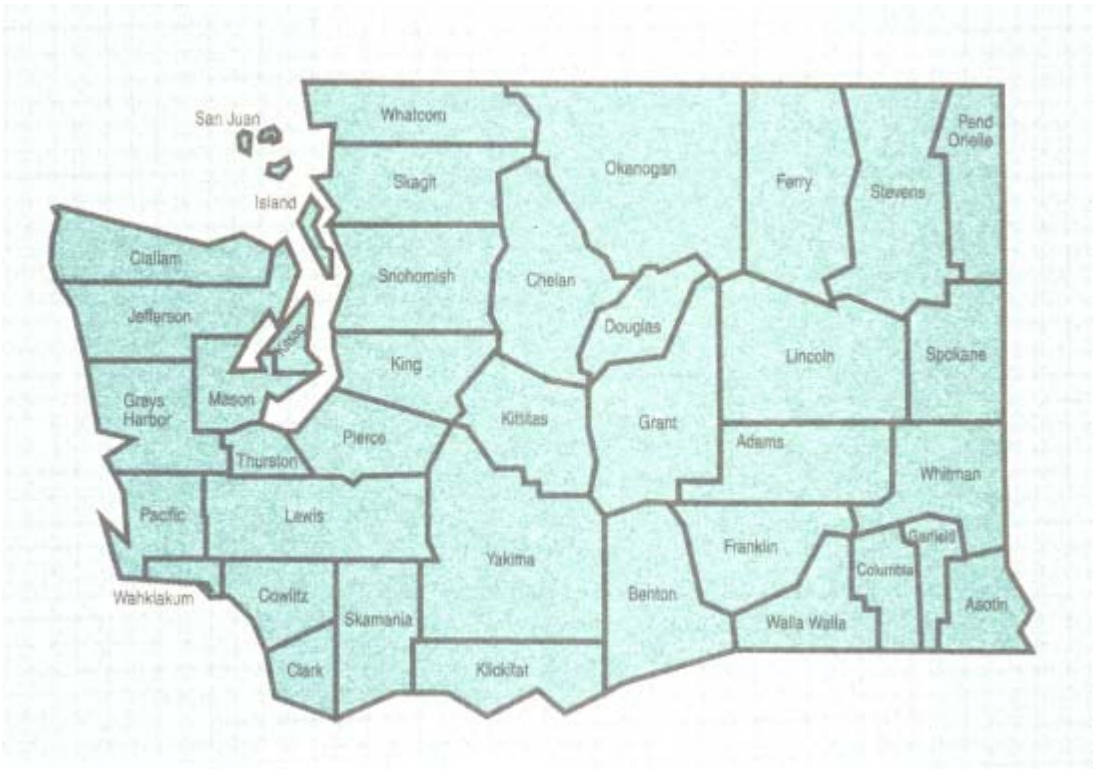

Solid Waste in Washington State

Third Annual Status Report

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Solid Waste Services Program
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For additional copies of this report, contact:

Department of Ecology
Ellen Caywood
PO Box 47600
Olympia, WA 98504-7600
Telephone: (360) 407-6132

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ACRONYMS

CDL	Construction, demolition and landclearing debris
CESQG	Conditionally Exempt Small Quantity Generator
CFC	Chlorofluorocarbon
CFT	Code of Federal Register
CPG	Coordinated Prevention Grants
EPA	Environmental Protection Agency
ESHB	Engrossed Substitute House Bill
EYC	Ecology Youth Corps
GA	Department of General Administration
GOLD	Government Options to Landfill Disposal
HDPE	High-density polyethylene
HHW	Household Hazardous Waste
LDPE	Low-density polyethylene
MFS	Minimum Functional Standards
MRW	Moderate risk waste
MSW	Municipal solid waste
NPDES	National Pollutant Discharge Elimination System
PCS	Petroleum Contaminated Soils
RCRA	Resource Recovery and Conservation Act
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SWS	Department of Ecology Solid Waste Services Program
TRI	Toxic Release Inventory
WAC	Washington Administrative Code
WR/R	Waste Reduction/Recycling

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Veronica Tracy
Holly Wescott

Central Regional Office - SWS

Melissa Gildersleave
John Storman

Eastern Regional Office - SWS

Viki Leuba
Doug Peters

Northwest Regional Office - SWS

John Keeling
Carol O'Dahl
Cullen Stephenson

Southwest Regional Office - SWS

Mary Harrington
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Mikel McCormick-Baxter

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EXECUTIVE SUMMARY

In January 1993, the Washington State Department of Ecology issued the *Solid Waste in Washington State – First Annual Status Report.*[1] This report identified and classified the solid waste handling facilities in the state, provided basic information concerning those facilities, and discussed the roles and responsibilities of various state and local governments for solid waste management.

The *Solid Waste in Washington State – Second Annual Status Report*[2] updated the status of solid waste facilities, looked at trends in recycling, disposed amounts and waste types. Also included were discussions of the movement of waste within, and to and from the state, methods of disposal, waste reduction strategies being implemented by Ecology, and the status of local governments as they implement solid waste management for Ecology, counties and local jurisdictional health departments were also included.

This *Solid Waste in Washington State – Third Annual Status Report* again updates the status of solid waste facilities, looks at recycling and disposal trends and discusses waste movement within the state, and waste movement in and out of the state. Additional information about the statutory roles for moderate risk waste, the results of local programs and facility status is included in this report.

SUMMARY OF FINDINGS

This annual report was compiled from report forms provided by the facilities, and from Ecology's headquarters and regional staff in coordination with local jurisdictional health departments. The key findings of this third annual report follow.

❖ Solid Waste Handling Infrastructure

In 1994, there were 332 solid waste facilities statewide, including landfills (92), intermediate transfer and storage facilities (207), and incinerators (6). There are an additional 27 facilities classified as ancillary.

In 1993, 43 municipal solid waste (MSW) landfills accepted waste. Of those, 35 were publicly owned, 8 were privately owned. These landfills were in 32 of the 39 Washington counties, compared with 35 counties in 1991. After April 1994, only 24 landfills, in 19 counties, remained operating. This includes two new land fills opened in 1993. As MSW landfills continue to close, more counties will be relying on long-haul transport to facilities beyond their borders for disposal.

[1] *Solid Waste in Washington State – First Annual Status Report*, Washington State Department of Ecology, Publication #92-103, January 1993.
[2] *Solid Waste in Washington State – Second Annual Status Report*, Washington State Department of Ecology, Publication #92-103, January 1994.

Of the remaining non-MSW facilities in the landfill classification, there is one ash monofill, 22 inert/demolition landfills, 15 limited purpose landfills and 11 woodwaste landfills.

❖ Waste Reduction

Ecology began implementing waste reduction strategies for three targeted waste streams: paper from the commercial sector, organics, and construction, demolition and landclearing debris.

Ecology is working with the Washington State Recycling Association and local governments to identify the opportunities and barriers to maximizing diversion of mixed used paper from landfills.

In March 1994, the "Composting Organic Wastes Seminar" was held at Monroe, Washington. The seminar focused on institutional composting and was attended by over 100 people. Composting alternatives for institutional composting were presented. A wide array of feedstocks and techniques from the very high and intensive techniques to the low end, low input techniques were addressed.

Ecology sponsored the first "Building with Value '93 Conference and Trade Show" for building professionals, works with the Western Washington CDL Regional Coordinators Groups to work cooperatively to avoid duplication and support each others efforts, and is developing an education and outreach program targeted at contractors and builders.

❖ Recycling

In 1993, 2,472,011 tons of the recyclable portion of the solid waste stream were recycled. This represents a 38% recycling rate for the recyclable waste stream generated in 1993, as compared with 35.3% in 1992. Although, this is still below the target goal of 50% recycling by 1995, several commodities had higher individual rates:

Ferrous Metals – 79.6%
Nonferrous metals – 67.1%
High grade paper – 57.1%
Newspaper – 55.9%
Corrugated Paper – 52.2%
Yard Waste – 50.1%

❖ Disposal of Solid Waste

- **Municipal Solid Waste Landfills**

  In 1993, after 2,472,011 tons of solid waste were recycled, a total of 3,726,055 tons were disposed of in MSW landfills. This compares to a total of 3,560,738 tons in 1992.

  In 1993, public landfills accepted 49% of the waste (compared to 58% in 1992 and 69% in 1991); 51% was disposed in private landfills (compared to 42% in 1992 and 31% in 1991). This shows the increasing trend for the use of private landfills.

- **Energy Recovery/Incineration**

  In 1993, 90% of the waste disposed in Washington was disposed in landfills and 10% was incinerated. A total of 431,928 tons of municipal solid waste was incinerated. This is a slight decrease from the 424,387 tons incinerated in 1992. One new incinerator began operation in early 1994, with another incinerator ceasing to operate in May 1994. With no new incinerators planned, the amount of waste incinerated should not increase significantly.

- **Municipal Solid Waste Importation/Exportation**

  In 1993, two of Washington's MSW landfills received 69,062 tons of waste from outside the state. This represents about 2% of the waste disposed in MSW landfills. In 1992, five MSW landfills received 101,492 tons of waste from out-of-state, or about 3% of the total amount.

  In 1993, Washington exported 756,067 tons of waste to landfills in Oregon. This was an increase from 705,608 tons in 1992.

- **Remaining Capacity for Municipal Solid Waste Landfills**

  Of the 43 MSW landfills that received waste in 1993, 19 closed and 24 remained operating after April 1994. Two of the 24 landfills opened in late 1993.

  Self-reporting by the 24 MSW landfills that will be operating after April 1994, indicated about 181 million tons of permitted capacity remained, or approximately 49 years at the current disposal rate. Of the remaining capacity, 75% is at one facility, the Roosevelt Regional Landfill in Klickitat County. The remaining capacity is at the other 23 landfills, most of which are operated to serve the citizens of the local area. The majority of the state's remaining capacity, located in one facility, is in eastern Washington.

- **Other Solid Waste Landfills**

  In 1993, 11 woodwaste landfills reported receiving 122,097 tons of waste, compared with 181,494 tons in 1992.

  In 1993, 22 inert/demolition landfills reported receiving 834,238 tons of waste, compared with 905,088 tons in 1992.

  In 1993, 15 limited purpose landfills reported receiving 407,747 tons of waste, compared with 383,115 tons in 1992.

- **Moderate Risk Waste**

  In 1994, 4.3 million pounds of household hazardous waste were collected in Washington by either the 35 fixed moderate risk waste collection facilities or through the 129 collection events held by the counties. In 1993, 1.1 million gallons of used oil was collected from households at over 400 used oil collection depots. Incidents of contaminated oil at the site requiring special handling totaled only 0.2% of the used oil collected.

CHAPTER I

SOLID WASTE MANAGEMENT IN WASHINGTON

The *First Annual Status Report* discussed some of the key roles, responsibilities and activities of local government and state government for solid waste management in Washington. These included roles for state and local solid waste planning, waste collection, facility permitting, enforcement, and data collection.

The *Second Annual Status Report* detailed the roles of both state and local government as identified in chapter 70.95 RCW, *the Solid Waste Management Act - Reduction and Recycling*. The responsibilities for the state, through the Department of Ecology, include: (1) local solid waste management plan approval; (2) rule making; (3) state solid waste plan development; (4) technical assistance; (5) financial assistance; (6) solid waste permit review; and (7) information management.

The counties are responsible for fulfilling the system objectives of the approved local comprehensive solid waste management plans. Specific statutory responsibilities of county governments under chapter 70.95 RCW, include: (1) plan development; (2) plan preparation; (3) required levels of service; and, (4) matching financial aid responsibilities.

Specific statutory responsibilities of jurisdictional health departments under chapter 70.95 RCW, include: (1) development of local ordinances for enforcement implementation consistent with the approved comprehensive solid waste management plan; (2) creation of cooperative agreements with Ecology; (3) review and issuance of solid waste facility permits; and, (4) matching financial aid responsibilities for enforcement grants.

The *Third Annual Status Report*, reviewed the statutory requirements for moderate risk waste management in Washington to complete the solid waste management discussion.

Management of Moderate Risk Waste

The roles and responsibilities between state and local government related to moderate risk waste are similar to those of solid waste in Washington state. However, moderate risk waste derives its authority from a collection of statues. The following tables (Table 1.1 and Table 1.2) delineate the responsibilities of Ecology and local governments in the management of moderate risk waste. References are taken from chapter 70l.95 RCW, *the Solid Waste Management Act*, chapter 70.95I RCW, *the Used Oil Recycling Act* and the primary enabling legislation for moderate risk waste, chapter 70.105 RCW, *the Hazardous Waste Management Act*.

