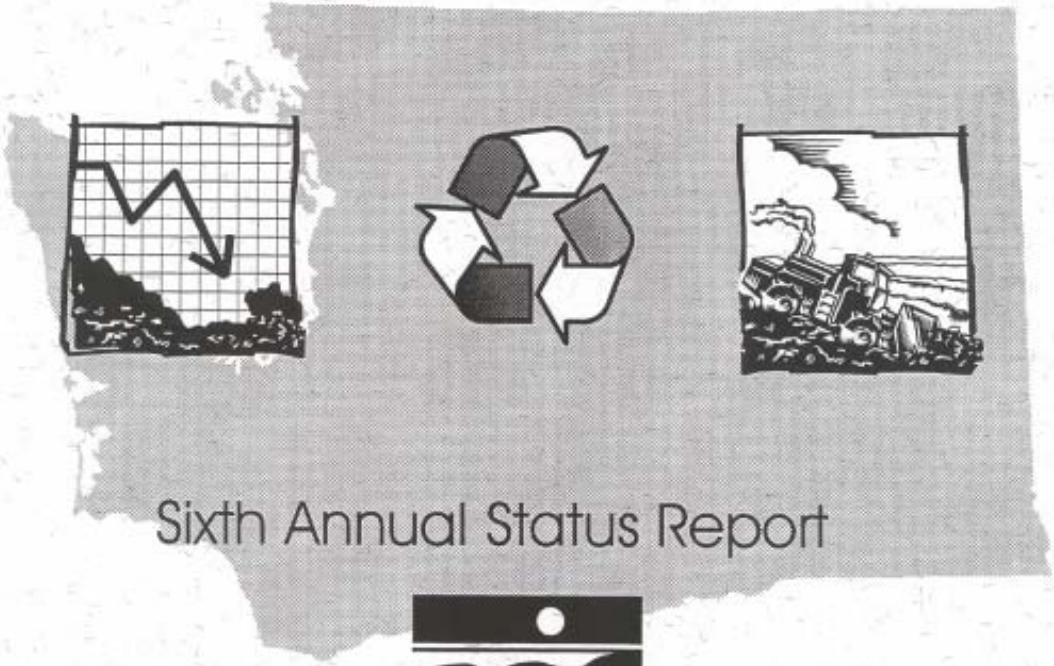
Solid Waste In Washington State



Sixth Annual Status Report

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Solid Waste and Financial Assistance Program
January 1998
Publication #98-500

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Solid Waste in Washington State

Sixth Annual Status Report

Prepared by:

Washington State Department of Ecology
Solid Waste and Financial Assistance Program

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Acronyms

CDL	Construction, Demolition and Landclearing
CPG	Coordinated Prevention Grants
EPA	Environmental Protection Agency
ESHB	Engrossed Substitute House Bill
EYC	Ecology Youth Corps
GA	Department of General Administration
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
PPG	Public Participation Grants
RA	Remedial Action
RCRA	Resource Recovery and Conservation Act
RCW	Revised Code of Washington
SW&FAP	Solid Waste & Financial Assistance Program
WAC	Washington Administrative Code
WR/R	Waste Reduction/Recycling

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Executive Summary

Summary of Findings

❖ Solid Waste Handling Infrastructure

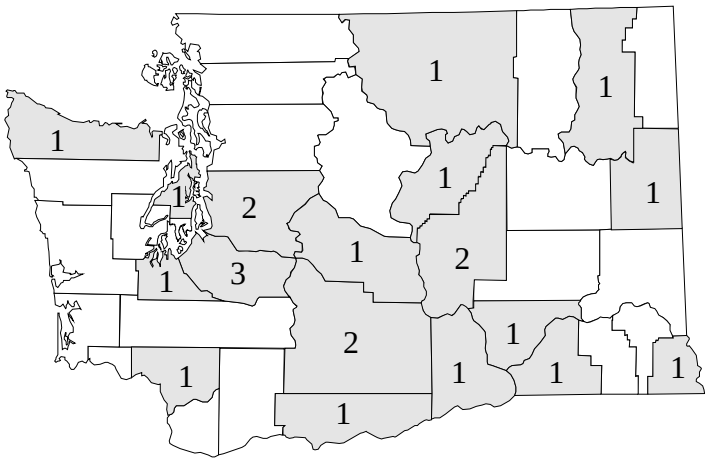
As of August 1997, there were 308 solid waste facilities, maintained in Ecology's statewide database. These included landfills (73), intermediate transfer and storage facilities (224), and incinerators (6). There are five additional facilities classified as ancillary/other.

There are additional facilities, most notably compost and moderate risk waste facilities, that are co-located at other permitted facilities, and are not included in the above totals. Biosolids land application sites are also not included in the total.

In 1996, 24 municipal solid waste (MSW) landfills accepted waste, compared with 45 in 1991. Of these 24, 18 were publicly owned, 6 were privately owned.

One publicly owned landfill closed in May 1996. There are currently only 23 operating municipal solid waste landfills. Sixteen of Washington's 39 counties have landfills, compared with 35 counties in 1991.

Location of MSW Landfills

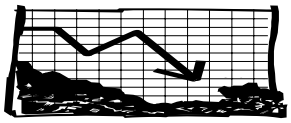


Public 17
Private 6
Total 23

As MSW landfills continue to close, more counties will be relying on long-haul transport to facilities beyond their borders for disposal. In 1996, 36 of the 39 counties sent part of their waste by long-haul, to facilities in Washington or Oregon. Twelve of those relied on a distant facility for all of their disposal needs.

Of the remaining non-MSW facilities in the landfill classification in 1997, there were 21 inert/demolition landfills, 18 limited purpose landfills, 10 woodwaste landfills and one ash monofill.

❖ Waste Reduction/Recycling



In October 1997, Ecology in cooperation with EPA, held a statewide workshop featuring the EPA "Source Reduction Program Potential" Manual and related computer software to enable local government to begin to build quantifiable waste reduction programs. Staff will continue working with individual counties as requested to assist them in developing their waste reduction programs.

Ecology is working with rural recyclers and counties by developing methods to provide the current market value of commodities, as well as helping them coordinate with others to consolidate and market materials. This will assist in increasing the recycling rate for that portion of the state. Ecology will evaluate the most feasible way to track current commodity prices on a weekly basis and make the information accessible through our 1-800 RECYCLE HOTLINE.

In 1996, waste reduction, as well as recycling efforts, continued to focus on the priority waste stream of construction, demolition and landclearing (CDL) debris. Some of the activities included:

- Forming the Washington State CDL council
- Conducting three major projects in the Spokane area with the Resource Efficient Building and Remodeling Council (REBAR)
- Assisting the Northwest EcoBuilding Guild with “Building with Value 1996” workshop series for building and design professionals
- Distributing “Environmental Handbook for Washington Construction Contractors: Regulatory Guidance” to builders and local building departments.
- Providing a resource efficient building video “Building More with Less:

A draft “Compost Facility Resource Handbook” was issued in June 1997[1]. It integrates the regulatory requirements, facility designs and best management practices for compost facilities.

The Ecology Youth Corps (EYC) picked-up over 64,947 bags of litter and recyclables on 5,900 miles of Washington highways and 1,111 acres during the 1997. Both median crews and summer crews participated.

[1] “Draft Compost Facility Resource Handbook – Guidance for Washington State”, June 3, 1997, Publication #97-502.

Ecology issued almost $5 million in grants through the Coordinated Prevention Grants program (CPG). These grants leveraged with local matching funds supported almost $7.7 million worth of solid waste and moderate risk waste program by 56 local governments.

❖ 1996 Recycling Survey

In 1996, 2,542,513 tons of the recyclable portion of the solid waste stream were recycled. This represents a measured 39% recycling rate for the recyclable waste stream generated in 1996. This year's recycling rate is .48% lower than last year.

This is significant because it coincides with the implementation of the last two planned curbside collection programs in the state located in Wenatchee and Walla Walla. These two curbside programs essentially signal the full implementation of the Waste Not Washington Act, which brought the state from 15% in 1986 to 39% in 1996. We can expect the recycling rate to remain constant in the near future varying only with market conditions.

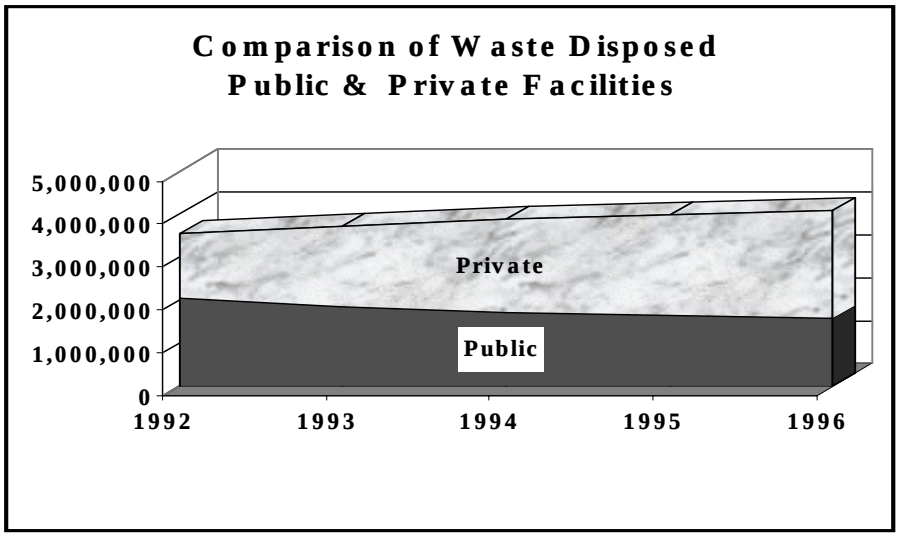
❖ Disposal of Solid Waste

- **Municipal Solid Waste Landfills**

  In 1996, 4,083,755 tons of solid waste were disposed of in 24 MSW landfills. In 1995, a total of 4,001,815 tons was disposed of in the same MSW landfills. In 1995, the per capita disposal rate had decreased for the first time since tracking began in 1991. With the increase in 1996, the per capita disposal rate increased but it was still lower than the 1994 rate.

  In 1996, public landfills accepted 39% of the waste (compared to 69% in 1991); 61% was disposed in private landfills (compared to 31% in 1991). This shows the increasing trend for the use of private landfills.

Comparison of Waste Disposed for Public and Private Facilities



- **Energy Recovery/Incineration**

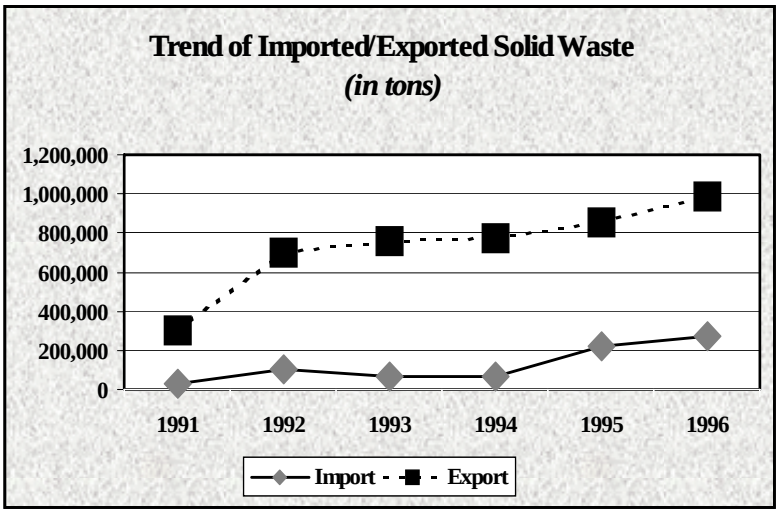
  In 1996, 92% of the waste disposed in Washington was disposed in landfills and 8 % was incinerated. A total of 365,464 tons of municipal solid waste was incinerated at six facilities. This is a decrease from the 397,588 tons incinerated in 1995.

  A total of 101,482 tons of ash produced by the MSW energy recovery facilities was disposed at the only permitted ash monofill in Washington at Roosevelt Regional Landfill in Klickitat County.

- **Solid Waste Importation/Exportation**

  In 1996, Washington's landfills and incinerators received 275,115 tons of waste from outside the state. This amounts to about 6% of the waste disposed in the state, compared with 1% in 1994. Washington exported 989,173 tons of waste to landfills in Oregon, an increase from 851,885 tons in 1995.

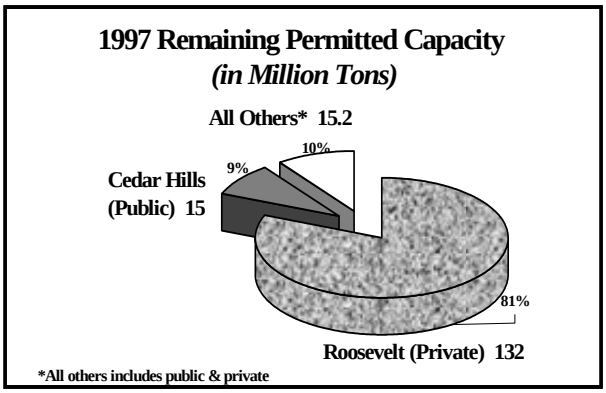
Trend of Imported/Exported Solid Waste



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

  Of the 24 MSW landfills that received waste in 1996, one closed in May 1996.

  Self-reporting by the 23 MSW landfills that are operating in late 1996, indicated about 162 million tons of permitted capacity remained, or approximately 40 years at the current disposal rate.[2] Of the remaining permitted capacity, 81% is at one facility, the Roosevelt Regional Landfill located in eastern Washington, in Klickitat County. The other capacity is at the other 22 landfills, most of which are operated to serve the citizens of the local area.



[2] Many factors can affect the amount of remaining capacity including population growth, the importing of waste from other states, and waste reduction and recycling activities.

One new MSW landfill has been permitted in Adams County with construction to begin in 1998. The permitted capacity of 90,000,000 tons has not be included in the above total.

- **Other Solid Waste Landfills**

  In 1996, ten woodwaste landfills reported receiving 102,697 tons of waste, compared with 115,759 tons received at seven facilities in 1995.

  In 1996, 21 inert/demolition landfills reported receiving 873,195 tons of waste, compared with 479,638 tons at 13 facilities in 1995. Bette response from this type of facility accounts for much of the increase in disposed amounts.

  In 1996, 18 limited purpose landfills reported receiving 910,078 tons of waste, compared with 974,116 tons at 14 facilities in 1995.

Chapter 1 Issues Facing Solid Waste

Changes in the Solid Waste Regulatory Structure

In the past, the majority of solid waste was disposed, either by landfilling or by incinerating. Landfills were not required to be lined and leachate often contaminated the ground and surface water. Environmental statutes and regulations were developed for solid waste handling facilities to protect our resources.

Chapter 70.95 RCW, the *Solid Waste Management Act* establishes the environmental and regulatory requirements for solid waste. It views all components of the solid waste stream as waste. By law, the definition of solid waste includes recyclables. This means recyclable materials and their processing facilities are subject to the same environmental regulations and permitting requirements as other types of solid waste handling facilities such as landfills, even when there is little or no environmental risk associated with the material.

The current regulation, chapter 173-304 WAC, *the Minimum Functional Standards for Solid Waste Handling Facilities (MFS),* does not provide for an assessment of the risk associated with a particular handling method, but rather requires all solid waste handling facilities to be permitted.

In 1989, the *"Waste Not Washington Act"* directed a fundamental shift from disposal by making waste reduction and recycling higher priority methods of solid waste handling. Currently, almost 40% of the waste stream is recycled. As more and more waste types are recycled, the existing solid waste handling statute and regulation often place an unnecessary burden on these operations.

In 1997, Ecology began a review of the solid waste permitting and regulatory system. This includes evaluating the solid waste statute, chapter 70.95 RCW, the *Solid Waste Management Act*, as well as evaluating the solid waste regulation, chapter 173-304 WAC, *the Minimum Functional Standards for Solid Waste Handling Facilities (MFS),* discussed below.

Solid Waste Permitting System Review

With the fundamental shift from a disposal based solid waste handling system to a system more reliant on recycling, a different statutory approach is needed that will allow for re-interpretation of existing regulations to make better distinctions between commodities (recyclables) and wastes. In addition, inconsistencies in how recycling facilities are currently permitted needed to be reviewed. There is also concern to ensure the safety of solid wastes that are being reused or recycled. This safety concern is expressed in terms of potential human health hazardous and potential environmental threats to air, water or

soil. Regulatory oversight should be matched to the degree of risk present. As resources at both the state and local level diminish over time, changes to the permitting system should allow both state and local staff to focus on real environmental risk, and allow for easier recycling.

The 1997 Legislature passed ESHB 1419 directing Ecology to review the solid waste permit system to determine how the use and reuse of materials can be improved. Areas to be reviewed include alternatives to statutory definitions, permitting requirements, risk assessment, and the overall regulatory system as it pertains to solid waste and recyclables.

Ecology worked with the State Solid Waste Advisory Committee, held public workshops and gained input from a wide group of interested parties during this process. A final report was submitted to the appropriate legislative committees December 1997.[3] Any proposal must ensure that human health and the health of the environment are protected, while encouraging economically sound solid waste management and beneficial uses. Specific legislative and regulatory changes to the solid waste permit system were included. Changes may be proposed for both chapter 70.95 RCW, *the Solid Waste Management Act* and chapter 173-304 WAC, *the Minimum Functional Standards for Solid Waste Facilities*.

What did Ecology look at during this process?

Ecology looked at options other than the "one-site/one-permit" systems that currently exists. Permitting structures of other states were investigated as well as permit systems in other Ecology programs. The current local permitting process was also evaluated. What was found was:

1. Other media have other permitting mechanisms besides individual site/individual permit;

2. Other states use varied approaches;

3. Local permitting processes, such as conditional use permits and solid waste permits, can be a point of conflict.

The study looked at creating some type of categorical exemption for solid waste activities and materials that is more broadly based than in the current regulation. A beneficial use test for products and commodities was proposed. This could be legislatively sanctioned and developed in future rule making.

It was proposed that for certain classes of facilities and handling practices, permits could be issued by the state through a general permit, similar to the Water Quality Program

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

permits. This would be for certain classes of facilities with low level of risks. While this approach would shift the permit authority on those facilities for local government to the state, the enforcement authority would remain at the local level.

The question of "how many permits are enough" was looked at. Is it possible to create a mechanism that would defer to another permit that a facility needs to receive and thus lighten the regulatory burden for the applicant?

Many of the issues raised by the study can be dealt with during the rule revision process to update chapter 173-304 WAC, *Minimum Functional Standards for Solid Waste Handling* (see discussion below). Some other issues may require legislative action at a future date.

What did Ecology hear during this process?

Changes to What?

There is limited interest in looking at wholesale changes to the solid waste permitting system, especially if it means changing who issues the permit. Garbage and disposal related facilities and handling methods should not be modified. What should be looked at further is how the permitting for low risk facilities, such as recycling facilities, could be modified. Public comment suggested that this should be undertaken as part of the *Minimum Functional Standards for Solid Waste Handling* (chapter 173-304 WAC) rule revision process where roles and responsibilities can be addressed.

Consistency vs. Local Control

There is a strong local control issue involved with the regulation of solid waste. Local governments do not want changes in the permit process and regulatory system, especially if it means loss of control. Not unexpectedly, in the eyes of most regulators, the system is working well. For some of the regulated community, however, the current system is cumbersome and inconsistent.

Alternate Permit Approaches May Be Possible

Local governments seem to be willing to consider a permit-by-rule or a general permit approach, if those would be options for their permitting process and not mandatory. They do not support changing the focus of who issues the permit. The regulated business community found the possibility of general permits appealing. These options will be evaluated during the chapter 173-304 WAC rule revision process and may not require statutory changes.

How Many Permits are Enough?

Deferring to other permits was proposed and may be considered during the rule revision process. Deferral could be made to air quality permits or water quality permits issued by Ecology or other permits issued. However, local governments are not interested in changing local land use permit systems. Not all local governments have land use ordinances appropriate for solid waste facility permitting. Many do not want to further encumber already overburdened systems with additional responsibilities.

What happens now?

The existing rule, chapter 173-304 WAC, sets minimum functional standards for solid waste facilities and describes the current permitting process. These regulations were created prior to the initiation of the comprehensive waste recycling systems in place today throughout the state. These regulations clearly need to be updated.

Many of the issues identified during this study can be addressed by regulatory rather than statutory change. Regulatory change will be pursued further as we move into revising the *Minimum Functional Standards* during the 1998-1999 timeframe. Two areas that may be available for Ecology to pursue during the rule revision process include:

1. Categorical exemptions of materials/products or handling practices from the solid waste permitting rules, much like SEPA; and

2. Beneficial use reviews and determinations for materials land applied.

Receiving public comment, it was clear that state regulations were inconsistently applied through the various local jurisdictions that enforce them. What the state can do about this is to make it clear what is and is not subject to permit and regulation and when. Establishing a process for categorical exemption of specific materials and processes would provide strong and clear direction and provide the needed consistency.

Chapter 70.95 RCW, *the Solid Waste Management Reduction and Recycling Act*, should be reviewed as well to reflect the current business and waste management system. Two areas that the legislature should authorize Ecology to pursue are:

1. Categorical exemptions for wastes that are recycled and pose no human health or environmental threat; and

2. Use review determination process for materials that are land applied.

For now, there is not consensus from the various interest groups on the best approaches to take. There is, however, a strong foundation to begin building consensus through rule making, which the agency intends to initiate immediately and plans to complete in 1999.

What issues remain?

Generally, there remains disagreement in the following areas:

- Should risk be assessed by looking at the material, the processing of the material, the application of the material or all three?

- Can the recycling industry be treated equally throughout the state with a variety of local ordinances implemented by multiple jurisdictions that have enforcement oversight?

- Do regulations and permit requirements place an undue burden on suppliers of recycled materials, which are not applied to primary material suppliers that provide the same, albeit new, materials?

- Can deferral to other permit processes successfully achieve reform in regulatory activity or will it make the permitting of solid waste facilities more complicated by bringing in other permitting processes not related to solid waste management? How disruptive would deferral be to existing permitting arrangements related to enforcement?

- Will categorical exemptions for specific wastes or handling methods allow practices that could pose a risk if not appropriately managed? What would be the enforcement mechanisms available should that happen?

- Should the "use review determination" (beneficial use determination) be limited to land application of waste derived products only, or should it apply to all recycling processes and recovered materials?

- Can the existing permitting system, with its inconsistencies in enforcement, be clarified to incorporate the needs of our existing waste management system without wholesale change?

