. This waste stream was the "recyclable waste stream" made up of waste types included in the recycling categories, but not including sludge, asbestos, petroleum contaminated 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.

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,

[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.

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. Since 1997, there has been a stabilization of the recycling rate, however in 1999, an increase in the disposal rate resulted in an increased generation rate and a decrease in the recycling 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 1998, there was a slight decrease in the per capita disposal rate to 1.00 tons/person/year. There was also a slight decrease in the recycling rate to 0.37 tons/person/year. The 1999 data shows a level recycling rate of 0.37 tons/person/year, but an increased disposal rate to 1.05 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

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 1999.

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

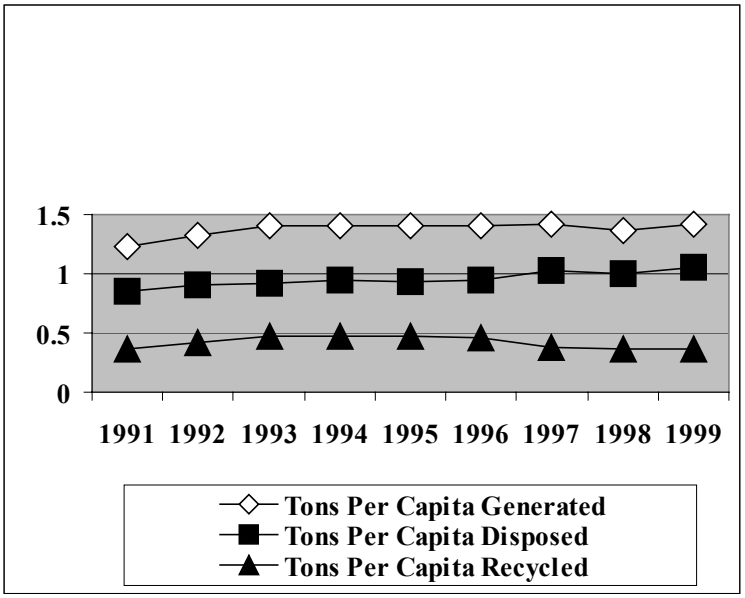


Table 6.10
Per Capita Disposed, Recycled and Generated Numbers
(pounds/person/day)

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

As the population continues to increase, the total amount of waste generation will continue to increase. That is why the current emphasis on household recycling should continue and an increasing emphasis on waste reduction by the residential sector and waste reduction and recycling by the commercial and industrial sector needs to become a priority.

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, 6,408,878 tons of waste were disposed of in all types of landfills and incinerators in Washington in 1999 (see Table 6.11).

Table 6.11
Total Amounts of Solid Waste Disposed in Washington

DISPOSAL METHOD	1993	1994	1995	1996	1997	1998	1999
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
Incinerated Waste	431,928	421,626	397,588	365,464	551,006	369,778	461,684
Woodwaste Landfills	122,097	32,625	115,759	102,697	95,325	59,410	102,484
Inert/Demolition Landfills	834,238	657,614	479,638	873,195	600,149	494,528	536,155
Limited Purpose Landfills	407,747	642,251	874,116	910,078	695,783	628,896	569,747
TOTAL	5,522,065	5,632,731	5,868,916	6,335,189	6,475,181	6,134,719	6,408,878

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

Remaining Capacity

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 2000, the facilities estimated about 169 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.

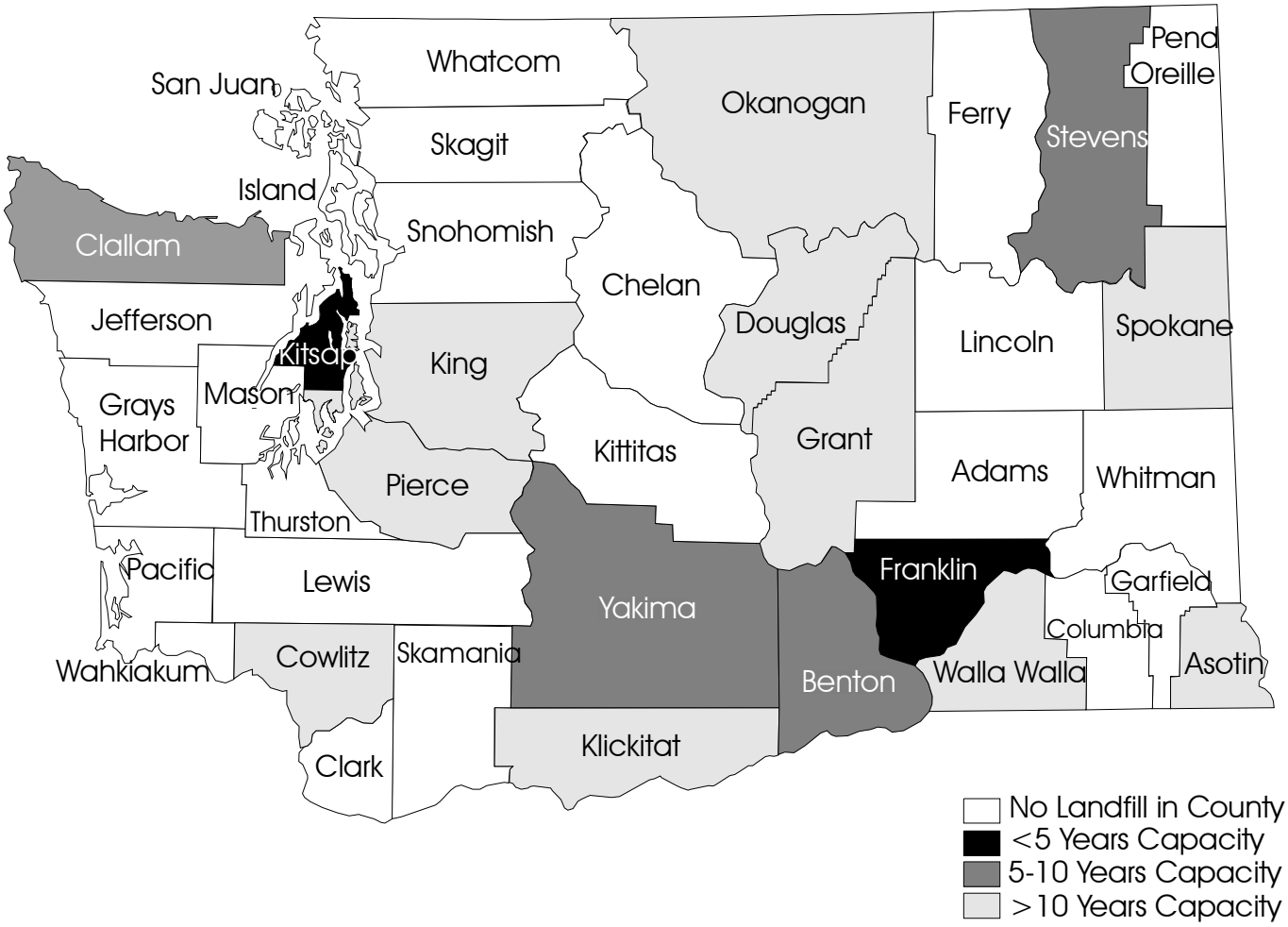
Table 6.12
Estimated Years to Closure for MSW Landfills

YEARS TO CLOSURE	% OF TOTAL REMAINING CAPACITY	NUMBER OF FACILITIES	PUBLIC	PRIVATE
Less than 5 years	2%	3	1	2
5 to 10 years	2%	6	5	1
Greater than 10 years	96%	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.

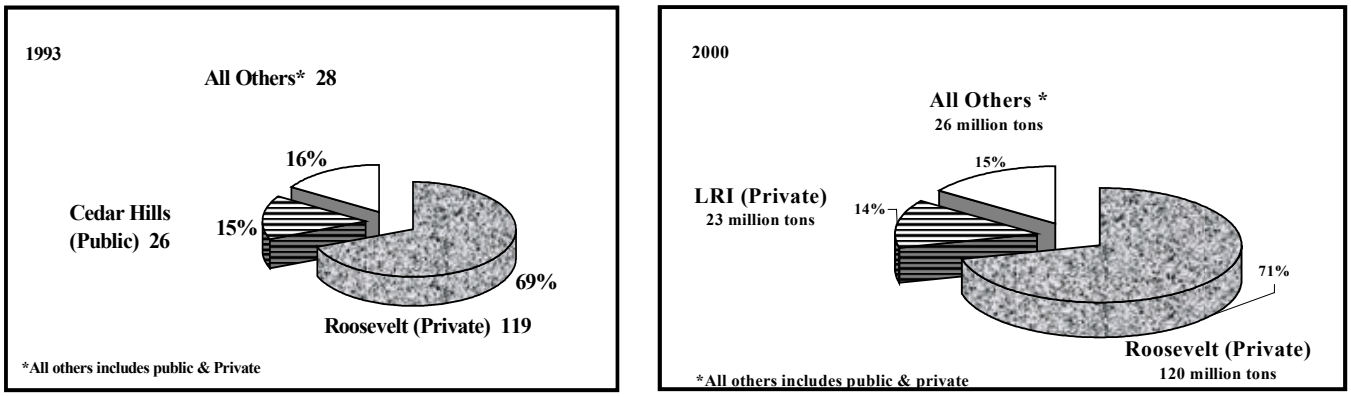
[37] *Solid Waste in Washington State - Third Annual Status Report*, Department of Ecology, Publication #94-194, December 1994.

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



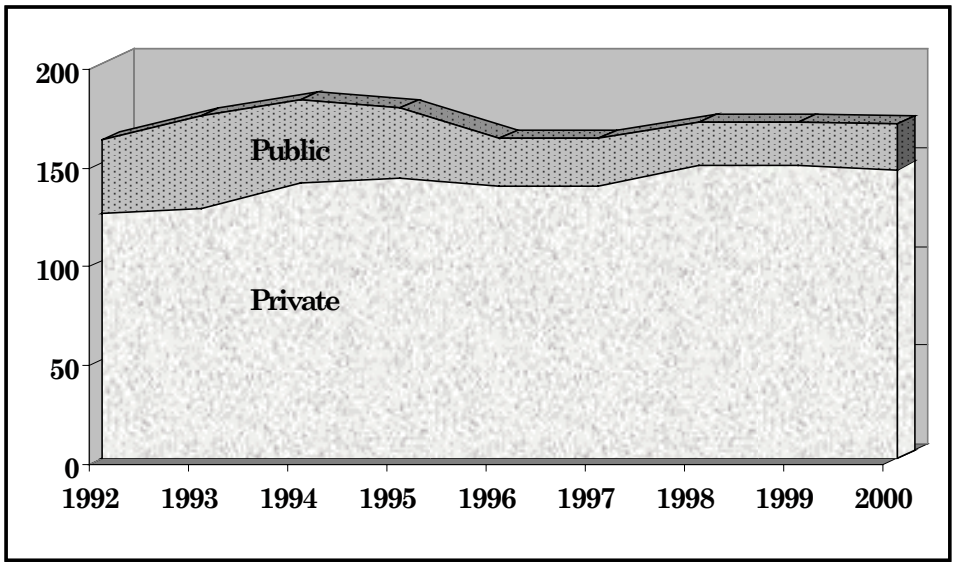
2000 capacity numbers indicated that 95% of the remaining capacity was at landfills with greater than 10 years to closure. Fourteen of the 20 operating MSW landfills are publicly owned with 14% of the remaining capacity (23 million tons). 86% of the remaining permitted capacity (146 million tons) is at the six privately-owned facilities, compared to 73% in 1993. The majority of the capacity, about 71% of the total statewide capacity, is at the privately owned Roosevelt Regional Landfill in Klickitat County. Another 14% of the statewide total capacity is at newly constructed, privately owned landfill in Pierce County, with the remaining 15% of capacity spread among the remaining 18 landfills in the state (see Figure 6.7).