Table 1.1
The Department of Ecology's Responsibilities for Moderate Risk Waste

Tasks/Authorities	RCW Reference
Local Plan Approvals	RCW 70.105.220 Local governments to prepare local hazardous waste plans - Basis - Elements required.
	RCW 70.95I.030 Used oil recycling element guidelines - Waiver - Statewide goals.
Rule Making Authority	RCW 70.95.060 Standards for Solid Waste Handling
	RCW 70.95.165 Solid Waste Disposal Facility Siting--Site Review--Local Solid Waste Advisory Committees
	RCW 70.95I.060 Disposal of used oil - Penalty
	RCW 70.95I.070 Used oil transporter and processor requirement - Civil penalties.
	RCW 70.105.130 Department's powers as designated agency under federal act.
State Plan	RCW 70.95.260 Duties of department--State Solid Waste Management Plan
	RCW 70.105.210 Hazardous waste management facilities - Department to develop criteria for siting
Technical Assistance	RCW 70.95.050 Solid Waste Advisory Committee
	RCW 70.95.600 Educational Material promoting household waste reduction and recycling.
	RCW 70.105.050 Disposal at other than approved site prohibited - Disposal of radioactive wastes.
	RCW 70.105.255 Department to provide technical assistance with local plans.
Financial Assistance	RCW 70.95.267 Department authorized to disburse referendum 26 (chapter 43.83A RCW) fund for local government solid waste projects.
	RCW 70.105.235 Grants to local governments for plan preparation, implementation, and designation of zones - matching fund - Qualificatins.
	RCW 70.105D.070 Toxics control accounts.
	RCW 70.95E.080 Hazardous waste assistance account.
Permit Review	RCW 70.95.163 Local health disposal facility siting - Site review - Local solid waste advisory committees - Membership.
	RCW 70.95.185 Permit for solid waste disposal site or facilities - Review by department - Appeal of issuance - Validity of permits issued after June 7, 1984.
	RCW 70.95.190 Permit for solid waste disposal site or facilities - Renewal - Appeal - Validity of renewal.
Information Management	RCW 70.95.280 Determination of best solid waste management practices - Department to develop method to monitor waste stream - Collectors to report quantity and quality of waste - Confidentiality of propriety information.
	RCW 70.95I.020 Used oil recycling element.
	RCW 70.105.240 State preemption - Department sole authority - Local requirements superseded - State authority over designated zone facilities.

Table 1.2
Local Government Responsibilities for Moderate Risk Waste

Tasks/Authorities	RCW Reference
Planning & Implementation	RCW 70.95I.020 Used oil recycling element.
	RCW 70.105.220 Local governments to prepare local hazardous waste plans - Basis - Elements required.
	RCW 70.105.221 Local governments to prepare local hazardous waste plans - used oil recycling element.
	RCW 70.105.225 Local governments to designate zones - Departmental guidelines - Approval of local government zone designations or amendment - Exemption.
	RCW 70.105.240 State preemption - Department sole authority - Local requirements superseded - State authority over designated zone facilities.
Financial Aid	RCW 70.105.235 Grant to local governments for plan preparation, implementation, and designation of zones - matching fund - Qualifications.

There are four main areas where moderate risk waste legislation is more explicit than that of solid waste:

- Plans must be consistent with Ecology's guidelines in order to gain Ecology approval (and be eligible for grants),
- Plans must be implemented by December 31, 1991 (no sunset date);
- Ecology may waive any planning or implementation requirement in the law, provided the intent of the requirement is met; and
- Ecology is granted specific enforcement authorities, although, due to the cooperative spirit of local governments, these authorities have never been exercised.

The Planning Process

The management of moderate risk waste is based on a planning and implementation process, similar to that of solid waste. A typical moderate risk waste plan includes:

- An estimation of the amount of moderate risk waste generated in the planning area, and where it is currently being disposed;
- A background description of the planning area;
- A set of goals for the area to achieve in moderate risk waste;
- Programs to divert the moderate risk waste to appropriate disposal. Programs general fall into five areas:

- Household and Public Education,
- Household Hazardous Waste Collection,
- Business Outreach and Technical Assistance,
- Business Collection/Disposal Assistance, and
- Compliance.

Plans also include a mechanism for adequate funding, and ideas of what Ecology can do to help the area achieve its goals in moderate risk waste. Plans are adopted by all participating jurisdiction prior to approval by Ecology.

The last of the 32 plans (which represent all Washington's jurisdictions) were approved in January 1992. Currently, preparations are underway to prepare a new generation of moderate risk waste plans. In anticipation of the new plans, Ecology prepared the *Guidelines for Development of Local Hazardous Waste Plans*[3].

[3] *Guidelines for the Development of Local Hazardous Waste Plans*, Department of Ecology, August 1994, Publication 93-99.

CHAPTER II

SOLID WASTE HANDLING INFRASTRUCTURE

This chapter describes the basic facilities, equipment and installations making up the solid waste infrastructure for the management of solid and moderate risk wastes within Washington state.

Once solid waste is generated, its handling can be categorized into three distinct classifications that describe what can happen to it. 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.

Moderate risk waste is, by definition, excluded from regulation as dangerous waste, even though it has the characteristic of dangerous waste. Moderate risk waste fixed facilities are regulated as solid waste transfer stations, since the wastes they collect are typically shipped off-site for disposal.

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)* identified 18 distinct solid waste facility types, each with its own set of permitting criteria. (Two of the 18 types identified in the MFS, sludge and septage utilization facilities, are in the process of being re-defined by federal criteria[4] and are being tracked separately from this annual status report.)

Table 2.1
State Solid Waste Infrastructure

CLASSIFICATION	STATEWIDE TOTAL	
	1993	1994
Landfill	97	92
Intermediate	151	207*
Incineration	6	6
Ancillary - Others	25	27
Total Solid Waste Infrastructure	279	332

*Includes 35 fixed moderate risk waste facilities

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 332 solid waste handling facilities in Table 2.1. These facilities constitute the solid waste infrastructure for Washington.

[4] Federal Criteria, once adopted in rule, will no longer consider sludge or septage as solid waste materials; they will be considered bio-solids. Ecology's Solid Waste Services Program is responsible for state rule development.

For a greater understanding of Washington's solid waste infrastructure, a closer examination of each solid waste infrastructure classification and applicable "type" sub-category is necessary.

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 2.2.)

Table 2.2
Landfill Classification

FACILITY TYPE	TOTAL # STATEWIDE		TOTAL BY OWNERSHIP DESIGNATION			
	Active	Active	Public		Private	
	1992	1993	1992	1993	1992	1993
Ash Monofill	2	1	1	0	1	1
Inert/Demolition	22	22	6	6	16	16
Limited Purpose	12	15	1	1	11	14
Municipal Solid Waste	42	43	36	35	6	8
Woodwaste	19	11	0	1	19	10
TOTAL	97	92	44	43	53	49

Facility ownership 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.

A short discussion of each landfill classification "facility type" and its relationship to the state's overall infrastructure follows.

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.

The only permitted ash monofill in Washington is located at the Roosevelt Regional Landfill in Klickitat County. The monofill operates under a permit issued by Ecology, and received 95,474 tons of special incinerator ash in 1993.

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.

By definition "inert wastes" are "noncombustible, nondangerous solid wastes that are likely to retain their physical and chemical structure under expected conditions of disposal, including resistance to biological attack and chemical attack for acidic rainwater."[6] "Demolition wastes" are defined as "solid waste, largely inert waste, resulting from the demolition or razing of buildings, roads and other man-made structures. Demolition waste consists of, but is not limited to, concrete, brick, bituminious concrete, wood and masonry, composition roofing and roofing paper, steel, and minor amounts of other metals like copper. Plaster (i.e., sheet rock or plaster board) or any other materials, other than wood, that is likely to produce gases or a leachate during the decompositon process and asbestos wastes are not considered to be demolition waste for the purposes of this regulation."[7]

Table 2.3
Inert/Demolition Landfills

OWNERSHIP	TOTAL	
	1992	1993
Public	6	6
Private	16	16
TOTAL	22	22

Ecology identified 22 inert/demolition landfills that took 834,238 tons of waste in 1993. Table 2.3 illustrates the profile of inert/demolition facilities statewide over the past two years. Most, 73%, of the inert/demolition landfills are privately owned and operated. Public inert/ demolition landfills make up 27% of this facility type.

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."[8] 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 fill.

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

[6] WAC 173-304-100(4)

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

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

Ecology identified 15 limited purpose landfills statewide that accepted 407,747 tons of waste in 1993. Table 2.4 illustrates the profile of limited purpose facilities statewide. All but one of the regulated limited purpose landfills are private. The waste disposed in these facilities is usually generated by the owner of the landfill.

Table 2.4
Limited Purpose Landfill

OWNERSHIP	TOTAL	
	1992	1993
Public	1	1
Private	11	14
TOTAL	12	15

Municipal Solid Waste Landfills

Municipal solid waste landfills in Washington, for most of 1993, were regulated under chapter 173-304 WAC, the Minimum Functional Standards (MFS). On October 9, 1993, federal MSW landfill criteria in Subtitle D of the Resource Conservation Recovery Act (RCRA), 40 CFR Part 258, took effect nationally. The federal standards required all states to meet new, more stringent, minimum requirements for siting design, performance, ground water monitoring, financial assurance, closure/post-closure and remediation. A new MSW landfill requirement, chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills* (351 Rule) incorporating federal criteria became effective November 1993. Washington State received partial approval to implement the federal program through the new landfill regulation in January 1994.

Table 2.5
Municipal Solid Waste Landfills

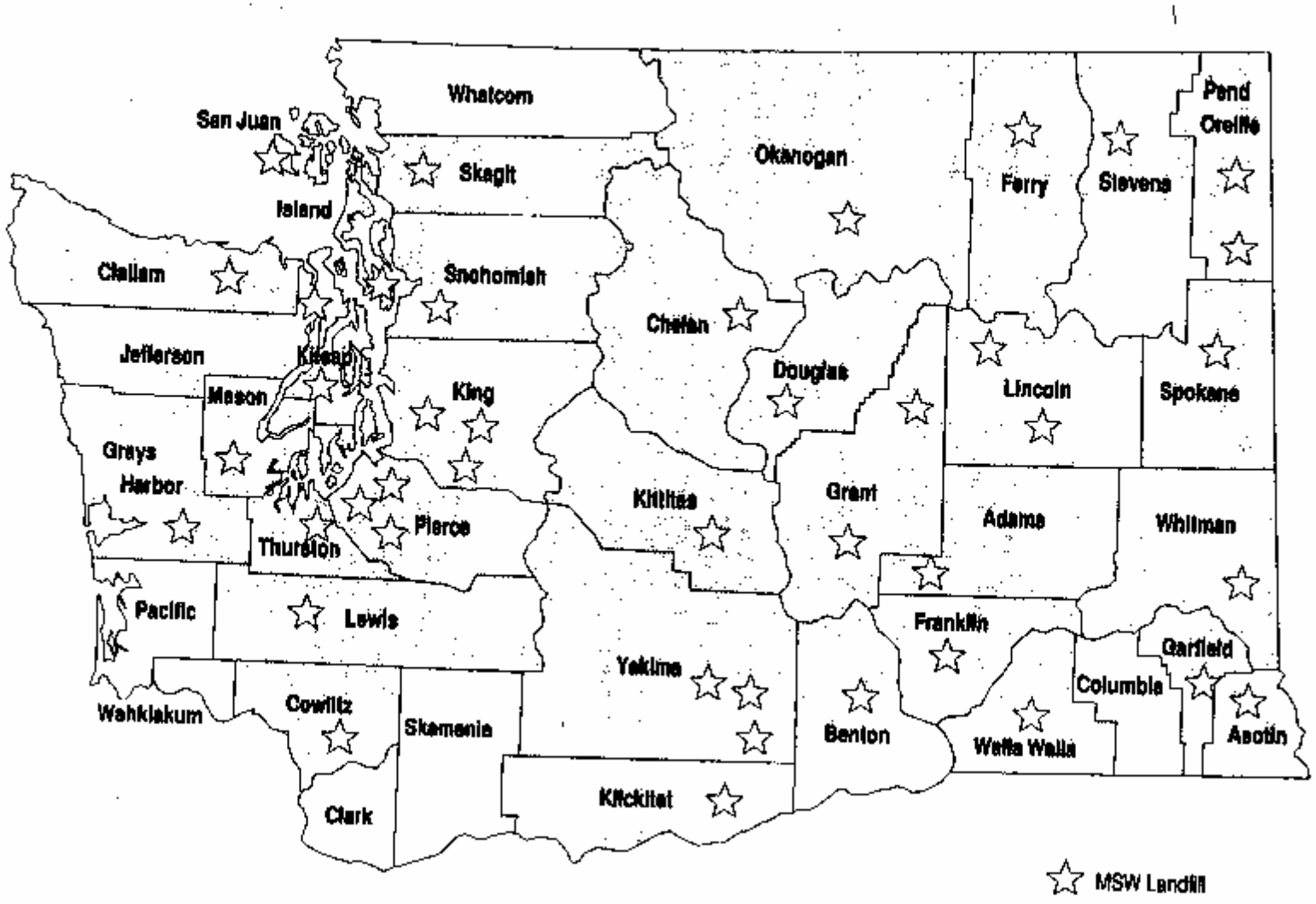
OWNERSHIP	TOTAL	
	1992	1993
Public	36	35
Private	6	8
TOTAL	42	43

Forty-three (43) MSW landfills accepted 3,726,055 tons of waste in 1992.[9] (See Chapter VI for additional discussion.) Table 2.5 identifies the statewide infra-structure profile for 1992 and 1993. Map A includes the location of the MSW landfills statewide.