Revision of chapter 173-304 WAC

Changes in the way solid waste is currently managed also necessitate an evaluation of chapter 173-304 WAC, the *Minimum Functional Standards for Solid Waste Handling*. This regulation was last revised in 1985. Since that time there have been many changes in the way solid waste is handled, including land application of material for beneficial use, new recycling and reuse methods for woodwaste and demolition wastes, the movement of wastes into the solid waste system from the hazardous waste system through deregulation, and the increasing emphasis on different facilities, such as compost facilities, rather than landfills. In addition, in 1991, new standards for municipal solid waste landfills, formerly included in chapter 173-304 WAC, were completed in chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills*. These and other changes

have resulted in the need for rule revision.

Ecology, working with State Solid Waste Advisory Committee, will develop a strategy for revising chapter 173-304 WAC. An internal work group has prioritized the areas of the rule that need revision. These will be the focus of work over the next two years to complete the rule revision. Areas of concern include:

How clean is clean - Inert definitions

This task would involve developing a set of criteria for defining the term "inert". The current definition in the rule was intended to apply to monolithic material like waste concrete, asphalt, and ceramics. The goal would be to develop a risk-driven approach that would allow some wastes to be considered as safe as "natural materials" and managed like soil and rock. These definitions could also be used to define risk boundaries for non-monolithic (i.e. fine-grained) materials.

Rule changes based on chapter 173-351 WAC

Appropriate aspects of the locational standards and groundwater monitoring requirements of chapter 173-351WAC, *Criteria for Municipal Solid Waste Landfills*, in chapter 173-304 WAC would be included. Other aspects of chapter 173-351 WAC would be reviewed for inclusion in chapter 173-304 WAC. It will be clarified that the MFS does not apply to municipal solid waste landfills.

Woodwaste and demolition landfill standards

The woodwaste and demolition standards in the MFS would be repealed and those wastes would be folded into the standards being developed for disposal of all other non-municipal solid waste. Implementation would be contingent on revisions to the inert definition and other non-MSW standards.

Administrative organization and readability

This task would involve looking at the outline of the regulation, the order in which topics are treated, the level of referencing and the readability of the rules. Additionally, new language developed will be assessed to ensure its readability.

Moderate Risk Waste

Definitions and permitting requirements for moderate risk waste facilities would be incorporated into the rules. The existing guidance (with appropriate modifications) would be incorporated into regulatory language.

Surface Impoundments

Currently only surface impoundments that are non-overflowing or otherwise have no federally-based, state-issued permit to discharge to surface water (NPDES) fall

under solid waste regulations. Other states regulate surface impoundments under solid waste rules even where NPDES permits regulate their discharge. With Washington's local permitting and enforcement authority, this would be a large expansion of the regulatory system. The approach might consider other alternatives including design standards in water quality NPDES permits, or using state discharge permit authority under chapter 90.48 RCW, *Water Pollution Control*.

Compliance Dates

In order to address the issue of when certain requirements need to be in place, compliance dates established in earlier rules, chapter 173-304 WAC and chapter 173-351 WAC, would be reviewed to determine how well those approaches worked. The first rule defined "existing" in terms of whether an active area had previously been permitted by the health department. The latter rule used the dates at which wastes had last been received to establish the definition of existing facility.

Other solid waste facilities (transfer stations)

This issue would involve exploring new approaches to regulating (or not regulating) transfer facilities and other solid waste management activities that occur within buildings. This might include innovative ways of permitting (including the permit-by-rule and/or the "general permit" approach). This issue is driven somewhat by the need to save staff resources at both the local and state levels for higher priority waste management activities; it also requires some exploration of whether current state law will allow innovative approaches (i.e. permit by rule).

Evaluating TIM's and guidance for incorporation into the rules

This task would involve examining each of the existing Technical Information Memorandas (TIM's) and other guidelines/guidance documents to determine whether they are suitable for incorporation into the rule.

Land application and other non-MSW standards (industrial landfills, surface impoundments, and piles)

Standards would be developed for land application and other non-MSW standards, including industrial landfills, surface impoundments, and piles. The conceptual approach would include either:

1. Using the national guidance being developed by Association of State and Territorial Solid Waste Management Officials (ASTSWMO) and EPA to outline the contents of the rules for all non-MSW waste; or,

2. Developing rules without national guidance, using other states' solid waste regulations and adapting them to as needed.

Waste-To-Fertilizer

Some firms are recycling industrial by-products which are classified as solid waste or hazardous waste according to state regulations, but are allowed by law to be removed from such classification if legitimately used in a product which has beneficial uses, such as fertilizer. Under existing Ecology regulations, some hazardous and solid waste are recycled as ingredients in fertilizers and soil amendments. Waste-derived fertilizer products can also contain "tag-along" contaminants. Metals are thought to be the most potentially hazardous of the tag-along contaminants, however, some products may also contain organic contaminants such as dioxin.

Fertilizer products from natural sources can also contain tag-along contaminants, especially metals. The risk of contamination in fertilizer products has not been fully evaluated. There are no federal or state standards which regulate the level of contamination in fertilizer.

News stories have created concern among some members of the public that use of industrial wastes in fertilizer is potentially unsafe. Current data does not support that conclusion, however in August 1997, Governor Locke asked the Department of Ecology, the Department of Agriculture and the Department of Health, to gather more information to determine with more certainty whether there is a potential public health problem.

The Hazardous Waste and Toxics Reduction Program at Ecology is the lead program for this effort to implement the Governor's directive. The Solid Waste & Financial Assistance Program (SW&FAP) is involved in the process because of certain solid wastes that are used for fertilizer and soil amendments.

In addition, the 1997 Legislature passed SSB 5701, which established an environmental review procedure for a person to seek the approval of the Department of Ecology to distribute a wood byproduct, currently a solid waste, as a commercial fertilizer. Once a wood byproduct is reviewed by Ecology for environmental heath hazardous, it then goes to the Department of Agriculture for registration as a commercial fertilizer. It would than be exempt from solid waste permitting.

This bill was narrowly focused on wood byproducts. Current land application activities involve applying various types of solid wastes to the land as fertilizers or soil amendments. Waste may include the application of gypsum wallboard mixed with yard waste, the application of chicken daft or by-products from meat packing plants, or such wastes as cement kiln dust or industrial wastewater treatment plant sludges. It is expected as the practice of land application increases, public awareness of the process, as well as controversy regarding the practice will also increase. The issue is also being driven by increasing volumes of waste from hazardous waste deregulatory activities and cleanup activities including sediments, air and water.

In the fall of 1997, the Department of Ecology, the Department of Agriculture and the Department of Health assembled a work group with a cross-section of interests from industry, agriculture, environmental groups, governments and citizens, to advise the agencies on a legislative proposal and rule-making on contaminants in fertilizers. The Department of Labor and Industries also joined the work group. Issues addressed included establishing standards for allowable levels of non-nutrient contents, labeling requirements and funding for a fertilizer monitoring program. Legislation was proposed during the 1998 Legislative session.

As a result of this work group, state health, environment, agriculture and worker safety experts developed proposed legislation, that if passed, will make Washington one of the first states in the nation to adopt standards for fertilizers. Governor Locke has requested this legislation during the 1998 session. The proposed legislation would:

- Intensify state review of the contents of all fertilizers.
- Require fertilizer makers to disclose on the labels of their products the heavy metals contents.
- Adopt the best available standards for metals levels in fertilizers;
- Fund research on plant uptake of heavy metals into food crops.

Increased Litter

The *Waste Reduction, Recycling, and Model Litter Control Act* (chapter 70.93 RCW), established the Litter Tax to be used for litter pickup by youth (40%) and waste reduction and recycling activities (60%). Ecology has always maintained this percentage split of the funds. However, over the previous three biennia, funds were appropriated from the Litter Account to the Clean Washington Center (CWC) for market development. This resulted in an overall decrease in the amount of funds available for litter pickup, although Ecology maintained the 40% split of funds received. The Clean Washington Center was not renewed for this current biennium.

During the 1997 Legislative session, there was concern about the increase in litter along the highways. Without funds going to CWC, Ecology received increased Litter Funds for the FY98/99 biennium. In addition, Ecology was directed to use 50% of the funds for litter pickup. With the additional funding, Ecology increased the use of the Ecology Youth Corps and added median crews to increase litter pickup. (Results of the 1997 efforts can be found in Chapter IV.) Ecology is evaluating additional ways to improve the efficiency and coverage of the Ecology Youth Corps.

Litter Task Force

Ecology did not feel that the agency could efficiently spend all of the funds allotted for litter pickup, without adding permanent staff and equipment. Therefore, Ecology convened a Litter Task Force, composed of representatives of Ecology, Washington State Department of Transportation, Department of Corrections, Department of Natural Resources, State Parks and Recreation Commission, Department of Revenue, representatives of counties, cities and industries associated with the Litter Fund, and legislators, to evaluate the litter pickup programs in Washington and to determine the most effective ways to pickup the litter

The Task Force completed in December 1997. As summarized in the final report, "Keeping Washington Clean – Litter Prevention and Pickup Recommendations to Washington State Legislature, the task force:

1. Looked at ways to increase litter pickup using the youth employment program or other methods at both the state and local level;

2. Evaluated the need for illegal dumping abatement at the local level;

3. Determined the most effective approach to public education and awareness for anti-litter campaigns at the state or local level; and

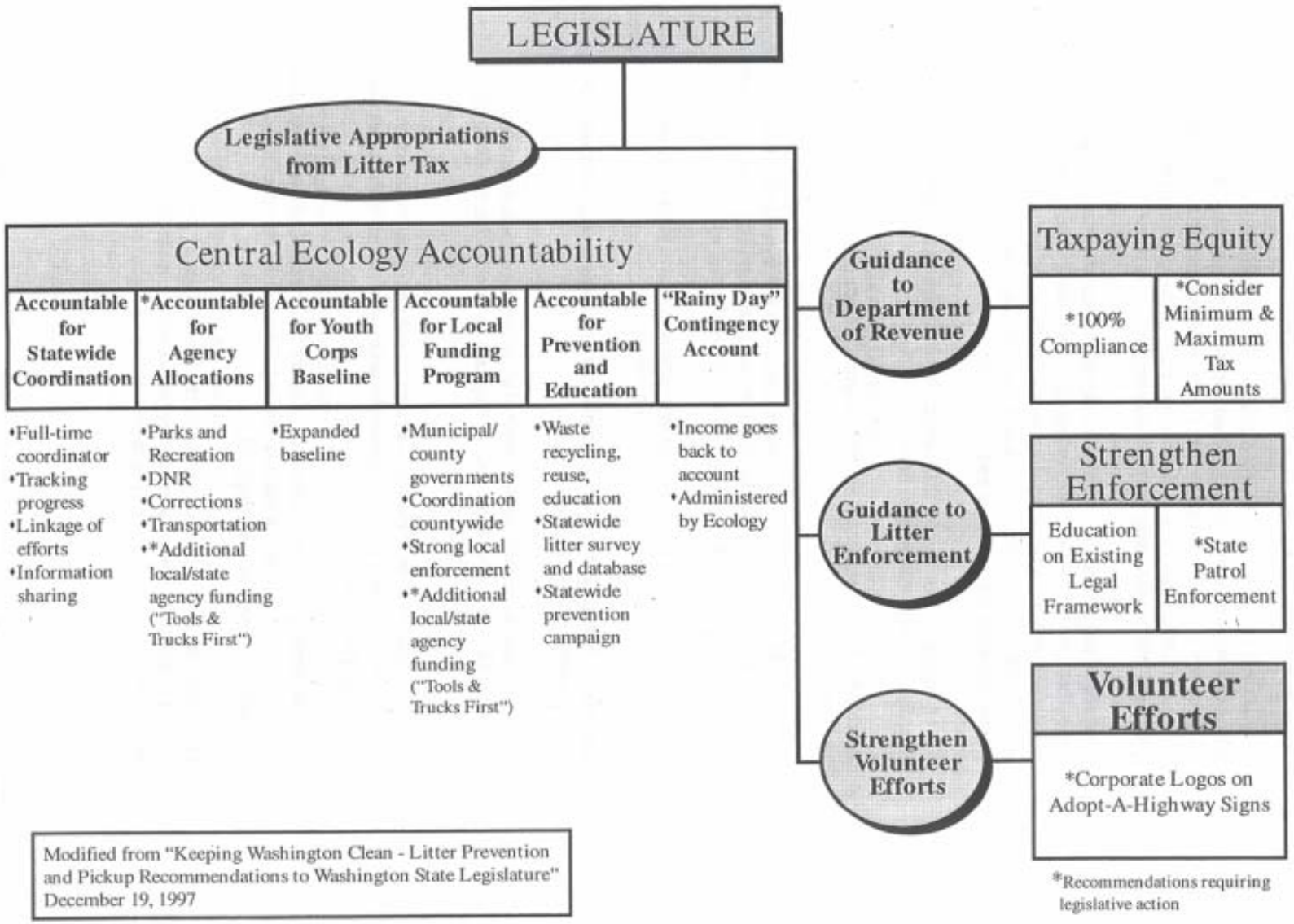
4. Evaluated other litter related issues as determined appropriate by the task force.

The Litter Task Force was committed to a standard of zero litter throughout the state. The partnership of state agencies, local governments, industry, and interest groups represented on the Task Force pledges to work cooperatively toward that goal.

Recommendations of the Litter Task Force

The Task Force formulated recommendations in several areas that will contribute to meeting the zero litter goal. They are summarized in Figure 1.1, and include:

Figure 1.1 Litter Task Force Recommendation Diagram



1. Make the Department of Ecology responsible and accountable for administering state agency allocations of Litter Tax Funds, working cooperatively with other agencies (Corrections, Natural Resources, Parks, Transportation) to develop programs and monitor their progress and results.

2. Establish a central function within Ecology to coordinate, integrate, and strengthen litter prevention and pickup efforts statewide. This would include regular information-sharing sessions with other involved agencies, local government grantees, and other interested stakeholders on methods for and progress toward the zero litter goal.

3. Set an enhanced baseline for the Ecology Youth Corps pickup program to maintain progress toward zero litter.

4. Establish a local government funding program for litter control activities by cities and counties.

5. In addition to Recommendation 4 above, create an additional competitive source of capital and operating funds for local or state agencies. Equipment purchases (e.g. trucks, tools) are to receive priority from this fund.

6. Continue support of waste reduction and recycling efforts as an effective tool for preventing litter and reaching the zero litter goal.

7. Establish a "rainy day account" as contingency for litter tax fund expenditures from currently unappropriated funds.

8. Conduct a statewide litter survey targeted at litter composition, sources, demographics, and geographic trends; maintain an information base to guide prevention and pickup efforts.

9. Conduct a statewide litter prevention campaign in partnership with local governments and tax-paying businesses to raise awareness of litter issues and encourage prevention.

10. Increase emphasis on the existing legal system for littering and illegal dumping to strengthen enforcement and include a strong enforcement message in the statewide litter prevention campaign.

11. Encourage the Legislature to ensure that the Department of Revenue works toward 100 percent compliance in litter tax collection, including consideration of minimum and maximum levels of tax liability.

12. Make a statutory change to allow corporate logos on Adopt-a-Highway signs to enhance the Department of Transportation's ability to attract corporate sponsors for highway cleanup.

Some of the recommendations may require changes in chapter 70.93 RCW, *Waste Reduction, Recycling, and Model Litter Control Act*, and other statutes. Additional changes in the funding percentages, as specified in statute, for litter collection and waste reduction and recycling activities may be required to implement the recommendations of the Litter Task Force.

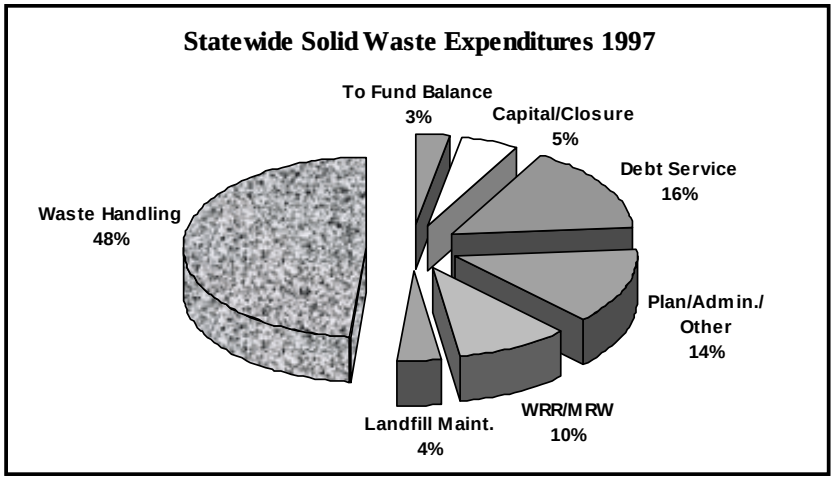
In addition to increased funds for litter pickup, the Legislature also directed Ecology to provide Litter Grants to local governments. A Litter Grant program is being developed and will be implemented in mid-1998 (see Chapter III).

Funding for Local Governments

The Washington State Association of Counties and the Solid Waste Policy Forum prepared a report, "Washington State Counties Solid Waste Survey Report" in October 1997. This report looked at the solid waste financial obligations and sources of funding for counties throughout the state. Information was obtained from surveys completed by all 39 Washington counties. Additional follow-up calls were made to insure the accuracy of the information provided. Some of the information discussed in their report is summarized below.

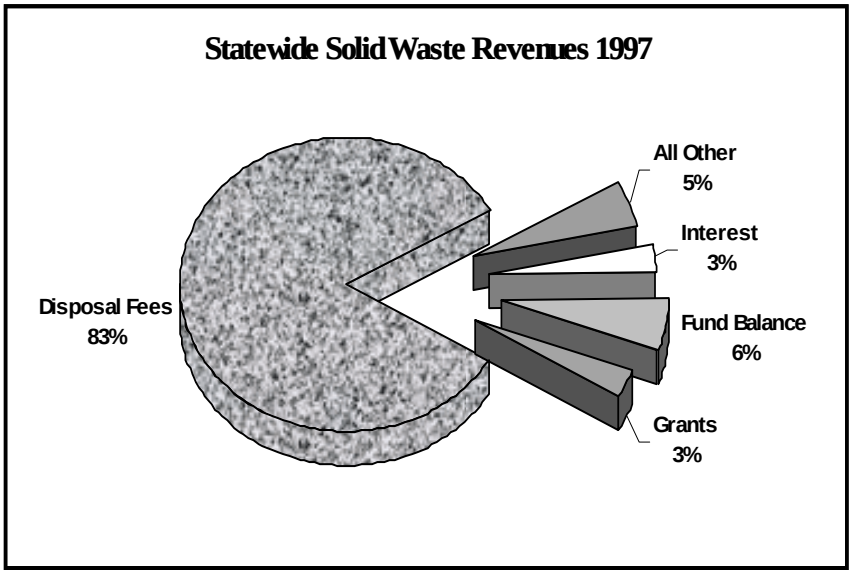
Changes have occurred not only in the way that solid waste is managed but also where it is managed. Up until the late 1980's, most cities and counties had their own local dump. Fees raised from the disposal charges paid for the solid waste programs. In the 1990's new environmental requirements for landfills resulted in the closure of many of those facilities. In 1985, there were almost 450 operating municipal solid waste landfills statewide; in 1997 there are 23. Not only do local communities not have their own landfills to provide income for solid waste activities, many also have closed landfills that have long-term post-closure costs associated with them. In some situations, the privatization of the solid waste system has also impacted local government's ability to obtain revenues for solid waste activities. In addition to long-term monitoring and maintenance costs associated with closed landfills, the types of activities funded by solid waste programs have also changed (see Figure 1.2). Increased environmental regulations brought the need for liners, daily cover, leachate and gas control systems. Changes in the state law and waste management hierarchy with the 1989 amendments to chapter 70.95 RCW, the *Solid Waste Management Act*, required local governments to plan for and provide waste reduction and recycling opportunities for their citizens, and better handling of hazardous waste, including household hazardous wastes. Fees from disposal were often used to pay for these programs. As waste reduction and recycling efforts became more successful, the amount of waste decreased, decreasing disposal revenue and requiring an increase in per ton tipping fees.

Figure 1.2 Statewide Solid Waste Expenditures 1997



The study looked at all counties, and found a wide variation in how county solid waste systems are operated, from counties operating their own transfer stations and landfills, to totally privatized systems. Statewide, counties in 1997 obtained over 80% of their revenues to fund all solid waste activities from disposal fees (see Figure 1.3). Some counties also use timber funds, general funds, planning fees, recycling revenues, contributions from cities, grants and other sources. While there are differences among counties, in general, many non-disposal programs are funded by disposal fees. For some counties, if all waste handling went away, there would still be significant non-disposal costs remaining.

Figure 1.3 Statewide Solid Waste Revenue 1997



Counties in the past have been able to use "flow control" ordinances to require that waste from their jurisdictions go through their own facilities, thereby being charged a disposal

fee. A 1994 US Supreme Court decision makes the use of flow control questionable. As a result the long-term use of disposal fees for funding solid waste activities is uncertain.

As the Solid Waste Survey Report points out, there may not at this time be a looming problem for any individual county. However, counties need to be aware of their situation, their future waste projections and needs, and determine how the changing waste stream impacts their solid waste programs. Without resources available from other sources, there needs to be a solution to long-term funding in the solid waste field. Understanding local governments current situation is a first step to determine the best method for solving the long-term funding needs.

Chapter II Solid Waste Handling Infrastructure

This chapter describes the basic facilities making up the solid waste management infrastructure within Washington state. While disposal and recycling information is from 1996, the lists of facilities are current as of July 1997.

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. Biosolids landspreading sites are not included in the total number of facilities. There is a new regulation proposed to deal exclusively with those types of sites.

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

Regulated solid waste facilities in the state are covered by three rules developed by Ecology. The first rule, chapter 173-304 WAC, *the Minimum Functional Standards* (MFS) identifies 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 not included in this annual status report.)

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 308 solid waste handling facilities in Table 2.1. Facility ownership in this chapter is categorized as either PUBLIC for those facilities owned by a recognized jurisdiction of government - a city, county or special purpose district - or as PRIVATE, for those facilities owned by corporations, partnerships or private individuals.