Figure 6.7
Comparison of Remaining Permitted Capacity
1993 and 2000



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 2000 (Figure 6.8).

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

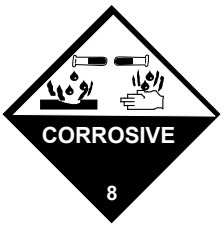


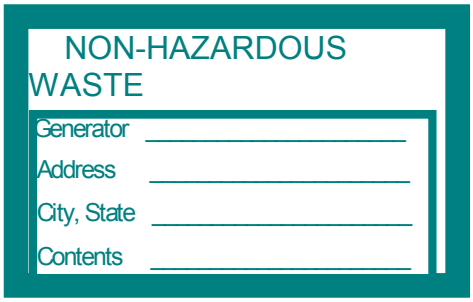
Besides the amount of remaining capacity, the availability of that capacity needs to be considered. The Roosevelt Regional Landfill is operated to accept waste from a wide variety of locations (see Map B). In 1999, the facility received some type of solid waste from 32 counties in Washington, including 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 1999. 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 History of Moderate Risk Waste Management in Washington

The term moderate risk waste (MRW) was created by revisions to Washington State's 1986 Hazardous Waste Management Act (RCW 70.105). Simply put, MRW is Household Hazardous waste (HHW) plus Conditionally Exempt Small Quantity Generator (CESQG) waste. In 1988, Initiative 97 created the Model Toxics Control Act in Washington State (MTCA). MTCA provided funding for moderate risk waste programs, required planning for the development of MRW programs, required implementation of MRW programs by each local jurisdiction, and required Ecology to assist local governments with MRW programs.

By 1991, moderate risk waste plans were submitted from all applicable local governments in Washington. Local moderate risk waste plan implementation includes at a minimum the following programs: CESQG Technical & Disposal Assistance, MRW Public Education, MRW Enforcement and HHW Collection.

Local MRW collection started in the early 1980's primarily as HHW-only collection events or round-ups, once or twice a year. In the late 1980's permanent collection facilities started to replace the events because of a need for year-round collection, to serve larger number of customers without long lines, the need to control costs, and to reuse and recycle larger quantities of moderate risk waste.

MRW collection diverts hazardous materials from the municipal waste streams and provides numerous benefits. MRW collection provides an opportunity for waste reduction education, allows entities to recover materials as resources, reduces toxicity to solid waste landfills and wastewater systems, helps the public to avoid improper disposal practices, and protects waste processing equipment and handlers from exposure to hazardous materials.

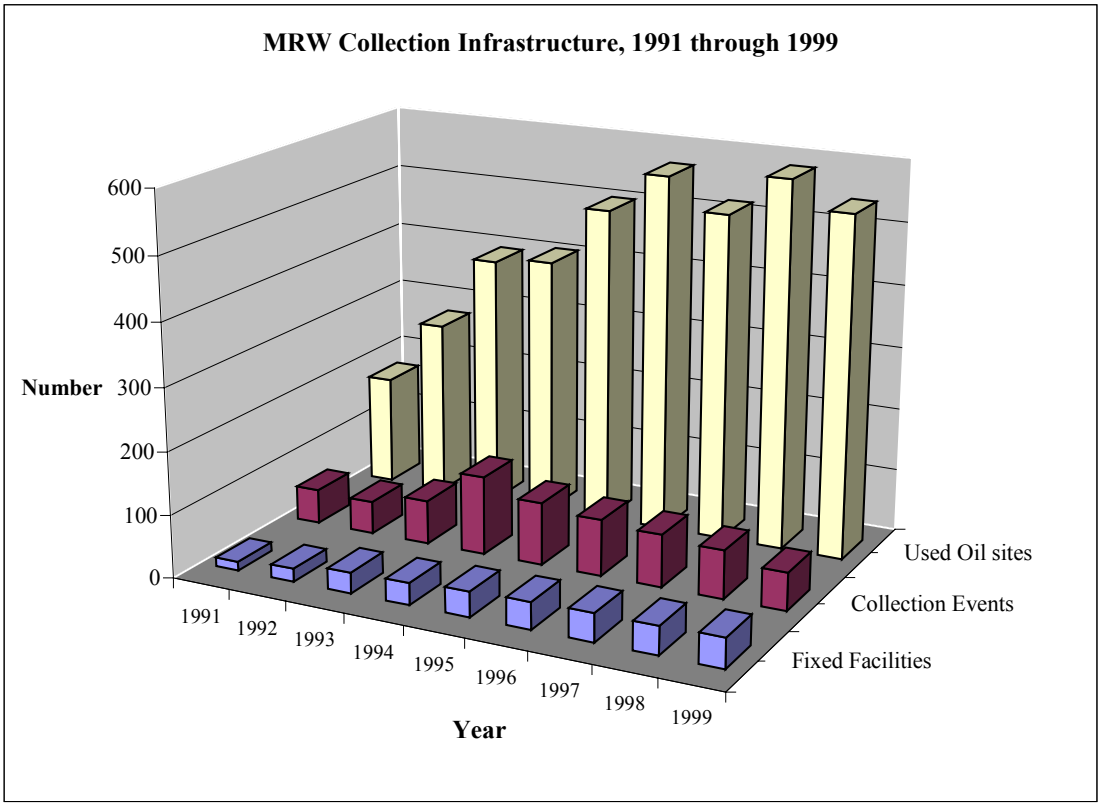
The information received from local programs through the MRW annual reports provides Ecology with data on the MRW infrastructure, collection trends, costs, waste types

received by events and facilities, and the final disposition of MRW. This year's report focuses on two years of data, 1998 and 1999. In the 1998 data set, Skamania County was unable to provide data due to a fire that consumed their records and transfer station. In the 1999 data set, Adams County did not provide MRW collection data.

Trends in Collection

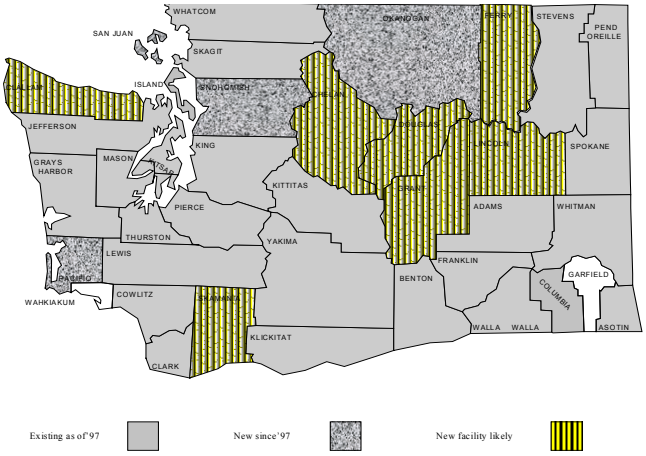
Fixed facility construction reached its peak between 1991 and 1995 with 26 facilities built during that time. Construction has slowed, and as of 1999 Washington currently had 47 facilities. The number of MRW collection events reached a high of 125 for the state of Washington in 1994, and has been declining ever since then, currently under half that amount. This downward trend is due to the development of fixed facilities that have supplanted the need for continuation of as many or any collection events in some counties. The number of public and private used oil sites for the state of Washington rose steadily between 1991 and 1996, averaging around 555 for the remaining years (Figure 7.1).

Figure. 7.1
Moderate risk waste infrastructure in Washington state:
Change from 1991 through 1999



As of 2000, there are 47 facilities (4 new since 1997), with seven projected facilities. These 47 existing facilities currently provide an average statewide service level of one facility for every 120,000 Washington State citizens (Figure 7.2).

Figure 7.2
MRW Facilities in 2000



Amounts of MRW Collected and Service Levels [38]

In 1998 Washington collected approximately 9.6 million pounds of household hazardous waste[39], over 9.2 million pounds of used oil, and approximately 497,000 pounds of CESQG waste, for a total of 19 million pounds of moderate risk waste. The amount of household hazardous waste collected increased by only four percent compared to 1997. This small increase in collection was due to Snohomish County building a facility and curtailing most county collection events in 1998. Statewide, both used oil collection and CESQG waste collection quantities also increased compared to 1997. CESQG collection levels increased by 25 percent and used oil collection levels increased by 20 percent over the 1997 levels.

In 1999 Washington collected approximately 9.9 million pounds of household hazardous waste; nearly 9.3 million pounds of used oil, and 637,400 pounds of CESQG waste, for a total of nearly 19.8 million pounds of moderate risk waste. This represents an increase of over 522,000 pounds. Household hazardous waste collection is still increasing; CESQG collection levels have also increased by 28% compared to 1998; and used oil collection has plateaued. Overall, MRW collections in Washington State increased by 2.7% between collection years 1998 and 1999, from 19,227,312 lbs. to 19,750,452 lbs., respectively. Figure 7.3 shows MRW collection from 1992 to 1999.