The majority, 81%, of MSW landfills are operated by public entities which has historically been true in Washington. Private MSW landfills constitute only 19% of this facility type. Even though most of the landfills are owned by public entities, the majority of landfill capacity is under the control of the private sector. (Also see the discussion on landfill capacity in Chapter VI.)

[9] The Ft. Lewis Landfill was added to the annual report for 1993. Two landfills that had received waste in 1992 did not receive waste in 1993. Two new landfills opened in late

MAP A: Counties With MSW Landfills Open in 1993



MSW Compliance

Chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills* (351 Rule) incorporating the new federal Subtitle D rules is the first major revision of landfill regulations in eight years. The new rule strengthens engineering, siting, operational, closure/post-closure and ground water monitoring standards for existing and new municipal solid waste landfills. It set a deadline of October 9, 1994 for existing landfills to close or be subject to the new rules. The new standards also address the need for corrective action financial assurance for landfills that may fall under cleanup requirements of federal and state Superfund laws.

Facilities that stopped accepting waste prior to October 9, 1993, closed under the MFS, chapter 173-304 WAC. Those facilities that received waste after October 9, 1993, were required to close under chapter 173-351 WAC. (The EPA did allow an extension of the October 9, 1993 compliance date to April 9, 1994 for MSW facilities that receive less than 100 tons of waste per day. At least 10 landfills opted to close between October 1993 and April 1994 in Washington.)

Of the 43 active MSW landfills in 1993, 19 closed rather than operate under the new requirements. After April 1994, 24 MSW landfills continued to receive waste.

Because 1994 is a year of transitioning from the old *Minimum Functional Standards* to the new *Criteria for Municipal Solid Waste Landfills*, facilities are undergoing transitional permit reviews and upgrades to eventually come into compliance with the new standards. Rather than assess the MSW landfills compliance status for this year, Ecology will wait next years' report to determine the compliance status with the new standards.

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."[10] These facilities are regulated under WAC 173-304-462.

Table 2.6
Woodwaste Landfills

OWNERSHIP	TOTAL	
	1992	1993
Public	0	1
Private	19	10
TOTAL	19	11

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."[11]

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

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

Ecology identified 11 woodwaste landfills that accepted 122,097 tons of waste in 1993. One new public woodwaste landfill opened in 1993, while 9 others closed.

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. Moderate risk waste fixed facilities are also regulated as interim solid waste handling stations. The storage, transfer or processing of solid wastes are regulated by the MFS and fall under the interim[12] or intermediate classification of solid waste handling facilities.

Specifically, a storage facility primarily holds "solid waste materials for a temporary period"[13] while a processing center is in the operation of converting "solid waste into a useful product or to prepare it for disposal."[14] 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."[15]

The distinguishing characteristic of all interim or intermediate classification solid waste handling facilities is that the facility is not designed for the final disposal of the materials. There are eight types of intermediate facilities: (1) baling stations; (2) compacting stations; (3) drop box facilities; (4) pile facilities; (5) recycling centers; (6) surface impoundments; (7) transfer stations; and, (8) tire pile facilities. Moderate risk waste fixed facilities were added this year to the intermediate classification.

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 discreet 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.

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

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

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

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

Ecology identified seven compacting stations statewide in 1993. All compacting facilities are under public ownership and are affiliated with recycling operations. Compacting stations are located in the more urban, northwestern counties of the state. Larger urban centers are more inclined to use this technology to process large amounts of recyclables for shipment.

Drop Box Facilities

A drop box facility 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."[16] They are regulated under WAC 173-304-410.

Table 2.7
Drop Box Facilities

OWNERSHIP	TOTAL	
	1992	1993
Public	40	64
Private	4	5
TOTAL	44	69

Drop box facilities 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 69 operating drop box facilities in 1993, an increase of 25 since the last reporting period. Table 2.7 depicts the profile of regulated drop box facilities statewide. The majority of the drop box facilities, over 90%, are public and are primarily operated by county public works departments.

Pile Facilities

A solid waste pile is described in the MFS as any "noncontainerized accumulation of solid waste that is used for treatment or storage."[17] 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.

Only four of these pile sites were identified in 1993. Three of the four identified regulated pile sites were publicly owned and operated by county public works departments.

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

[17] 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 remanufacturing 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."[18] 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.

Because of the distinction between regulated recycling facilities and non-regulated activities that promote recycling, only 12 regulated recycling facilities were identified in 1993. The majority (80%) of the regulated recycling facilities were private facilities and public recycling facilities constituted 20% of this facility type.

Surface Impoundment Facilities

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."[19]

Some surface impoundments are regulated under WAC 173-304-430.[20] Ecology identified seven such regulated facilities in 1993. All seven of these surface impoundment facilities were septage lagoons. The category remains in the intermediate classification pending interpretation or clarification in the forthcoming biosolids rule.

[18] RCW 70.95.030(14)
[19] WAC 173-304-100(80)

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

The majority of the regulated surface impoundment facilities were publicly-owned, and one is privately-owned.

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."[21] 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. The advantages of transfer stations include fewer vehicles going to the disposal facility, improved efficiencies by reducing the number of truck loads of waste disposed at facilities, and the opportunity to transfer and dispose of wastes at off-peak hours.

Table 2.8
Transfer Stations

OWNERSHIP	TOTAL	
	1992	1993
Public	53	44
Private	21	22
TOTAL	74	66

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 66 regulated transfer stations operating in 1993. This does not include those facilities that handled only moderate risk waste. Table 2.8 illustrates the number of transfer stations, a decrease from 1993. Much of the decrease was a result of a facility being categorized as a transfer station, and actually being a drop box.

The profile shows that the majority of the transfer stations continue to be publicly operated entities, 67%. Private facilities comprise approximately 33% of the transfer station infrastructure.

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

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

are regulated as solid waste transfer stations, since the wastes they collect are typically shipped off-site for disposal.

Fixed facilities must have a hazardous materials handling permit issued under article 80 of the *Uniform Fire Code*, as well as a solid waste handling permit issued by the jurisdictional health district. There are currently 35 fixed facilities in Washington, with 15 more in the planning or design stages.

Generally, used oil collection facilities are only carry a Fire permit. There are over 400 used oil collection facilities in the state.

Household hazardous waste collection events require no permit under state law. However, Ecology has provided guidelines[22] which are widely used.

In addition, despite the large volumes of hazardous waste now entering the moderate risk waste system, there have been no major releases to the environment to date at any facility or event.

Tire Pile Facilities

In Washington state, about four million tires are discarded each year. The discarded tires often are 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 component of tire disposal in the state has been illegal tire dumping. This section, however, deals specifically with regulated tire pile facilities. Ecology identified seven tire pile facilities in the state in 1993. Each regulated tire pile remains under private ownership.

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."[23] 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."[24]

[22] *Household Hazardous Waste Guidelines for Conducting Collection Events*, Department of Ecology, Publication #88-6, February 1989.

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

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

Energy recovery and incinerator facilities are regulated under WAC 173-304-440 and apply 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."[25]

Ecology identified six regulated solid waste incinerator facilities that burned a total of 422,876 tons of waste.[26] Table 2.9 depicts the classification profile of the facilities by ownership status. The profile shows that the energy recover and incinerator facilities are equally divided between public and private ownership.

Table 2.9
Incinerator Classification

OWNERSHIP	TOTAL	
	1992	1993
Public	4	3
Private	3	3
TOTAL	7	6

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 six solid waste incinerators operating during 1993, four of these facilities are subject to both the requirements of chapter 173-304 WAC and chapter 173-306 WAC.[27] These four facilities are required to have generator ash management plans. A generator ash management plan is, in essence, a blueprint prepared by the facility operator concerning the handling, storage, transport and disposal of incinerator ash. The generator ash management plan must be reviewed and approved by Ecology. An approved ash management plan is a requirement for municipal solid waste incinerator operation. All four facilities, three public and one private have approved generator ash management plans and solid waste handling permits.[28]

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,

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

[26] In last year's annual report, the incinerator at Friday Harbor was included in this classification. Since it burns less than 12 tons of solid waste per year, it has been moved to the "Other Solid Waste Handling Facility" under the Ancillary - Other Classification.

[27] One of the facilities does not burn municipal solid waste, and the other incinerator has been exempt from the chapter 173-306 WAC ash standards because the ash produced does not fall under the state's dangerous waste classification.

[28] One of the public municipal solid waste incinerators ceased operations in May 1994.

or determined to be an obscure facility type needing reclassification or elimination outright. This classification includes: (1) Compost facilities; (2) Exempted-Tribal Facilities; (3) Landspreading; and (4) Other.

Compost Facilities

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

The MFS regulates compost facilities under the non-containerized solid waste standards for recycling facilities in WAC 173-304-300(1)(a)(I) and number WAC 173-304-420, depending upon the "condition specific" nature of the waste e.g., whether or not the waste produces leachate. Ecology has placed compost facilities in the Ancillary-Other Classification because of continued evaluation of this type of facility. In 1994, 21 compost facilities permitted under the MFS were identified.

Beginning in early 1995, Ecology will be developing guidelines for functional standards at compost facilities. The guidelines will address facility designs and operating procedures to protect human health and the environment.

Ecology issued *Interim Guidelines for Compost Quality*[29] in April 1994 and revised them in November 1994. The guidelines focus on the finished compost product. One of the primary objectives of these guidelines was to promote consumer acceptance of composted products by creating statewide standards and enhanced consumer confidence in the safety of these products. Over the next two years, Ecology will be collecting data for developing future revisions to the guidelines.

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 exempted for consideration by other federal, state or local laws, such as woodwaste facilities which fall under Department of Natural Resources rules. Three such facilities were identified during the preparation of this report.

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. Only one permit was issued in this category.

[29] *Interim Guidelines for Compost Quality*, Solid Waste Services Program, Department of Ecology, Publication #94-38, April 1994.

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"[30] 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. The incinerator at Friday Harbor has been included under this category because it does not meet the MFS definition of an incinerator. One other permit was issued in this category, to a medical waste recycling facility.

Biosolids Regulation Development

In 1992, the Legislature passed ESHB 2640, an *Act Relating to Municipal Sewage Sludge.* The new chapter 70.95J RCW, *Municipal Sewage Sludge - Biosolids*, defines biosolids as "municipal sewage sludge that is primarily organic, semisolid product resulting from the waste water treatment process that can be beneficially recycled and meets all requirements under this chapter. Biosolids includes septic tank sludge, also known as septage, that can be beneficially recycled and can meet all requirements of chapter 70.95J RCW." Most treatment plant biosolids in Washington should be able to meet this definition. However, it is possible that some will require additional treatment prior to use for some land applications.

Ecology is currently developing chapter 173-308 WAC, *Biosolids Management.* A Determination of Nonsignificance for the new rule was issued under the State Environmental Policy Act (SEPA) in December 1993. The rule is being developed with the assistance of an advisory committee of approximately forty persons from within and without the agency. An internal working draft of the rule has been reviewed by the advisory committee, and preparation of a responsiveness summary is under way. A final rule is not expected before mid-spring of 1995; promulgation could take longer depending upon a number of factors. The rule development process will include public workshops and formal public hearings.

Municipal sewage sludge and septage are presently classified as solid wastes under chapter 70.95 RCW, the *Solid Waste Management Act*, and chapter 173-304 WAC, the *Minimum Functional Standards*. The new regulation will create standards for municipal sewage sludge and domestic septage which allow each to be classified as biosolids. Under the new rule, biosolids will not be solid waste, and will be regulated under chapter 70.95J RCW and chapter 173-308 WAC. Ecology will have primacy in permitting the final use of biosolids, but will be able to delegate authority to local jurisdictional health departments on request.

[30] WAC 183-304-470

In November 1993, chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills* went into effect. WAC 173-351-220(10) restricts the disposal of municipal sewage sludge or biosolids in municipal solid waste landfills. Impetus for the restriction on disposal came from two statutes. RCW 70.95.255 gave Ecology the authority to ban the disposal of municipal sewage sludge in landfills. Chapter 70.95J RCW directs Ecology to maximize the beneficial use of municipal sewage sludge. In 1993, acting on the solid waste management authority of chapter 70.95 RCW and the mandate of chapter 70.95J RCW for biosolids management, Ecology restricted, but did not ban the disposal of municipal sewage sludge and biosolids in landfills.

Jurisdictional health departments are allowed to make a finding that available management options other than landfill disposal would pose a potentially unhealthful circumstance. They may grant temporary permission to a generator to dispose of municipal sewage sludge or biosolids in a landfill while unfavorable characteristics of the sludge are addressed or better management options are developed. The Department may allow disposal by granting authority under a facility's NPDES permit or a permit issued under chapter 70.95J RCW.

Ecology prefers beneficial use as a management option, and long-term disposal by permit would generally be granted only in cases of economic unfeasibility. Ecology is willing to work with generators and local jurisdictional health departments to allow disposal for a period of time while a generator works on developing a viable beneficial use option.

CHAPTER III

IMPLEMENTING SOLID WASTE ACTIVITIES

Ecology helps local governments fulfill their role as waste managers by providing financial assistance in the form of grants. These grants cover some of the costs of planning for solid and moderate risk waste management, and of putting those plans into action.