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

Table 2.1
Classification Table

Classification Facility Type	Statewide Total
Landfills	**73**
Ash Monofills	1
Inert/Demolition Waste Landfills	21
Limited Purpose Waste Landfills	18
Municipal Solid Waste Landfills*	23
Woodwaste Landfills	10
Intermediate Classification	**224**
Compacting Stations	7
Compost Facilities	26
Drop Boxes	71
Piles	5
Recycling Facilities	15
Surface Impoundments	4
Transfer Stations	78
Moderate Risk Waste Facilities	17
Tire Piles	1
Incineration	**6**
Ancillary/Other	**5**
Exempted Facilities	1
Landspreading Disposal Facilities	2
Other Facilities	2
Total All Facilities	**308**

* Disposal information for 1996 is provided for 24 MSW landfills. Bruce Landfill in Adams County closed in mid-1996.

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

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

Table 2.2 Solid Waste Facilities in Washington
Permitted Under Chapter 173-304 WAC or Chapter 173-351 WAC
(as of July 1997)

	LANDFILLS				INTERMEDIATE											
County	MSW Landfill	Wood Waste	Inert/Demolition	Limited Purpose	Ash Monofill	Compacting Station	Compost Facility	Drop Boxes	Piles	Recycling Facility	Surface Impoundments	Transfer Stations	MRW Fixed Facility	Tire Piles	Incinerators	Other
Adams												2				
Asotin	1		1													
Benton	1		1					1				1	1			
Chelan			2							1		3				
Clallam	1			2			1		1			2				1
Clark				2								3	1			
Columbia												1				
Cowlitz	1	1		1			1									
Douglas	1											1				
Ferry												1				
Franklin	1											1				
Garfield			1									1				
Grant	2							15								
Grays Harbor		1	1	2								6				
Island			1			2				3		2	4			
Jefferson			1	1				5				1	1			
King	2						4	2		1		11	5			
Kitsap	1	1					1	5		2			1			
Kittitas	1								1		1	2				
Klickitat	1				1			2				2		1		
Lewis			1					8				3				

	LANDFILLS				INTERMEDIATE											
County	MSW Landfill	Wood Waste	Inert/Demolition	Limited Purpose	Ash Monofill	Compacting Station	Compost Facility	Drop Boxes	Piles	Recycling Facility	Surface Impoundments	Transfer Stations	MRW Fixed Facility	Tire Piles	Incinerators	Other
Lincoln				1						1						
Mason		2		1				3				1				
Okanogan	1	1										2				
Pacific								2				2				
Pend Oreille								1				2				
Pierce	3		2	3			1	1				7			2	
San Juan								2			2					
Skagit						5	4	1				1	1			
Skamania												3				
Snohomish	0	2	1				4	6		1		3				1
Spokane	1		5	1			3		1		1	4	1		2	1
Stevens	1			1								4				
Thurston	1						1	3		1						
Wahkiakum								1								
Walla Walla	1						1									
Whatcom		2	1	2			1	6		4		4	2		2	1
Whitman			1	1			1			1						
Yakima	2		2				3	7	2			2				1
TOTAL	23	10	21	18	1	7	26	71	5	15	4	78	17	1	6	5

Landfill Classification

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

Table 2.3
Landfill Classification

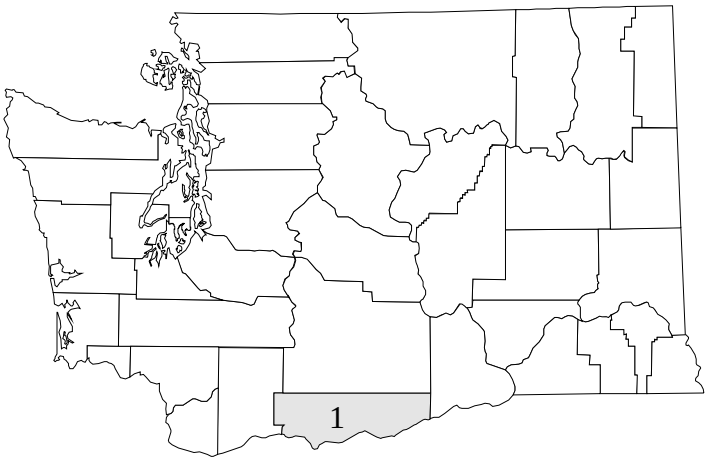
FACILITY TYPE	TOTAL # STATEWIDE		TOTAL BY OWNERSHIP DESIGNATION			
	Active	Active	Public		Private	
	1996	1997	1996	1997	1996	1997
Ash Monofill	1	1	0	0	1	1
Inert/ demolition	21	21	6	6	15	15
Limited Purpose	18	18	2	2	16	16
Municipal solid waste	23	23	17	17	6	6
Woodwaste	13	10	0	0	13	10
TOTAL	76	73	26	26	48	45

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.

In 1996, there was only one permitted ash monofill in Washington, located at the Roosevelt Regional Landfill in Klickitat County. The monofill operates under a permit issued by Ecology, and received 101,482 tons of special incinerator ash in 1996.

Location of Ash Monofill



Public	0
Private	1
Total	1

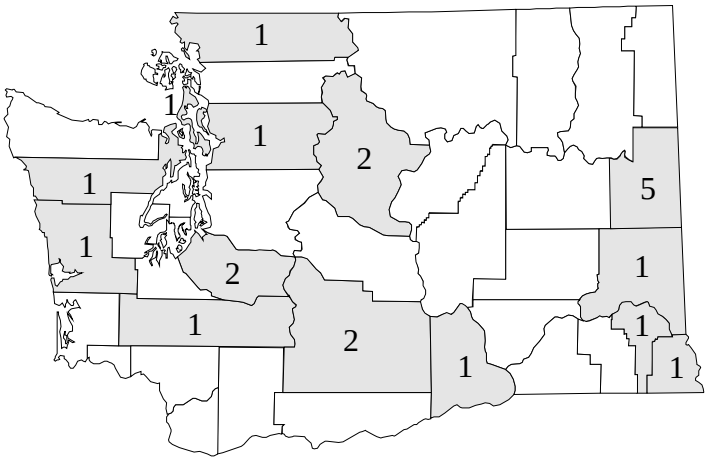
Inert/Demolition Waste Landfills

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.

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

Twenty-one of the inert/demolition landfills that reported in 1996, took 873,195 tons of waste. Most (71%) of the inert/demolition landfills are privately owned and operated. Public inert/ demolition landfills make up 29% of this facility type.

Location of Inert/Demolition Waste Landfills



Public	6
Private	15
Total	21

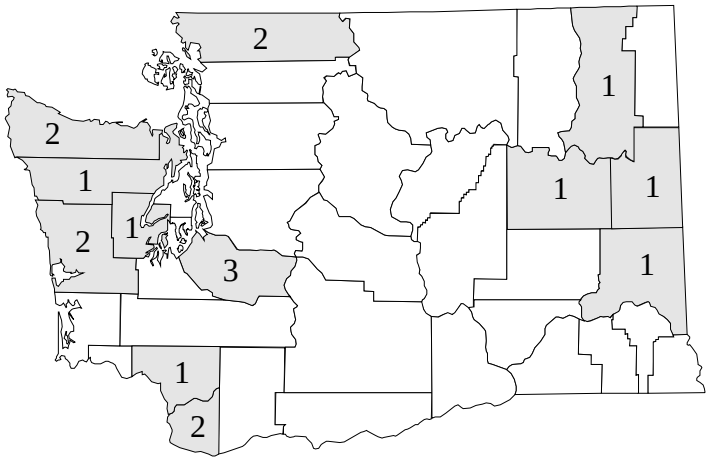
Limited Purpose Waste Landfills

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

Eighteen limited purpose landfills that reported in 1996, accepted 910,078 tons of waste. The waste disposed in these facilities is usually generated by the owner of the landfill.

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

Location of Limited Purpose Landfills



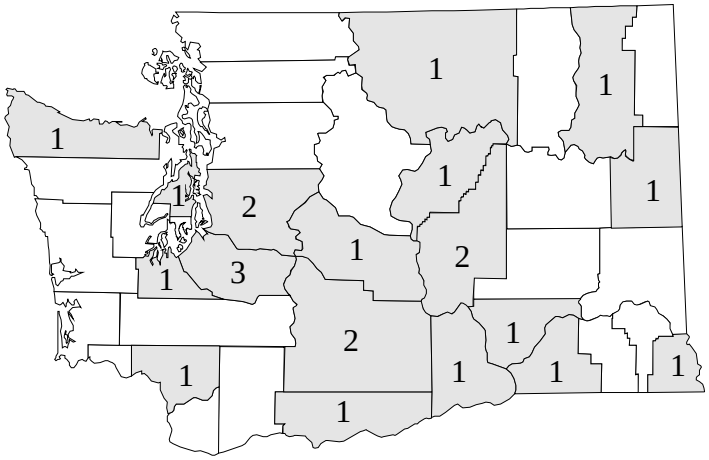
Public 2
Private 16
Total 18

Municipal Solid Waste Landfills

In 1996, 24 MSW landfills accepted 4,083,755 tons of waste. Bruce Landfill, Adams County closed May 1996. (See Chapter VI for additional discussion of waste types, amounts and sources.)

The majority, 74%, of MSW landfills are operated by public entities. This has historically been true in Washington. Private MSW landfills constitute only 26% of this facility type. Even though most of the landfills are owned by public entities, the majority of landfill capacity (85%) is under the control of the private sector. (See the discussion on landfill capacity, in Chapter VI.)

Location of MSW Landfills



Public 17
Private 6
Total 23

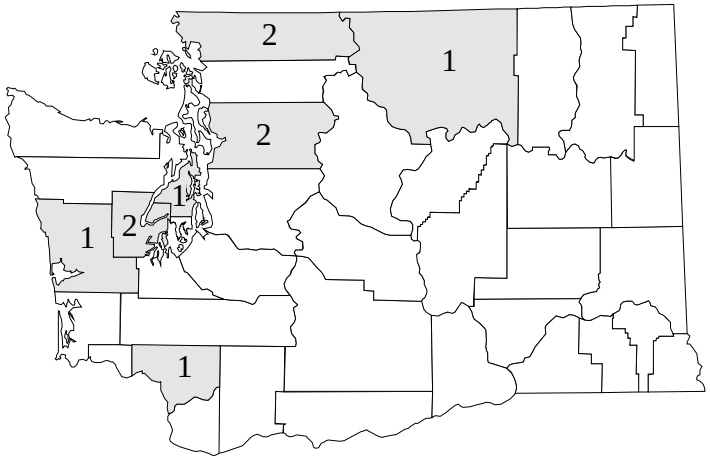
Woodwaste Landfills

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

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

In 1996, woodwaste landfills reported 102,697 tons of waste. All woodwaste landfills are privately owned.

Location of Woodwaste Landfills



Public 0
Private 10
Total 10

Intermediate Classification

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

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

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

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

of solid waste handling facilities. Some moderate risk waste fixed facilities are regulated as interim solid waste handling sites.

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

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

Bale Station

A bale station is a facility that processes loose solid waste into large bound bundles. The purpose of binding waste in this fashion is to place the bundles into lifts at a landfill. These facilities are regulated under WAC 173-304-410. Because this technology is often confused with compacting stations, and since bale stations are regulated under the same section of the MFS, to date no bale stations have been permitted as separate facilities. One county does have a bale station located at its transfer station, but it does not have a separate permit.

Compacting Station

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

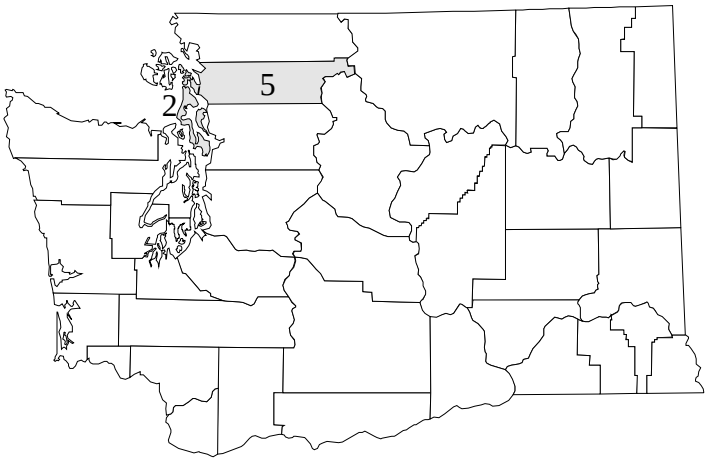
Ecology identified seven compacting stations statewide in 1997. All compacting facilities are under public ownership and are affiliated with recycling operations. Compacting stations are located in the more urban, northwestern counties of the state. Larger urban centers are more inclined to use this technology to process large amounts of recyclables for shipment. Compactors are also used at transfer stations, though they are not permitted separately.

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

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

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

Location of Compacting Stations



Public	7
Private	0
Total	7

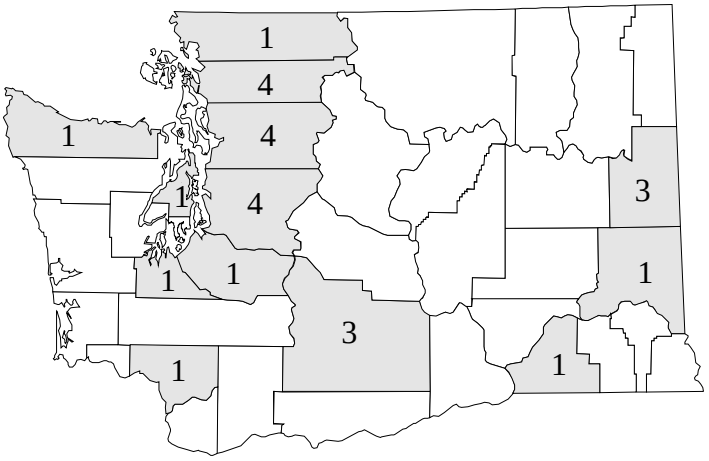
Compost Facilities

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

The MFS regulates compost facilities under the non-containerized solid waste standards for recycling facilities in WAC 173-304-300 (1)(a)(i) and under WAC 173-304-420, depending upon the "condition specific" nature of the waste e.g., whether or not the waste produces, or has the potential to produce, leachate. Twenty-six compost facilities permitted under the MFS were identified in 1997.

Ecology is developing a resource handbook for compost facilities. This handbook will address facility designs and operating procedures to protect human health and the environment. (See Chapter IV for additional discussion.)

Location of Compost Facilities



Public	12
Private	14
Total	26

Drop Boxes

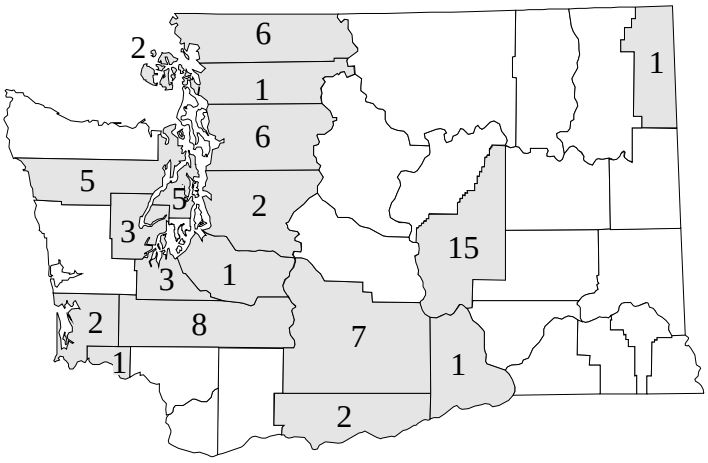
A drop box is defined in the MFS as "a facility used for the placement of a detachable container including the area adjacent for necessary entrance and exit roads, unloading and turn-around areas."[13] It is regulated under WAC 173-304-410.

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

Ecology identified 71 operating drop boxes in 1997. The map depicts the profile of regulated drop boxes statewide. The majority, over 89%, are public and are primarily operated by county public works departments.

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

Location of Drop Boxes

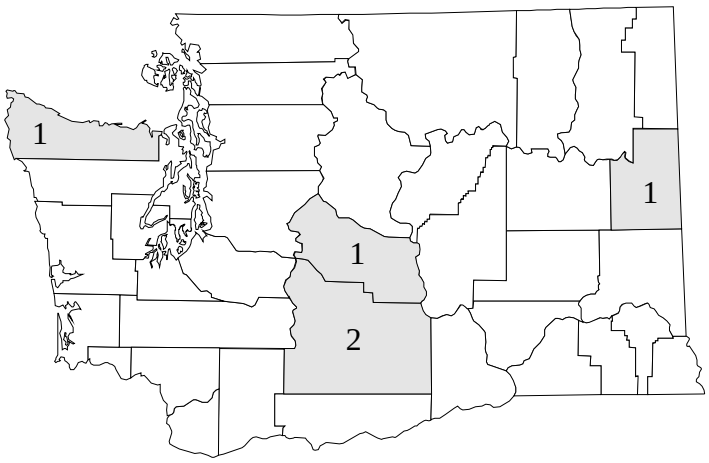


Public	63
Private	8
Total	71

Piles

A solid waste pile is described in the MFS as any "non-containerized accumulation of solid waste that is used for treatment or storage."[14] Pile storage/treatment areas are usually associated with the storage and processing of wastes requiring remedial actions, such as petroleum-contaminated soils. Pile facilities or areas used for storage and treatment are regulated by WAC 173-304-420. (Compost facilities can also be regulated under this section as discussed above.) Five privately owned piles (non-composting) were identified in 1997.

Location of Piles



Public	0
Private	5
Total	5

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

Recycling Facilities

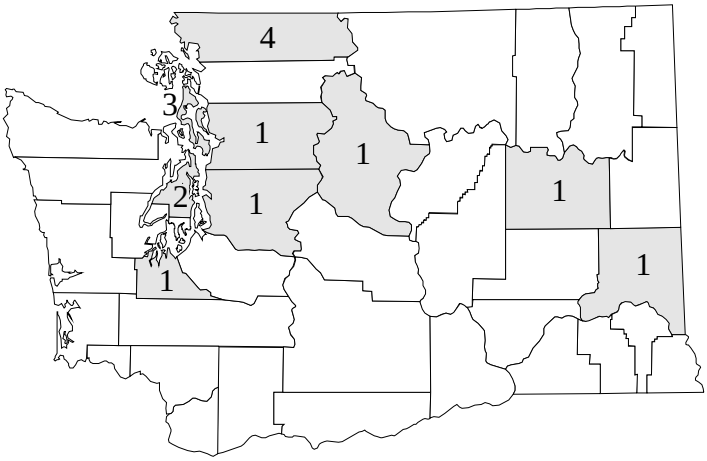
A regulated recycling facility refers to an operation engaged in the collection and utilization of solid waste for the purpose of transforming or remanufacturing the waste materials into usable or marketable materials for use other than landfill disposal or incineration. Chapter 70.95 RCW, the *Solid 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."[15] Recycling facilities are regulated under WAC 173-304-300.

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

Because of the distinction between regulated recycling facilities and non-regulated activities that promote recycling, only 15 recycling facilities permitted under the MFS requirements were identified in 1997. The majority (80%) of the regulated recycling facilities were private facilities and public recycling facilities constituted 20% of this facility type.

[15] RCW 70.95.030(14)

Location of Recycling Facilities



Public	3
Private	12
Total	15

Surface Impoundments

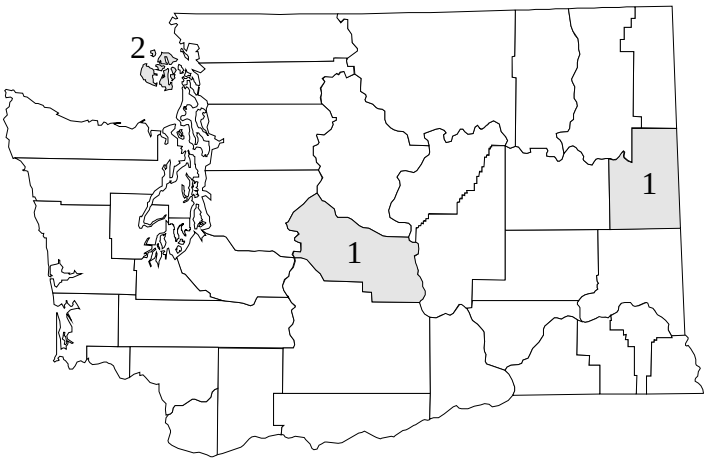
A surface impoundment refers to "a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), and which is designed to hold an accumulation of liquids or sludges.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

Some surface impoundments are regulated under WAC 173-304-430.[17] Ecology identified four regulated facilities in 1997. All four of these surface impoundment facilities were septage lagoons. The category remains in the intermediate classification pending interpretation or clarification in the forthcoming biosolids rule. Three of the regulated surface impoundment facilities were publicly-owned, and one is privately-owned.

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

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

Location of Surface Impoundments



Public	3
Private	1
Total	4

Transfer Stations

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

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

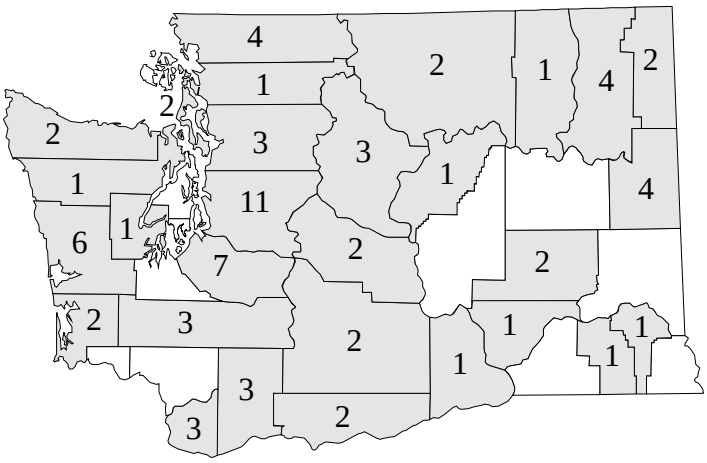
In the past, transfer stations were generally located in larger, urban areas; however, with the new federal regulations applicable to municipal solid waste landfills, jurisdictions are now viewing transfer stations as an option to operating a landfill. Wastes can be collected at these centers for long-hauling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

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 78 regulated transfer stations operating in 1997.

The profile map shows that the majority of the transfer stations continue to be publicly operated entities, 71%.

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

Location of Transfer Stations



Public	55
Private	23
Total	78

Moderate Risk Waste Facilities

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

MRW facilities vary in the types and number of materials they can handle. Some received only limited types of materials, such as used motor oil, batteries and oil-based paints, while others can collect several types of waste including those generated by small quantity generators. In 1997, Ecology had 17 MRW fixed facilities in its tracking system that received a separate permit.