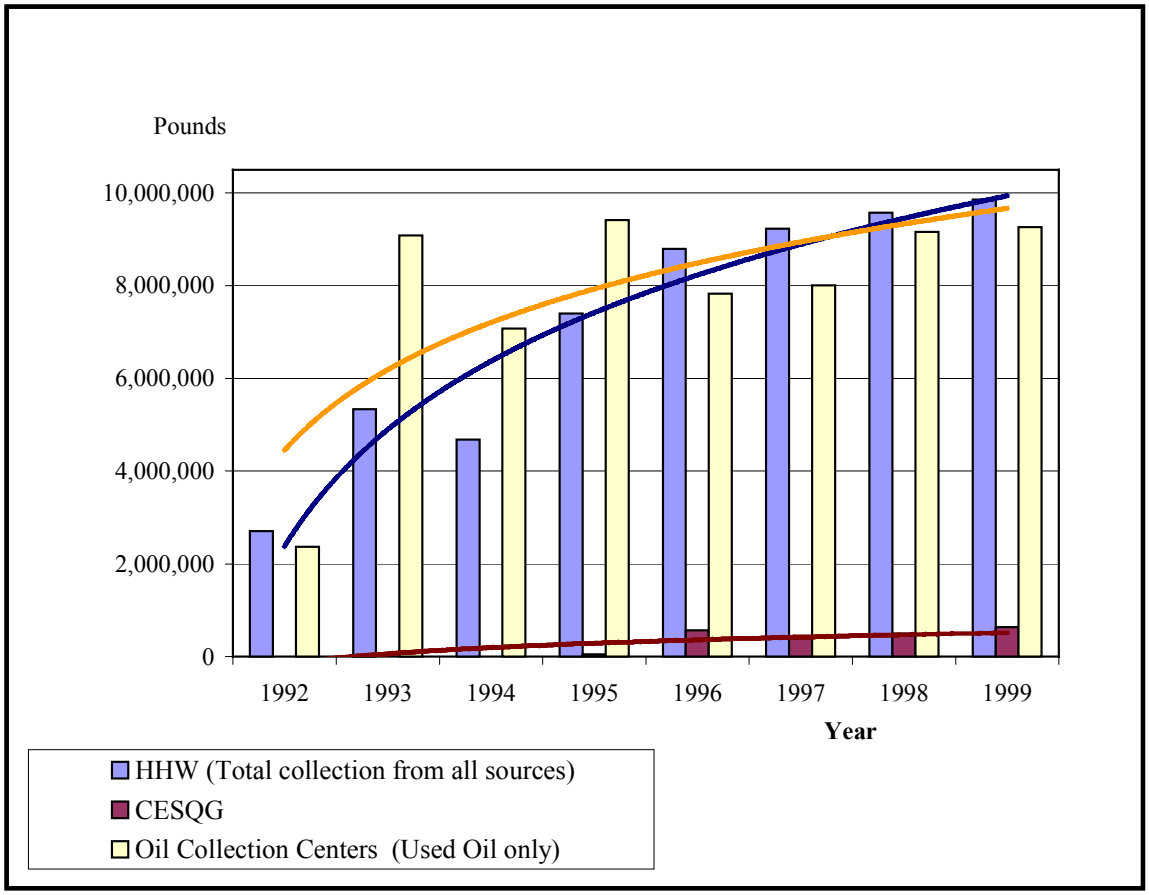
Statewide Level of Service

[38] This chapter primarily discusses 1999 data. A more detailed report, *Moderate Risk Waste Collection System Report*, Publication Number 00-07-041, expected December 2000, will also include additional 1998 data and analysis.
[39] Household hazardous waste collected from used oil collection sites, such as antifreeze, has been included in the HHW collection numbers for 1998 and 1999. Used oil collection numbers represent used oil collection sites only.

The US Census Bureau reports that as of July 1998, there were an estimated 2,211,000 households[40] in Washington state. There were 125,076 participants in HHW collection programs during 1998, and 145,041 participants in 1999. The actual number of households served is much larger due to the fact that used oil sites do not record or report numbers of participants. 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 or an estimated 137,584 households served in 1998 and 159,545 in 1999. This represents 5.66 percent of all households in Washington in 1998, a slight decrease of .59 percent from the estimated 6.25 percent served in 1996. For 1999, an estimated 7.22 percent of all households were served in Washington State, an increase of 1.56 percent compared to 1998.

Figure 7.3
Trends in MRW collection by quantity and waste in Washington state: 1992 through 1999

*Trendlines in Figure 7.3 graphically show the growth or decline of the three moderate risk waste types.



In 1998, used oil collection sites in metropolitan and nonmetropolitan areas showed variability in pounds per capita. Chelan County, with a population of about 60,000, collected over 300,000 pounds of used oil: over 5 pounds per person. In metropolitan areas, the

[40] This number will be updated in the year 2000 by the Office of Financial Management and in the year 2001 by the U.S. Census Bureau

average per capita amount of used oil collected was 1.55 pounds, with Yakima County collecting 3.02 pounds per person. A number of counties collected twice or more of the state average per capita amount of used oil (approximately 3.0 lbs. used oil), and some counties made this list in both 1998 and 1999. The used oil per capita collection by these high counties in 1998 and 1999 are listed in Table 7.1.

Table 7.1
High Collection Counties, Used oil

Used oil, 1998			Used oil, 1999		
County	Region	Pounds Per Capita	County	Region	Pounds Per Capita
Asotin	Eastern	**3.50**	Asotin	Eastern	4.15
Chelan	Central	**5.11**	Cowlitz	Southwest	3.06
Jefferson	Southwest	**3.51**	Jefferson	Southwest	3.00
Klickitat	Central	**3.82**	Klickitat	Central	3.72
San Juan	Northwest	**3.61**	San Juan	Northwest	6.05
Stevens	Eastern	**3.88**	Skamania	Southwest	4.25
Yakima	Central	**3.02**	Stevens	Eastern	4.03

Table 7.2 lists counties that collected over 3.0 pounds per capita HHW during 1998 and 1999, approximately twice the state average or more. Some of these counties also made the list for collection of used oil at over three pounds per capita, during 1998, 1999, or both years. Klickitat, Jefferson, San Juan, Stevens, Yakima, and Kittitas counties have all made both categories (HHW and used oil) during one or more years. Except for Yakima with a population of 220,000, these are all non-metropolitan counties with populations between 19,000 and 32,000 persons.

Table 7.2
High Collection counties, HHW

HHW, 1998			HHW, 1999		
County	Region	Pounds Per Capita	County	Region	Pounds Per Capita
Chelan	Central	3.43	Lewis	Southwest	3.62
Jefferson	Southwest	3.61	Kittitas	Central	3.97
Lewis	Southwest	3.23	Klickitat	Central	3.02
Kittitas	Central	3.26	Skamania	Southwest	4.14
Klickitat	Central	4.95	Yakima	Central	4.00
Stevens	Eastern	5.07			
Yakima	Central	3.34			

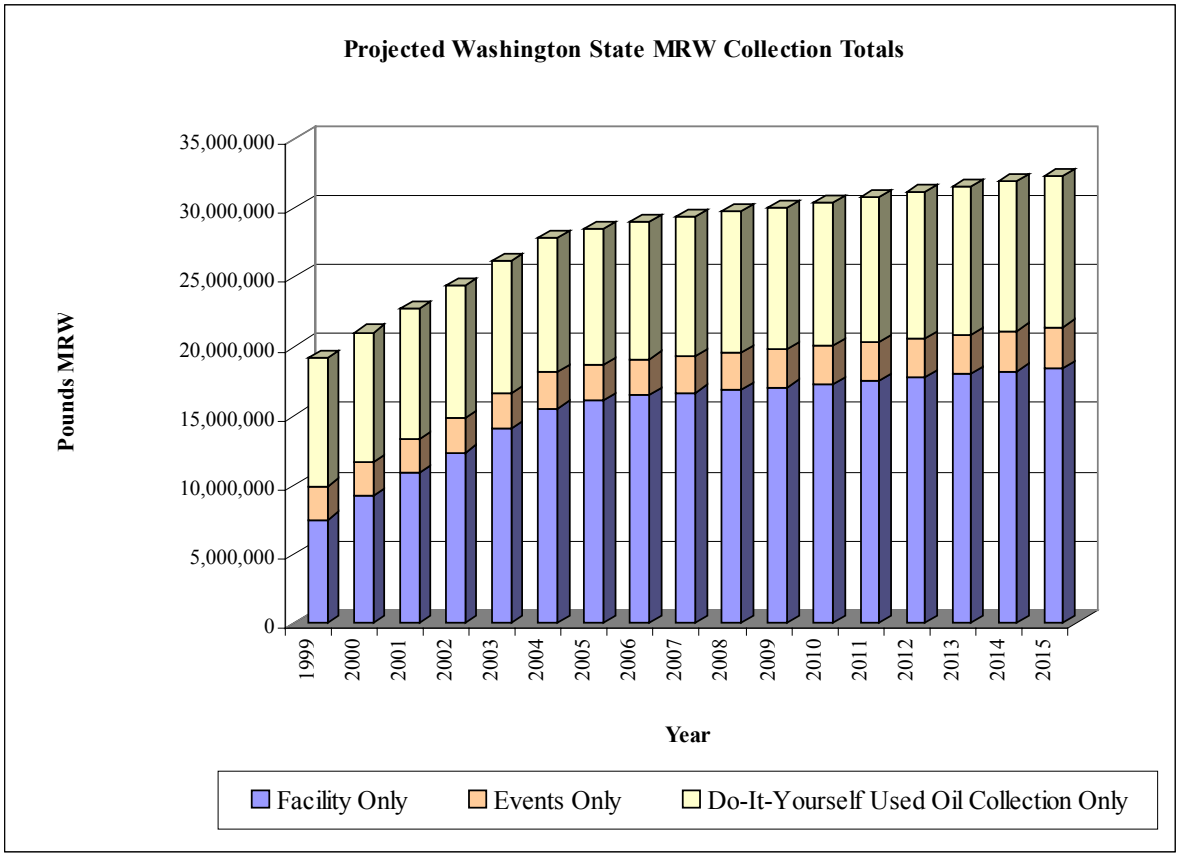
Trends and Forecasting

The Washington State Office of Financial Management releases annual population forecasts for Washington State. Using the change in state population from year to year, it is possible to create simple calculations that project probable changes in the collection of moderate risk waste.

The population of Washington State is projected to increase from the year 2000 number of 5,820,995 to 7,049,917 in 2015 – an increase of 21%. It can be expected that the collection of MRW will increase as well. Figure 7.4 reflects projections based on statewide population growth for collection event quantities from years 2000 to 2015 in the center section of each bar.

Figure 7.4

Projected MRW Collection: 1999 through 2015, Washington State



For collection facilities, a national study shows that average participation, and quantities of HHW, more than double in the second year of operation (Nightingale and McLain, 1997). The study found year-to-year--average participation increases at collection facilities gradually levels off to an average of a four percent participation increase in year eight of facility operations.[41] These average annual increases were used to project future collection rates for each county that had a fixed facility operating for eight years or less for the year 2000 and beyond. In the year

[41] See complete report, *Moderate Risk Waste Collection System Report*, Publication Number 00-07-041, expected December 2000, for additional information.

where a facility had more than eight years of operating history, projected annual increases were based on the statewide average population increases for all remaining years. The results of these collection facility projections are shown in Figure 7.4 on the bottom section of each years bar.

Because Snohomish County has recently built one of the newest facilities and has a large collection quantity, it contributed more to the facility collection growth projections than Tacoma or Spokane, which have had facilities operating for many years.

For used oil collection, males in the 20 to 45 year-old age range dominate the data. Consequently, the used oil projections in Figure 7.4 use the growth rate of this statewide population subgroup to estimate future growth in used oil collection. This is reflected in Figure 7.4 on the top section of each yearly bar.

The combined projections in Figure 7.4 show that the MRW collection system is approaching a more stable phase. There are no remaining large counties without a permanent HHW collection facility. If there was a significant increase in the number of facilities or used oil sites, these projections may underestimate actual results. In addition, 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. Because CESQGs pay for disposal services at public and private collection facilities, this possible increase would be less likely to have a significant increase in local operations costs.

Assuming a relatively stable collection system for the foreseeable future, Figure 7.4 shows the total projected MRW quantities through 2015. In 1999, the last year of data, approximately 20 million pounds of MRW was collected. By 2015, the total estimate for MRW collection is about 34 million pounds of MRW, an projected increase of approximately 75 percent.