Grants to Local Governments

Various grants programs fund activities including:

- inspecting facilities and pursuing illegal dumpers
- collecting and disposing of household hazardous waste
- working with businesses to find ways to reduce and recycle their moderate risk waste
- teaching people how to prevent waste and to recycle
- providing curbside and drop box collection for recyclables
- providing yard waste composting
- drilling ground water monitoring wells at active landfills
- training staff
- undertaking special projects, such as closing landfills or demonstration projects

Ecology awarded $29,299,697 in grants for waste management from April 24, 1993 through June 30, 1994. The grants leveraged local matching funds to support $45,468,686 worth of solid and moderate risk waste projects. An additional $794,929 in grant amendments went to existing grants. Ecology also supports efforts to clean up contaminated sites through the remedial action grants program, which awarded over $17.8 million from April 24, 1993 through June 30, 1994.

Coordinated Prevention Grants (CPG)

Most of the solid and moderate risk waste projects are funded through the Coordinated Prevention Grants program. Ecology launched this consolidated program of grants for waste management in 1992. It combines funds from all sources and reduces the oversight needed to properly administer the programs.

This 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 county-wide areas, using a formula based on a set amount per county plus a certain amount per capita. Grant recipients must provide a cash match of 25 to 40 percent of the total eligible costs of their projects.

For example, in Adams County, the county and the health district received $80,128 in grant funding, which they matched with $43,146 in local dollars. The health district has the responsibility to enforce solid waste regulations and ordinances, inspect facilities, and review and issue permits. The county is responsible for all other waste management activities. The two agencies used the grant funding to:

- Review, update and write solid waste permits for various facilities and sites
- Investigate 47 cases of illegal dumping
- Conduct six inspections of landfills and ten inspections of other permitted facilities
- Work on the issue of biosolids application, including conducting sampling and developing rules, regulations an guidelines
- Hire a waste reduction and recycling coordinator to develop solid waste programs, and train that person in hazardous materials and safety
- Develop and distribute a quarterly waste reduction and recycling newsletter
- Buy equipment to recover chlorofluorocarbons (CFCs) from appliances brought to the Bruce Landfill
- Conduct four household hazardous waste collection events
- Set up a vehicle battery collection station at the Bruce Landfill

SOURCES OF GRANT FUNDING

Local Toxics Control Account, established by the Model Toxics Control Act and funded by state taxes on toxic substances.

Hazardous Waste Assistance Account, funded by fees paid by businesses that may generate hazardous wastes.

Solid Waste Management Account, funded by a surcharge on garbage collection (sunset July 1995).

Referenda 26 and 39 account, funded by the sale of general obligation bonds authorized in 1971 and 1980.

Vehicle Tire Recycling Account, funded by a fee on new replacement tires.

In most cases cities and counties are working together well to assess their needs and apply for funding for the projects that best meet those needs. Some cities have grant agreements separate from the one for the county-wide area, while still coordinating their approach to waste challenges with the county government.

The City of Tacoma, for example, received $1,384,062, which they matched with $982,187 in local funds. Tacoma used these funds to:

- Build a recycling center and household hazardous waste collection facility at the City of Tacoma Landfill
- Buy equipment for the waste reduction and recycling and household hazardous waste collection programs
- Operate the used motor oil collection program, which received an Environmental Excellence Award from the Washington State Environmental Commission
- Assist small businesses with technical help on disposal and recycling problems (number of business visits varied from 13 to 100 per month)

- Educate and inform people abut waste reduction and recycling, with an environmental curriculum in the Tacoma School District, tours of the recycling center, presentations to community and school groups, and a brochure mailed to 56,000 Tacoma residents.
- Educate and inform people about household hazardous waste, with an informational newsletter distributed to approximately 65,000 Tacoma households, a display for the Tacoma Home and Garden Show, newspaper ads, flyers, and targeted mailing advertising the mobile collection facility
- Collect and dispose of household hazardous waste from the fixed and mobile facilities, and the collection event held in conjunction with Pierce County at the Tacoma Home and Garden Show
- Recover CFCs from over 1,000 refrigerators

Capital Investment in Waste Reduction and Recycling

Capital purchases for waste reduction and recycling equipment and facilities increased this last year as more local governments finished the waste reduction and recycling updates to their solid waste management plans. From April 1993 through June 1994, 25 local governments signed agreements to build or expand collection and processing facilities, purchase balers, tub grinders, used oil collection tanks and other equipment, and provide drop boxes and recycling bins for their residents.

One reason for this increased activity is the $12 million Ecology set aside for waste reduction and recycling capital costs from the funds remaining in the Referenda 26 and 39 accounts. This money is available through Coordinated Prevention Grants until the end of 1997.

Landfill Closures

Landfill closures also showed increasing activity, with 13 counties and cities using grants to close 15 municipal solid waste landfills in accordance with state environmental standards. Properly closing landfills prevents future contamination, but it is also costly, especially for local governments with old landfills that are no longer bringing in revenue through tipping fees. Active landfills are required to have funds set aside for closure and post-closure monitoring, so this part of coordinated prevention grants program will end in 1995.

An example of landfill closure is Island County, which used a $500,000 grant and $750,000 in local match to close the Coupeville Landfill. Closing the landfill will help protect the county's sole source aquifer area. The landfill closure involved engineering design, testing materials to make sure they met the minimum functional standards set by the state, and final construction with a multiple layer cap and control systems for surface water and landfill gas.

Public Participation Grants

Ecology also provides small grants to citizen groups whose projects help implement the state's priorities of waste reduction and recycling. This Public Participation Grants program is mandated by the *Model Toxics Control Act*, chapter 70.105D RCW. It is highly-competitive and excites great interest in a wide variety of citizen groups and not-for-profit organizations interested in these issues. All projects must include an education element directed at an audience beyond the group's members.

From April 1993 through June 1994, Ecology awarded 28 Public Participation Grants. They covered a wide range of approaches to preventing and recycling waste. One example is the Sustainable Building Collaborative which used a $26,908 grant for the Building With Value conference to teach people in the building industry how to reduce waste and recycle materials. The conference also introduced the more than 500 attenders to a wide array of recycled building products. The Collaborative produced a "Guide to Resource Efficient Building" and a set of fact sheets to disseminate the information to a wider audience.

Another grant went to the Pomegranate Center which used a $23,460 grant for a project to raise people's awareness of the amount of waste they generate. The Center recruited 750 middle and high school students and 50 teachers and other adults to commit to save all the garbage they produced in one week. Midway through the week they weighed their trash and learned about waste prevention and recycling opportunities. At the end of the week they weighed the trash again, to see if they had put their knowledge of waste prevention and recycling into practice. The Center is disseminating written materials and a videotape about the project and its results.

Other Innovations

Ecology is continually working to make grants more efficient and effective in producing benefits to the environment. One result is the "outcome funding" approach to grant projects, which ties the grant agreement to specific, measurable environmental benefits. Grant projects have always been intended to improve and protect the environment, but the projects have not always been structured so that details of that improvement could be captured. The outcome funding approach will help Ecology determine how to get the best return on the investment of grant dollars.

Ecology is a member of the Infrastructure Assistance Coordinating Council, an ad hoc committee of state and federal agencies that assist local governments with their infrastructure needs. In late 1993, and the first part of 1994, the Council experimented with a direct consultation service to match funding programs to a local government's needs. The response overwhelmed the program, as more than 50 communities and jurisdictions requested help. The Council is analyzing the situation and intends to revise the program into a more manageable service.

Tire Pile Cleanup Contracts

Table 3.1
Unauthorized Tire Sites Cleaned-Up

County	Number of Sites	Number of Tires
Asotin	1	52,210
Clark	1	172,500
Kittitas	1	28,355
Pierce	10	2,286,674
Spokane	3	2,970,000
Stevens	2	3,781
Thurston	7	2,101,749
TOTAL	25	7,614,269

In 1989, the legislature established a one-dollar-per-tire fee on the retail sale of new vehicle tires. This funding source was to be used to cleanup existing unauthorized tire piles around the state. Ecology, in conjunction with local jurisdictional health departments, created a prioritized cleanup list containing 25 sites located in seven counties. The first cleanup contracts were executed in May of 1991. By the end of 1993, over 3.6 million tires had been removed. Some of these tires became fuel for cement kilns or pulp mills. Others were retread, made into marine bumpers or pulverized for use in road projects. The remaining tires were shredded and landfilled.

By the end of 1994, all remaining tire pile cleanup sites were under contract. Cleanup at the last major tire pile site in Pierce County (1.6 million tires) and one in Spokane County (1.6 million tires) began in the spring and fall of 1994 respectively. The contract for the last remaining pile, also located in Spokane County (1.3 million), was awarded late in 1994.

The tire fee ended October 1, 1994. Ecology has sufficient funds in the tire account to complete the cleanups at all originally identified sites. Any unexpended funds left in the account after the completion of the current contracts, will be used for additional enforcement, educational or cleanup activities to be conducted by local government. Future activities related to illegal tire disposal, after the tire account is gone, will be the primary responsibility of local government.

CHAPTER IV

WASTE REDUCTION IN WASHIINGTON

Washington state has established priorities for solid waste management in the *Solid Waste Management Act*, chapter 70.95 RCW (see text box). The next three chapters discuss solid waste management activities in Washington for these priorities.

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.

Waste reduction is the highest priority for solid waste management in Washington. "Waste reduction" means reducing the amount of toxicity of waste generated or reusing materials. Waste reduction can also be thought of as "source reduction" and "waste prevention."

Waste reduction involves not generating waste in the first place and reducing both the volume and toxicity of waste. Waste reduction at the source requires changes in how goods are produced and sold, and changes in how and what consumers buy.

State Government Efforts For Waste Reduction

In 1993, Ecology developed waste reduction strategies for three target waste streams: paper from the commercial sector, organics, and construction, demolition and landclearing debris. Efforts undertaken in 1994 are discussed below:

Paper from the Commercial Sector

The *1992 Washington State Waste Characterization Study*[31] estimated that 30% of the waste materials that went to landfills was paper. Of that amount, 51% was estimated to be generated by commercial sources in the following categories:

- newspapers
- corrugated paper
- computer paper
- office paper
- mixed recyclable paper
- milk/juice containers
- aseptic juice containers
- frozen food containers
- other paper

[31] *1992 Washington State Waste Characterization Study*, (Six Volumes), Washington State Department of Ecology, July 1993, Publication #93-45.

In 1994, Ecology undertook a project with the objectives of reducing, through educational efforts, the generation of mixed waste paper at commercial establishments, diverting from the disposal stream to the recycling stream as much commercially generated waste paper as possible and providing information on waste-to-energy options in Washington. Briefings were provided to the Washington State Recycling Association and meetings of eastside and westside local governments on the opportunities and barriers to maximizing diversion of mixed used paper from landfills.

The "Paper Connection" Project identified the following opportunities for increased diversion of mixed used paper from the commercial sector:

- well established residential collection networks that may facilitate improved collection from commercial generators;
- increased stability of paper markets related to increased capacity of Northwest mills to consume paper;
- rise in some paper commodity prices;
- local governments shifting more resources to expand commercial reduction, collection and recycling programs;
- reduction in timber supply raising the price of the hog fuel mills making pelletized used paper more economically viable as a fuel substitute;
- .an estimated 51 % of the paper disposed in 1992 in Washington came from the commercial sector indicating a large reservoir of material to be tapped.

Barriers to capturing this paper for recycling include:

- legislatively required separation of residential collection and commercial collection which increases collection costs;
- small businesses widely dispersed increases collection costs;
- small amounts of a variety of paper grades from small business increases collection costs.

Barriers to using collected mixed used paper for energy recovery include:

- Washington state waste management priorities which list waste reduction and recycling higher than burning for energy recovery;
- designation of mixed paper as a solid waste: Washington cap of twelve tons per day on burning solid waste; Supreme Court decision stating that ash from burning solid waste is hazardous unless testing designates it as non-hazardous.
- lack of infrastructure to transform mixed paper into fuel pellets;
- resistance to the idea of burning mixed paper for energy recovery from recycling proponents.

Recommendations from the "Paper Connection" Project include:

1. Department of Ecology work to change the designation of mixed used paper fuel pellets from a solid waste to a product.
2. Ecology and the Washington Refuse and Recyclers Association work to change the law which dictates separate collection for commercial and residential accounts.

3. Efforts to use mixed used paper fuel pellets should be focussed on paper mills since they need substitute fuel options, the mills have the capacity to consume large amounts of the pellets and they already have pollution control devices in place.
4. Clean Washington Center should be involved in identifying companies capable of producing the pellets.

Organics

Ecology chose to focus on the organics waste stream because data form the *1992 Washington State Waste Characterization Study* indicated that 24% of the solid waste disposed in Washington State was organics, composed of food, yard and other organic wastes.

In early 1994, a draft plan, "Organics Waste Reduction and Recycling Strategy," was developed to focus on the organics waste stream. The main method identified for recycling organic waste was as a feedstock for compost. Specific organic waste reduction methods were not so easily identified. The purpose of the strategy was to outline activities that Ecology would undertake in the 1993-1995 biennium to reduce and recycle organics in the waste stream. Objectives of the strategy include:

- ❖ Clarifying regulatory environment for compost facilities.
- ❖ Refining information about the safety of using compost products to update the compost quality guidelines.
- ❖ Communicating regulatory and technical information to health districts.
- ❖ Focusing assistance on waste reduction.
- ❖ Gathering information to encourage centralized yard waste composting in central and eastern Washington.
- ❖ Sharing information gathered.