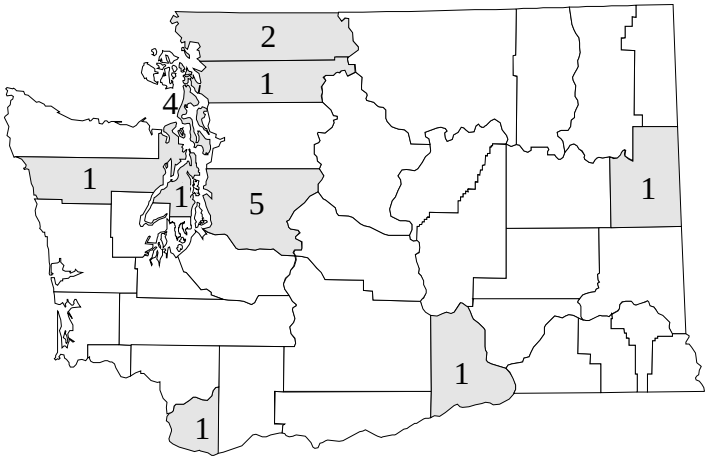
Fixed facilities typically have a hazardous management plan pursuant to article 80 of the *Uniform Fire Code*, as well as a solid waste handling permit issued by the jurisdictional health district. There are currently over three dozen fixed facilities in Washington, with 15 more in the planning or design stages.

Generally, used oil collection facilities are not required to have solid waste handling permits in accordance with the MRW Fixed Facility Guidelines[19], but often have a permit from the local fire department. There were 477 used oil collection facilities in the state at the end of 1995. Household hazardous waste collection events require no permit under state law. However, Ecology has provided guidelines[20] which are widely used.

[19] *Moderate Risk Waste Fixed Facility Guidelines*, Department of Ecology, Publication No. 92-13, March 1992 (revised May 1993).
[20] *Household Hazardous Waste Guidelines for Conducting Collection Events*, Department of Ecology, Publication #88-6, February 1989.

Despite the large volumes of hazardous waste now entering the moderate risk waste collection and management system, there have been no major releases to the environment to date at any facility or event.

Location of MRW Facilities



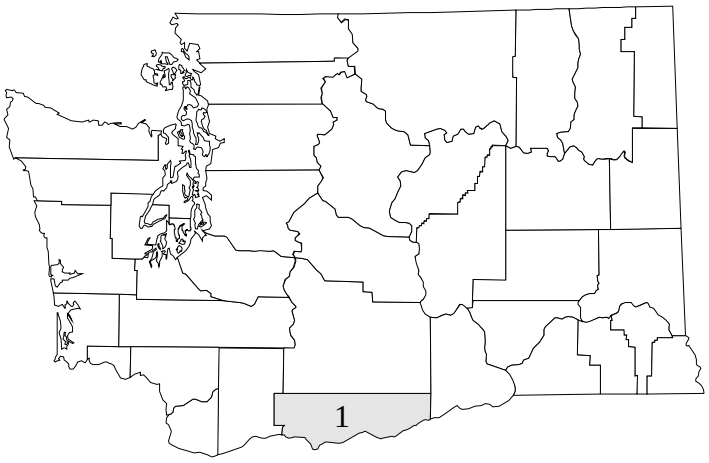
Public	0
Private	17
Total	17

Tire Piles

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

A major problem with used tires has been illegal tire piles. This section, however, deals specifically with regulated tire piles. (See Chapter III for additional information about the cleanup of illegal tire piles.) Ecology identified one permitted tire pile in the state in 1997, privately owned.

Location of Tires Piles



Public	0
Private	1
Total	1

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."[21] 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."[22]

Energy recovery and incinerator facilities are regulated under WAC 173-304-440 applies to "all facilities designed to burn more than twelve tons of solid waste per day, except for facilities burning woodwaste or gases recovered at a landfill."[23]

Ecology identified six regulated solid waste incinerator facilities that burned a total of 365,464 tons of waste. One of the incinerators, Inland Empire Paper in Spokane, falls under the *Minimum Functional Standards* as a solid waste incinerator because they burn more than 12 tons of solid waste per day. At this facility, the waste is composed of the paper sludge from the pulp and papermaking process. The other five incinerators burn municipal solid waste.

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

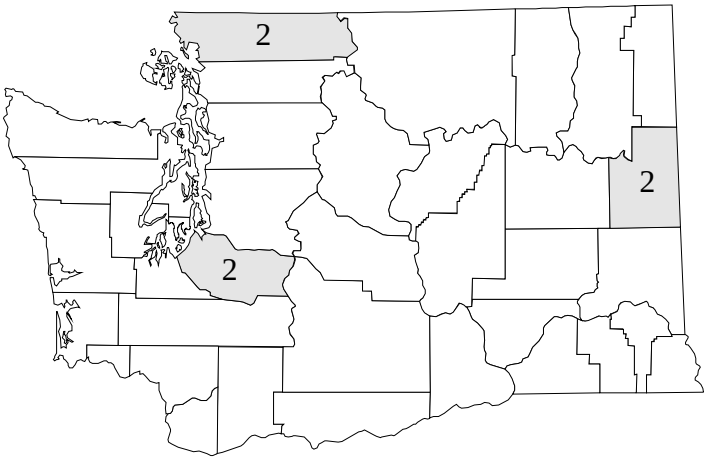
[22] WAC 273-304-100(37)

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

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 1997, five of these facilities are subject to both the requirements of chapter 173-304 WAC and chapter 173-306 WAC. These five are required to have a generator ash management plan, approved by Ecology, which discusses the handling, storage, transportation and disposal of the incinerator ash. All five facilities, two public and three private, have approved generator ash management plans and solid waste handling permits.[24]

Location of Incinerators



Public	2
Private	4
Total	6

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

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

have an effect in subsequent reporting years. To qualify for inclusion in this category, a facility type must be either under regulatory modification, be exempted from regulation, or determined to be an obscure facility type needing reclassification or elimination outright. This classification includes: (1) Biosolids; (2) Exempted-Tribal Facilities; (3) Landspreading; and (4) Other.

Exempted Facilities

Exempted facilities, for the purpose of this report, are those solid waste handling facility types that are identified under Washington statute or rule but are either (1) not under the jurisdiction of state or local governments, such as Tribal solid waste facilities; or (2) are exempted for consideration by other federal, state or local laws, such as woodwaste facilities which fall under Department of Natural Resources rules. One such facility was identified in 1997.

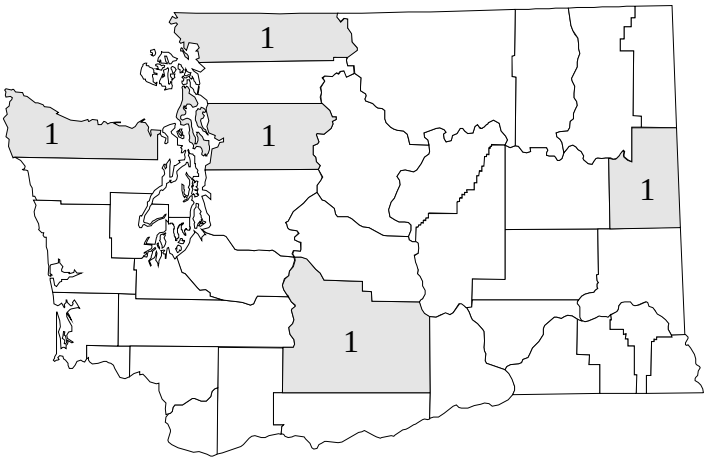
Landspreading Disposal Facilities

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. One sludge and one septage facility were identified in this category in 1997. (Many sites using biosolids for land application will be permitted under the new biosolids regulation discussed below.)

Other Facilities

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

Location of Other Facilities



Public	3
Private	2
Total	5

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." Chapter 70.95J RCW contains provisions for the development of a new biosolids management program by Ecology.

Ecology is developing chapter 173-308 WAC, *Biosolids Recycling*, planned for completion in early 1998. 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. 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. (See chapter IV for additional discussion.)

Operator Certification Program

In Washington state, solid waste landfills and incinerators are required to have certified operators on site at all times, per chapter 70.95D RCW, *Solid Waste Incinerator and Landfill Operators*. The Landfill and Incinerator Operator Certification program was created by the legislature in 1989, through the "Waste Not Washington Act". The

implementation rule was adopted in June 1991, chapter 173-300 WAC, *Certification of Operators of Solid Waste Incinerators and Landfill Facilities*.

Course offerings began in 1992, with those taking the course and passing the test receiving certifications of competency for 3 years. Yearly training courses were held on landfill and incinerator operations until 1995. Direct funding for implementing this program at Ecology is not available. Because of reduced staffing, a home study course was instituted. This not only reduced the level of effort for Ecology, it provided a cost savings to those who took the course. The certification training however no longer focuses on Washington specific issues for both operators and inspectors.

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

Over 900 persons have taken one or both courses since the programs inception. To date, a total of 510 people have been certified for landfill operations and 310 have been certified for incinerator operations. Certification renewals began in 1994.

In 1997, 226 certificates were up for renewal (165 landfill and 101 incinerator). Notices were sent out in September. Re-certification requests must be submitted to Ecology by years' end. To date, 20 landfill and 34 incinerator training material packets have been requested and one landfill and 11 incinerator certificates of competency have been issued.

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

Chapter III Implementing Solid Waste Activities

Local Planning

Local solid waste planning is the cornerstone of solid waste management in Washington state. The state Legislature asks counties and cities to make sound solid waste handling decisions based on approved and "current" comprehensive solid waste management plans (RCW 70.95110(1)).

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

Ecology provides technical assistance to local governments in preparing and implementing their plans. Ecology also approves the plans. Table 3.1 identifies the local solid waste plans for each county and two cities that do individual plans (Seattle and Everett). This table shows the status of each local comprehensive solid waste management plans for each county, organized by planing phases, the year the plans were last approved, the waste reduction/recycling goals and comments concerning future planning efforts as of October 1997.

Table 3.1 Current Status of Solid Waste Plans in Washington

COUNTY PLANNING STATUS BY PHASES			
COUNTY	**CURRENT STATUS (date last approved)**	**WR/R GOAL**	**COMMENTS**
PHASE I			
King	Yes - 1994	50% by 1995 65% by 2000	Recycling goals being reevaluated in update scheduled for completion in 1998
Seattle	Yes - 1990	recycle or compost: 40% by 1991 50% by 1993 60% by 1998	Currently updating plan with scheduled completion in 1998
Kitsap	Yes - 1993	50% by 1995	Currently updating plan with scheduled completion in early 1998
Pierce	Yes - 1993	50% WRR by 1995	Currently updating plan
Snohomish	Yes - 1990	24% by 1992 36% by 1995 50% by 1999	Currently updating plan with scheduled completion in early 1998. Recycling goals are being reevaluated with plan update.
Everett	Yes - 1996	35% recycling by 2005 3% to 5% waste red	

COUNTY PLANNING STATUS BY PHASES			
COUNTY	**CURRENT STATUS (date last approved)**	**WR/R GOAL**	**COMMENTS**
Spokane	Yes - 1992		Currently updating plan
PHASE II			
Clallam	Yes - 1993	20% by 1996 40% long range goal	Currently updating plan
Clark	Yes - 1994	50% WRR by 1995	
Cowlitz	Yes - 1993	50% WRR by 1995	
Grays Harbor	Yes - 1992	50% WRR by 1995	Currently updating plan
Island	Yes - 1994	assisting the State in achieving its goal of 50% by 1995	
Jefferson	Yes - 1993	30% WRR by 1996	Currently updating plan
Lewis	Yes - 1993	18% WRR by 1995	Currently updating plan
Mason	Yes - 1992	16% WRR by 1995	Currently updating plan
Pacific	Yes - 1992	32% WRR by 1996	
San Juan	Yes - 1994	50% by 1995	Currently updating plan
Skagit	Yes - 1994	50% or better by 1995	Currently updating plan
Skamania	Yes - 1992	40% WRR by 1998 50% long range goal	
Thurston	Yes - 1993	40% WRR by 1995 60% by 2000	Preparing to update plan
Wahkiakum	Yes - 1994	20% WRR by 1996	
Whatcom	Yes - 1994	50% by 1995	
PHASE III			
Adams	Yes - 1993	50% WR/R BY 2012	Currently updating plan
Asotin	No - 1993	26% by 1997	Currently updating plan - expected approval January 1998
Benton	Yes - 1994	35% by 1995	
Chelan	Yes - 1995	26% by 1995	
Columbia	Yes - 1994	20% WR/R by 1996	
Douglas	Yes - 1994	25% by 1995	
Ferry	Yes - 1993	35% WR/R by 1995 50% WR/R by 2013	
Franklin	Yes - 1994	35% R by 1995 5% WR by 1998	
Garfield	Yes - 1993	26% WR/R by 1997	
Grant	Yes - 1995	22% WR/R by 2000	Scoping for update
Kittitas	NO - 1990	50% by 2006 (in update)	Plan update nearing completion - anticipated approval early 1998
Klickitat	Yes - 1991	50% by 1995	
Lincoln	Yes - 1992	35% WR/R by 1997	
Okanogan	Yes - 1993	30% by 2000	
Pend Oreille	Yes - 1994	45% WR/R by 2015	
Stevens	Yes - 1994	36% WR/R by 2012	
Walla Walla	Yes - 1994	40% by 2002	
Whitman	No - 1991	40% WR/R est by 2001	Currently updating plan - expected approval November 1997
Yakima	Yes - 1994	35% by 1995	

In addition to solid waste plans, local governments were required to prepare moderate risk waste plans. By January 1992, the last of the 32 plans (representing all of Washington's jurisdictions) was approved.

Grants to Local Governments

In addition to regulation and technical assistance, Ecology helps to ensure proper solid waste management through financial assistance in grants and contracts. Ecology helps local governments fulfill their role as waste managers by providing financial assistance in the form of grants to implement their local plans. These grants cover some of the costs of planning for solid and moderate risk waste management, putting those plans into action, and enforcing regulations. A new grant program for litter pickup will begin in 1998.

The grant programs fund local government activities including:

- inspecting facilities and pursuing illegal disposal
- 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
- special projects, such as demonstration projects

Ecology awarded $4,873,994 in grants for waste management from July 1, 1996 through June 30, 1997. The grants leveraged local matching funds to support $7,679,214 worth of solid and moderate risk waste projects. An additional $390,079 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 $5.1 million from July 1, 1996 through June 30, 1997. [25]

Coordinated Prevention Grants (CPG)

Most of the solid and moderate risk waste projects supported by grants are funded through the Coordinated Prevention Grants program. Ecology launched this consolidated program of grants for waste management in 1992. It reduces the oversight needed to administer the programs and combines funds from the three available resources, the Local Toxics Control Account, and the Referenda 26 and 39 accounts. Since 1992, local governments have received over $68 million for solid and moderate risk waste activities,

[25] See also "Model Toxics Control Act 1997 Annual Report" regarding grants provided to local governments and citizen groups for cleanups at contaminated sites.

waste reduction and recycling activities and facilities, and landfill closures. $18.2 million of this total is for the current 96/97 funding cycle.

The coordinated structure encourages local governments to work together to examine their waste management needs and decide the activities they will propose for grant funding. Ecology allocates the available funds for county-wide areas, using a formula based on a set amount per county plus a certain amount per capita. For the 1996-97 grant cycle, this amounted to $100,000 per county, plus $2.04 per capita. Local governments also have available, from the Referenda 26 and 39 accounts, a one-time allocation of $125,000 per county plus $1.50 per capita.

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

In most cases cities and counties are doing a good job of working together to assess their needs and apply for funding for the projects that best meet those needs. Some cities have individual grant agreements although their approach to waste management challenges is coordinated with the county government.

Changes in the Coordinated Prevention Grants Program

Some modifications were made to the Coordinated Prevention Grants program for the 1998/99 cycle, starting January 1998. Enforcement grants, which are used by local health agencies for activities such as inspections, enforcement, and illegal dumping complaints, will continue to be a part of the CPG grant, but, unlike past grant cycles, the funds will not be available for other uses under the grant. Ecology's intent is to direct more funds to the local health agencies for implementing enforcement required by state law and regulation. Additional reporting will be required of all enforcement grant recipients.

Another change occurring in the operation of the CPG program is the regionalization of the Ecology grant officers. Positions were relocated to the four regional offices of Ecology. A coordinator position is at headquarters to coordinate activities such as guidelines, reporting, developing the competitive grant process and some consistency issues. This effort is to provide more direct contact to the grant recipients.

Capital Investment in Waste Reduction and Recycling

Capital purchases for waste reduction and recycling equipment and facilities continued this last year as more local governments finished the waste reduction and recycling updates to their solid waste management plans. From July 1996 through June 1997, about 50 grants were signed 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. This is in addition to the projects already underway throughout the state.

These capital investments for waste reduction and recycling are funded through the Referenda 26 and 39 accounts. The program is using funds left from voter-approved bond issues in the late 1970s and early 1980s that originally established the accounts. Ecology set aside this remaining money as local government allocations, which were available through the Coordinated Prevention Grants program until the end of 1997.

The 1997 Legislature put restrictions on the use of the Referendum 26 and 39 funds. Local governments that had grant agreements in place by June 30, 1997, were allowed to spend the funds through December 1999. Those funds not allotted to signed grant agreements must be reauthorized by the 1998 Legislature.

In the FY97 funding cycle, $4.6 million has been provided to local governments for purchasing capital equipment for recycling and moderate risk waste activities.

Community Litter Cleanup Program

The 1997 Legislature, as part of Ecology's biennial budget, directed that 20% (approximately $2,000,000) of the Litter Fund be used to provide funds to local governments for litter related activities. A Litter Task Force was formed in August 1997, to look at litter issues in the state and develop a set of recommendations on how best to work toward a standard of zero litter. The recommendations were compiled into a report to the Legislature. (See Chapter I for additional information.) Ecology was directed to work quickly to get the money out to local governments as soon as possible (spring 1998).

Based on the Litter Task Force recommendations, Ecology is developing a program that will quickly distribute Litter funds to local governments through inter-agency agreements. Local governments will be encouraged to establish and maintain litter pickup activities in their jurisdictions, including both roadside litter and illegal dumping .

Communities are also encouraged to partner with local and state correctional facilities to address their litter cleanup priorities.

Any additional rounds of funding will be after adoption of a rule establishing a litter grant program. The planned initial filing will be in late 1998, with rule adoption in 1999. Guidelines for the preparation of grant applications will be prepared.

Grants to Citizens

Public Participation Grants (PPG)

Ecology also provides small grants to citizen groups whose projects help implement the state's priorities of waste reduction and recycling. The Model Toxics Control Act mandates this Public Participation Grants (PPG) program. It is highly competitive and creates 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 July 1996 through June 1997, Ecology awarded 14 of these Public Participation Grants, for a total of $330,237. The grants covered a wide range of approaches to preventing and recycling waste, including educating citizens around cleanup sites

Contracts to the Private Sector

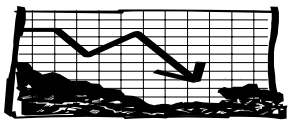
Tire Pile Cleanup Contracts

The legislature established a one-dollar-per-tire fee on the retail sale of new vehicle tires. in 1989. The funding source was to be used to clean up existing unauthorized tire piles around the state. The fee sunset in October 1994. 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 1991. By the end of 1995, Ecology had completed the cleanups of all 25 originally identified sites. During the process of cleaning up the original 25 piles, the cost per site decreased and funds remained for additional tire pile cleanups.

The 1996 Legislature appropriated the remaining Tire Account fund balance to clean up additional illegal tire piles. In April 1996, cleanup of a Lewis County site, a pile containing between 1.7 and 2.3 million tires, commenced. The cleanup was essentially completed by the end of 1997. Cleanup of a site in Toppenish, with less than 200,000 tires, commenced in November 1996. The site cleanup was finished in January 1997.

With these last two illegal pile cleanups, funds remaining in the account will be exhausted. The original mandate of the legislature, to clean up the original 25 unauthorized tire piles, has been completed. There are additional illegal tire piles around the state, with more coming into existence every year. Without the Tire Account funding, neither the state nor local governments have the resources to clean them up.



Chapter IV Waste Reduction/Recycling

Ecology's Efforts in Waste Reduction/Recycling

Washington State has established priorities for solid waste management in the *Solid Waste Management Act*, chapter 70.95 RCW (see sidebar). Waste reduction is the highest priority for solid waste management in Washington. Reducing the amount or toxicity of waste generated or reusing materials, waste reduction can also be thought of as "source reduction" and "waste prevention."

SOLID WASTE MANAGEMENT PRIORITIES
Chapter 70.95 RCW

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

Ecology is working in several areas of waste reduction/recycling. Those include working with local governments to develop waste reduction programs, assisting with rural recycling programs, focusing efforts on several aspects of the organics waste stream and continuing work with the construction and demolition waste stream.

Waste Reduction Measurement Methodologies

During 1995 and early 1996, Ecology staff and a committee of local government recycling coordinators began developing a draft waste reduction measurement document titled "Waste Reduction Program Measurement Methodology". By researching how Federal, state and local governments and universities were measuring waste reduction, the document compiled a series of successful waste reduction measurement programs nation-wide and included a simple methodology for measuring waste reduction. At the same time, other entities, such as the US EPA, UCLA, and Cornell, were working on a similar project.

In 1997, the US EPA finalized a document titled "Source Reduction Program Potential Manual" that appeared to summarize the work of all parties together in a comprehensive format. In light of multiple financial and project priorities in Ecology at that time, staff recommended that it would be more efficient to use the information the EPA has developed and discontinue this project at the state level.

In October 1997, A statewide workshop featuring the EPA "Source Reduction Program Potential Manual" and related computer software to enable local government to begin to build quantifiable waste reduction programs was held in Yakima at Ecology's Central Regional Office. Appropriate local government staff were invited to attend. Ecology staff felt the workshops was a success and will continue working with individual counties as requested to assist them in developing their waste reduction programs.

Rural Recycling Opportunities

Markets for recyclable commodities are volatile. The problem of volatile markets is of even more concern in the rural portions of Washington, where distance to markets, as well as the ability to consolidate marketable quantities of materials, are additional problems.

The current statewide recycling rate is 39%. However, in the Eastern Washington Waste Generation Area the rate is about 22%. Collecting materials is only part of the solution. Getting those materials to a viable market is also essential.