HHW: Facilities Versus Events Collection

Facility and Event Costs: Household Hazardous Waste

Looking at facility to event ratios, costs of event collections are higher than those of facility collection in all three categories, during 1999. The largest differences are seen in cost per participant, with cost for event collection 95% higher than facility collection in 1998 and 56% higher than facility collection in 1999. This increased to 32% in 1999, as seen in Table 7.3. The cost per pound of HHW also remains higher for collection events than that for facility collection. In 1999, it was 21% more expensive per pound to handle HHW at an event versus through a facility-based system.

Table 7.3
HHW Collection at Facilities and Events
Comparison of Costs, Participants, and HHW collected, 1998 and 1999*

1999	**FACILTIES**				
Total costs	Total Participants (Ppts)	Total lbs. HHW	Cost per ppt.	Cost per lb.	*Cost per capita
$4,255,859.55	103,288	6,496,299	$41.20	$0.66	$1.05
1998					
$3,859,636.35	99,144	5,983,215	$38.93	$0.65	$1.16

1999	**EVENTS**				
Total Costs	Total Participants (Ppts)	Total lbs. HHW	Cost per ppt.	Cost per lb.	Cost per capita
$1,965,894.90	30,554	2,484,278	$64.34	$0.79	$1.39
1998					
1,921,864.11	25,316	2,332,467	$75.91	$0.82	$0.89

RATIOS: EVENTS TO FACILITIES			
1998	Event to Facility Costs	**1999**	Event to Facility Costs
Cost per ppt.	195%	Cost per ppt.	156%
Cost per lb.	128%	Cost per lb.	121%
Cost per capita	76%	Cost per capita	132%

*All values based upon complete and useable cost data submitted with 1998 and 1999 annual MRW forms.

Collection by Fixed Facilities

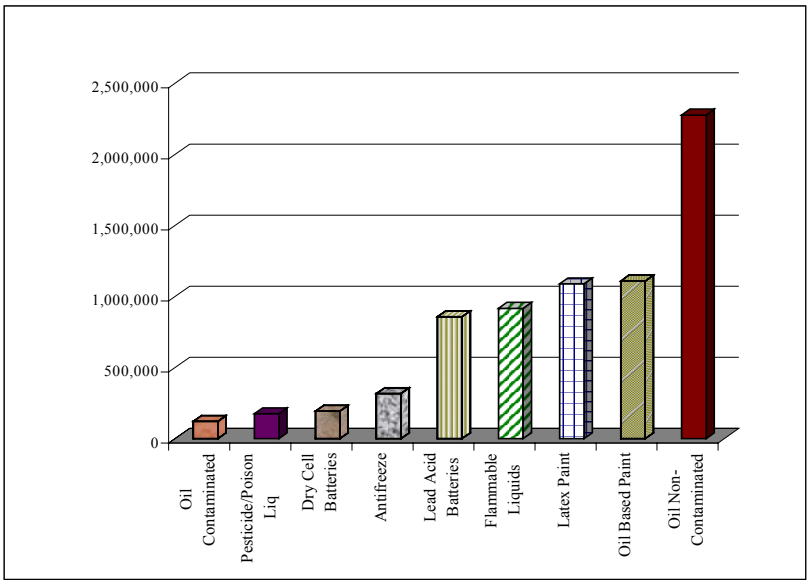
Moderate Risk Waste Collection at Fixed Facilities

There are many types of moderate risk waste collected at facilities; however, the vast majority of waste can be represented by types collected in quantities over 100,000 pounds. This section addresses information on quantities collected at fixed facilities for 1999.

Figure 7.5 shows the 1999 waste streams collected at facilities in aggregate quantities over 100,000 pounds. This does not include oil collected from used oil collection sites, but only oil brought into MRW fixed facilities. Also commonly brought to fixed facilities were oil-based and latex-based paints, flammable liquids, and lead acid batteries. After these categories, the quantities start to drop dramatically[42].

[42] For additional details on the disposition of MRW collected by waste type, please refer to Appendix C.

Figure 7.5
Fixed facility collections of waste streams over 100,000 lbs. in 1999



Fixed facilities disposed of HHW and CESQG wastes in similar manners. For 1999, fixed facilities in Washington State preferred recycling and reusing materials as their primary method for disposal of household hazardous waste, followed closely by energy recovery (see Figure 7.6).

Figure. 7.6
Household hazardous waste disposition methods by fixed facilities in Washington, 1999.

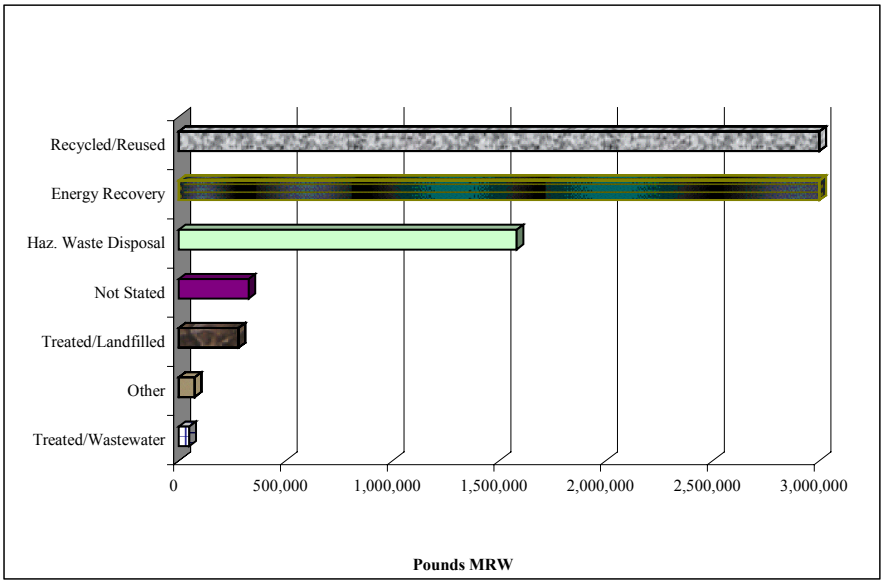
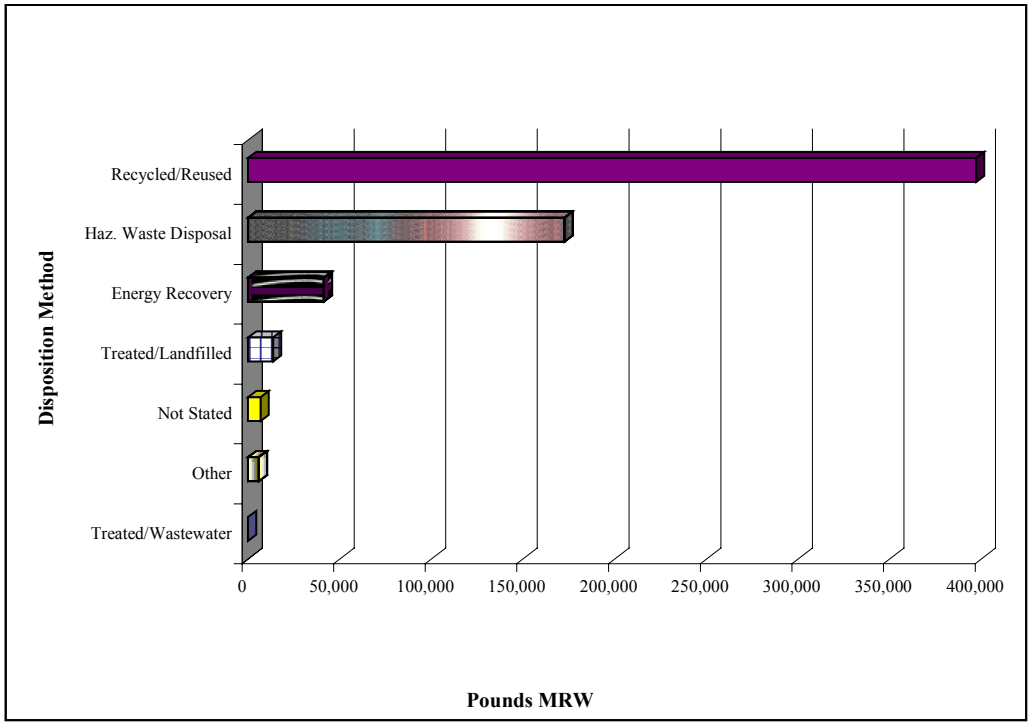


Figure 7.7
CESQG disposition methods by facilities in Washington state, 1999.



In 1999, Washington state collected over 137,000 pounds more CESQG compared to the 1998 level. The majority of it was disposed of by recycling or re-utilization, sending to a hazardous waste landfill, or through energy recovery (Figure 7.7)

Collection by Waste Category and Type

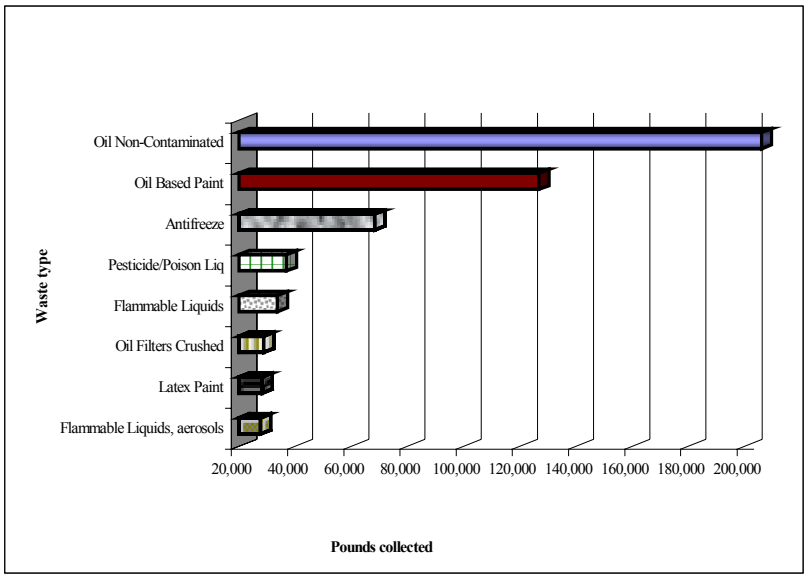
This section provides summary information on MRW waste types collected. More detailed information is contained Appendix C.

Conditionally Exempt Small Quantity Waste Collection

Figure 7.8 shows the waste types and quantities over 20,000 pounds collected from CESQGs in 1999. 637,000 pounds were collected for a state per capita rate of 0.11 pounds per person. Of this total amount, the Yakima facility collected 374,000 pounds or 54 percent. This does not include a large amount of CESQG wastes managed by facilities and collection activities operated independently from the MRW collection system, largely by CESQG's and hazardous waste facilities.

In 1999, collection levels were higher than 1998 for many categories, particularly the top three: non-contaminated oil, oil-based paint, and antifreeze.