In addition to continuing work on the six objectives outlined above, a compilation of information gathered from the compost study grants is being developed. These study grants were conducted in 1990-1993 and included projects on yard waste testing, food waste composting and compost marketing. The compiled information will be an important source of information for tasks identified in the draft strategy.

Ecology staff have provided technical and planning assistance to local governments through waste coordinators' meetings, site visits and published reference material. The *Interim Guidelines for Compost Quality* were published and distributed in April 1994 and the first round of revisions was distributed in November 1994. These guidelines provide guidance on the testing and use of compost.

Several counties have developed master composter programs and in other counties Ecology staff have "trained the trainers" by providing talks and technical information to interested county personnel. Ecology staff explain the advantages to solid waste handling system by

the diversion of household yard and kitchen waste streams and tech the composting process and technique.

In March 1994, the "Composting Organic Wastes Seminar" was held at Monroe, Washington. The seminar focused on institutional compo sting and was attended by over 100 people. Composting alternatives for institutional compo sting were presented. A wide array of feedstocks and techniques, from the very high and intensive techniques to the low end, low input techniques were addressed.

Construction, Demolition and Landclearing Debris

Construction, demolition, and landclearing (CDL) debris is the term commonly used to define the waste stream generated from various site preparation, building, and demolition services. CDL is frequently referred to as one mixed solid waste stream although it is regulated differently. The terminology has arisen more as a reflection of the manner in which the materials are generated, rather than how they are managed or disposed. The 1*992 Washington State Waste Characterization Study* estimated CDL at approximately 13-17% of the total waste stream.

Generally, CDL includes clean and treated woodwaste, dimensional lumber, gypsum board, roofing shingles and associated waste, asphalt, concrete, brick, various metals, plastics, and tree stumps. The waste from construction sites may also include a significant amount of packaging waste including cardboard, plastic wrap and wood pallets from materials supplies, and general municipal solid waste products generated by site workers.

In 1993, Ecology selected CDL as an opportunity waste stream to target for waste reduction and recycling activities. Although Ecology's main client is local governments, Ecology's strategies effect builders, contractors, salvage operators, demolition operators, lenders, and realtors, among others. Ecology prepared a Strategic Plan for CDL which includes 16 tasks related to information gathering and dissemination, education and outreach, technical support and document development, and general technical assistance.

The past year has yielded several significant accomplishments:

- **Building With Value '93 Conference and Trade Show.** Ecology sponsored and supported this first in the northwest event which attracted over 600 building professionals. The trade show featured over 35 resource-efficient product and service vendors. The highlight of the trade floor was the state-of-the-art multi-media Resource Center featuring the latest information materials including computer terminals set up with access to databases on resource-efficient construction. Seminars included a hands-on "Roll Up Your Sleeves" workshop which allowed participants to apply the new techniques and material applications to actual site designs.

- **Western W A CDL Regional Coordinators Group.** The Group includes state and local representatives from various agencies working on CDL issues. The goal of the Group is to work cooperatively to avoid duplication and support each others efforts. Quarterly meeting agendas include: organization of regional projects, including a regional collaborative effort to characterize the CDL waste stream; information sharing; establishing a regional strategy.

  The regional CDL waste characterization will be used to develop targeted collection and market development programs. Since only a few, isolated, detailed CDL characterizations have been conducted in the country, the data may also be useful to adjacent municipalities for extrapolation to their own waste stream.

- **Network and Resource Coordinator.** Ecology has been serving the state functioning as a network and resource coordinator. Ecology tracks local and national resource materials, local group's activities, and national conferences to share among the Coordinators Group and interested callers.

- **Education and Outreach Program.** Ecology is developing an education and outreach program targeted at contractors and builders. The program will emphasize waste reduction and recycling activities for construction sites and may additionally target architects to emphasize waste reduction design opportunities. To support this program and to be used by local governments, Ecology has developed a slide show highlighting private sector businesses recycling and reducing construction, demolition and landclearing debris.

CHAPTER V

RECYCLING IN WASHINGTON

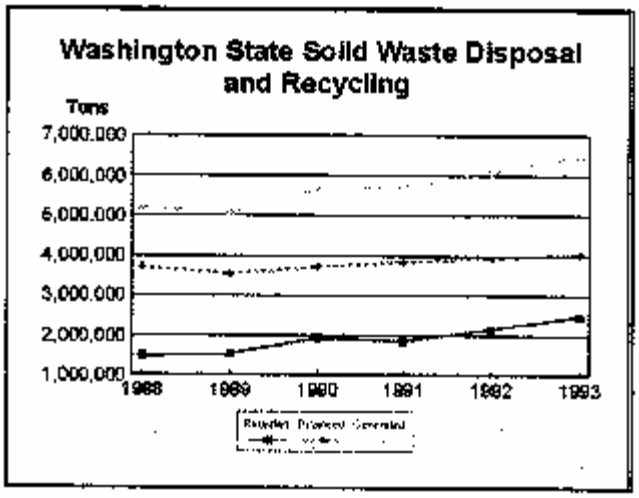
In 1989, the Legislature, in amending the Solid Waste Management Act, set a state goal of achieving a 50% recycling rate by 1995. They also stated that recycling should be made at least as affordable and convenient to citizens as garbage disposal.

In response, local governments began offering its citizens various forms of recycling ranging from drop boxes to curbside collection of variety of recyclables. In 1993, more that 100 cities and counties offered curbside collection, with about 40 offered curbside collection of yard waste.

Recycling Rates

Each year since 1987, Ecology has conducted a recycling survey with information provided by local governments, haulers, recyclers, brokers and other handlers of recyclable materials on the amount of materials from the recyclable portion of the waste stream that are collected for recycling.[32]

Figure 5.1



Since 1987 to 1993, the statewide recycling rate increased from 23% to 38%.[33] As can be seen in Figure 5.1, this increase had been fairly steady, with a slight dip in 1991.[34] While the overall statewide recycling rate of 38% is still below the 1995 target of 50% recycling, several specific commodities have exceeded 50%:

Ferrous Metals – 79.6%
Non-Ferrous Metals – 67.1%
High Grade Paper– 57.1%
Newspaper – 55.9%
Corrugated Paper – 52.2%
Yard Waste – 50.1%

[32] The recycling survey does not include sludge, asbestos, petroleum contaminated soils or industrial waste in the amount generated or disposed.

[33] *1993 Washington State Recycling Survey*, Solid Waste Services Program, Department of Ecology, Publication 94-177.

[34] In 1991, the statewide recycling rate was 32.7%, down from 34.3% the previous year. One of the major categories that was lower that year was the industrial recycling of ferrous metals because of a six-month closure of a steel mill that uses those recycled metals. Because the ferrous metals by weight are a large part of the recycled waste stream, the decrease in that commodity affected the overall rate. This category was back up in 1992.

Table 5.1 identifies specific commodities and their recycling rates. Solid waste streams that need improvement in recycling include mixed waste, construction debris, and food and yard wastes. These waste streams are the targets of Ecology's waste reduction and recycling efforts for 1994, as discussed in the previous chapter.

Table 5.1
Solid Waste Disposal, Recycling and Generation for Categories of Major Materials: Washington State 1993[35]

	Recycling	Disposal	Generation	Recycling Rate
Recycling above 50 percent				
Ferrous Metals	908,460	232,566	1,141,026	79.6%
Nonferrous Metals	89,210	43,735	132,945	67.1%
High Grade Paper	81,037	60,958	141,996	57.1%
Newspaper	208,603	164,872	373,474	55.9%
Corrugated Paper	329,670	301,953	631,623	52.2%
Yard Waste	320,821	319,458	640,279	50.1%
Recycling below 50 percent				
Mixed Waste Paper	193,386	366,372	559,758	34.5%
Container Glass	66,283	157,753	224,036	29.6%
Construction Debris	111,294	594,051	705,345	15.8%
Food Waste	69,996	488,246	558,242	12.5%
Textiles	15,588	142,595	158,184	9.9%
Plastics	11,449	414,449	425,899	2.7%
Other Paper (currently not recyclable)	0	331,106	331,106	0.0%
Other Organics	0	200,621	200,621	0.0%
Disposable Diapers	0	103,695	103,695	0.0%
TOTALS FOR MAJOR MATERIALS	2,405,797	3,922,432	6,328,229	
TOTALS FOR ENTIRE MSW WASTE STREAM	2,472,011	4,041,168	6,513,179	
PERCENTAGE	97%	97%	97%	

Table 5.2 shows the recycling tonnages for commodities in 1993 included in the recycling survey and the changes from the 1992 amounts. There are problems in obtaining all of the information needed to prepare a complete and accurate recycling survey. Recycling survey forms are sent to recycling firms and haulers to obtain information about types, quantities, sources and destinations of recyclable materials. However, since there is no penalty for not returning the information, some firms choose not to respond. Others, because they want to protect the confidentiality of who they sell their materials to (although Ecology holds the information confidential), send in

[35] *1993 Washington State Recycling Survey*, Solid Waste Services Program, Department of Ecology, Olympia, WA, Publication No. 94-177.

incomplete data which can be unusable. Ecology is undergoing an evaluation process to determine better ways to obtain more accurate and complete information, in a more timely manner, for future recycling surveys.

Table 5.2
State Tonnage By Commodity:
1992 and 1993 Washington State Recycling Surveys[36]

Commodity	Total Tons Recycled		
	1992	1993	Change
Newspaper	219,227	208,603	-10,624
Corrugated Paper	468,317	329,670	-138,647
High Grade	79,574	81,037	1,463
Mixed Waste Paper	160,211	193,386	33,175
Aluminum Cans	18,732	18,132	-601
Tin Cans	16,720	17,256	536
Ferrous Metals	662,824	796,042	133,218
Nonferrous Metals	57,284	71,079	13,794
White Goods	126,540	112,418	-14,122
Refillable Beer Bottles	492	432	-60
Container Glass	55,629	66,283	10,654
PET Bottles	1,762	1,982	220
HDPE Containers	2,437	3,117	681
LDPE Plastics	1,860	1,275	-584
Other Recyclable Plastics	4,746	5,075	329
Vehicle Batteries	19,604	14,975	-4,629
Tires	12,784	31,248	18,464
Used Oil	1,845	1,835	-11
Yard Waste	157,673	320,821	163,148
Food Waste	38,624	69,996	31,372
Wood Waste	30,181	77,116	46,936
Textiles	10,061	15,360	5,527
Gypsum	3,605	34,177	30,573
Photographic films	9	468	459
Other rubber materials	20		-20
TOTAL RECYCLED	2,150,761	2,471,783	321,249
TOTAL DISPOSED	3,945,287	4,041,168	95,881
TOTAL GENERATED	6,096,048	6,512,951	417,130
RECYCLING RATE	35.3%	38.0%	

[36] *1993 Washington State Recycling Survey*, Solid Waste Services Program, Department of Ecology, Olympia, WA, Publication No. 94-177.

Recycling Efforts By The State

Recycling Information Line

Ecology operates 1-800-RECYCLE to help citizens find ways to reduce waste and recycle. Information includes: backyard composting techniques, disposal options for household toxic materials, and suggestions about alternative products posing less of a threat to human health and the environment. The most frequently asked questions by households are about plastics, used motor oil, household hazardous wastes, and the availability of local curbside recycling programs.

INFORMATION LINES 1993 TOTAL CALLS	
1-800-RECYCLE	**86,196**
1-800-LITTERS	**2,450**

The recycling information line received 86,196 calls in 1993. This was a decrease from 116,527 calls in 1992. Factors contributing to this decline include: more curbside collection programs, more drop box locations, education efforts and the existence of local recycling hotlines in about 15 cities and counties.

Ecology also operated a 1-800-LITTERS Hotline for citizens to obtain information about the litter program or to report litter violators. Litter violators were identified by the license number and vehicle description. An information letter explaining that littering is against the law, and a litter bag, were sent to those individuals.

Ecology Youth Corps

The summer of 1994 was the 16th year that the Ecology Youth Corps (EYC) conducted summer litter pick up as provided for chapter 70.93 RCW, *Waste Reduction, Recycling and Model Litter Control Act*. In a two-month sweep, 23 EYC crews cleaned 2,749 miles of roadway, bagging 171 tons (22,803 bags) of litter and recycling 17.7 tons of glass, aluminum and other metals.

Another 22.6 tons of litter were collected from state parks, rest areas, sportsman access areas, beaches, and illegal dump sites. The EYC has been coordinating with other state agencies and counties statewide to help in the effort to maintain areas utilized by the public.

State Agency and Institution Waste Reduction and Recycling

Under the 1989 "Government Options to Landfill Disposal" (G.O.L.D.) mandate, Ecology and the Department of General Administration (GA) work together to assist state facilities in implementing waste reduction and recycling programs. State facilities are required to reach a 50% recycling rate by 1995.

Ecology's role is to help state facilities write and implement their G.O.L.D. plans. GA's role is to track the progress state facilities have made in waste reduction and recycling.