Providing small recyclers the current market value of commodities, as well as helping them coordinate with others to consolidate and market materials, will assist in increasing the recycling rate for that portion of the state. Ecology will evaluate the most feasible way to track current commodity prices on a weekly basis and make the information accessible through our 1-800 RECYCLE Information Line. This information could be compiled by our hotline staff or could be contracted out to the Washington State Recycling Association (WSRA), the Washington Recycling and Refuse Association (WRRA) or the Washington Citizens for Recycling (WCFR) possibly. Information could also be posted on the SW&FAP Homepage.[26]

Ecology will also evaluate the feasibility of establishing through the Information Line a clearing house for rural recyclers to post incomplete loads of hard to recycle commodities to enable them to coordinate loads and cooperatively market those materials.

Ecology staff will set up informal regularly scheduled face to face breakfast or lunch meetings with interested local recyclers to hear their concerns and allow them an opportunity to network. Staff will also visit local recyclers at their place of business at least once a year.

Ecology will develop and distribute some new recycling promotional/educational items like brochures or possibly a coloring poster to recyclers for distribution at their places of business. Frequently, small scale recyclers in the outermost rural areas have no budget for such items and would benefit from them. Staff will also actively recruit local recyclers to attend the regional Waste Coordinators meetings with local governments coordinated by Ecology. This may mean scheduling the meetings around the recyclers schedules somewhat, but they need to be at the same table with their local government representatives.

[26] http://www.wa.gov/ecology/swfa/swhome/html

Organics

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

Composting

Composting is considered a key element of the state's strategy of reaching the statewide 50% recycling goal. Operators expanding or developing compost facilities face unclear and potentially inconsistent regulation from various regulating entities. Ecology is committed to clarifying existing regulations and recommending best management practice guidance to compost facility operators, health departments, municipalities and entrepreneurs. Yard waste is a significant part of the waste stream and specific technical information needs to be available.

In 1996, a factsheet "What Can We Do? Residential Woody Waste Options for Small Town and Rural Areas," was prepared on woody residential yard waste. It defined some issues with this waste stream and referenced programs throughout the state that have dealt with these issues. Strategies for collecting, processing, using and marketing the product, public information, education and funding are discussed.

In June 1997, a working draft of the "Compost Facility Resource Handbook" was issued for review and use by the regulated community. This resource handbook integrates, to the extent possible, the regulatory interpretation of solid waste, water quality and air quality rules as they apply to compost facilities. It also promotes baseline compost facility designs and recommended practices to protect human health and the environment.

Ecology will provide technical support to local governments and the private sector in the interpretation and use of the resource handbook. After the comment period for the working draft ended in July 1997, the document is being revised and will be issued for a formal public review comment period in early 1998. Workshops will be held in each Ecology region.

In addition to support for the resource handbook, staff will continue to provide technical assistance to local health jurisdictions and compost facility owners/operators in the design, operational plan, application and permit review processes.

Waste from the Agricultural Industry

Agriculture and related activities represent the largest industry in Central and Eastern Washington. Additionally, agriculture is the largest industrial waste producer in the eastern half of the state. More specifically, the four industries in the agricultural regime which require a strong environmental focus by Ecology and other environmental entities are:

- Farming Operations (growers of fruits, vegetables and grains)
- Fruit and Vegetable Food Processors
- Fruit Packing and Storage Facilities
- Livestock Operations (dairies and feedlots)

The primary wastestreams generated by these industries that require careful management and therefore continued environmental monitoring, in the form of permits and technical assistance, are wastewaters heavily laden with pollutants and large quantities of solid wastes. Agricultural wastes are currently being handled in a variety of ways. Some is being disposed in landfills, some is being applied to agricultural land, some is being given away as soil amendments, a minimal amount is composted, and a large quantity is being piled illegally. Local health departments have noticed an increase of illegal handling of this material.

The regulations and guidelines pertaining to these materials are confusing and contradictory. Guidelines and regulations for biosolids (sewage sludge), which are no longer defined as solid waste, deal only with material produced at municipal wastewater treatment plants. The food processors fearing more stringent regulations lobbied to not be included in any of the biosolids statute (chapter 70.95J RCW). Therefore, the only place in the regulations which pertain to this waste material is the recycling section 300 of chapter 173-304 WAC which uses guidelines from the early 1980's for beneficial use of organics on the land. WAC 173-304-450 was intended to discourage "over-application" of organics on the land. The current regulation needs updating and clarification.

In addition, some generators of this waste stream are getting it registered as a fertilizer through the Department of Agriculture fertilizer registration program. Once these materials are registered as fertilizers, the generators claim that the material is no longer a solid waste and should not be regulated as a solid waste. This adds to the regulatory confusion.

Also, increased emphasis is being given by many agencies to nutrient and organic loading of soil profiles, and surface and ground water in Ecology's Central and Eastern Regions. Many thousands of acres are currently permitted for biosolids and organics applications in Ecology's Central Region, with a potential for 122,000 acres to be under permit in Yakima County alone during 1997. Because of the significant acreage and quantities to be applied and composted, there needs to be continued coordination between

Ecology, Washington State University, and conservation districts to address short and long term nutrient management.

In April 1997, Ecology held a workshop with local health districts, conservation districts and industry representatives to discuss the proper techniques for managing dairy and food processing wastes. Helping the industry understand the regulatory issues are part of this effort.

Ecology had planned for the development of an additional technical assistance pamphlet to specifically address solid waste pollution prevention opportunities. On further consideration, it appears that solid waste pollution prevention information can be more effectively distributed and widely used in the form of fact sheets inserted in food processing association newsletters. Some specific issues that need to be addressed are solid waste planning, pollution prevention options for organic solid waste, and solid waste economics. Work regarding this Ecology commitment is ongoing.

The characteristics of the organic waste material from the food processing industry will be determined by using existing data from Water Quality permits and land application permits to determine the quality and quantity of material generated.

A focus sheet for food processing journals and newsletters will be developed to explain economical ways to manage organic wastes generated by the food processing industry (land application and composting). It will clearly spell out how this material should be handled focusing on pollution prevention, but also providing information on disposal methods.

Ecology will work with the Department of Agriculture's Fertilizer Registration Program to develop a process which will inform organic waste generators that registration as a fertilizer does not always cause a material to drop out of the solid waste regulatory environment. Ecology will draft criteria to evaluate whether these registered organic wastes should be regulated as a solid waste. This criteria will address the quality of the organic material and potential environmental and human health impacts of not regulating it as a solid waste.

Working closely with the Northwest Food Processors Association and the jurisdictional health departments, Ecology will provide specific technical assistance on permitting land application of these organic waste materials. It is critical for the food processors association to understand the potential environmental impacts for land applying this material.

Biosolids

Municipal sewage sludge which has been treated to make it suitable for beneficial uses is called biosolids. The past and present approach to managing beneficial uses of biosolids (primarily land application and composting), has been by regulation under local solid waste permits. Ecology's role has been one of technical assistance and administrative oversight. New regulations are being developed for biosolids, in response to the requirements of chapter 70.95J RCW, *Municipal Sewage Sludge - Biosolids*. New technologies for waste

disposal require evaluation of environmental effects and possible clarification with regulations.

Sewage treatment plants produce biosolids as a consequence of operation. Biosolids are applied to agricultural crops, forest land, and land reclamation sites, and are a component of compost and topsoil mixes. Regulations covering beneficial use are necessary to address pollutants, such as lead, and to control pathogens and disease vectors.

The 1992 Legislature anticipated changes in federal regulations, which were implemented in 1993, and directed Ecology to adopt a new program more in line with the current federal approach. Under RCW 70.95 and RCW 70.95J, beneficial use is the preferred management option in Washington. The revised program represents a significant upgrade of standards that have been in place, largely unchanged, since the late 1970's and early 1980's, and which do not meet *Clean Water Act* requirements. Parity with the federal program will allow delegation, thereby eliminating one layer of permitting and bureaucracy. The new state program represents the opportunity for leveling the playing field across local jurisdictions and bringing biosolids management under a unified system of technical standards and permitting.

The future of the revised biosolids program was uncertain because of lack of continued funding. During the 1997 Legislative session, stakeholders in the regulated community sponsored legislation (SB5590) which passed and allows the continuation of the program, including fulfillment of statutory mandates. Delegation of federal program authority will be sought.

The biosolids rule will be completed in early 1998. The new regulation will create standards for municipal sewage sludge and domestic septage which allow each to be classified as biosolids. The rule will include a state permitting system. Biosolids will no longer be a solid waste, and will be regulated under chapter 70.95J RCW, *Municipal Sewage Sludge*, and chapter 173-308 WAC, *Biosolids Recycling*.

Ecology will have primacy in permitting the final use of biosolids, but a process will be developed to allow the delegation authority of specific activities to interested local jurisdictional health departments after rule completion. Ecology will pursue delegation of the biosolids program from the Environmental Protection Agency by mid-1998.

At this time, the land application of biosolids is permitted under chapter 173-304 WAC, the *Minimum Functional Standards for Solid Waste Handling*. Regional staff review the biosolids applications and permits and provide technical assistance to the local jurisdictional health departments on appropriate biosolids landspreading techniques.

Land Application

The regional offices of Ecology receive an increasing number of requests for technical assistance from local government on a variety of land application issues. Land application involves applying various types of solid wastes to the land as fertilizers or soil amendments. Such requests may include the application of gypsum wallboard mixed with yard waste, the application of chicken daft or by-products from meat packing plants, or such wastes as cement kiln dust or industrial wastewater treatment plant sludges. These request require a large amount of staff time for oversight of permitting activities and technical assistance for local governments, environmental agencies, and the public. It is expected as the practice of land application increases, public awareness of the process, as well as controversy regarding the practice will also increase. The issue is also being driven by increasing volumes of formerly hazardous waste moving into the special waste category and cleanup activities including sediments, air and water.

Ecology plans to increase technical assistance to local governments on land application issues. In addition, fact sheets and policies will be developed regarding the latest and most appropriate method for handling and applying different waste.

From a policy perspective, implementation of the new waste as fertilizer bill (SB5701) passed by the 1997 Legislature and incorporation of land application into the regulatory/permit reform study of ESHB 1419 will be the focus. While the prime responsibility for directly responding to requests for assistance in this area will fall to the regional offices, headquarters will likely have requests for assistance and direction to maintain statewide consistency. There will also be some associated involvement in the chapter 173-304 WAC, the *Minimum Functional Standards*, revisions, especially in relation to the definition of inert materials. (See Chapter I for additional information about the rule revision.)

Construction, Demolition, and Landclearing Waste

In 1993, Ecology proposed to develop and implement a strategic waste management program to target construction, demolition, and landclearing (CDL) debris reduction and recycling opportunities. CDL is the term commonly used to define the waste stream generated from various site preparation, building, and demolition activities. The *1992 Washington State Waste Characterization Study* estimated CDL to comprise approximately 13-17% of the total disposed waste stream. More recent studies estimate the actual amount disposed in Washington State landfills could exceed 30%; however, generation figures could range from 50-70% of the total waste stream accounting for on- and off-site recycling, reuse including commercial salvage, burning, burying and illegal disposal.

Generally, CDL includes clean and treated wood waste, dimensional lumber, gypsum board, roofing shingles and associated waste, asphalt, concrete, brick and other aggregates, 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.

Ecology continues efforts to facilitate the reduction and recycling of Construction, Demolition and Landclearing (CDL) debris. The following outlines some of the main activities Ecology initiated in 1996 and 1997.

Resource Efficient Building Partnerships

Washington State CDL Council

The Washington State CDL Council was formed in May 1997, to formalize and expand the roles of a group called the Regional CDL Coordinators. The CDL Coordinators' was formed and organized by Ecology to coordinate the activities of organizations involved in CDL issues and avoid duplication of efforts, thereby maximizing limited resources. They operated as an informal group for three years, evolving to include government agencies, not-for-profit groups, and businesses. Through this unique collaboration, the Regional CDL Coordinators members shared in numerous accomplishments.

The mission of the Washington State CDL Council is to maximize waste prevention, recycling, and the use of recycled-content building materials within the Washington state construction industry as a part of an overall resource-efficient approach to building. The Council also serves as an advisory group to the Washington State Recycling Association. Ecology continues to facilitate this more formalize group and serves as it's chair.

The Council provides a vehicle for the public and private sectors to work together to make Washington state a national leader in resource-efficient building. Through meetings, regular correspondence, publications and educational programs, participants are able to exchange information about the benefits and challenges of resource-efficient building with a diverse group of construction industry and solid waste professionals.

Department of General Administration Sustainable Building Project

Ecology is forming a partnership with the Department of General Administration (GA) providing leadership and serving as an example of how to build in a sustainable fashion. Ecology has drafted a proposal to work with GA to develop a strategy and a procedure to facilitate the use of resource efficient building principles in all state funded construction projects as a standard practice. The project goals are:

- **Long Term** - the state of Washington would provide leadership in demonstrating how resource efficient building practices can be incorporated into construction projects. Striving to make resource efficient building become a standard practice on state public construction projects.

- **Short Term** - the Department of General Administration, in partnership with Ecology, will identify and incorporate resource efficient practices to the Cascadia/UW Campus and Liquor Control Board Warehouse projects.

The Resource Efficient Building and Remodeling (REBAR) Council

REBAR was formed in August 1996, in Spokane as an organizational context for cooperation among sometimes competing public and private organizations involved in various aspects of the construction and waste management industries in Spokane. This group differs from the CDL Council in that it is predominantly private sector representatives and its focus is on the Spokane area. REBAR relies directly on its members to form its on-site technical assistance teams. Ecology feels this direct approach is a valuable way of educating the industry about sustainable building practices while building credibility as a source of information and expertise. In just its first year of operation, REBAR has offered assistance to three major commercial building projects, including:

- **Tidyman's Green Grocers**: A major grocery supermarket, Tidyman's used recycled content materials and operated a profitable on-site recycling program during construction of a new superstore in the Spokane Valley with REBAR help. This was so successful that the same contractor incorporated these programs in a subsequent Tidyman's store construction in Southwest Spokane.

- **FutureShop:** Shea Construction, took the REBAR recommended approach on a deconstruction/remodel of a Smith's Home Furnishings Store into a FutureShop computer/electronics store in North Spokane. REBAR's technical assistance team, helped Shea identify community beneficiaries for donated dimensional lumber (Habitat for Humanity and a carpentry apprenticeship training program); and furniture displays (local theater groups), and encouraged the new owners to retain and reuse all of the wiring from the existing lighting and security systems.

- **Spokane Valley Mall:** REBAR operated a three-site, nine-container construction materials recycling program during construction of the 875,000 square foot Spokane Valley Mall. More than 27 tons of materials were recycled and/or diverted from incineration or landfilling. Approximately 70 contractors were exposed to resource efficient building principles.

Riverpark Square Redevelopment

REBAR will test the efficacy of its learning over the first year when it offers its services to the developers of one of the largest retail construction projects in the history of the city of Spokane. REBAR will offer to help the proponents of a major reconstruction of the

downtown commercial core to identify opportunities to use recycled, salvaged and energy efficient materials in renovation and construction projects. REBAR will also seek a commitment to a deconstruction model rather than standard demolition as the precursor to the new construction. During the construction phase, REBAR plans to offer technical assistance in the design and operation of on-site recycling programs.

Education/Outreach Activities

EcoBuilding Guild

Ecology CDL staff have actively participated with the NW EcoBuilding Guild in an effort to establish and maintain coordination between this and other groups that are approaching the construction industry to educate about resource efficient building. An Ecology staff member serves on the board of directors for the Guild and encourages integration of Guild educational efforts with similar efforts by other organizations.

Building With Value 1996 - Workshop Series for Building and Design Professionals

Ecology provided funding and staff resources to assist the Northwest EcoBuilding Guild in the development and implementation of the *Building With Value* workshop series. The workshops were designed to help participants learn how to: use less building materials with better results; reduce waste in building designs and on the job-site; decrease the job's disposal costs through job-site recycling; and increase sales by designing and building environmentally-friendly buildings with market appeal. The five l-hour workshops were held in 10 locations in Washington and one in Portland Oregon. A workshop video was developed by Ecology to make this information available to those unable to attend.

Environmental Handbook for Washington Construction Contractors

Ecology published and is currently distributing *"Environmental Handbook for Washington Construction Contractors: Regulatory Guidance."* This 103-page guide is a comprehensive summary of environmental regulation that applies to almost all construction within Washington State with plain language explanations of what each rule requires of builders. This document has been very popular with builders and local building departments.

Building More With Less - A Resource Efficient Building Video

Ecology has produced a 22-minute video on resource efficient building. The video conveys the message that building can be done in a way that has less impact on the

environment and health without losing beauty, function or quality. The video also reinforces the notion that adopting resource efficient practices can be done incrementally and can save money.

The video is available for loan through Ecology's 1-800-RECYCLE number and each of its regional offices. It is also available for customizing and duplication by local governments or other organization. It will be broadcast on local cable television and Ecology will also investigate the possibility of making the video available through construction industry vendors (i.e. Home Depot), video stores and libraries.

Resource Efficient Building/CDL Webpage

Ecology is designing a resource efficient building/CDL component to the SW&FAP Homepage. The web page will include the following:

- CDL Council information
- resource listings *(people, publications, services, etc.)* inside and outside of Ecology
- statewide CDL recycling, salvage and disposal facility databases
- calendar of events
- links to other CDL/resource efficient building web sites
- publications/factsheets on the web
- educational institutes or trade schools that offer resource efficient building programs/classes
- resource efficient building "listserv"
- news-flashes and announcements.

Public Participation Grant Projects

Reusable Building Materials Exchange: Ecology has funded, provided technical assistance, and has promoted the new on-line "Reusable Building Materials Exchange" web site that has been developed by the Energy Outreach Center in Olympia Washington.

This low maintenance, materials exchange system will help facilitate the reuse of construction materials that might otherwise be destined for the landfill, burn pile or illegal dump site. It is currently being piloted in Thurston, Mason and Pierce Counties. If upon evaluation, it is viewed as successful, it will be expanded to statewide and possibly national use.

Recycling Information Line

Ecology operates 1-800-RECYCLE to help citizens find ways to reduce waste and recycle. In 1996, over 26,000 callers per year were assisted. In addition to the traditional

calls from the public which are referred to recycling centers or to local governments for curbside programs, the types of calls received are becoming increasingly complex. Alternatives to using products that produce household toxics wastes are suggested, and methods and locations for the safe disposal of household hazardous waste are provided. For businesses, information on locations for the recycling and disposal of construction, demolition and landclearing debris are provided, and referrals are made to companies who offer commercial pickup for business recycling. Information on used oil recycling and used oil haulers is provided.

While many local governments have developed their own information lines, the statewide information line continues to serve as a first contact for many citizens. Information is provided to callers and they are provided their local government information line numbers for future reference. The statewide information line also provides more specialized information not available within individual counties.

A database is maintained by periodically contacting all recyclers to determine commodities accepted, fees if any, and hours. The database was converted to new software to allow posting of recycling information on the SW&FAP Homepage. Targeted waste streams, such as construction and demolition, provide increased opportunities to expand the support for recycling in these areas by providing information on recyclers.

Ecology Youth Corps

1997 marked the 22nd year of operation for the Ecology Youth Corps (EYC). Under Chapter 70.93 RCW, *the Waste Reduction, Recycling and Model Litter Control Act*, the EYC operates as a "litter patrol program to employ youth from the state to remove litter from places and areas that are most visible to the public." The Act finds that the proliferation of litter discarded around the state is a public health hazard and it impairs the need for a healthful, clean and beautiful environment.

In response to public concerns about a perceived rise in litter volume across the state, the 1997 Legislature increased funding to Ecology for additional litter cleanup efforts. As a result, additional crews were added and several crews worked for longer periods of time to more than double the litter removed.

EYC operates two types of crews, median crews and summer crews. Median crew members are 18 years and older, and they work on the more complex cleanup challenges of highway median strips, interchanges and on/off ramps. Summer youth crew members are 14 to 17 years of age, and they work on road shoulders and public access areas. Each summer crew member works one four-week session, with a complete turnover of crews in the middle of the summer. 1997 litter removal results are shown in Table 4 below.

Table 4
1997 EYC Litter Pickup Output

Crew Type	Road miles cleaned	Off-Road Acreage Cleaned	Bags of Litter & Recyclables Filled
Median	2,483 miles	142 acres	31,232
Summer youth	3,417 miles	969 acres	33,715
Totals	**5,900 miles**	**1,111 acres**	**64,947 bags**

Recognizing Waste Reduction and Recycling Efforts

School Awards Program

The School Awards Program was established by the Legislature in 1989, as part of the "Waste Not Washington Act." and is administered by Solid Waste & Financial Assistance Program of Ecology. All 1,790 of Washington State's public schools are eligible to apply for the awards. Cash awards are made to public schools for their waste reduction and recycling programs in three categories: Best Waste Reduction Program, Best Recycling Program, and Outstanding Waste Reduction and Recycling Programs. A total of 89 Washington schools have received cash awards over the years.

Several of this year's winning schools had also won awards in past years, and they continue to build on previous accomplishments and win new recognition.

On May 9, 1997, at a ceremony in the state Capitol rotunda, Ecology Deputy Director Dan Silver presented $20,000 in cash awards to 20 schools (Table 4.5). Each school was judged on the basis of comprehensive, efficient and innovative approaches to waste reduction and recycling during the 1996-97 school year.

The ceremony was co-sponsored by Weyerhaeuser Company Foundation, which also gave $10,000 in cash awards to four Washington school districts for "Excellence in Recycling." This Weyerhaeuser/Ecology partnership has continued annually since 1991. This year the Washington Department of Health also presented a Certificate of Appreciation to each winning school for contributions to environmental health.

The winning schools carry out active waste reduction and recycling programs during the school year. Each also has an active education component in place to support their goals, often based on Ecology's "A-Way with Waste" curriculum. Each school recycles aluminum and other metals, glass, cardboard and mixed paper, white paper, newsprint, food wastes and plastic. The schools also practice many classroom and office waste

reduction techniques, such as making two-sided copies, purchasing recycled products, reuse of surplus items, etc.

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

The Best Waste Reduction Program Winner: Morris Schott Middle School - $2,500

Morris Schott Middle School in Mattawa, won this award in competition with 19 other schools. In the past, Ecology's judging panel had determined this award by counting total weight for all items recycled during the September-March reporting period. (Morris Schott's total was 50.1 tons, or 334 pounds per student.) But this year the judges looked beyond the numbers for unique support programs. At Morris Schott they found a student-owned and operated recycling business, "Re-Run Recycling," which uses recycling revenues to award scholarships to graduating seniors or to fund community environmental projects. And they found a commitment to Ecology's "A-Way with Waste" curriculum. Morris Schott has gone beyond the tonnage figures to make recycling an important of school life and a benefit to Mattawa residents.