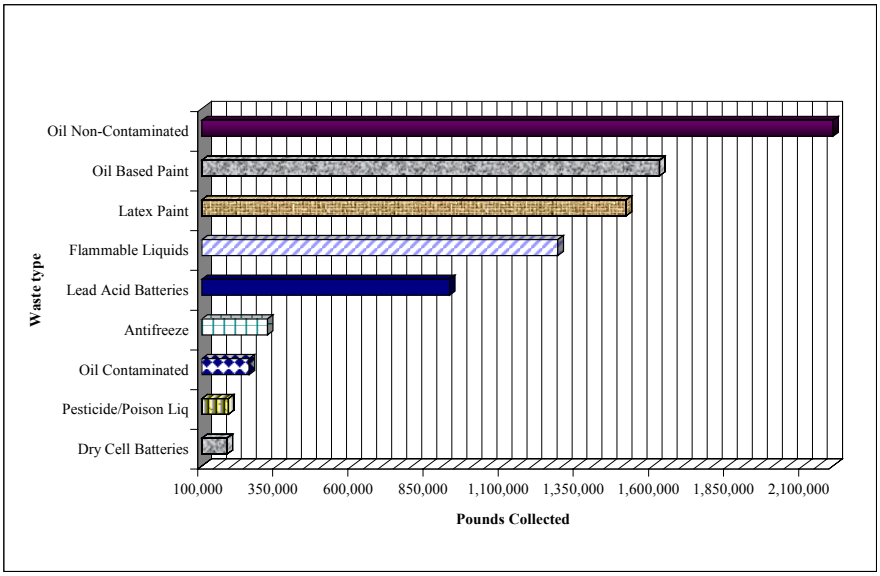
Figure 7.8
CESQG waste types collected in amounts over 20,000 pounds, 1999.



Household Hazardous Waste

Waste types that dominated household hazardous waste collected during 1999 ranged from 100,000 to 2.5 million pounds. 9.5 million pounds of HHW was collected in 1999, but four categories made up 80% of the entire amount — flammable liquids, latex paint, oil-based paint, and non-contaminated oil (see Figures 7.9). With the exception of latex paint, these are the same waste types collected in high quantities during the 1999 CESQG collection efforts.

Figure 7.9.
Household hazardous waste types collected in amounts between 100,000 and 2,500,00 pounds, Washington state, 1999[43]



Used Oil Collection Sites

Used oil – if it is not contaminated – is a large part of moderate risk waste collection in Washington State, in facilities, events, or at used oil sites. During 1999, the collection of used oil increased slightly, to 9.3 million pounds. It appears that the amount of oil filters collected dropped dramatically, to below 38,000 pounds.

It should be noted that this drop in the collection of oil filters might not actually reflect a decrease in collection, but reflect a lack of data on private used oil collection sites. There has been a current effort to collect such information on private DIY used oil collection sites not currently reporting to the Department. This effort has resulted in new data on used oil collections for the years 1997-99. Some of the reports provided information for 1997 and 1998 only, thus making it appear as if there were a decrease in used oil filter collections for 1999.

Table 7.4 shows how much of each waste type was collected at used oil collection sites, how it was disposed of (if the disposition method was stated), and how many pounds of oil were

[43] Excludes used oil collected at used oil collection sites.

collected per capita. This does not include used oil collection sites that are operated in concert with facilities unless the site is reported separately from the facility.

Table 7.4
DIY collection center information for Washington State, 1999

Waste Type & Disposal	Recycled	Energy Recovery	Haz. Disposal	OTHER	*Total Pounds*
Oil	5,365,072	3,808,472	740	83,473	9,257,757
Oil Filters	37,306			54	37,360
Antifreeze	270,744	2,960	440	13,072	287,216
Totals	5,673,122	3,811,432	1,180	96,599	9,582,333
	1999 WA State Population:		5,756,361		
	Pounds of collected waste per person:		**1.66**	**Used Oil only per person:**	**1.61**

Effectiveness of Used Oil Collection

So how effective was our DIY used oil program? The American Petroleum Institute reported that Washington State residents purchased 13.6 million gallons of oil in 1997. Of the purchased oil, those people who change oil themselves (Do-It-Yourselfers) purchased an estimated 7.3 million gallons or 54 million pounds. Of the estimated 54 million pounds, only about 70% of this is recoverable. Oil will be lost through combustion, residual left on engine parts, and inadvertent spillage and leaks. According to these numbers, 70% of the recoverable Do-It-Yourselfers used oil would be 38 million pounds. The amount recovered through used oil collections during the 1998-year was 9.2 million pounds, or about 24% of the recoverable amount. Another 2.5 million pounds was collected through household hazardous waste efforts, for a total of 11.6 million pounds. This brings the amount recovered to 32% of the estimated total recoverable amount. These numbers did not change significantly for the year 1999. Where did the rest of the oil go in the state of Washington? Should we be concerned?

This is where Factor-X comes in. Factor-X is a variable that cannot be quantified, but we know it exists. It is human behavior. In this situation, Factor-X consists of the following:

1) Illegal dumping of DIY oil – one CA study showed that one in five DIY households improperly disposes of used oil
2) Use of DIY oil for other purposes, such as heat, instead of returning it for collection and unreported to Ecology
3) Private companies that pick up used oil, but do not report it as DIY used oil to Ecology
4) Incorrectly or mistakenly reporting DIY used oil amounts on the MRW report forms
5) Other sources of DIY used oil collection Ecology is not aware of

Factor-X cannot be quantified, but efforts can be made to change it. Currently, Ecology is attempting to track missing sources of DIY used oil using forms sent out by a county MRW facility representative to sites that may collect used oil. There is also continuing work on

educational outreach to the public concerning the environmental damage related to illegal oil dumping, and improve compliance with local used oil collection reporting requirements.

Mercury Bearing Waste and Used Electronics Collection Efforts

Within the 1999 MRW annual survey, respondents were asked about collection efforts in two areas: mercury-bearing waste (such as fluorescent lamps) and used electronics. MRW coordinators were asked whether they were currently collecting either type of waste, or investigating the possibility of collecting either waste type. The results of these questions are presented in this section (see Table 7.5).

The need to focus on collection of these waste streams is important. Fluorescent and high intensity lamps contain small amounts of mercury, and are commonly used by Americans. An estimated amount of mercury discharged in the United States, into the atmosphere from the 550 million lamps currently in use amounts to 35 tons (Greskovich 1997).

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

The European Union estimates that in 1999 electronics, other electrical devices and appliances comprised four percent of their municipal solid waste stream. They anticipate that by the year 2010 this waste substream will double. As consumer electronics increases in popularity, disposal of these components becomes a concern for Ecology and local solid waste managers.

Table 7.5
Status of mercury bearing waste and used electronics acceptance at MRW facilities, 1999

Accepting Mercury Bearing Waste:	6
Not accepting Mercury Bearing Waste	8
Exploring acceptance:	0
Not Exploring	6
Total	20
Accepting Used Electronics:	1
Not Accepting Used Electronics:	23
Exploring Acceptance:	3
Not Exploring	16
Total	43

Survey Results

The majority of counties are currently neither accepting mercury nor used electronics. A low response rate was received for all questions concerning mercury. A higher response rate is seen with used electronics, with the highest response rate being "Not Accepting Used Electronics" (53% of those who answered this question). When combined with "Not Exploring" (used electronics), the highest response rate provides a guideline for how Washington State's moderate risk waste system is currently handling televisions, computers, monitors, and other electronic devices containing substances of concern. It may be that in some jurisdictions these wastes are being examined for disposal options by non-MRW staff.

Currently, costs of accepting used electronics and mercury are high. The costs associated with recycling these products may reach 80% or more of production, according to one Minnesota based study. Sponsored by the Minnesota Office of Environmental Assistance*, Sony Electronics Inc., Waste Management-Asset Recovery Group, Matsushita Electric Corporation of America, and the American Plastics Council, this collection effort attempted to test a variety of strategies for managing end-of-life electronic products, in order to remove them from the Minnesota municipal waste system.

Although a large amount of used electronics was collected during a three-month collection period (events, dropoff sites, and curbside collections), many of the electronics came from households – not businesses. This led to a large number of televisions and personal computers. Although there were markets for these products, the costs of transporting the product parts were somewhat high. In contrast, business electronics are generally worth more, and more than pay for themselves when recycled. The study pointed out there was a need to encourage more businesses to recycle used electronics in order to obtain these valuable products. This would reduce the overall cost burden.

There is also a need for clear and consistent commodity specifications, such as with CRT glass and thermoplastics from television sets. Without these specifications for recycling, there is a lack of communication between the recyclers and the waste managers concerning quality of products.

For a copy of the Minnesota study, ***Minnesota's Multi-Stakeholder Approach To Managing Electronic Products At End-Of-life,*** please visit:
http://www.sel.sony.com/SEL/esh/mnproj/wpaper.html

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APPENDIX A

STATE MAP WITH COUNTY NAMES


San Juan
Whatcom
Okanogan
Ferry
Pend Oreille
Stevens
Skagit
Island
Snohomish
Chelan
Clallam
Douglas
Lincoln
Spokane
Jefferson
Kitsap
King
Grays Harbor
Mason
Kittitas
Grant
Adams
Whitman
Pierce
Thurston
Pacific
Lewis
Yakima
Franklin
Garfield
Columbia
Cowlitz
Skamania
Benton
Walla Walla
Asotin
Wahkiakum
Klickitat
Clark

APPENDIX B

Facility Specific Disposal Data for 1999

Table B.1 1999 Total Waste Disposed in Municipal Solid Waste Landfills

Landfill Name	County	MSW	Demolition	Industrial	Inert Wst	Comm'l	Wood Wst	Sludge	Asbestos	PCS	Tires	Other	Total Waste
LRI	Pierce	3,272	18	0	0	0	0	0	0	0	0	0	**3,290**
Asotin County MSW	Asotin	36,645	0	0	0	0	0	0	0	0	0	0	**36,645**
Cedar Hills l	King	920,917	0	0	0	0	0	0	93	90	0	4,250	**925,350**
Cheyne Road	Yakima	59,160	0	0	0	0	6,325	56,180	0	0	290	507	**122,462**
Cowlitz County B	Cowlitz	47,684	2,807	6,726	0	24,471	0	0	59	0	0	0	**81,747**
Delano	Grant	3,541	600	0	250	525	0	0	0	0	0	0	**4,916**
Ephrata	Grant	79,143	0	0	0	0	0	0	40	0	74	0	**79,257**
Fort Lewis #5	Pierce	31,449	0	0	2,593	0	1,567	0	19	0	0	0	**35,628**
Greater Wenatchee Reg	Douglas	157,308	0	0	0	0	0	440	108	6,356	9	499	**164,720**
Hawks Prairie	Thurston	144,768	0	0	0	0	0	0	35	0	0	0	**144,803**
Horn Rapids	Benton	27,664	9,134	3,756	7,656	23,674	2,601	880	0	3,623	16	162	**79,166**
New Waste Inc.	Franklin	1,828	301	0	767	8,979	159	0	974	884	0	1,106	**14,998**
Northside	Spokane	2,491	3,846	0	42	0	0	0	0	0	0	3	**6,382**
Okanogan Central	Okanogan	22,335	17	0	0	0	13	10	2	0	0	0	**22,377**
Olympic View	Kitsap	82,401	52,585	17,550	12,503	60,138	0	0	2,929	111,447	4,289	21,012	**364,854**
Port Angeles Sanitary	Clallam	29,773	5,147	0	0	10,286	0	1,541	52	7,963	0	0	**54,762**
Roosevelt Regional	Klickitat	1,493,013	362,550	200,171	0	0	45,631	3,869	4,427	181,884	7,354	0	**2,298,899**
Stevens County	Stevens	21,750	0	4,702	0	997	0	0	0	0	0	0	**27,449**
Sudbury Road	Walla Walla	54,360	0	0	0	0	0	0	92	0	50	46	**54,548**
Tacoma, City of	Pierce	32,626	0	0	0	0	0	0	44	0	0	0	**32,670**
Terrace Heights	Yakima	165,337	0	0	64	0	12,593	0	792	0	499	650	**179,935**
Facility Count:	**21**	**3,417,465**	**437,005**	**232,905**	**23,875**	**129,070**	**68,889**	**62,920**	**9,666**	**312,247**	**12,581**	**28,235**	**4,734,858**