Sixty-two (62) of the 90 state facilities submitted a G.O.L.D. plan to Ecology. During the reporting period of July 1, 1993, to June 30, 1994, half of the state agencies reported a recycling rate of 50% or above.

In the 1993-1995 biennium, Ecology and GA will continue to help state facilities implement waste reduction and recycling programs. GA will work to streamline annual reporting, and Ecology will continue providing technical assistance and information to state facilities.

A-Way With Waste Curriculum

The *A-Way With Waste* curriculum, first developed in 1985, is a K-12 multi-disciplinary classroom activity guide that includes lessons on waste reduction, recycling, landfilling, incineration, litter control, hazardous waste management and household hazardous wastes. Teachers can attend a one day training session on the use of the curriculum. Over 10,000 Washington teachers have attended A-Way With Waste workshops since 1985.

Recognizing Waste Reduction and Recycling Efforts

School Awards Program

The School Awards Program provides cash awards to public schools for their waste reduction and recycling programs. Ecology also provides technical assistance to schools and school districts to help them develop and implement waste reduction and recycling programs.

Every K-12 public school is eligible to apply for the awards program. The awards program has three categories; Best Waste Reduction Program, Best Recycling Program, and Outstanding Waste Reduction and Recycling Programs.

<u>Best Waste Reduction Award</u>

McLoughlin Middle School in Vancouver won the "Best Waste Reduction Program Award." McLoughlin students and staff reduce waste in the kitchen, classrooms, and laboratories, and by waste reduction methods enacted by the custodial staff. The kitchen staff buys fresh produce and other food items in bulk to minimize packaging and maximize composting. In additi9n, the head cook develops menus with waste reduction in mind, and the school uses hard plastic, washable, reusable trays in the cafeteria. The custodian purchases non-toxic or low toxic cleansers, and no longer uses lacquer thinner.

Garbage can liners are reused. A greenhouse is maintained on campus that uses compost from kitchen and yard waste. The office staff send memos by electronic mail to save paper and teachers and staff make double-sided copies whenever possible.

McLoughlin is cutting down the number of books purchased and used in class by presenting video lessons, putting the encyclopedia on CD ROM for student computer access, and having project-based instruction. For example, a science class made bridges o~t of pasta for a project, wasting no paper. The library sponsors an annual book fair day for students to exchange books, and the daily bulletin is announced over cable vision instead of using paper. The efforts of McLoughlin have helped the Vancouver School District reduce waste by 440 yards or 144,000 pounds of waste in the 1993-1994 school year.

Best Recycling Award

The 1993-1994 Public School Best Recycling Award had 15 applicants. The winning school was Sequim High School. Students and staff recycled 77,387 pounds for a total of 106 pounds per student. Totals include 67,680 pounds of mixed paper, including white ledger paper, card board, computer paper and newsprint. In addition, students and staff recycled 1,197 pounds of aluminum, 5,400 pounds of other metals, and 2,200 pounds of motor oil. The school thrift store recycled 900 pounds of miscellaneous items.

Eleven senior high schools, two junior high/middle schools and two elementary schools applied for the award. The fifteen schools recycled 279,989 pounds of materials between September 1, 1993 and March 1, 1994. The average pounds recycled per school was 18,666. The average amount recycled per student was 27 pounds.

Statistical analysis reveals that schools recycled a total of 225,495 pounds of paper, including cardboard, newsprint, mixed paper and white paper, for an average of 16,601 pounds of paper per school, or 25.1 pounds of paper per student.

Senior high schools recycled aluminum at a rate of 786 pounds per high school, or 1.3 pounds per student. In addition, senior high schools averaged 21,343 pounds per school or 30.65 pounds per student for all materials recycled. The four elementary and junior high schools that sent applications averaged 11,303 pounds recycled per school or 4.2 pounds per student for all materials recycled.

Outstanding Waste Reduction and Recycling Awards

In the "Outstanding Waste Reduction and Recycling Awards" category, fifteen schools won awards. Five awards were presented to senior high schools, five awards to middle/junior high schools, and five awards to elementary schools. A team of judges scored the applications, and finalist schools were visited. Awards were provided on the basis of waste reduction and recycling methods, education, training, purchasing practices and innovative features. Table 5.3 lists the 1993-1994 school award winners.

Table 5.3
1993 - 1994 School Awards

Award	School	Location
Best Waste Reduction *$2,500*	McLoughlin Middle School	Vancouver
Best Recycling Program *$2,500*	Sequim High School	Sequim-Clallam
Outstanding Waste Reduction and Recycling Programs[37] *$1,000 each*	Franklin Elementary School	Pullman
	Stevenson Elementary School	Bellevue
	Chattaroy Elementary School	Spokane
	Tukwila Elementary School	South Seattle
	Beach Elementary School	Lummi Island - Whatcom County
	Morgan Middle School	Ellensburg
	Highland Middle School	Bellevue
	Fairview Junior High School	Bremerton
	Alki Middle School	Vancouver
	Steptoe School	Whitecom County
	Nathan Hale High School	Seattle
	Orcas Island High School	Island County
	Lakes Senior High School	Clover Park - Tacoma
	Riverside High School	Spokane County
	North Thurston High School	Lacey

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 5.4 lists the award winners for 1994.

[37] Awards were given for Elementary Division, Middle School/Junior High School Division and Senior High School Division.

Table 5.4
1994 Waste Reduction & Recycling Awards for Local Government and Businesses

1995 WINNERS		ACCOMPLISHMENT
CATEGORY	**BUSINESS/ENTITY**	
BEST WESTERN WASHINGTON WASTE REDUCTION AND RECYCLING GOVERNMENT PROGRAM	CITY OF TACOMA WASTE REDUCTION AND RECYCLING PROGRAM	Programs include a recycling hotline, city-wide residential curbside recycling, used motor oil collection tanks, aerosol can recycling program. Tacoma recycles 42% of its waste.
	PIERCE COUNTY'S COMPREHENSIVE SOLID WASTE MANAGEMETN PROGRAM	Programs include county-wide curbside collection (83% participation), curbside composting, buy-recycled program, WR/R education for K-12, and the Greenhouse Exhibit, a modular home created from reused, recycled, low toxic and energy-efficient materials.
BEST EASTERN WASHINGTON WASTE REDUCTION & RECYCLING GOVERNMENT PROGRAM	WALLA WALLA COUNTY RECYCLING & WASTE MANAGEMENT OFFICE	Programs include neighborhood recycling (reaches 70% of the population), master recycler-composter, "Green Seal" for technical assistance to businesses, local recycle hotline, a monthly newsletter, "F.Y.I." with waste reduction tips.
BEST PUBIC INFORMATION/EDUCATION ON WASTE REDUCTION AND RECYCLING	CONSUMER BUY RECYCLED CAMPAIGN KING COUNTY COMMISSION FOR MARKETING RECYCLABLE MATERIALS	Provided a research study of King County consumers determining attitudes and buying habits related to recycled products, the "get in the loop" retail campaign promoted recycled products in 620 retail stores. "Jadin Encore" a demonstration garden promoted recycled construction and gardening products.
MOST INNOVATIVE WASTE REDUCTION AND RECYCLING APPROACH OR PROGRAM	THE RE STORE ENVIRONMENTAL RESOURCE SERVICE	The RE store educates the public about the benefits of reuse by providing opportunities to sell, donate, exchange, and purchase still usable building materials that are usually disposed. Since July 1993, 300,000 pounds of materials have been diverted from disposal.
BEST MEDIA COVERAGE OF A WASTE REDUCTION AND/OR RECYCLING EVENT	"CROSSWIND" NAVAL AIR STATION, WHIDBEY ISLAND, PUBLIC AFFAIRS OFFICE	"Crosswind," a Navy newspaper with a weekly section on making recycling a part of daily life, is circulated throughout the base and serves as a media focal point for waste reduction and recycling information to the town of Oak Harbor.

1995 WINNERS		ACCOMPLISHMENT
CATEGORY	**BUSINESS/ENTITY**	
BEST BUSINESS/COMMERCIAL WASTE REDUCTION AND/OR RECYCLING PROGRAM	MICROSOFT CORPORATION	Goals to reduce, reuse and recycle are reflected in the mail system, MS mail 3.2, which allows the attachment of documents, spreadsheets, and slides. Used printer toner cartridges are refilled, computer hardware is refurbished and components from old equipment are reused. Microsoft recycles paper, glass, metals, plastics, computer disks, video tapes, & hardware components.
BEST MULTI-FAMILY RECYCLING PROGRAM	CITY OF BELLEVUE MULTI-FAMILY RESIDENTIAL RECYCLING	With a participation rate of 95%, apartment and condominium residents (45% of Bellevue's residents) recycle newspaper, mixed paper, milk cartons, aluminum cans, tin, other metals, glass, PET and HDPE plastics.
BEST G.O.L.D. PROGRAM	SEATTLE CENTRAL COMMUNITY COLLEGE	Substitutes non-toxic products for custodial work, purchases 45% of all paper with recycled content, composts lawn and yard clippings, uses E-mail and voice mail to reduce paper, operates a refrigerant recovery unit, and recover 93% of silver in photography lab. In 1993-1994 a recycling rate of 23% was achieved.
BEST STATE OR LOCAL GOVERNMENT AGENCY WASTE REDUCTION PROGRAM	DURABLE GOODS CAMPAIGN CITY OF ISSAQUAH RESOURCE CONSERVATION OFFICE	Created 200 durable latte cups, a single refillable pen that has red and blue ink and a technical pencil, use of E-Mail, FAX stamps, bulletin board postings replaced memos, envelops are reused and scrap paper is used as note pads.
BEST RECYCLING (BUY BACK) CENTER	COMPREHENSIVE RECYCLE PROGRAM U.S. NAVAL SUBMARINE BASE (SUBASE) BANGOR	A self-service recycling center accepting newspapers, magazines, corrugated cardboard, office paper, glass, aluminum, tinned cans, two grades of plastics, other metals, scrap wood and pallets, polyureathane foam, used motor oil, auto batteries and yard wastes. The center recycled 30% of the industrial wastes (1,817 tons), avoiding $102,000 in tipping fees.

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. Waste exported for disposal to Oregon is also included in this discussion.

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 for the disposal of ash from municipal solid waste energy recovery facilities.

As part of the annual reporting requirements of the MFS, in January 1994, forms were sent to the various types of landfills (except for ash monofills) 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 and other. The information provided below is from the landfill reports.

The other method of waste disposal in Washington is energy-recovery facilities. Annual report forms were also sent to these facilities for the first time in January 1994. The same types of waste information was requested as for landfills.

Some waste generated in Washington is disposed of in landfills in Oregon. Information obtained from the Oregon Department of Environmental Quality and from two regional landfills in Oregon is included in the following discussion.

Municipal Solid Waste Landfills

Amount of Waste Disposed in Municipal Solid Waste Landfills

In 1993, 43 municipal solid waste landfills[38] accepted waste totaling 3,726,055 tons. Of the 43 landfills, 35 were publicly owned, and eight were privately owned. Of the landfills that accepted waste, two were newly opened that year.

In analyzing the size of the MSW landfills it was found that of the 43, five received over 100,000 tons of waste in 1993, while 13 received less than 10,000 tons. Two of the largest landfills and all of the smaller landfills are publicly owned. Some of the facilities received lesser amounts of waste in 1993 than in previous years because they closed during 1993 in response to the new, more stringent state/federal regulations.

[38] The existing municipal solid waste landfill at Ft. Lewis in Pierce County was included in this year's analysis.

Some of the smaller amounts of waste were received by new facilities which were only opened near the end of 1993.

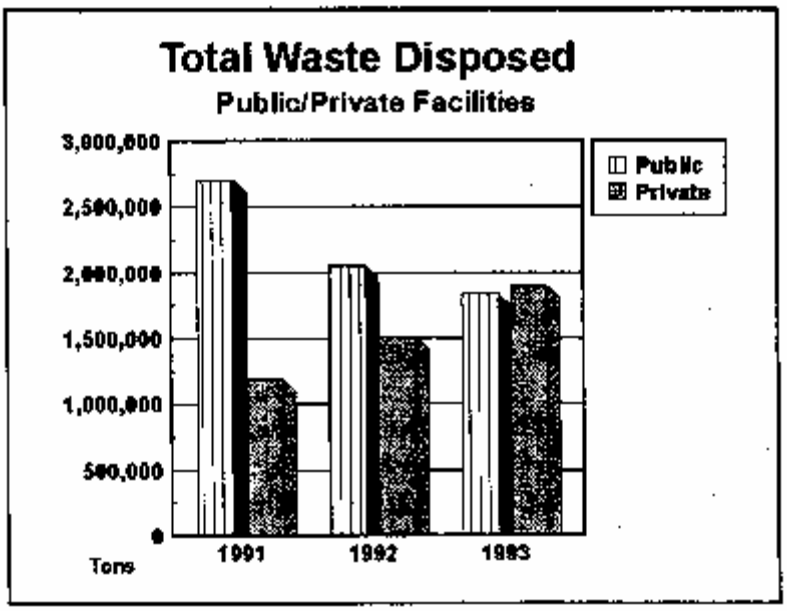
Table 6.1 depicts the relationship of waste disposed to public/private ownership. As the table illustrates, 1,832,928 tons of solid waste disposed went to publicly owned facilities (49%), with the remaining 1,893,127 tons going to private facilities (51%).