Best Recycling Program Winner: Trout Lake School - $2,500

Trout Lake School in Klickitat County won this award with a total commitment to waste reduction. Paper and packaging are major targets for their efforts, but Ecology's judges concluded that hardly anything at all becomes waste at Trout Lake--everything gets re-used, and re-used again. Teachers and staff work with students on techniques of not generating waste in the first place, and the custodial staff is committed to purchasing less toxic materials and re-using school equipment and supplies. Situated in one of Washington's most scenic geographic areas, Trout Lake School is the centerpiece of a community effort to maintain that beauty.

Table 4.5
1996 - 1997 School Awards

Award	School	Location
Best Waste Reduction $2,500	Morris Schott Middle School	Mattawa, Grant County
Best Recycling Program $2,500	Trout Lake School	Trout Lake, Klickitat County
Outstanding Waste Reduction and Recycling Programs ($1,000 each)	Sequim High School	Sequim, Clallam County
	Jefferson Elementary School, Richland	Richland, Benton County
	Conway School, Mt Vernon	Mt Vernon, Skagit County
	Wilson Creek Elementary/ Junior/Senior High Schools	Wilson Creek, Grant County
	Stratton Elementary School, Newport	Newport, Pend Oreille County
	Mt. Baker Junior/Senior High Schools	Deming, Whatcom County
	Ocosta Junior/Senior High Schools	Westport, Grays Harbor County
	Ardmore Elementary School, Bellevue	Bellevue, King County
	Silver Ridge Elementary School, Silverdale	Silverdale, Kitsap County
	La Conner Elementary School	La Conner, Skagit County
	Gray Middle School, Tacoma	Tacoma, Pierce County
	Quilcene Schools	Jefferson County
	Maple Falls, Harmony, and Deming Elementary Schools	Whatcom County
	Mountain View Elementary School	Port Townsend, Jefferson County
	Eastgate Elementary School	Bellevue, King County

Weyerhaeuser Excellence in Recycling Awards

Weyerhaeuser Company Foundation awarded $3,000 each to the Kent, Methow Valley, and Richland school districts, and $1,000 to Mt. Baker district, for their recycling achievements during the 1996-97 school year. The awards were presented by Betsy Seaton, Weyerhaeuser Vice President of Recycling, and Tony Angell, Environmental Education manager for the Washington Superintendent of Public Instruction.

Waste Reduction and Recycling Awards

Each year, Ecology presents "Waste Reduction and Recycling Awards" at the Washington State Recycling Association Conference. These awards recognize a wide variety of programs being instituted by state and local governments, the private sector, non-profit groups and individuals, that show a commitment to finding ways to reduce waste or recycle material. Table 4.6 lists the award winners for 1997.

Table 4.6
1997 Waste Reduction & Recycling Awards for Local Government and Businesses

1997 WINNERS		
CATEGORY	**BUSINESS/ENTITY**	**ACCOMPLISHMENT**
Best Small Government Waste Reduction and Recycling Program	**Lewis County Public Services Department**	Against some significant odds, the Public Services Department has brought almost 90% of the population into the recycling fold. They have designed a system of outreach and education that reaches every segment of the population, with staff working regularly evenings and weekends to ensure all citizens have an opportunity to learn and participate. Working with the Sheriff's Department, illegal dumpers are being targeted and fined. Inmate labor from the county jail was used for a waste characterization study. The County has kept programs such as “Away-With-Waste” and “Shopping Smart” active in their communities.
Best Large Government Waste Reduction & Recycling Program	**King County and the City of Seattle**	This County and City have been major players in gaining the state's reputation for it's waste reduction and recycling successes. Outstanding successes include: the Greenworks Program, the Commission for the Marketing of Recyclable Materials; the King County Purchasing Agency; the Business and Recycling Venture of the Seattle Chamber of Commerce; the biosolids program of the Wastewater Treatment Division; the Northwest and the National Waste Prevention Coalition projects.
Best Federal Facility on Waste Reduction and Recycling	**McChord Air Force Base**	This program has the single largest office recycling program in the state, 8,500 residential recyclers, 200+ recycling locations, a two year recycling figure of more than 15 million pounds, for a rate of 57%. The recycling procurement program earned the "Closing the Circle Award" and the "Air Mobility Command Award for Pollution Prevention". They have been nationally recognized for education and outreach efforts.
Best Small Business Waste Reduction and Recycling Program	**Circuits Engineering, Inc.**	Many environmental programs are assisted through other local programs, and such is the case with Circuits Engineering, Inc. Contacted in 1996 by the Greenworks Program out of King County, employees at Circuits pulled

1997 WINNERS		
CATEGORY	**BUSINESS/ENTITY**	**ACCOMPLISHMENT**
		together to develop an Environmental Awareness Plan that covers every department in their company. Their recycling rate reached approximately 55%, conserved more than 150,000 gallons of water per month, and saved $75,000 in waste prevention. They offer free on-site consultation to any company wishing to become a "Business in the Green".
Best Large Business Waste Reduction and Recycling Program	**Hewlitt Packard Vancouver, WA**	This company recycles 23 different materials. They have a diversion rate of more than 77%. Their disposal savings in 1996 was over $300,000 and revenues of $537,000. HP has its own recycling center with six employees.
Best Education and Information Program	**Green Zone Committee** **and (tie)** **Bellevue Neighbors For Recycling**	The Green Zone Committee created a waste reduction and recycling small display for the Spokane Interstate Fair. Sustainable building, low maintenance and environmentally friendly landscaping, green driving, smart shopping, open space, "Trash to Treasures" reuse, and pollution prevention were all graphically in use in the display. Close to 300,000 visitors attended the fair. The Bellevue Neighbors for Recycling program brought recycling programs to multi-family housing throughout the city. A volunteer group, supported by the Coordinated Prevention and Public Participation grants, reached out to more than one-half of the population that live in the multi-family housing. Signs were produced in six languages to accommodate the culturally diverse population of the city.
Most Innovative Program	**"Build A Better Kitsap" Home Builders Associates of Kitsap and the Kitsap Public Works Dept.**	**"**Build a Better Kitsap", has produced a hand-book for Green building that contains up to 85 environmentally friendly actions that can be incorporated into new buildings or remodels. Use of these actions determines a rating that is given to projects with a Certificate of Merit, which can enhance their value on the market. This program is a clear example of how the government and private associations can work together to produce sound market-based solutions to a variety of environmental con-cerns. The Kitsap program is one of two in the country conceived, developed and administered by a local building trade association.
Special Recognition Award	Stevens County	Steven's County attained a 48% increase in their recycling rate in 1996, bringing it to 28%. The county has relied largely on its own resources to design an infrastructure that works in all segments. Innovation has been a big part of their success - working with a local asphalt company, the county actually developed a market for colored glass, and was able to increase glass recycling by more than 500%.

Chapter V The 1996 Recycling Survey for Washington

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

In response, local governments began offering its citizens various forms of recycling ranging from drop boxes to curbside collection of a variety of recyclable materials. In 1996, more than 100 cities and counties offered curbside collection of recyclables such as glass, paper, and metals while an increasing number are offering curbside collection of yard waste.

Recycling Rates

Each year since 1987, Ecology has conducted a survey to measure the statewide recycling rate. Information is provided by local governments, haulers, recyclers, brokers and other handlers of materials from the recyclable portion[27] of the waste stream that are collected for recycling.

From 1987 to 1993, the measured statewide recycling rate increased from 23% to 38%. This increase had been fairly steady, with a slight dip in 1991. In 1994 the measured recycling rate remained steady at 38%. In 1995 the recycling rate resumed its climb to 39% in spite of poor markets. This year the recycling rate has leveled at 39% (38.95%). Nearly all the recyclable collection infrastructure that was initiated by the "Waste Not Washington Act" has been completed. All major cities in the state, except one, have curbside collection programs in place. With the collection infrastructure "built out," we can expect the recycling rate to stay between 37% to 40% with changes in the recycling rate corresponding to changes in the recycling commodity market.

Future Recycling Survey Components

In 1997 the Legislature directed to Department of Ecology, through ESHB 1419 to review the state's solid waste permitting system to see if there were policy changes that could streamline the permit process without increasing risk to the environment. This study bill is important to the recycling community because the permit process is oriented towards disposal and often is an impediment to recycling operations.

[27] The recyclable portion of the waste stream is municipal solid waste as defined by the Environmental Protection Agency in the *Characterization of Municipal Solid Waste in The United States: 1995 Update*. This includes durable goods, nondurable goods, containers and packaging, food wastes, and yard trimmings. It does not include industrial waste, inert debris, asbestos, bio-solids, petroleum contaminated soils, or construction, demolition, and landclearing debris disposed at municipal solid waste landfills and incinerators.

The recycling survey measures a subset of solid waste, municipal solid waste. Municipal solid waste, for the purposes of the recycling survey, is solid waste generated by residences and commercial operations that generate residential like waste and use residential like collection services. It does not include biosolids, petroleum contaminated soils, industrial wood waste, industrial materials, inert materials, and construction, demolition and landclearing debris.

As the recycling rate has increased, recycling operations are using more materials from these "non-municipal solid waste" waste streams. This is particularly true in the organic waste stream that is composted. A composting operation can use parts of residential/commercial yard waste, wood waste and food waste. The composting operation then may combine the residential component with construction and demolition debris, industrial wood waste, or biosolids. For example, for 1996 compost operations were contacted by the recycling survey and by the solid waste disposal survey. The totals for processed compost were different on the two surveys because the solid waste disposal survey measures all solid waste while the recycling survey only measures municipal solid waste. The Department will attempt to reconcile these differences in the 1997 Annual Report. (See Appendix B, Table B.6 for a summary of request of data provided by facilities.)

For the purposes of measuring municipal solid waste recycling, this trend of combining waste streams is making the measurement of the municipal waste stream more difficult. However, it also highlights some of the best opportunities for recovery of solid waste before disposal. One of the lessons from the study bill and for the recycling survey is that we need to develop policy and management that measures all parts of the solid waste system not just municipal solid waste.

The challenges for the 1997 Recycling Survey will be to get better information about the composted and construction/demolition wastes streams. These two components of solid waste best illustrate how traditional definitions and management of solid waste are changing in the face of new technologies and methods in waste recovery. The Department will begin efforts to better characterize the collection and resulting commodity streams for these materials. Some of the questions we will attempt to answer in the future are:

What feedstocks are used in composting?
What percentage is organic material from the residential waste stream?
What percentage is organic material from the industrial waste stream?
What kinds of materials are recovered from construction and demolition waste?
How much construction/demolition waste is reprocessed and how much is reused?

The Department will use this information, with existing waste characterization, to help current market development efforts and, to provide information for current policy efforts occurring under ESHB 1419.

1996 Recycling Survey Process and Results

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

Recycling survey forms are sent to recycling firms and haulers to obtain information about types and quantities of recyclable materials collected. However, since reporting is not mandatory, and there is no penalty for not returning the information, some firms do not respond. Others, because they want to protect the confidentiality of who purchases their materials, do not complete the entire survey which leads to difficulties such as under counting or double counting materials. These factors make it very difficult to compile good recycling information for specific counties

Table 5.2
State Tonnage by Commodity: 1994-1996 Washington State Recycling Surveys[28]

Commodity	1994	1995	1996
Newspaper	209,415	286,984	298,616
Corrugated Paper	382,996	480,198	639,291
High Grade	61,931	50,416	80,203
Mixed Waste Paper	173,055	278,371	260,883
Aluminum Cans	16,375	21,213	19,064
Tin Cans	17,519	13,223	92,683
Ferrous Metals	772,295	691,843	220,667
Nonferrous Metals	99,827	31,559	75,926
White Goods	10,304	14,051	14,358
Refillable Beer Bottles	573	3,278	2,579
Container Glass	64,980	77,108	73,197
PET Bottles	3,502	4,955	3,853
LDPE Plastics	6,087	634	2,135
HDPE Containers	7,827	5,250	4,033
Other Recyclable Plastics	11,693	2,542	1,642
Vehicle Batteries	19,128	18,331	16,365
Tires	53,119	6,575	7,043
Used Oil	2,050	961	6,141
Yard Waste	319,232	295,915	337,534
Food Waste	126,409	78,148	103,073
Wood Waste	93,318	192,056	223,828
Textiles (Rags, clothing, etc.)	12,440	13,022	9,186
Gypsum	27,598	1,216	50,202
Photographic Films	23	20	3
Total Recycled	2,492,697	2,576,523	2,542,513
Total Disposed[29]	4,106,228	3,968,241	3,984,929
Total Generated	7,078,404	6,534,902	6,527,443
Recycling Rate	37.77%	39.43%	38.95%

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

Regional Recycling

Compilation of regional recycling information is part of a larger effort to analyze changes in the solid waste stream since the passage of the "Waste Not Washington Act" and to formulate solid waste policy to keep improving the recycling rate. Looking at the state's waste stream in smaller regional pieces will help Ecology make appropriate policy choices based on regional needs.

The following table (5.3) illustrates the county groupings: Central Puget Sound (CPSWGA), Western Washington (WWWGA), and Eastern Washington (EWWGA). The groupings correspond to a waste characterization study conducted by Ecology in 1992.[30] The table is grouped geographically whereas other parts of the annual report compare the counties by planning Phases.[31]. Ecology felt the groupings of Central Puget Sound, the rest of Western Washington and Eastern Washington provided good comparisons in terms of demographics and markets. These comparisons will provide useful information towards policy development for working towards the 50% recycling goal without compromising proprietary information.

[30] *1992 Washington State Waste Characterization Study*, (Six Volumes), Washington State Department of Ecology, July 1993, Publication #93-45.

[31] The planning phases are nearly identical to Waste Generation Areas with only one exception, Spokane county. Spokane is included in Phase 1[31] and not in the Central Puget Sound. Conversely, the Eastern Washington Waste Generation Area includes Spokane county and the Phase 3[31] planning group does not

Table 5.3
Recycling Tonnage by Geographic Area

Commodity	State Total	CPSWGA	EWWGA	WWWGA
Newspaper	298,616.14	175,901.91	31,390.25	46,544.59
Corrugated Paper	639,291.19	252,190.06	77,943.21	71,675.21
High Grade	80,203.67	52,969.07	5,616.38	19,256.87
Mixed Waste Paper	260,883.39	174,946.07	9,345.82	42,185.49
Aluminum Cans	19,064.65	10,583.61	4,377.51	3,401.04
Tin Cans	92,683.58	87,912.68	1,949.91	2,751.76
Ferrous Metals	220,667.13	66,661.48	78,644.26	32,636.91
Nonferrous Metals	75,926.27	3,697.86	9,094.99	5,237.77
White Goods	14,358.07	1,648.10	6,757.11	3,366.86
Refillable Beer Bottles	2,579.30	1,142.57	525.73	911.00
Container Glass	73,197.14	48,335.30	10,482.56	14,378.11
PET Bottles	3,853.62	2,514.60	492.20	664.27
LDPE Plastics	2,135.81	1,358.00	77.38	643.00
HDPE Containers	4,033.26	2,100.34	962.90	871.02
Other Recyclable Plastics	1,642.35	1,212.05	63.96	232.33
Vehicle Batteries	16,365.63	5,775.95	3,495.61	3,571.43
Tires	7,043.00	21,993.01	8,469.86	9,136.55
Used Oil	6,141.00	598.00	3,813.00	1,204.00
Yard Waste	337,534.27	268,668.72	43,271.34	25,594.21
Food Waste	103,073.59	71,657.17	10,235.85	12,952.57
Wood Waste	223,828.01	187,963.29	606.88	35,059.57
Textiles (Rags, clothing, etc.)	9,186.36	4,509.36	4,278.51	398.49
Gypsum	50,202.87	43,655.60	2,020.00	4,527.27
Photographic Films	3.41	0	2.95	0.46
Recycling Total	2,542,513.71	1,403,190.49	306,694.22	330,856.51
MSW Disposal Total	3,984,929.38	2,136,185.49	1,068,015.19	823,530.12
Generated Recycling Total	6,527,443.09	3,539,375.98	1,374,709.41	1,154,386.63
Recycling Rate	38.95%	39.65%	22.31%	28.66%
		-	-	-
Population	5,516,800.00	2,832,100.00	1,234,600.00	1,450,100.00
Recycling, pounds/person/day	2.13	2.17	1.22	1.57
Disposal, pounds/person/day	3.96	4.13	4.74	3.11
Generation, pounds/person/day	6.48	6.85	6.10	4.36

Central Puget Sound Waste Generation Area (**CPSWGA**) - King, Pierce, Snohomish
Western Washington Waste Generation Area (**WWWGA**) - Clallam, Clark, Cowlitz, Grays Harbor, Island, Jefferson, , Kitsap, Lewis, Mason, Pacific, San Juan, Skagit, Skamania, Thurston, Wahkiakum, Whatcom
Eastern Washington Waste Generation Area (**EWWGA**) - Adams, Asotin, Benton, Chelan, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Kittitas, Klickitat, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman, Yakima

Figure 5.1
Pounds Disposed, Recycled and Generated Per Person/Day

	Disposed	Recycled	Generated
1986	4.8	1.4	6.3
1988	4.5	1.8	6.3
1989	4.2	1.8	6.0
1990	4.2	2.2	6.4
1991	4.2	2.0	6.3
1992	4.2	2.3	6.5
1993	4.2	2.6	6.8
1994	4.2	2.5	6.7
1995	4.0	2.6	6.6
1996	4.0	2.5	6.5

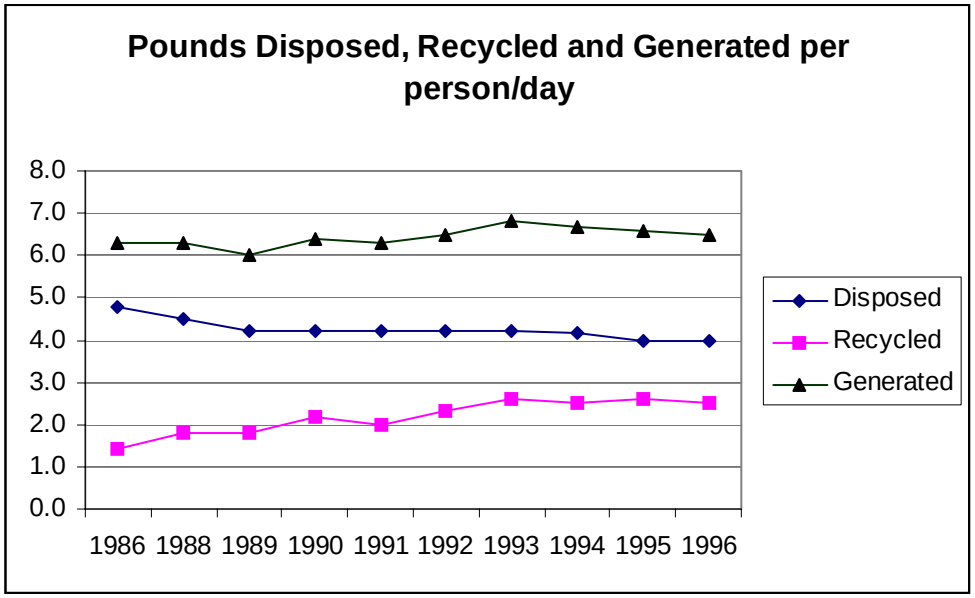


Figure 5.2 shows the trend in recycling rates since 1986. Figure 5.3 shows the tons recycled.

Figure 5.2
Recycling Rates, 1986-1996

	Recycling Rate
1986	15.00%
1988	28.60%
1989	28.00%
1990	34.30%
1991	32.70%
1992	35.30%
1993	37.95%
1994	37.77%
1995	39.43%
1996	38.95%

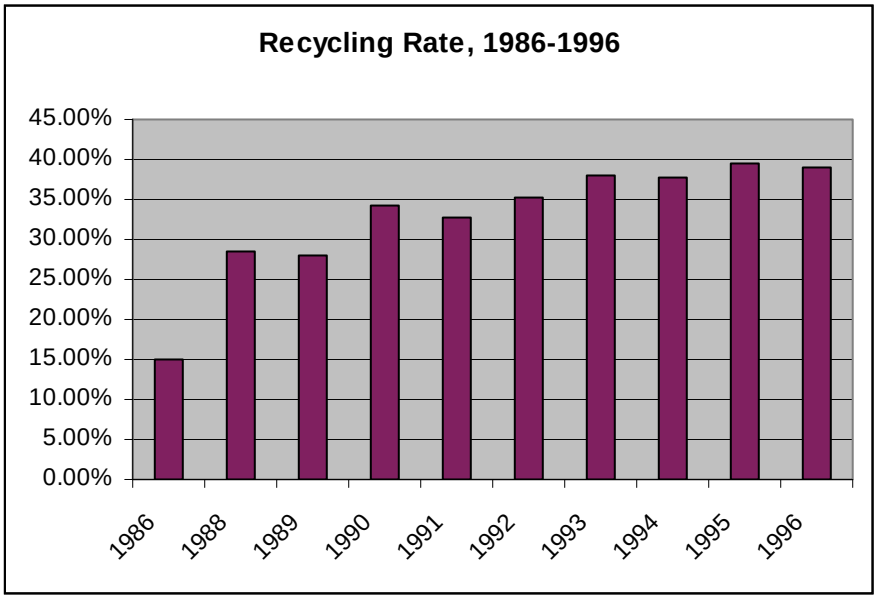
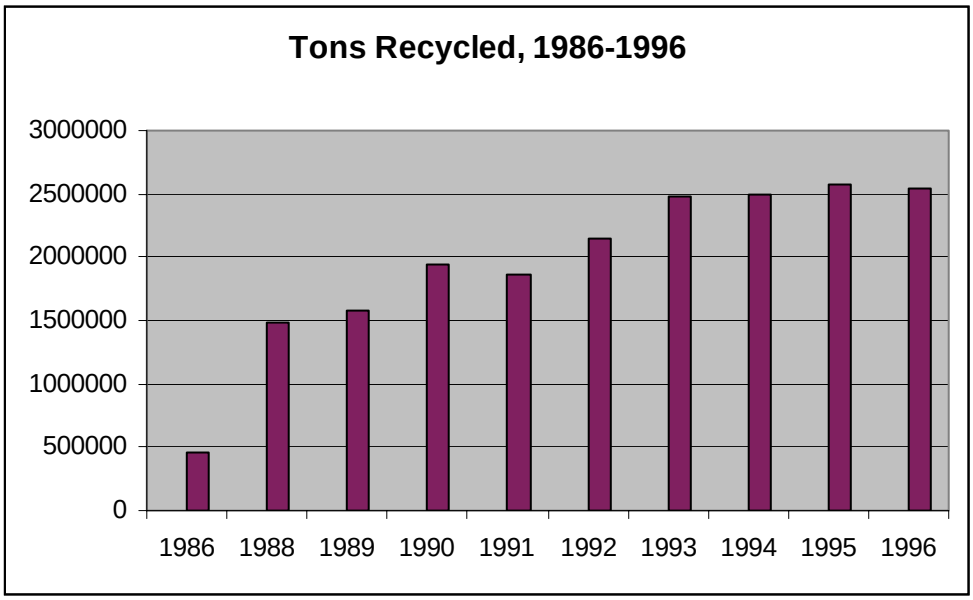


Figure 5.3
Tons Recycled 1986-1996

	Recycled tons
1986	463,387
1988	1,491,400
1989	1,573,940
1990	1,942,730
1991	1,868,801
1992	2,150,756
1993	2,471,783
1994	2,492,697
1995	2,576,523
1996	2,542,514



Chapter VI Disposal of Solid Waste in Washington

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

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

As part of the annual reporting requirements of chapter 173-304 WAC, *the Minimum Functional Standards (MFS)* and chapter 173-351, *Criteria for Municipal Solid Waste Landfills*, forms were sent to the various types of landfills[32] for them to report the types and quantities of waste they received for disposal. The categories of solid waste specified on the form were municipal, demolition, industrial, inert, commercial, woodwaste, sewage sludge, asbestos, petroleum contaminated soils, tires, special waste and other. The facilities were also asked to report the source of their waste, by county, out-of-state or out-of-country.