Table B. 2 1999 Total Waste Disposed Energy Recovery/Incinerators

Facility Name	1-MSW-Inc	2-Demo-Inc	3-Ind-Inc	4-Inert-Inc	5-Comm'l	6-Wood-Inc	7-Sludge-Inc	8-Biomedical	9-Tires-Inc	10-Special-Inc	11-Other-Inc	Total
Inland Empire Paper	0.00	0.00	0.00	0.00	0.00	8,467.00	0.00	0.00	0.00	0.00	0.00	**8,467.00**
Spokane Regional Waste to Energy Facility	297,534.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**297,534.00**
Tacoma RDF Steam Plan #2	43,583.00	19,504.00	0.00	0.00	0.00	89,153.00	0.00	0.00	0.00	0.00	3,443.00	**155,683.00**
	341,117.00	**19,504.00**	**0.00**	**0.00**	**0.00**	**97,620.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3,443.00**	**461,684.00**

Table B.3 1999 Total Waste Disposed Inert/Demolition Waste Landfills												
Facility Name	**2-Demolition**	**3-Industrial**	**4-Inert Wst**	**5-Comm'l**	**6-Wood Wst**	**7-Sludge**	**8-Asbestos**	**9-PCS**	**10-Tires**	**11-Special**	**12-Other**	**Total Waste**
Acme Crestline Recycling	0.00	0.00	91,885.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**91,885.00**
Adams Street Inert Waste Disposal Site	0.00	0.00	1,486.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1,486.00**
Anderson Demolition Site	24,400.00	0.00	0.00	0.00	0.00	0.00	0.00	9,502.00	0.00	0.00	600.00	**34,502.00**
Asotin County I & D Landfill	2,080.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2,080.00**
Asphalt & Gravel Products Excavation Demo Landfill	6,879.00	0.00	219.00	0.00	336.00	0.00	0.00	0.00	0.00	0.00	0.00	**7,434.00**
Box Canyon Site	3,412.00	0.00	2,350.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**5,762.00**
Busy Bee Landfill	7,778.00	0.00	4,860.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**12,638.00**
Caton Inert & Demo Landfill	6,733.00	0.00	112.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**6,845.00**
Central Pre-Mix Site	0.00	0.00	75,932.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**75,932.00**
Centralia Mining CDL	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	412.00	0.00	0.00	**712.00**
Chester Landfill	27,353.00	0.00	2,841.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**30,194.00**
County Construction Recyclers, Inc.	22,047.00	0.00	7,701.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**29,748.00**
Coupeville Demolition LF	2,700.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**3,000.00**
CSR Associated	51,184.00	0.00	0.00	0.00	0.00	0.00	0.00	7,763.00	0.00	0.00	0.00	**58,947.00**
Fillion Inert/Demo Site	1,608.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1,608.00**

Table B.3 1999 Total Waste Disposed Inert/Demolition Waste Landfills												
Facility Name	**2-Demolition**	**3-Industrial**	**4-Inert Wst**	**5-Comm'l**	**6-Wood Wst**	**7-Sludge**	**8-Asbestos**	**9-PCS**	**10-Tires**	**11-Special**	**12-Other**	**Total Waste**
Foran Landfill	0.00	0.00	71,196.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**71,196.00**
Garfield County Inert/Demo Landfill	750.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	8.00	**760.00**
Indian Island Landfill	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**45.00**
Inland Asphalt Landfill	0.00	0.00	70,586.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**70,586.00**
Kaiser-Mead Inert & Demolition Site	65.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**65.00**
Kittitas County Inert & Demo Landfill	2,829.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2,829.00**
McChord Demolition Landfill (permit 27-025)	37.00	0.00	5,658.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**5,695.00**
Pipkin/Handley Landfill	2,860.00	0.00	1,595.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**4,455.00**
Poe Asphalt Paving Inc	10,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**10,000.00**
Prosser Inert/Demo Landfill	328.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**358.00**
Whitman College Site	0.00	0.00	7,020.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**7,020.00**
Yakima Training Center Inert/Demo	0.00	0.00	373.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**373.00**
	173,088.00	**0.00**	**344,444.00**	**0.00**	**336.00**	**0.00**	**0.00**	**17,265.00**	**414.00**	**0.00**	**608.00**	**536,155.00**

Table B.4 1999 Total Waste Disposed Limited Purpose/Special Use Facilities

Facility Name	2-Demolition	3-Industrial	4-Inert Wst	5-Comm'l	6-Wood Wst	7-Sludge	8-Asbestos	9-PCS	10-Tires	11-Special	12-Other	Total Waste
ALCOA Inert Waste/Demoliti on	0.00	0.00	3,190.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	**3,200.00**
Arco Products Company	0.00	80.00	0.00	0.00	0.00	1,059.00	0.00	516.00	0.00	0.00	0.00	**1,655.00**
Dayton Landfill	0.00	16,076.00	0.00	0.00	3,312.00	0.00	0.00	0.00	0.00	0.00	0.00	**19,388.00**
Dickson - So 50th & Tyler St	0.00	0.00	688.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**688.00**
Dickson -East 48th & Waller Road Fill	0.00	0.00	90,693.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**90,693.00**
Graham Road Recycling & Disp	61,587.00	16,754.00	29,528.00	0.00	1,926.00	0.00	1,514.00	6,560.00	54.00	0.00	0.00	**117,923.00**
Intalco Aluminum Corp	1,850.00	4,585.00	4,416.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	900.00	**11,756.00**
Kettle Falls Generating Station Wood Ash Landfill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28,298.00	**28,298.00**
Lady Island Landfill	0.00	0.00	7,837.00	0.00	3,497.00	0.00	0.00	0.00	0.00	0.00	7,065.00	**18,399.00**
Lawson Limited Purpose Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26,681.00	**26,681.00**
Port Townsend Paper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3,889.00	**3,889.00**
Weyerhaeuser Regional Landfill	17,977.00	224,526.00	0.00	0.00	118.00	44.00	0.00	1,761.00	0.00	0.00	0.00	**244,426.00**
Whitman Co. Transfer Station/Limited PurposeLandfi	2,726.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	**2,751.00**

Table B.5 1999 Total Waste Disposed for Woodwaste Landfills

e	Demolition	Industrial	Inert Wst	Comm'l	Wood Wst	Sludge	Asbestos	PCS	Tires	Special	Other	Total Waste
Northwest Hardwoods	0	0	0	0	0	0	0	0	0	0		
Simpson/Matlock Landfill	0	0	0	0	14,094	0	0	0	0	0	0	**14,094**
Stafford Creek Woodwaste Landfill	25,121	0	0	0	41,662	0	0	0	0	0	0	**66,783**
Washington Veneer	0	0	0	0	19,912	0	0	0	0	0	1,695	**21,607**
	25,121	**0**	**0**	**0**	**75,668**	**0**	**0**	**0**	**0**	**0**	**1,695**	**102,484**

Table B.6 Total Waste Composted 1999

Company	County	Yard Wst	Wood Wst	Biosolids	Vegetative	Manure	Post Consumer	Other	Total
Bailey Compost	Snohomish	13,000.00	0.00	0.00	0.00	4,000.00	0.00	0.00	***17,000.00***
Cedar Grove Composting	Snohomish	124,540.00	0.00	0.00	0.00	0.00	0.00	0.00	***124,540.00***
Cedar Grove Composting Co	King	127,457.00	17,845.00	0.00	15,288.00	0.00	0.00	0.00	***160,590.00***
Cheyne Road Landfill	Yakima	0.00	0.00	0.00	0.00	0.00	0.00	0.00	***0.00***
City of Port Townsend	Jefferson	2,815.39	0.00	270.68	0.00	0.00	0.00	0.00	***3,086.07***
Columbia Compost	Columbia	300.00	1.00	0.00	0.00	0.00	0.00	99.00	***400.00***
Cowlitz County Landfill-B	Cowlitz	1,872.00	0.00	0.00	0.00	0.00	0.00	0.00	***1,872.00***
Dykstra Composting Facility	Skagit	1,137.00	0.00	0.00	254.00	0.00	0.00	1,774.00	***3,165.00***
Hawks Prairie Landfill/MRW Fixed Facility aka	Thurston	6,815.39	0.00	0.00	0.00	0.00	0.00	0.00	***6,815.39***
Hi Q Compost Facility	Skagit	208.00	0.00	0.00	0.00	0.00	0.00	0.00	***208.00***
Johnson Agriprises	Adams	0.00	0.00	0.00	0.00	450.00	0.00	250.00	***700.00***
Lincoln Composting Facility	Yakima	0.00	0.00	0.00	0.00	33,000.00	0.00	500.00	***33,500.00***
Miller Creek Compost Facility	King	0.00	0.00	352.00	0.00	0.00	0.00	198.00	***550.00***
Pacific Topsoils	Snohomish	43,731.00	48,580.00	0.00	0.00	1,667.00	0.00	27,920.00	***121,898.00***
Pierce County Yardwaste Composting Facility	Pierce	10,008.00	0.00	0.00	0.00	0.00	0.00	0.00	***10,008.00***
Skagit Soils	Skagit	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00	***7,000.00***
Soil Life Systems, Inc	Walla Walla	0.00	0.00	0.00	0.00	7,674.00	0.00	19,200.00	***26,874.00***
Spokane Regional Compost Facility	Spokane	26,979.00	0.00	0.00	0.00	0.00	0.00	0.00	***26,979.00***
Washington State U/Pullman Compost Facility	Whitman	0.00	0.00	290.00	22.80	9,394.20	91.20	1,536.00	***11,334.20***
		365,862.70	***66,426.00***	***912.68***	***15,564.80***	***56,185.20***	***91.20***	***51,477.00***	***556,519.66***