Table 6.1
Total Waste Disposed in MSW Landfills

OWNERSHIP	NUMBER OF MSW LANDFILLS		AMOUNT OF WASTE DISPOSED (Tons)		% TOTAL WASTE DISPOSED	
	92	93	92	93	92	93
PUBLIC	35	35	2,051,475	1,832,928	58	49
PRIVATE	6	8	1,509,264	1,893,127	42	51
TOTAL	42	43	3,560,738	3,726,055	100	100

The amount of waste disposed in MSW landfills show a shift from the publicly owned facilities to those owned by the private sector (see Figure 6.1). 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 by 20% since 1991. The majority of this increased amount can be accounted for by the Roosevelt Regional Landfill in Klickitat County.

Figure 6.1



Types of Waste Disposed in Municipal Solid Waste Landfills

Traditionally, many people think of the waste disposed of in MSW landfills as being mostly household waste.[39] Annual reports show that a much wider variety of waste is disposed of in the MSW landfills. These wastes need to be considered in terms of remaining available capacity. Fourteen of the 43 landfills reported a significant amount of solid waste disposed, other than municipal solid waste. Demolition, industrial, commercial, woodwaste and petroleum contaminated soils (PCS) were the major waste streams. Table 6.2 summarizes the types and amounts of waste disposed of in 1991 through 1993 in MSW landfills.

Table 6.2
Waste Types Reported Disposed in MSW Landfills

WASTE TYPES	1991 (Tons)	1992 (Tons)	1993 (Tons)
Municipal Solid Waste*	3,211,857	2,694,800	2,641,551
Demolition Waste	191,518	250,144	331,231
Industrial Waste	189,908	101,607	44,471
Inert Waste	2,023	1,027	0
Commercial Waste	157,862	143,466	180,691
Woodwaste	39,184	60,523	98,595
Sewage Sludge	42,618	64,311	33,854
Asbestos	3,931	8,247	7,076
Petroleum Contaminated Soils	66,879	224,560	273,429
Tires	na	na	1,288
Other**	4,357	12,053	113,869
TOTAL	3,910,137	3,560,738	3,726,055

* 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 yard waste, compost, auto fluff, ash, medical waste, and white goods.

In examining the types of waste that were disposed in the MSW landfills in 1993, there was a decrease in municipal solid waste, inert waste, industrial waste, sewage sludge and asbestos. Increased amounts were reported for demolition waste, woodwaste, petroleum contaminated soils and the "other" category. Part of the difference could be a result of better reporting of individual waste streams by the facilities.

[39] "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).

Of these increased amounts of solid waste, woodwaste and PCS were the only waste where the increase was significantly from out-of-state. For woodwaste, about 26% was imported from out-of-state, with about 6% of the total amount of petroleum contaminated soils originating from other states.

Movement of Municipal Solid Waste

Movement of Waste Between Counties

MSW landfills were asked to report the source, types and amounts of waste they received from out-of-county, if they received any. Sixteen of the 43 active MSW landfills reported receiving waste from other counties in 1993.

Some of this waste movement was because of closer proximity to neighboring landfill, although some counties are looking to other locations for their waste disposal. Some of the waste disposed from other counties was "specialty" waste such as PCS or bad compost. Most counties either disposed of their own municipal waste or had long-haul agreements to other landfills.

The Roosevelt Regional Landfill in Klickitat County, received from 26 of the 39 Washington counties, four additional counties since 1992, and also from out-of-state. With the closure of many local landfills (19 as of April 1994) because of the new state/federal regulations, Roosevelt Regional Landfill, and to a lesser extent Oregon regional landfills, have become the chosen disposal option. For many counties that still have operating landfills, Roosevelt Regional Landfill has become an option to dispose of some of their non-municipal waste, thus saving future local landfill capacity. .

Waste Imported from Outside the State

Washington state MSW landfills were also asked to report the source, types and amounts of waste received from out-of-state or out-of-country. In 1993, a total of 69,062 tons of solid waste was imported from beyond the state's boundaries for disposal to two landfills. This compares to 101,492 tons in 1992 received by five landfills.

The types of waste received from out-of-state for disposal are included in Table 6.3. All types of waste showed a decrease from 1992, with reduced amounts being attributed to Roosevelt Regional Landfill. Some of this waste, 26,993 tons from Nez Perce County, Idaho, was disposed of in the Asotin County Landfill. This type of waste disposal is considered incidental movement because of the closer proximity of Washington state landfills. In addition, 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.

Table 6.3
Out-of-State Waste Disposed in Washington

TYPE OF WASTE	QUANTITY-IN TONS		
	1991	1992	1993
Municipal Solid Waste	24,475	27,114	26,993
Demolition	1.412	0	147
Petroleum Contaminated Soils	0	12,388	16,698
Industrial	0	0	0
Asbestos	0	41	735
Sludge	36	34,457	0
Woodwaste	208	27,492	24,486
Other	0	0	0
TOTAL	26,131	101,492	69,059

Waste Exported from the State

Another aspect of waste disposed is the amount that is exported from Washington to another state for disposal. In 1993, 756,067 tons of waste generated in Washington was disposed in Oregon landfills, an increase from 705,608 tons in 1992. Table 6.4 shows a comparison of the waste amounts and types exported, compared with that imported.

Major exporters of municipal solid waste in Washington included the city of Seattle (452,266 tons), Clark County, Pacific County, Island County, Benton County and Whitman County. Reasons for exportation out-of-state are related to the closure of local landfills, and negotiation of favorable long-haul contracts with Oregon facilities.

Table 6.4
Comparison of Imported-to-Exported Waste to all SW Facilities

TYPE OF WASTE	1993 QUANTITIES IN TONS	
	IMPORTED	EXPORTED
	93	93
Municipal Solid Waste	26,993	710,515
Demolition	147	2,245
Petroleum Contaminated Soils	16,698	22,308
Asbestos	735	1,623
Indusrial	0	864
Woodwaste	24,486	0
Sludge	0	0
Other	0	18,512
TOTAL	69,059	756,067

Waste-To-Energy/Incineration

In 1993, the six waste-to-energy facilities/incinerators burned 431,928 tons of solid waste. Of that amount, 1,727 tons was identified as medical waste. The amount of solid waste statewide that was incinerated increased from2% in 1991 to 10% in 1993.

For waste-to-energy facilities or incinerators that meet both the chapter 173-304 WAC and chapter 173-306 WAC (see in Chapter II), the ash generated from the facilities must be disposed in a properly constructed ash monofill. There are four energy recover/incinerators that meet these criteria. All of the ash from those facilities is disposed at the ash monofill at the Roosevelt Regional Landfill in Klickitat County.

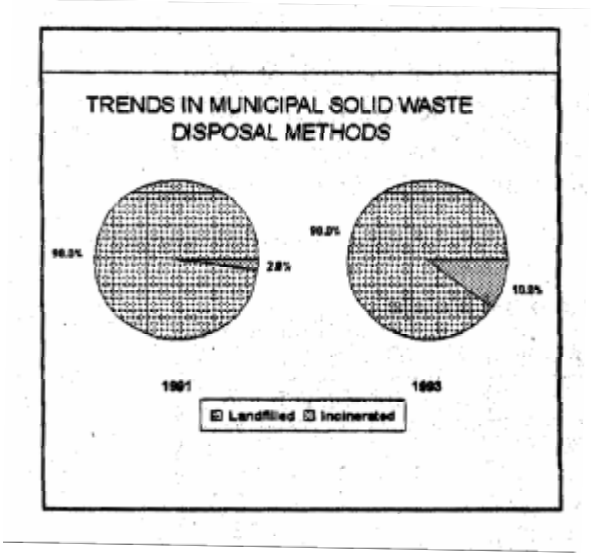
Trends in Municipal Solid Waste Disposal Methods

The two basic ways to dispose of solid waste are landfilling and burning. A comparison of the amount of solid waste disposed in municipal solid waste landfills and waste-to-energy facilities and incinerators in 1993 is shown in Table 6.5.

Table 6.5
Waste to Muncipal Solid Waste Disposal Facilities in Washington in 1993

	Tons	Percent (%)
In-state to MSW landfills	3,656,993	88
Imported to MSW landfills	69,062	2
Incinerators	431,928	10
TOTAL	4,157,983	100

Figure 6.2



The largest change in disposal methods has been between landfilling and energy recovery/incineration. In 1991, 98% of the waste was disposed in MSW landfills and 2% was incinerated. In 1993, this had changed to 90% landfilled and 10% incinerated (see Figure 6.2). There was slight decrease in the amount of solid waste being imported to MSW landfills, although the percent of the total disposed remained at 2%.

This trend will likely stabilize over the next few years because no new large waste-to-energy facilities or incinerators, or expansions of existing facilities, are currently planned. In addition, the incinerator in Skagit County closed in May 1994.

Inert/Demolition, Limited Purpose and Woodwaste Landfills

In addition to municipal solid waste landfills, there are three other major types of landfills in the state: inert/demolition, limited purpose, and woodwaste. These three types of landfills are defined in the MFS as discussed in Chapter II.

Annual reports received from these types of landfills show a variety of waste types disposed, as seen in Table 6.6. In some instances, wastes that are not technically included in the definition of the facility type were disposed. Some of this results from confusion in interpreting the MFS and the variability in the way the local health jurisdictions classify a facility. An additional confusion arises when the use of a facility changes over the years.

Table 6.6
Waste Types and Amount Disposed at Other Types of Landfills

LANDFILL TYPE						
WASTE TYPES	WOODWASTE		INERT/DEMOLITION		LIMITED PURPOSE	
	1992	1993	1992	1993	1992	1993
Municipal	0	0	0	0	0	0
Demolition	57,328	20,775	750,627	168,066	13,698	12,894
Industrial	0	0	0	0	194,689	17,680
Inert	0	0	139,366	272,047	44,572	37,274
Commercial	0	0	0	0	0	25,019
Wood	122,381	96,708	609	120	94,572	156,261
Sludge	0	0	0	0	0	0
Asbestos	0	0	0	12	0	0
PCS	0	0	0	16,233	0	99,360
Tires	0	0	0	500	0	0
Other	1,785	4,614	14,486	377,260	35,615	59,259
TOTAL (tons)	181,494	122,097	905,088	834,238	383,115	407,747

Determining the Amount of Solid Waste Disposed

The amount of solid waste disposed in Washington varies depending upon the categories included. For example, 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[40]), It was also typically the waste stream generated and reported by municipalities (cities and counties).

[40] 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 waste.

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 recycling survey disposal numbers.

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. Then when all categories are included, 5,522,065 tons of waste was disposed of in all types of landfills and incinerators in Washington in 1993 (see Table 6.7).

Table 6.7
Total Amounts of Solid Waste Disposed in Washington, 1993

DISPOSAL METHOD	AMOUNT OF WASTE (TONS)	
	1992	1993
Municipal Solid Waste Landfills	3,560,738	3,726,055
Incinerated MSW Waste	424,387	431,928
Woodwaste Landfills	181,494	122,097
Inert/Demolition Landfills	905,088	834,238
Limited Purpose Landfills	383,115	407,747
TOTAL	5,454,822	5,522,065

Remaining Capacity

Future Capacity at Municipal Solid Waste Landfills

Increased standards required by chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills*, resulted in the closure of 19 municipal solid waste landfills since 1992. Of the 43 MSW landfills that accepted solid waste in 1993, only 24 remained operating after April 1994[41] (see Map B on following page). Landfill closures were partially in response to Subtitle D requirements. Those that had little or no remaining capacity determined not to expand because of the expense in meeting the new requirements. Others, although they had some remaining capacity, decided to close rather than upgrade to meet the new requirements. Those facilities accounted for less than 1% of the estimated remaining permitted capacity reported last year.

Two new landfills opened in 1993, one publicly owned (in Okanogan County) and one privately owned (in Franklin County). Both of these landfills were opened in response to closures of existing landfills in the area. Other existing landfills have expanded by constructing new cells which meet the new federal requirements. These openings and expansions have increased permitted capacity since last year.

[41] 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 waste.