The two major landfills in Oregon accepting waste from Washington are Finley Butte and Columbia Ridge. They both provide copies of their disposal records for use in preparing this report.

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

[32] Only one ash monofill in Washington is located at the Roosevelt Regional Landfill. Information about the special incinerator ash disposed is provided in their annual report for their municipal solid waste landfill at the same site.

Municipal Solid Waste Landfills

Amount of Waste Disposed in Municipal Solid Waste Landfills

In 1996, 24 municipal solid waste landfill accepted waste totaling 4,083,755 tons.[33] Of the 24 landfills, 18 were publicly owned, and six were privately owned.

In analyzing the size of the MSW landfills it was found that of the 24, seven received over 100,000 tons of waste in 1996. The two largest landfills in Washington, Cedar Hills in King County and Roosevelt Regional Landfill in Klickitat County received 743,094 tons and 1,707,535 tons, respectively. In 1996, two landfills received less than 10,000 tons, compared with 12 MSW landfills in 1994. One of the smaller landfills, Bruce Landfill in Adams County, closed in May 1996. This trend (Figure 6.1) indicates that the smaller facilities have been closing in response to more stringent regulations. Three of the largest landfills and all of the smaller landfills are publicly owned

Figure 6.1 Size and Number of MSW Landfills

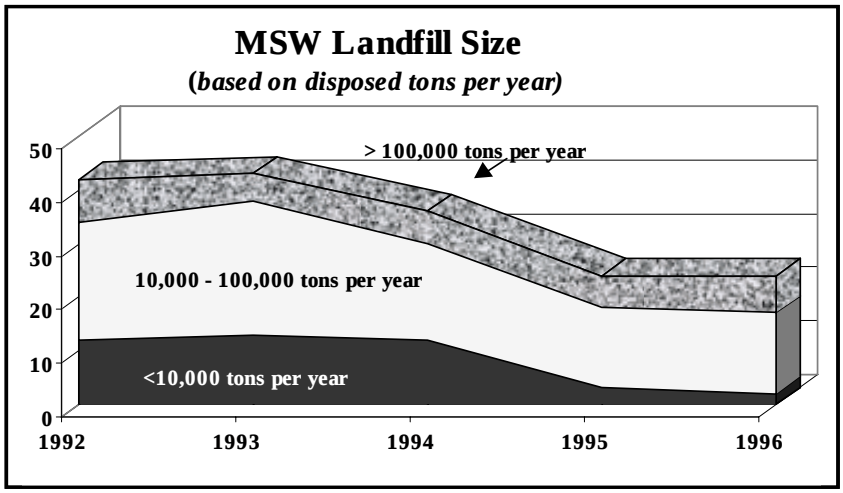


Table 6.1 shows the relationship of waste disposed to public/private ownership. As the table illustrates, 1,581,565 tons of solid waste disposed went to publicly owned facilities (39%), with the remaining 2,502,190 tons going to private facilities (61%).

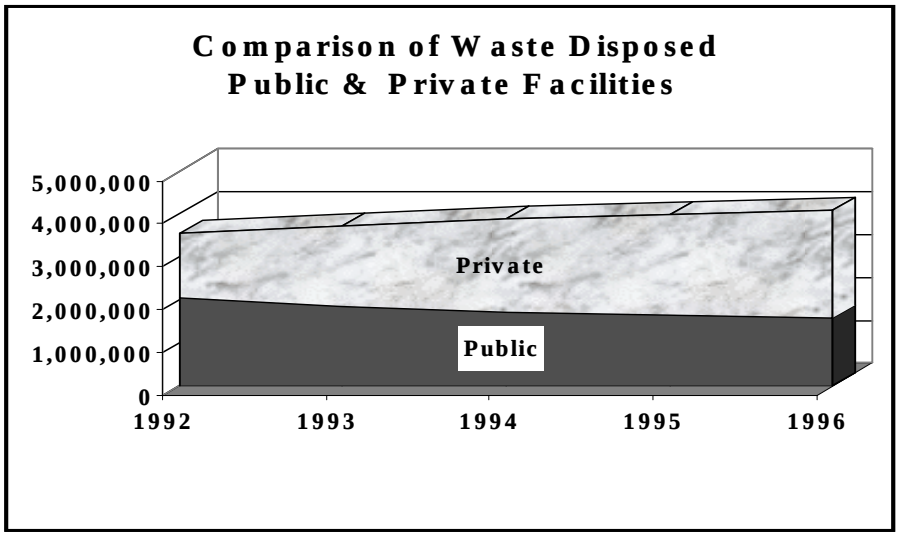
[33] Throughout this report, different disposal amounts are discussed. These numbers vary based on the types of facilities being discussed, the source of the waste and the purpose of the discussion. For example, the recycling survey only accounts for "traditional" municipal waste in the disposed amount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

Table 6.1
Waste Disposed in MSW Landfills – Public/Private

OWNERSHIP	NUMBER OF MSW LANDFILLS		AMOUNT OF WASTE DISPOSED (Tons)		% TOTAL WASTE DISPOSED	
	1991	1996	1991	1996	1991	1996
PUBLIC	36	18	2,696,885	1,581,565	69	39
PRIVATE	9	6	1,192,207	2,502,190	31	61
TOTAL	45	24	3,889,092	4,083,755	100	100

The amount of waste disposed in MSW landfills shows movement from the publicly owned facilities to those owned by the private sector (see Figure 6.2). The trend has continued since 1991, when the state first started tracking this type of information. The amount of waste disposed in the private facilities has increased from 31% since 1991 to 61% in 1996. The majority of this increased amount can be accounted for by the Roosevelt Regional Landfill in Klickitat County.

Figure 6.2
Comparison of Waste Disposed for Public and Private Facilities



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.[34] Annual facility reports show that a much wider variety of waste is disposed of in the MSW landfills. These wastes need to be considered in terms of remaining available capacity. Fourteen of the 24 landfills reported a significant

[34] "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).

amount of solid waste disposed, other than municipal solid waste. Demolition, industrial, commercial, woodwaste, sludge, petroleum contaminated soils (PCS) and tires were the major waste streams. Table 6.2 shows changes in waste, types and amounts disposed in MSW landfills from 1991 through 1996. (See Appendix B Table B.1 for specific MSW facility data).

Table 6.2
Waste Types Reported Disposed in MSW Landfills

WASTE TYPES	1991 (Tons)	1992 (Tons)	1993 (Tons)	1994 (Tons)	1995 (Tons)	1996 (Tons)
Municipal Solid Waste*	3,211,857	2,694,800	2,641,551	2,725,084	2,777,030	2,807,998
Demolition Waste	191,518	250,144	331,231	459,979	382,513	375,412
Industrial Waste	189,908	101,607	44,471	150,218	161,779	145,617
Inert Waste	2,023	1,027	0	31,248	5,154	30,061
Commercial Waste	157,862	143,466	180,691	92,498	142,258	109,093
Woodwaste	39,184	60,523	98,595	22,668	37,850	57,667
Sewage Sludge	42,618	64,311	33,854	64,364	66,728	49,205
Asbestos	3,931	8,247	7,076	11,819	7,859	7,965
Petroleum Contaminated Soils	66,879	224,560	273,429	249,552	255,288	254,414
Tires	na	na	1,288	1,815	28,712	12,787
Special	na	na	na	na	na	10
Other**	4,357	12,053	113,869	69,371	136,644	233,526
TOTAL	3,910,137	3,560,738	3,726,055	3,878,615	4,001,815	4,083,755

* 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 auto fluff, non-municipal ash and white goods.

In examining the types of waste that were disposed in the MSW landfills in 1996, there was a slight decrease in demolition waste, industrial, commercial, sewage sludge, PCS, and tires. Increased amounts were reported for all other waste types.

Waste reduction and recycling efforts for CDL may be having an impact on the demolition waste stream. Future trends and increased tracking through the recycling survey will provide better information. The land application and composting of biosolids may account for decreased disposed amount of sewage sludge in 1996.

The increase in the amount of tires disposed at MSW landfills as seen in 1995 (28,712 tons) is a result of some failed recycling efforts for tire pile cleanups. Recycling of tires is currently not occurring vary widely in Washington. Illegal tire piles cleanups are being diverted to landfills for disposal. The decrease in 1996 (12,787 tons) reflects completion of several tire pile cleanups (see Chapter III).

Waste-to-Energy/Incineration

In 1996, a new waste-to-energy facility began operation at Fort Lewis in Pierce County. The six waste-to-energy facilities/incinerators statewide burned 365,464 tons of solid waste. Of that amount, 7,507 tons was identified as woodwaste at the Inland Empire Paper facility in Spokane. This is the only incinerator that does not burn municipal solid waste. The amount of solid waste incinerated statewide decreased from a high of 12% in 1992 to 8% in 1996. (See Appendix B, Table B.2 for specific incinerator data.)

Ash Monofill

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 five energy recovery/ incinerators that meet these criteria. All of the municipal solid waste incinerator ash (101,482 tons) from those facilities is disposed at the ash monofill at the Roosevelt Regional Landfill in Klickitat County.

Trends in Municipal Solid Waste Disposal Methods

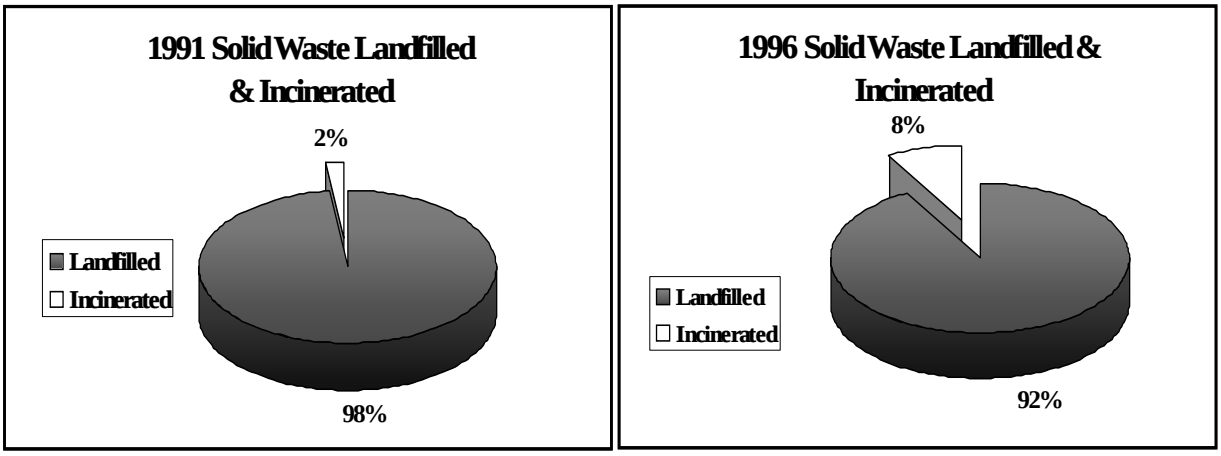
The two basic ways to dispose of solid waste are landfilling and burning. A comparison of the amount of solid waste disposed in municipal solid waste landfills and waste-to-energy facilities and incinerators in 1996 is shown in Table 6.3.

Table 6.3
Waste Disposed in MSW Landfills and Incinerators in 1996

FACILITY TYPE	TONS	PERCENT (%)
MSW Landfills	4,083,755	92
Incinerators	365,464	8
TOTAL	4,449,219	100

The largest change in disposal methods over the past few years has been between landfilling and energy recovery/incineration. In 1991, 98% of the waste was disposed in MSW landfills and 2% was incinerated. In 1995, the split was 88% landfilled and 12% incinerated. In 1996, there was a decrease to 8% incinerated. (See Figure 6.3)

Figure 6.3
Comparison of Solid Waste Landfilled & Incinerated
1991 and 1996



Inert/Demolition, Limited Purpose and Woodwaste Landfills

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

Table 6.4 shows the waste types and amounts reported for inert/demolition landfills. In 1996, 453,494 tons of "Other" waste was soil from a PCS treatment facility in Snohomish County which increased the total amount disposed for inert/demolition landfills. (See Appendix B, Table B.3 for specific inert/demolition landfill data.)

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

WASTE TYPES	1992	1993	1994	1995	1996
Municipal	0	0	0	0	0
Demolition	750,627	168,066	157,758	103,903	133,469
Industrial	0	0	0	0	0
Inert	139,366	272,047	200,172	121,943	226,362
Commercial	0	0	0	0	0
Wood	609	120	0	167	39
Sludge	0	0	0	0	0
Asbestos	0	12	4	0	0
PCS	0	16,233	19,179	18,295	846
Tires	0	500	0	0	33
Other	14,486	377,260	280,501	235,330	512,446
TOTAL (tons)	905,088	834,238	657,614	479,638	873,195

Table 6.5 shows the types and amounts of waste reported disposed at Limited Purpose landfills in 1996. There was a decrease in the amount of PCS disposed. Increased "Tires" was from a cleanup of a failed tire recycling project. (See Appendix B, Table B.4 for specific limited purpose landfill information.)

Table 6.5
Waste Types and Amount Disposed at Limited Purpose Landfills

WASTE TYPES	1992	1993	1994	1995	1996
Municipal	0	0	0	0	0
Demolition	13,698	12,894	95,568	151,230	180,529
Industrial	194,689	17,680	212,008	315,930	371,496
Inert	44,572	37,274	104,419	138,577	141,759
Commercial	0	25,019	0	0	0
Wood	94,541	156,261	86,088	58,628	22,660
Sludge	0	0	21	0	0
Asbestos	0	0	226	797	512
PCS	0	99,360	82,279	148,932	98,221
Tires	0	0	0	0	29,227
Other	35,615	59,259	60,642	40,797	65,675
TOTAL (tons)	383,115	407,747	642,251	874,116	910,078

Table 6.6 shows the waste types and amounts reported in 1996 at woodwaste landfills. A high demand for wood products has increased the reuse and recycling of woodwastes that had been disposed in the past. This is shown in the decrease in woodwaste disposed at woodwaste landfills. Reduced amounts of woodwaste were also reported at inert/demolition and limited purpose landfills. (See Appendix B, Table B.5 for specific woodwaste landfill data.)

Table 6.6
Waste Types and Amount Disposed at Woodwaste Landfills

WASTE TYPES	1992	1993	1994[35]	1995	1996
Municipal	0	0	0	0	0
Demolition	57,328	20,775	0	8,600	18,780
Industrial	0	0	0	0	0
Inert	0	0	0	0	0
Commercial	0	0	0	0	0
Wood	122,381	96,708	93,310	105,080	81,886
Sludge	0	0	0	0	0
Asbestos	0	0	0	0	0
PCS	0	0	0	0	0
Tires	0	0	0	0	0
Other	1,785	4,614	3,213	2,079	2,031
TOTAL (tons)	181,494	122,097	96,523	115,759	102,697

[35] Data entry error from 1994 corrected. An additional 63,898 tons of woodwaste waste disposed in 1994.

Movement of Solid Waste

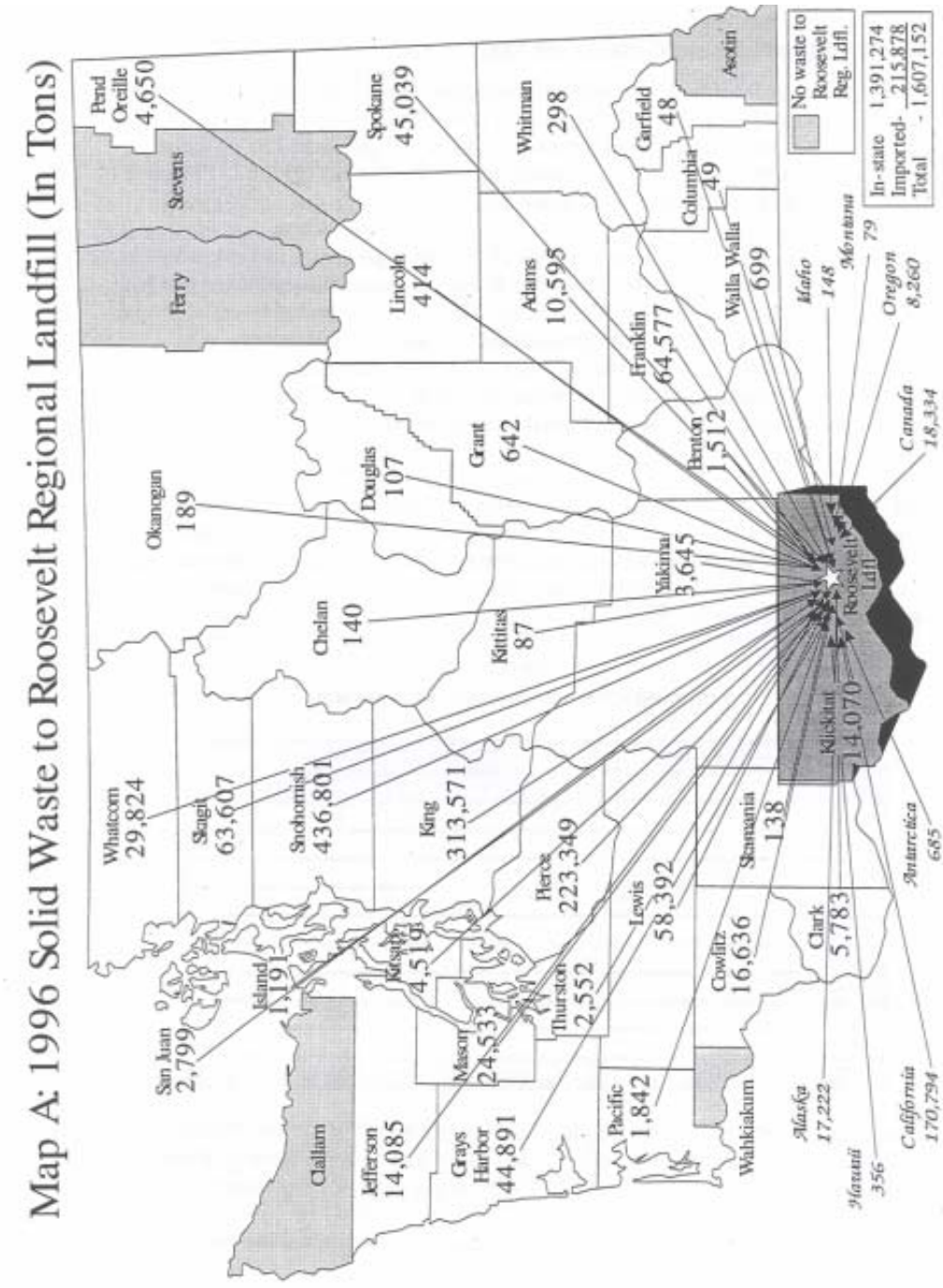
Movement of Waste between Counties

All landfills and incinerators were asked to report the source, types and amounts of waste they received from out-of-county. Eleven of the 24 active MSW landfills reported receiving over 1.5 million tons of solid waste from other counties in 1996.

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

With the closure of many local landfills because of the new state/federal regulations, Roosevelt Regional Landfill in Klickitat County, and to a lesser extent, Oregon regional landfills, have become the chosen disposal option. The Roosevelt Regional Landfill received some type of solid waste from 34 of the 39 Washington counties (14 additional counties since 1992) and also from out-of-state and out-of-country (see Map A). For many counties that still have operating MSW landfills, Roosevelt Regional Landfill has become an option to dispose of some of their non-municipal waste, thus saving local landfill capacity for future need. Ten of the 34 counties rely on Roosevelt for the majority of their MSW waste disposal and four other counties send a significant portion of their MSW to Roosevelt. Four counties and the City of Seattle send the majority of their MSW waste and two other counties send a significant portion of their MSW waste to Oregon facilities.

In addition to waste movement to MSW landfills, three of the waste-to-energy facilities received a small amount of waste from beyond its home county and twelve other types of landfills (woodwaste, inert/demolition and limited purpose) received 158,991 tons of waste, predominantly inert/demolition waste, from other counties.


Map A: 1996 Solid Waste to Roosevelt Regional Landfill (In Tons)
Pend Oreille 4,650
Stevens
Ferry
Spokane 45,039
Whitman 298
Garfield 48
Asotin
Lincoln 414
Adams 10,595
Columbia 49
Walla Walla 699
Franklin 64,577
Benton 1,512
Okanogan 189
Douglas 107
Grant 642
Chelan 140
Kittitas 87
Yakima 3,645
Whatcom 29,824
Skagit 63,607
Snohomish 436,801
King 313,571
Pierce 223,349
Lewis 58,392
Thurston 2,552
Mason 24,533
Kitsap 4,519
Island 1,191
San Juan 2,799
Clallum
Jefferson 14,085
Grays Harbor 44,891
Pacific 1,842
Cowlitz 16,636
Skamania 138
Wahkiakum
Clark 5,783
Klickitat 14,070
Roosevelt Ldfl
No waste to Roosevelt Reg. Ldfl.
In-state 1,391,274
Imported- 215,878
Total - 1,607,152
Idaho 148
Montana 79
Oregon 8,260
Canada 18,334
Antarctica 685
Alaska 17,222
Hawaii 356
California 170,794

Waste Imported from Outside the State

Washington state landfills and incinerators were also asked to report the source, types and amounts of waste received from out-of-state or out-of-country. In 1996, a total of 275,115 tons of solid waste, 6% of the waste disposed and incinerated in Washington, was imported from beyond the state's boundaries for disposal. In 1994, 67,113 tons of waste, 1% of the disposed amount, was imported.