APPENDIX C

MODERATE RISK WASTE

CESQG AND HHW WASTE TYPES COLLECTED IN 1998

Table C-1. Collected 1998 CESQG	
WASTE TYPE	LBS COLLECTED
Aerosols	0
CFC/ Freon filters	0
Pentachlorophenol	0
Personal Protect. Equip.	0
Oil with PCBs	6
Flammable Gas (Poison)	24
Flammable Solids	52
Reactives	58
Mercury	106
Lead	162
Chlorinated Solvents	310
Oil (Contaminated)	511
Oxidizers	551
Oil with Chlorides	680
Dry Cell Batteries	1,513
Oil Filters	2,569
CFC/ Freon	2,576
Flammable Liquids (Poison)	2,703
Flammable Gas	2,754
Pesticide Poison (Liquid)	3,215
Pesticide Poison (Solid)	3,417
Crushed Cans	6,000
Bases	6,492
Oil Filters (Crushed)	9,957
Acids	11,355
Other Dangerous Waste	14,040
Lead Acid Batteries	14,241
Latex Paint	17,476
Flammable Liquids	55,880
Antifreeze	69,078
Oil Based Paint	97,100
Oil (Non-Contaminated)	174,035
SUM	496,861

Table C-2. Collected 1998 Household Hazardous Waste	
WASTE TYPE	LBS COLLECTED
Lead	0
Mercury	0
Pentachlorophenol	0
Personal Protect. Equip.	806
Oil with PCBs	980
CFC/ Freon filters	1,652
Chlorinated Solvents	1,795
CFC/ Freon	1,930
Aerosols	3,127
Flammable Gas (Poison)	7,074
Reactives	9,247
Oil (Contaminated)	10,383
Oil with Chlorides	14,430
Oxidizers	15,153
Oil Filters (Crushed)	16,177
Other Dangerous Waste	20,484
Oil Filters	29,897
Flammable Solids	31,055
Flammable Gas	37,914
Flammable Liquids (Poison)	44,771
Bases	55,192
Dry Cell Batteries	62,036
Crushed Cans	75,125
Acids	75,652
Pesticide Poison (Solid)	118,458
Pesticide Poison (Liquid)	231,429
Antifreeze	326,323
Lead Acid Batteries	858,001
Flammable Liquids	1,224,104
Latex Paint	1,248,729
Oil Based Paint	1,343,045
Oil (Non-Contaminated)	2,747,577
SUM	8,612,545

Table C-3. Collected 1999 CESQG	
WASTE TYPE	LBS COLLECTED
Acids, aerosols	0
Bases, aerosols	0
CFC/ Freon	0
CFC/ Freon filters	0
Crushed Cans	0
Flammable Liquid Poison, aerosols	0
Oil with Chlorides	0
Oil with PCBs	0
Personal Protect. Equip.	0
Wood Preservatives	0
Flammable Gas (Poison)	4
Organic Peroxides	31
Flammable Gas (Poison), aerosols	84
Oil (Contaminated)	111
Oil Filters	1,497
Pesticide/Poison (Solid)	2,248
Oxidizers	2,320
Flammable Liquids (Poison)	2,818
Dry Cell Batteries	3,103
Flammable Gas	3,367
Flammable Solids	3,555
Chlorinated Solvents	3,634
Other Non Hazardous	5,250
Acids	5,635
Reactives	7,160
Bases	10,592
Lead Acid Batteries	14,184
Other Dangerous Waste	14,697
Flammable Liquids, aerosols	27,592
Latex Paint	28,226
Oil Filters (Crushed)	28,770
Flammable Liquids	33,684
Pesticide/Poison (Liquid)	36,868
Antifreeze	68,277
Oil Based Paint	126,828
Oil (Non-Contaminated)	206,868
SUM	637,403

Table C-4. Collected 1999 Household Hazardous Waste	
WASTE TYPE	LBS. COLLECTED
Acids, aerosols	0
CFC/ Freon filters	0
Oil with Chlorides	0
Personal Protect. Equip.	0
Wood Preservatives	0
Bases, aerosols	10
Flammable Liquid (Poison), aerosols	85
Organic Peroxides	223
Flammable Gas (Poison)	496
Reactives	1,219
Oil with PCBs	1,935
CFC/ Freon	2,094
Flammable Liquids Poison	2,325
Chlorinated Solvents	7,532
Oil Filters (Crushed)	9,538
Other Dangerous Waste	13,040
Flammable Gas (Poison), aerosols	13,298
Flammable Gas	23,651
Flammable Solids	24,526
Oxidizers	24,694
Flammable Liquids, aerosols	29,706
Oil Filters	30,171
Crushed Cans	55,160
Other Non Hazardous	60,766
Acids	62,980
Bases	66,134
Pesticide/Poison Solids	97,799
Pesticide/Poison Liquids	189,693
Dry Cell Batteries	196,088
Oil (Contaminated)	257,629
Antifreeze	333,884
Lead Acid Batteries	993,855
Flammable Liquids	1,349,080
Latex Paint	1,587,913
Oil Based Paint	1,694,536
Oil (Non-Contaminated)	2,400,658
SUM	9,530,718

Table C-5. Household Hazardous Waste disposition, waste types in pounds: 1998

HHW Waste type	Haz. Waste Disposal	Recycled/ Reused	Energy Recovery	Treated/ Landfilled	Treated/ Wastewater	Other	Totals	Not Stated
Acids	32,312	166		3,815	15,474	42	75,652	23,844
Aerosols	0						3,127	3,127
Antifreeze	11,124	291,784	15,200	15			326,323	8,200
Bases	12,499	225		6,443	19,882		55,192	16,143
CFC/ Freon	177	1,753					1,930	
CFC/ Freon filters	0	1,652					1,652	
Chlorinated Solvents	885					910	1,795	
Crushed Cans	0	75,125					75,125	
Dry Cell Batteries	54,476		1,600	3,893			62,036	2,067
Flammable Solids	1,824	1,664	300	261		406	31,055	26,600
Flammable Liquids	495,143	1,192	709,406			3,774	1,224,104	14,590
Flammable Gas	3,471		30,990	240		1,803	37,914	1,410
Flammable Liquids (Poison)	27,438			1,753		9,242	44,771	6,338
Flammable Gas (Poison)	3,635			500		1,379	7,074	1,560
Latex Paint	155,594	768,778		231,688		24,000	1,248,729	68,670
Lead	0						0	
Lead Acid Batteries	0	853,981		420			858,001	3,600
Mercury	0						0	
Oil Based Paint	357,523	78,573	840,137				1,343,045	66,812
Oil (Contaminated)	0	4,079	2,520				10,383	3,784
Oil Filters	0	21,057	8,800				29,897	40
Oil Filters (Crushed)	15,400	777					16,177	
Oil (Non-Contaminated)	1,316	860,342	1,676,950				2,747,577	208,970
Oil with Chlorides	14,400					30	14,430	
Oil with PCBs	880					100	980	
Other Dangerous Waste	7,346	3,684		70			20,484	9,384
Oxidizers	4,314			802		2,708	15,153	7,329
Pentachlorophenol	0						0	
Personal Protect. Equip.	806						806	
Pesticide Poison Liquid	131,386					24,898	231,429	75,145
Pesticide Poison Solid	40,522	576				3,498	118,458	73,862
Reactives	204		900	95		342	9,247	7,706
TOTALS	**1,372,674**	**2,965,406**	**3,286,803**	**249,995**	**35,356**	**73,131**	**8,612,545**	**629,181**

Table C-6. Household Hazardous Waste disposition, waste types in pounds: 1999

HHW Waste Type	Haz. Waste Disposal	Recycled/ Re-used	Energy Recovery	Treated/ Landfilled	Treated/ Wastewater	Other	Totals	Not Stated
Acids	20,946	866		8,439	26,874	1,579	62,980	4,277
Acids, aerosols	0						0	
Antifreeze	307	312,752	18,000	2,825			333,884	
Bases	23,236	1,441		6,718	22,481	2,211	66,134	10,047
Bases, aerosols	5			5			10	
CFC/ Freon	590	1,464					2,094	40
CFC/ Freon filters	0						0	
Chlorinated Solvents	5,871		900			761	7,532	
Crushed Cans	0	55,160					55,160	
Dry Cell Batteries	187,059	1,844		6,985			196,088	200
Flammable Solids	14,324	3,920	1,480	3,111		731	24,526	960
Flammable Liquids	305,697	6,420	1,032,113	4,100			1,349,080	750
Flammable Liquids, aerosols	1,570		27,936	200			29,706	
Flammable Liquids (Poison)	680			745		500	2,325	400
Flammable Liq. (Poison}, aerosols	0					85	85	
Flammable Gas	3,751	429	14,950	330			23,651	4,191
Flammable Gas (Poison)	0			436		60	496	
Flammable Gas (Poison), aerosols	5,849		294	945		6,210	13,298	
Latex Paint	299,128	1,077,988		203,487		3,640	1,587,913	3,670
Lead Acid Batteries	735	903,085					993,855	90,035
Oil Based Paint	498,625	158,169	1,034,392				1,694,536	3,350
Oil (Contaminated)	2,350	110,229	143,893				257,629	1,157
Oil Filters	30	16,790	11,751				30,171	1,600
Oil Filters (Crushed)	0	9,538					9,538	
Oil Non-Contaminated	2,548	1,032,983	1,187,768				2,400,658	177,360
Oil with Chlorides	0						0	
Oil with PCBs	15					1,920	1,935	
Other Dangerous Waste	2,152	278		20		929	13,040	9,661
Organic Peroxides	51			161		12	223	
Oxidizers	7,067	4,120		12,266		1,222	24,694	20
Personal Protect. Equip.	0						0	
Pesticide/Poison Liquid	118,587	786	22,842	23,400		7,555	189,693	16,523
Pesticide/Poison Solids	54,902			3,866		38,512	97,799	519
Reactives	334			760		125	1,219	
Wood Preservatives	0						0	
Other Non Hazardous	26,310	22,301		410		8,955	60,766	2,790
TOTALS	**1,582,717**	**3,720,563**	**3,496,320**	**279,207**	**49,355**	**75,007**	**9,530,718**	**327,549**

Table C-7. CESQG Disposition methods, waste types in pounds: 1998

CESQG Waste Type	Haz. Waste Disposal	Recycled/ Reused	Energy Recovery	Treated/ Landfilled	Treated/ Wastewater	Other	Totals	Not Stated
Acids	3,384			2,115		8	11,355	5,848
Aerosols	0						0	
Antifreeze	330	68,584					69,078	164
Bases	3,286			2,512			6,492	695
CFC/ Freon	1,680	891				5	2,576	
CFC/ Freon filters	0						0	
Chlorinated Solvents	169						310	141
Crushed Cans	0	6,000					6,000	
Dry Cell Batteries	1,183						1,513	330
Flammable Solids	20			1			52	31
Flammable Liquids	19,084	25,846	8,271			15	55,880	2,665
Flammable Gas	249			2,493			2,754	12
Flammable Liquids (Poison)	1,413					260	2,703	1,030
Flammable Gas (Poison)	4					20	24	
Latex Paint	1,566	9,238		3,769			17,476	2,903
Lead	162						162	
Lead Acid Batteries	0	13,296		945			14,241	
Mercury	106						106	
Oil Based Paint	25,482	52,277	13,413				97,100	5,928
Oil (Contaminated)	0						511	511
Oil Filters	0	2,449					2,569	120
Oil Filters (Crushed)	0	9,182		775			9,957	
Oil (Non-Contaminated)	888	159,957	10,767				174,035	2,423
Oil with Chlorides	680						680	
Oil with PCBs	6						6	
Other Dangerous Waste	3,760	65				17	14,040	10,198
Oxidizers	385	15				3	551	148
Pentachlorophenol	0						0	
Personal Protect. Equip.	0						0	
Pesticide Poison Liquid	1,266					1,202	3,215	748
Pesticide Poison Solid	1,100					711	3,417	1,606
Reactives	25						58	33
TOTALS	**66,229**	**347,799**	**32,451**	**12,610**	**0**	**2,240**	**496,861**	**35,532**