MAP B: Counties With MSW Landfills Open After 1994

The amount of remaining capacity for municipal solid waste landfills in Washington was determined by asking the facilities to report remaining permitted capacity, as well as the expected closure date. In 1994, for the 24 MSW landfills that remain operating after April 1994, the facilities estimated about 181 million tons, or 49 years, of capacity at the current disposal rate. Last year, facilities reported approximately 173 million tons of remaining capacity, about 48 years of remaining capacity statewide.[42]

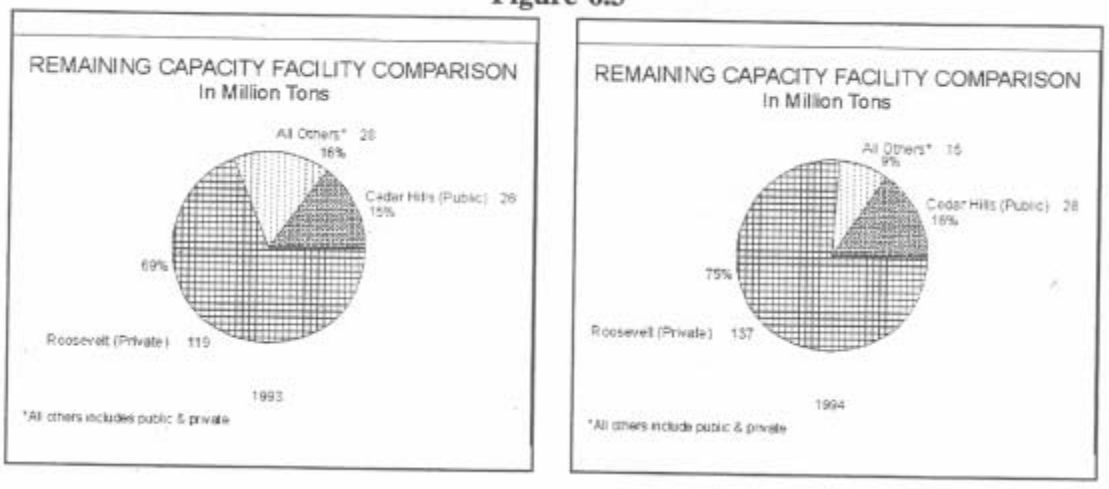
Eighteen of the 24 operating MSW landfills are publicly owned. However, 77% of the remaining permitted capacity is at the six privately-owned facilities, compared to 73% in 1993. See Table 6.8 for an estimated number of facilities with specified remaining years of life.

Table 6.8
Estimate Years to Closure for MSW Landfills

Years To Closure	Number of Facilities	Public	Private
Less than 5 years	1	1	0
5 to 10 years	5	5	0
Greater than 10 years	18	12	6
TOTALS	24	18	6

While 49 years of remaining capacity appears to be a lot, it needs to be put into the perspective of availability and ownership of that capacity. The majority of the capacity is in the private sector, with about 75% of the total statewide capacity being at Roosevelt Regional Landfill in Klickitat County. Another 16% of the statewide total capacity is at the Cedar Hills Landfill in King County, with the remaining 9% of capacity spread among the remaining 22 landfills in the state (see Figure 6.3).

Figure 6.3



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

The access to landfill capacity also needs to be considered. The Roosevelt Regional Landfill is operated to be a landfill that accepts waste from a wide variety of locations. In 1993, the facility received some type of solid waste from 26 counties in Washington, four other states 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 49 years of total capacity is based on the amount of waste disposed in MSW landfills in 1993. This amount will vary depending upon waste reduction and recycling activities, as well as the impact of waste being imported into the state for disposal or additional waste that is currently being 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). If requirements for other types of landfills (woodwaste, inert/demolition and limited purpose) become more stringent in the future, there may be an additional shift of the types of solid waste moving to the MSW landfills for disposal.

Additional sources of waste for disposal in the solid waste infrastructure may occur from the regulatory reform process being undertaken by Ecology for the state *Dangerous Waste Regulations*, chapter 173-303 WAC. This process is evaluating the classifications of waste that are regulated at a level beyond the federal standards. Some of these wastes may be evaluated and determined that, because of the more stringent requirements of the new state/federal municipal solid waste landfill standards, that some of these waste may, with the proper management be suitable for disposal in MSW landfills.

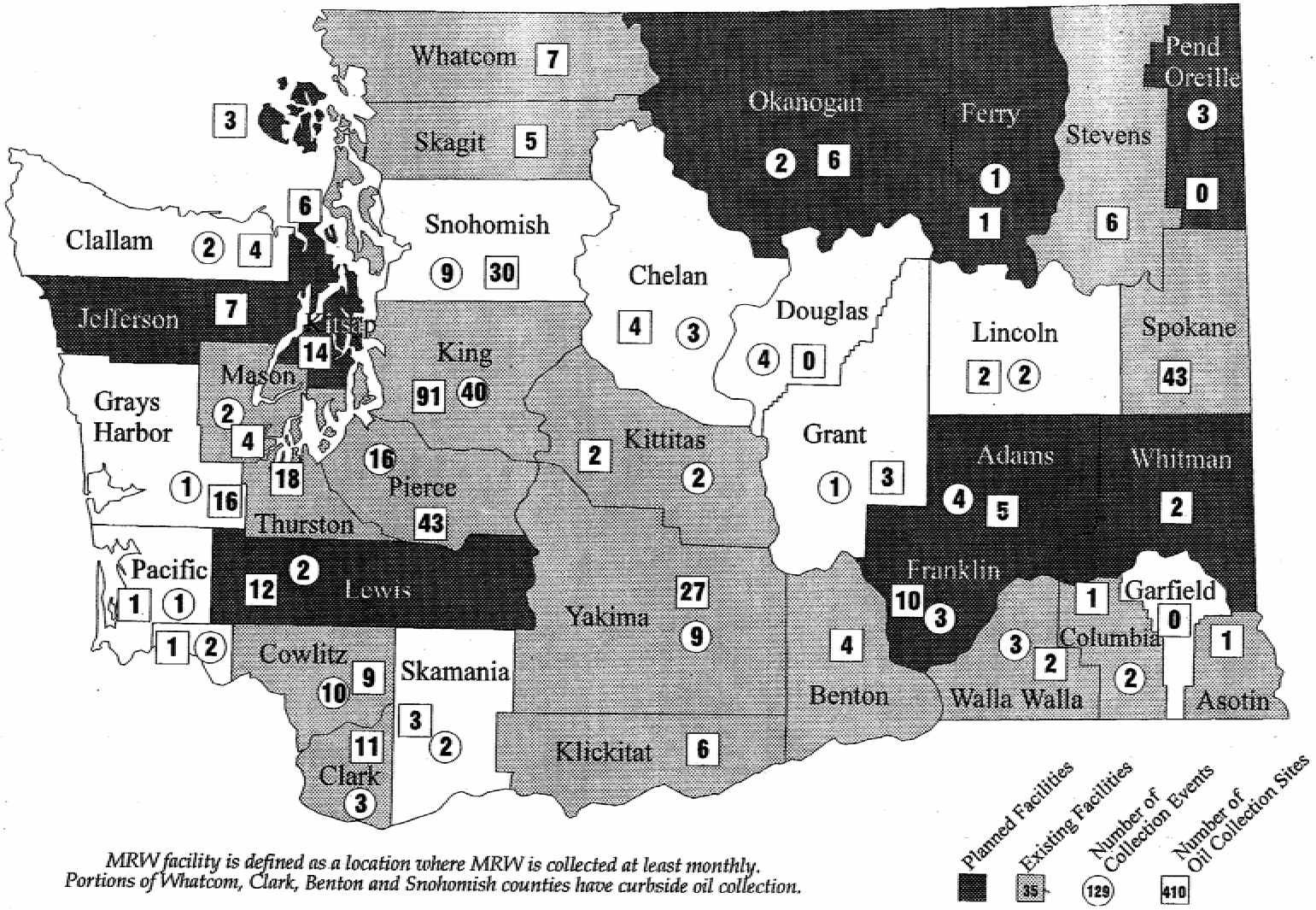
Moderate Risk Waste

Statewide Summary of MRW Collection System as of the end of 1994

Map C summarizes the moderate risk waste (MRW) collection system as it exists as of the end of 1994. This includes the number of MRW collection events held per county, including mobile MRW collection activities, as well as planned and existing MRW and used oil collection facilities.

In 1994, the collection event count per county includes mobile collection activities, which were formerly counted as a separate kind of collection activity. In 1993, there were 70 collection events reported and 53 would have been added to the collection events for mobile facilities for an equivalent total of 123 collection events. In 1994, there were 129 collection events, including mobile collections. Some counties curtailed their collection events in anticipation of fixed facilities that had not yet begun operations.

MAP C: 1994 MRW Collection Systems



MRW facility is defined as a location where MRW is collected at least monthly.
Portions of Whatcom, Clark, Benton and Snohomish counties have curbside oil collection.

Eighteen counties now have operating MRW fixed facilities and 7 have more than one per county. Some accept only household hazardous waste (HHW) while others accept HHW and Conditionally Exempt Small Quality Generator (CESQG) wastes. Most also accept used oil. This includes public and private operations. There are now 35 fixed facilities accepting MRW, which is more than the number of landfills accepting MSW (24 total). In 1993, there were 33 MRW fixed facilities operating. Nine other counties are planning to construct MRW fixed facilities one of which will be private. Facilities in Pend Oreille, Ferry, Franklin, Kitsap, Whitman and Jefferson Counties are likely to open in 1995.

The used oil collection system has dramatically expanded in 1994 to 410 sites from the 1992 estimate of 280 sites. As shown on Map C the used oil collection sites are well distributed across the state. There is estimate that to meet the legislative goal of 80% used oil recycling that there is a need for approximately 1,000 sites statewide.

Estimated Moderate Risk Waste Collection in 1992 and 1993

Table 6.9 shows the estimated quantities and types of HHW collected statewide. Excluding used oil collection, the amount of HHW collected nearly doubled from 1992 with 2.7 million pounds to 5.3 million pounds in 1993.

In this same 12 month period used oil collection approximately quadrupled from 320 thousand gallons in 1992 to 1,226 thousand gallons in 1993. Assuming 7.4 pounds per gallon for used oil, the overall HHW collection went from 5.1 million pounds in 1992 to over 14.4 million pounds in 1993, almost a three fold increase. A past concern of used oil collection sites was the potential for contamination and the resulting increased disposal costs for the contaminated use oil. In 1993, the Legislature provided $75,000 through Ecology to deal with contaminated loads. During fiscal year 1994 (July 1993-June 1994), fifteen incidents totaling $9,000 in cleaning costs were handled. This represented only a 0.2% contamination rate of used oil collected.

The dramatic increase in HHW collected is explained to the largest extent by increased use of collection events and facilities as the public becomes more aware of their availability. The modest expansion of collection opportunities, most typically in the less populous parts of the state, described previously cannot account for this large increase. This indicates that the collection program has not yet reached customer saturation in the state.

Table 6.9

Estimated 1992 and 1993 Household Hazardous Waste Collected

Waste Type	1992 Lbs.	1992 Percent	1993 Lbs.	1993 Percent	Percent in 1993 Compared to 1992
Auto Batteries	347,252	12.8%	1,341,700	25.2%	386.4%
Latex Paint	742,835	27.4%	1,333,500	25.0%	179.5%
Solvents	334,820	12.4%	753,500	14.1%	225.0%
Oil Based Paint	663,342	24.5%	696,700	13.1%	105.0%
Antifreeze	143,431	5.3%	482,700	9.1%	336.5%
Flammable Solids			239,000	4.5%	
Flammables (includ. adhes.)	139,135	5.1%			
Pesticides	205,150	7.6%	203,800	3.8%	99.3%
Corrosives (Acids + Bases)	55,829	2.1%	87,500	1.6%	156.7%
Aerosols, non-pesticide	64,379	2.4%	79,000	1.5%	122.7%
Other			50,000	0.9%	
Oxidizers	14,489	0.5%			
Household Batteries			42,900	0.8%	
Adhesives			21,500	0.4%	
CFCs			600	0.0%	
Totals Except Used Oil	2,710,662	100.0%	5,332,400	100.0%	196.7%

Estimated 1992 and 1993 Used Oil Collected

Waste Type	1992 Lbs.	1992 Percent	1993 Lbs.	1993 Percent	Percent in 1993 Compared to 1992
Used Oil	2,373,089	320,688	9,070,000	1,225,676	382.2%
Contaminated Used Oil			15,100	2,041	
Percent Contaminated				0.2%	

Estimated 1992 and 1993 HHW Collection Totals

	1992 Lbs.		1993 Lbs.		Percent in 1993 Compared to 1992
Total HHW Collected	5,083,751		14,417,500		283.6%

The *Problem Waste Study*[43] estimated that there is approximately 10 pounds per person per year of HHW generated in Washington. With a current population of about 5.2 million persons that would mean 52 million pounds of HHW is being generated per year. The collection of 14.4 million pounds of HHW would account for 27% of the 52 million pounds generated annually. This does not account for the significant amounts of HHW that is known to exist "in-storage" from generation in prior years in our houses, garages, and workshops.

Another way to gauge the amount of HHW collected is to compare it to other hazardous waste stream such as the Toxic Release Inventory (TRI). In 1993, there was a reported 24.5 million pounds of toxics released into Washington's air, water, and ground from selected industrial sources. The 14.4 million pounds of HHW diverted from the water and waste streams of the state by the MRW collection system equal about 59% of the total TRI quantities. Less than 2% of the HHW collected were managed by treatment or solid waste landfilling. The majority of the collected HHW is recycled or reused and the remainder is sent to various hazardous waste disposal facilities.

The 1993 information is more detailed in the wastes with smaller volumes and the waste type definitions are somewhat different in the 1993 data due to the nature of the survey instrument. The 1994 data should be more standardized by waste type based on the results of the 1992 and 1993 data collection efforts.

The amounts of CESQG waste collected in 1993 was negligible relative to HHW. It is usually reported separately and was not included here. CESQG collection will be increasing significantly in the coming few years according to the various local hazardous waste plans and especially at various fixed facilities that have recently begun or are planning to collect CESQG wastes.

[43] *The Problem Waste Study*, Department of Ecology, Publication #90-59, December 1990.