Table C-8. CESQG Disposition methods, waste types in pounds: 1999

CESQG Waste Type	Haz. Waste Disposal	Recycled/ Reused	Energy Recovery	Treated/ Landfilled	Treated/ Wastewater	Other	Totals	Not Stated
Acids	3,235	253		83		1,564	5,635	500
Acids, aerosols	0						0	
Antifreeze	0	68,277					68,277	
Bases	6,724	165		889		2,748	10,592	66
Bases, aerosols	0						0	
CFC/ Freon	0						0	
CFC/ Freon filters	0						0	
Chlorinated Solvents	679		2,279				3,634	676
Crushed Cans	0						0	
Dry Cell Batteries	2,444	659					3,103	
Flammable Solids	3,383		93	37		42	3,555	
Flammable Liquids	14,826		14,100	70			33,684	4,687
Flammable Liquids, aerosols	26,680		875			37	27,592	
Flammable Liquids Poison	2,767			18			2,818	33
Flammable Liq. (Poison), aerosols	0			0			0	
Flammable Gas	2			3,365			3,367	
Flammable Gas (Poison)	0	0		4			4	
Flammable Gas (Poison), aerosols	71					14	84	
Latex Paint	10,928	11,320		5,978			28,226	
Lead Acid Batteries	282	13,902					14,184	
Oil Based Paint	47,870	70,965	7,994				126,828	
Oil (Contaminated)	30		81	0			111	
Oil Filters	0	1,497					1,497	
Oil Filters (Crushed)	0	28,770					28,770	
Oil (Non-Contaminated)	0	197,824	8,804				206,868	240
Oil with Chlorides	0						0	
Oil with PCBs	0						0	
Other Dangerous Waste	11,006	3,348				7	14,697	335
Organic Peroxides	1					29	30	
Oxidizers	267			2,030		13	2,320	10
Personal Protect. Equip.	0						0	
Pesticide/ Poison Liquid	36,605					253	36,868	10
Pesticide/ Poison Solid	905			20		1,123	2,248	200
Reactives	20		7,140				7,160	
Wood Preservatives	0						0	
Other Non Hazardous	3,827	273		1,150			5,250	
TOTALS	**172,551**	**397,253**	**41,366**	**13,644**	**0**	**5,830**	**637,402**	**6,757**

Table C-9. Used Oil Collection Site Disposition methods, waste types in pounds: 1998

Waste types	Recycled/ Re-used	Energy Recovery	Haz. Waste Disposal	Not Stated	Total Pounds
Used Oil	2,253,729	3,983,483	60,769	2,862,572	9,160,553
Oil Filters	787,809	0	0	400	788,209
Antifreeze	163,440	600	304	4,800	169,144
Total Pounds	3,204,978	3,984,083	61,073	2,867,772	10,117,906

Table C-10. Used Oil Collection Site Disposition methods, waste types in pounds: 1999

Waste types	Recycled/ Re-used	Energy Recovery	Haz. Waste Disposal	Not Stated	Total Pounds
Used Oil	5,365,072	3,808,472	740	83,473	9,257,757
Oil Filters	37,306	0	0	54	37,360
Antifreeze	270,744	2,960	440	13,072	287,216
Total Pounds	5,673,122	3,811,432	1,180	96,599	9,582,333

Table C-11
Per capita used oil and HHW collection by county: 1997 and 1998[44]

County	HHW lbs. Per capita 1997	1998	Percent Change	Used Oil lbs. Per capita 1997	1998	Percent Change	1998 Population
Adams	2.22	0.31	-86.0%	1.99	0.14	-92.7%	15,324
Asotin	1.82	2.00	10.0%	9.25	3.50	-62.2%	23,594
Benton	3.06	1.79	-41.5%	0.94	2.54	169.6%	136,250
Chelan	0.65	3.43	423.4%	0.73	5.11	597.5%	60,052
Clallam	0.40	0.56	38.1%	2.12	2.47	16.5%	64,169
Clark	1.49	2.77	85.9%	2.03	1.99	-2.0%	326,943
Cowlitz	5.13	1.37	-73.3%	3.24	2.57	-20.7%	95,431
Douglas	1.02	0.80	-21.1%	0.75	1.70	127.9%	33,631
Ferry	1.16	0.75	-35.0%	1.54	1.51	-1.8%	7,170
Franklin	0.13	0.16	26.5%	1.73	2.23	29.4%	46,459
Grant	0.40	0.43	7.3%	0.15	0.06	-57.5%	70,545
Grays Harbor	0.90	0.89	-1.6%	1.86	0.00	-100.0%	67,739
Island	1.55	1.64	6.0%	2.17	0.00	-100.0%	70,319
Jefferson	4.66	3.61	-22.5%	3.72	3.51	-5.6%	26,232
King	1.57	1.52	-2.8%	1.73	1.83	5.6%	1,654,876
Kitsap	1.07	1.01	-5.3%	1.58	1.42	-10.1%	232,623
Kittitas	2.63	3.26	23.9%	1.19	2.26	90.7%	31,714
Klickitat	1.34	4.95	268.1%	2.47	3.82	55.1%	19,295
Lewis	0.06	3.23	5293.7 %	2.08	2.22	6.7%	68,163
Lincoln	0.00	1.03	N/A	0.00	0.00	0.0%	9,734
Mason	2.44	0.82	-66.3%	1.46	1.02	-29.9%	49,867
Okanogan	0.00	0.00	0.0%	0.67	1.00	48.5%	38,237
Pacific	0.71	0.36	-48.9%	1.76	1.61	-8.8%	20,802
Pend Oreille	0.95	1.72	82.0%	0.38	2.12	457.5%	11,526
Pierce	0.67	1.35	101.7%	0.57	0.91	58.4%	676,505
San Juan	0.28	1.99	619.7%	4.71	3.67	-22.0%	12,493
Skagit	3.58	0.67	-81.3%	0.86	0.96	11.7%	99,357
Skamania	0.18	0.00	-100.0%	3.17	0.00	-100.0%	9,805
Snohomish	2.29	0.02	-99.0%	0.79	1.34	70.6%	587,783
Spokane	2.29	2.46	7.3%	1.04	1.53	46.8%	408,669
Stevens	1.18	5.07	328.2%	1.25	3.88	210.6%	39,464
Thurston	1.86	0.87	-53.3%	1.32	1.64	23.5%	202,255
Walla Walla	2.11	2.11	-0.1%	0.88	1.10	24.3%	57,858
Whatcom	0.99	1.04	4.6%	2.44	2.56	4.8%	156,830
Whitman	1.22	0.84	-31.3%	0.80	0.00	-100.0%	39,487
Yakima	0.98	3.34	241.9%	1.76	3.02	71.6%	218,062
Statewide	1.40	1.40	8.1%	1.40	1.69	20.7%	5,689,263

[44] HHW includes oil filters or antifreeze collected from used oil collection sites for 1998 and 1999. Used oil reflects oil collected from used oil sites only.

Table C-12
Per capita used oil and HHW collection by county: 1998 and 1999

County	HHW lbs. Per capita			Used oil lbs. Per capita			1999 Population
	1998	1999	Percent Change	1998	1999	Percent Change	
Adams	0.31	0.00	-100.0%	0.14	0.00	-100.0%	15,235
Asotin	2.00	1.01	-49.5%	3.50	4.15	18.8%	23,545
Benton	1.79	2.06	15.1%	2.54	1.32	-48.0%	137,844
Chelan	3.43	0.97	-71.8%	5.11	0.34	-93.3%	60,835
Clallam	0.56	1.03	84.1%	2.47	2.90	17.4%	64,690
Clark	2.77	2.62	-5.5%	1.99	2.46	23.6%	336,268
Cowlitz	1.37	1.33	-3.2%	2.57	3.06	18.7%	95,790
Douglas	0.80	0.67	-16.7%	1.70	1.60	1.4%	34,191
Ferry	0.75	1.73	128.8%	1.51	1.85	22.8%	7,188
Franklin	0.16	0.50	203.4%	2.23	2.47	10.7%	46,782
Grant	0.43	0.56	30.6%	0.06	0.06	0.0%	72,019
Grays Harbor	0.89	1.06	19.1%	0.00	0.00	0.0%	67,102
Island	1.64	2.47	50.3%	0.00	2.26	N/A	73,490
Jefferson	3.61	2.78	-23.0%	3.51	3.00	-14.6%	26,748
King	1.52	1.77	15.9%	1.83	1.78	-2.5%	1,664,846
Kitsap	1.01	1.17	16.3%	1.42	1.35	-5.1%	236,560
Kittitas	3.26	3.97	21.7%	2.26	1.64	-27.4%	32,021
Klickitat	4.95	3.02	-38.9%	3.82	3.70	-2.7%	19,530
Lewis	3.23	3.62	12.0%	2.22	2.56	15.2%	68,621
Lincoln	1.03	0.27	-73.4%	0.00	0.66	N/A	9,759
Mason	0.82	0.68	-16.9%	1.02	0.97	-5.5%	50,357
Okanogan	0.00	0.00	0.0%	1.00	0.79	-20.6%	38,432
Pacific	0.36	0.00	-100.0%	1.61	2.23	38.5%	20,768
Pend Oreille	1.72	0.16	-90.8%	2.12	1.32	-37.5%	11,604
Pierce	1.35	0.38	-71.7%	0.91	0.94	4.2%	688,807
San Juan	1.99	2.28	14.5%	3.67	6.05	64.8%	12,898
Skagit	0.67	1.80	168.3%	0.96	0.17	-81.9%	101,180
Skamania	0.00	4.14	N/A	0.00	4.25	N/A	9,831
Snohomish	0.02	1.18	5240.9 %	1.34	1.51	12.3%	596,598
Spokane	2.46	2.79	13.5%	1.53	1.44	-5.5%	409,736
Stevens	5.07	1.25	-75.4%	3.88	4.03	3.9%	40,137
Thurston	0.87	1.40	60.3%	1.64	2.62	60.3%	205,459
Walla Walla	2.11	2.33	10.6%	1.10	0.00	-100.0%	58,009
Whatcom	1.04	1.39	34.2%	2.56	0.00	-100.0%	160,310
Whitman	0.84	0.92	9.5%	0.00	0.00	0.0%	38,386
Yakima	3.34	4.00	19.7%	3.02	2.26	-25.0%	220,785
Statewide	1.40	1.66	9.4%	1.69	1.61	-4.8%	5,756,361