The types of waste received from out-of-state for disposal are shown in Table 6.7. The majority of this waste (215,878 tons) went to Roosevelt Regional Landfill and two other municipal landfills. The majority of that (170,794 tons) was imported from California, with the remainder from Alaska, Oregon, Canada, Hawaii, Idaho, Montana, and Antarctica. Roosevelt also received the majority of out-of-state demolition waste, PCS and tires. The Weyerhaeuser limited purpose landfill in Cowlitz County received most of the industrial waste, waste resulting from their other wood processing operations in Oregon.

Nez Perce County, Idaho, disposed of 25,000 tons of MSW in the Asotin County Landfill. This disposal is considered incidental movement because Asotin County, Washington, and Nez Perce County, Idaho, prepared a joint local comprehensive solid waste management plan to meet the requirements of Washington state statute and have an agreement for joint use of the landfill.

Table 6.7
Out-of-State Waste Disposed in Washington

TYPE OF WASTE	QUANTITY (TONS)	
	1991	1996
Municipal Solid Waste	24,475	203,180
Demolition	1,412	9,904
Petroleum Contaminated Soils	0	13,706
Industrial	0	39,272
Asbestos	0	422
Sludge	36	14
Woodwaste	208	71
Tires	0	7,605
Other	0	941
TOTAL	26,131	275,115

Under the "Guidelines for Reporting Imported Solid Waste"[36] MSW landfills or incinerators receiving waste from out-of-state are required to notify Ecology if the amount from one generator will exceed 10,000 tons per year. An equivalency

[36] *Guidelines for Reporting Imported Solid Waste*, Department of Ecology, Publication #94-140, September 1994.

determination for the state or province is required. In addition, the facility must submit quarterly reports on all solid waste received from out-of-state. Roosevelt Regional Landfill is currently the only landfill falling under the reporting guidelines.

Waste Exported from the State

Another aspect of solid waste movement is the amount exported from Washington to another state for disposal. In 1996, a total of 989,173 tons of waste generated in Washington was disposed in Oregon landfills, an increase from 705,608 tons in 1992. Table 6.8 compares the waste amounts and types exported and imported.

Major exporters of municipal solid waste in Washington included the City of Seattle (493,864 tons, mostly MSW), Benton County, Clark County, Island County, Pacific County, Pierce County, San Juan County, Snohomish County, and Whitman County. Reasons for exportation out-of-state are related to the closure of local landfills, negotiation of favorable long-haul contracts with Oregon facilities and extending the life of local landfills by exporting non-municipal waste.

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

TYPE OF WASTE	IMPORTED		EXPORTED	
	1995	1996	1995	1996
Municipal Solid Waste	111,396	203,180	709,133	778,107
Demolition	6,643	9,904	113,097	137,314
Petroleum Contaminated Soils	54,839	13,706	9,760	29,574
Asbestos	401	422	3,031	2,564
Industrial	39,990	39,272	6,773	20,949
Woodwaste	1,897	71	0	0
Sludge	0	14	5,212	7,062
Tires	3,594	7,605	0	0
Medical Waste	na	na	Na	5,209
Other	210	941	4,879	8,394
TOTAL	218,970	275,115	851,885	989,173

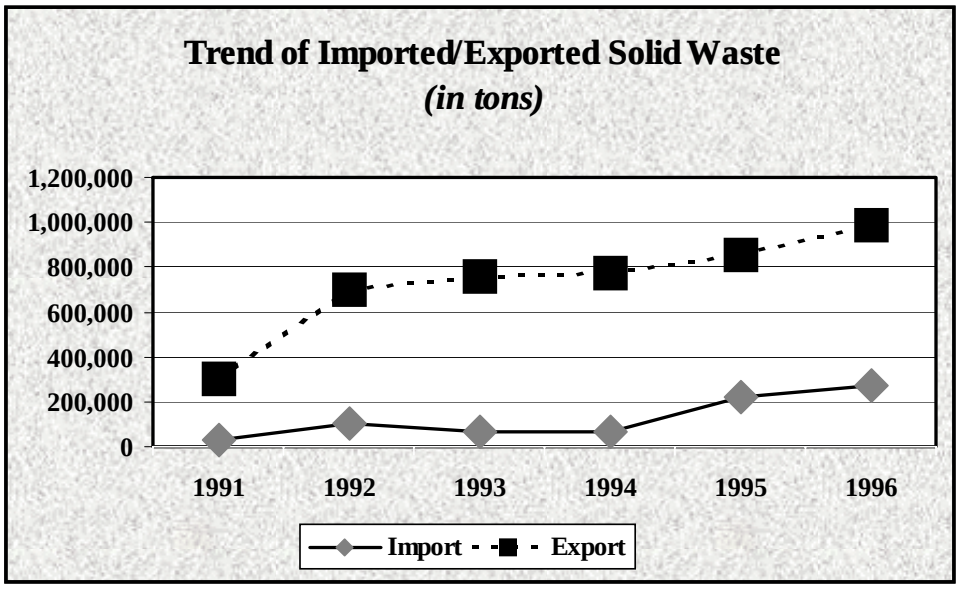
Trends in Interstate Waste Movement for Washington

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

As can be seen in Figure 6.4, Washington exports have been much higher than imports since 1991. With the expansion of waste taken at Roosevelt Regional Landfill however, the amount of imported waste is increasing. Still, about three and a half times as much waste is exported to Oregon's two landfills, Columbia Ridge and Finely Buttes.

With the permitting of a new large regional landfill in Adams County, Washington, (planned construction to start in 1998) it is likely that much of the waste currently being exported to Oregon would be disposed of in-state. The Roosevelt Regional Landfill continues to market their landfill for waste from other states, as well as other countries.

Figure 6.4
Trend of Imported/Exported Solid Waste



Determining the Amount of Solid Waste Disposed

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

Waste Generated by Washington Citizens for Disposal at MSW Facilities

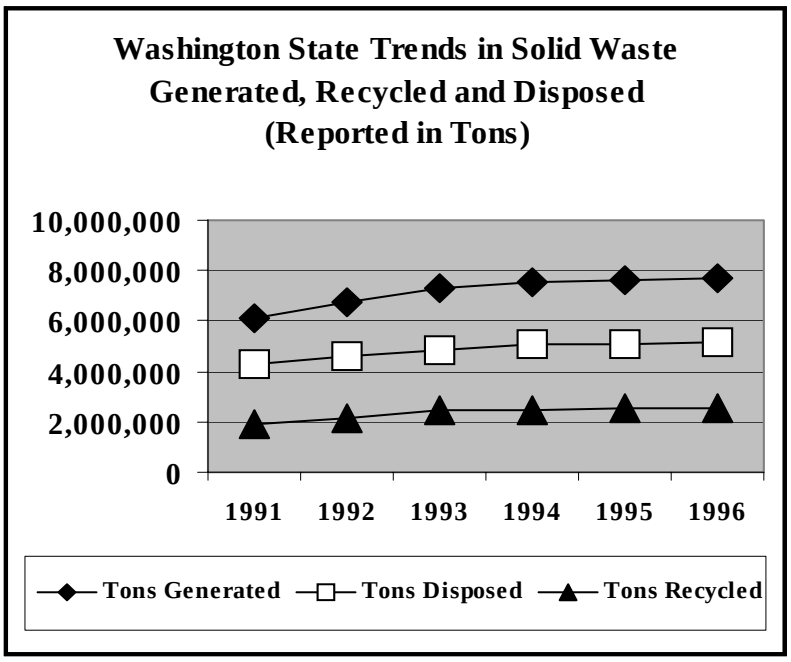
Since 1987, Ecology has conducted a recycling survey that has reported the amount of waste generated, recycled and disposed each year. This waste stream was the "recyclable waste stream" made up of waste types included in the recycling categories, but not including sludge, asbestos, petroleum contaminated soils, construction and demolition, or industrial waste (when it could be specifically identified[37]). It was also typically the

[37] 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 stream generated and reported by municipalities (cities and counties). The report for the recycling survey included waste that was disposed of outside of Washington, but excluded imported waste.

Figure 6.5 shows the amount of waste recycled, disposed and generated in Washington. It is based on waste disposed at MSW landfills and incinerators in Washington and Oregon, excluding imported waste. All types of waste are included in the disposal numbers. The trend seen is an increase in all of the amounts generated, recycled, and disposed.

Figure 6.5
Washington State Trends in Solid Waste Generated, Recycled and Disposed



Washington State's population has continued to grow since disposal numbers were tracked in 1991 (see Table 6.9). The increased population has had a correlated increase in waste disposed. In 1995, the per capita disposal rates (0.93 tons/person/day) decreased from the 1994 level (0.95 tons/person/day). In 1996, the per capita disposal rate increase slightly (0.94 tons/person/day), although it was still below the 1994 rate. There was also a slight decrease in the recycling rate per person, from 0.47 tons/person/year in 1995 to 0.46 tons/person/year.

Table 6.9
Washington State Population

1991	5,000,385
1992	5,116,685
1993	5,240,900
1994	5,334,400
1995	5,429,900
1996	5,516,800

Figure 6.6 analyzes the trends in per capita generation, recycling and disposal. This looks at the number of tons per year generated, recycled and disposed by each person. The total is not what each person produces at each household, but includes all residential, business, commercial and industrial waste generated in the state that is disposed of in municipal solid waste landfills and incinerators. Table 6.10 shows the per capita numbers from 1991 through 1996.

Figure 6.6
Washington State Trends in Solid Waste Generated, Recycled and Disposed
(Tons Per Person Per Year)

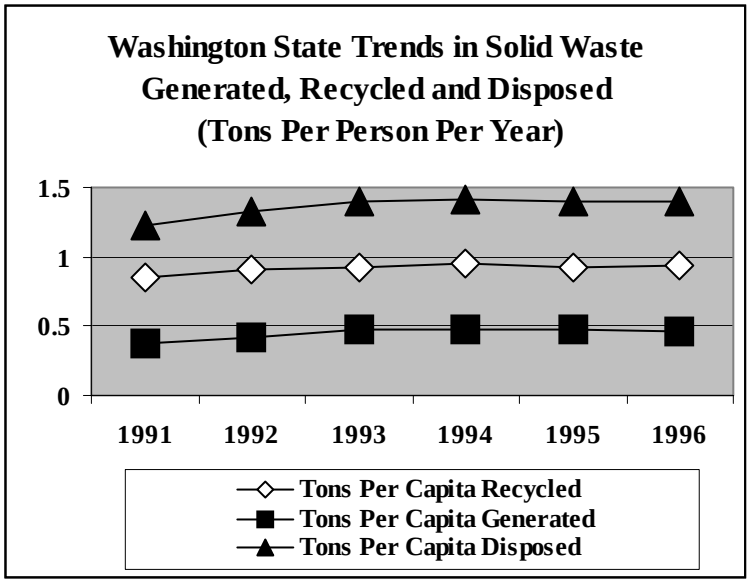


Table 6.10
Per Capita Disposed, Recycled and Generated Numbers (tons/person/year)

Per Capita	1991	1992	1993	1994	1995	1996
Disposed[38]	0.85	0.91	0.92	0.95	0.93	0.94
Recycled	0.37	0.42	0.47	0.47	0.47	0.46
Generated	1.23	1.33	1.40	1.41	1.40	1.40

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

Total Waste Disposed in Washington State

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

To gain a more complete picture of solid waste disposal in the state, it is necessary to include all categories of waste that are disposed or incinerated in Washington state landfills and incinerators. This includes waste imported from out-of-state, but does not include exported waste. When all categories are included, 6,335,189 tons of waste were disposed of in all types of landfills and incinerators in Washington in 1996 (see Table 6.11).

Table 6.11
Total Amounts of Solid Waste Disposed in Washington

	AMOUNT OF WASTE (TONS)				
DISPOSAL METHOD	1992	1993	1994	1995	1996
Municipal Solid Waste Landfills	3,560,738	3,726,055	3,878,615	4,001,815	4,083,755
Incinerated MSW Waste	424,387	431,928	421,626	397,588	365,464
Woodwaste Landfills	181,494	122,097	32,625	115,759	102,697
Inert/Demolition Landfills	905,088	834,238	657,614	479,638	873,195
Limited Purpose Landfills	383,115	407,747	642,251	874,116	910,078
TOTAL	5,454,822	5,522,065	5,632,731	5,868,916	6,335,189

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

Remaining Capacity

Future Capacity at Municipal Solid Waste Landfills

Twenty-three MSW landfills remained operating at the end of 1996[39]. (See Map B for the location of operating MSW landfills and incinerators.) The amount of remaining capacity for the 23 MSW landfills was determined by asking the facilities to report remaining permitted capacity, as well as the expected closure date. In 1997, the facilities estimated about 162 million tons, or 40 years, of capacity at the current disposal rate. In 1994, facilities reported approximately 181 million tons of remaining capacity, about 49 years of remaining capacity statewide.[40] The reduction in almost 20 million tons of capacity was only partially from waste disposed. Changes in permit conditions, landfill closures and projections of fewer expansions account for part of the decrease. Of the 23 currently operating landfills, only 12 have greater than 10 years of remaining permitted capacity. (See Table 6.12 for an estimated number of facilities with specified remaining years of life.) Map C shows the counties and the remaining years of capacity of their MSW landfills.

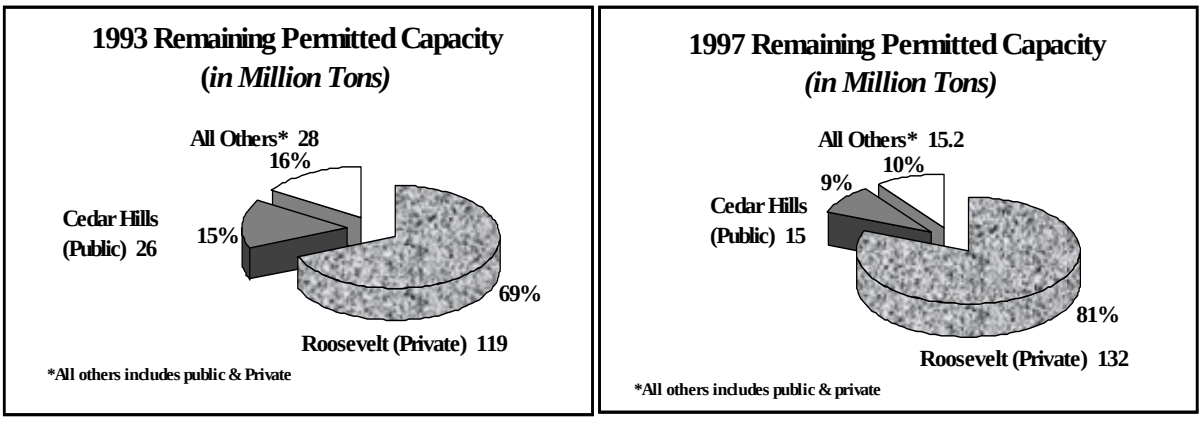
Table 6.12
Estimated Years to Closure for MSW Landfills

YEARS TO CLOSURE	% OF TOTAL REMAINING CAPACITY	NUMBER OF FACILITIES	PUBLIC	PRIVATE
Less than 5 years	1%	6	3	3
5 to 10 years	3%	5	4	1
Greater than 10 years	96%	12	10	2
TOTALS		23	17	6

Seventeen of the 23 operating MSW landfills are publicly owned. However, 85% of the remaining permitted capacity (138 million tons) is at the six privately-owned facilities, compared to 73% in 1993. The majority of the capacity, about 81% of the total statewide capacity, is at the privately owned Roosevelt Regional Landfill in Klickitat County. Another 9% of the statewide total capacity is at the publicly-owned Cedar Hills Landfill in King County, with the remaining 10% of capacity spread among the remaining 21 landfills in the state (see Figure 6.7).

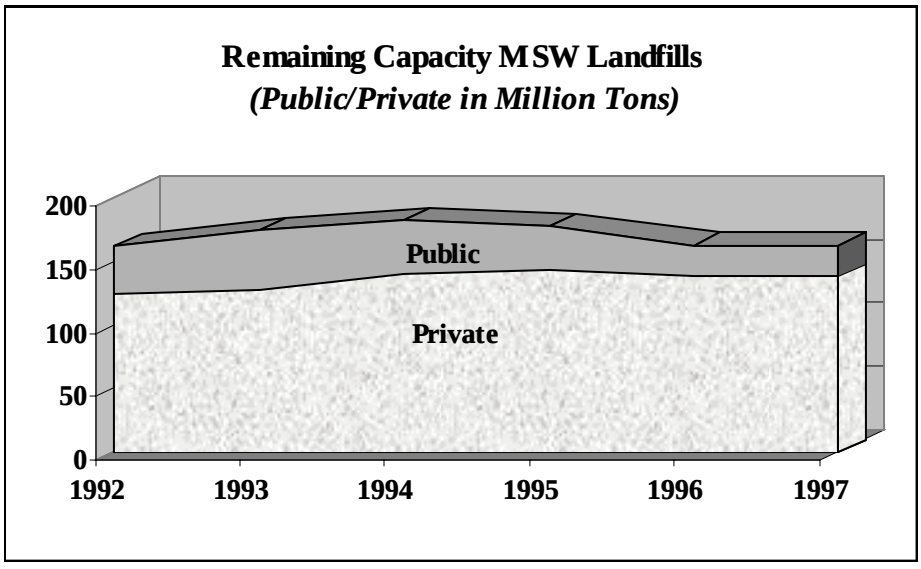
[39] Bruce Landfill in Adams Conty closed in May 1996.
[40] *Solid Waste in Washington State - Third Annual Status Report*, Department of Ecology, Publication #94-194, December 1994.

Figure 6.7
Comparison of Remaining Permitted Capacity
1993 and 1997



The remaining capacity at private landfills has exceeded that for public facilities since the amounts were tracked in 1992. For both ownership types, the remaining capacity is starting to decrease, more rapidly at the public facilities (Figure 6.8). Of the 162 million tons of remaining capacity, only 24 million tons (about 15%) is in the public landfills.

Figure 6.8
Remaining Capacity MSW Landfills

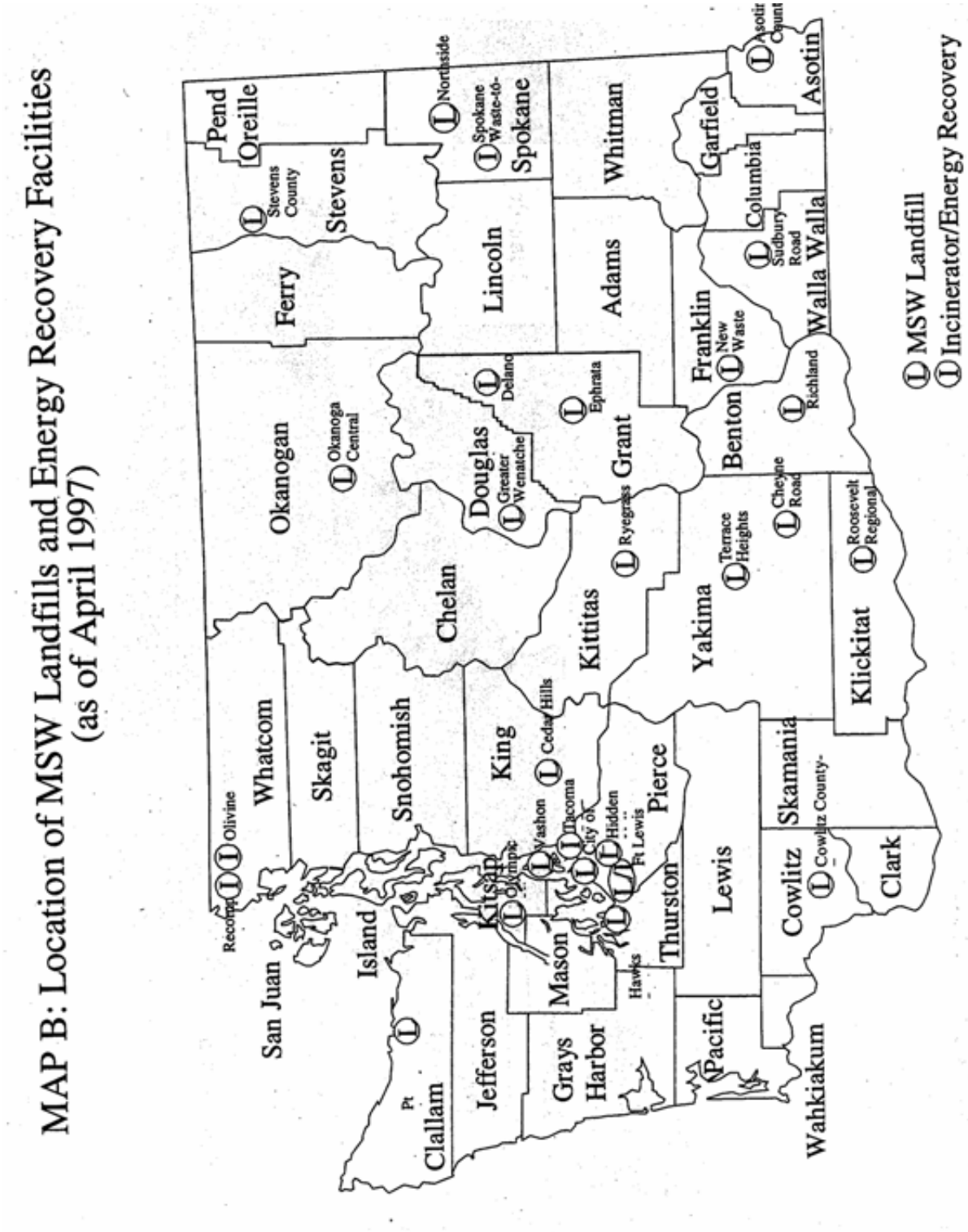


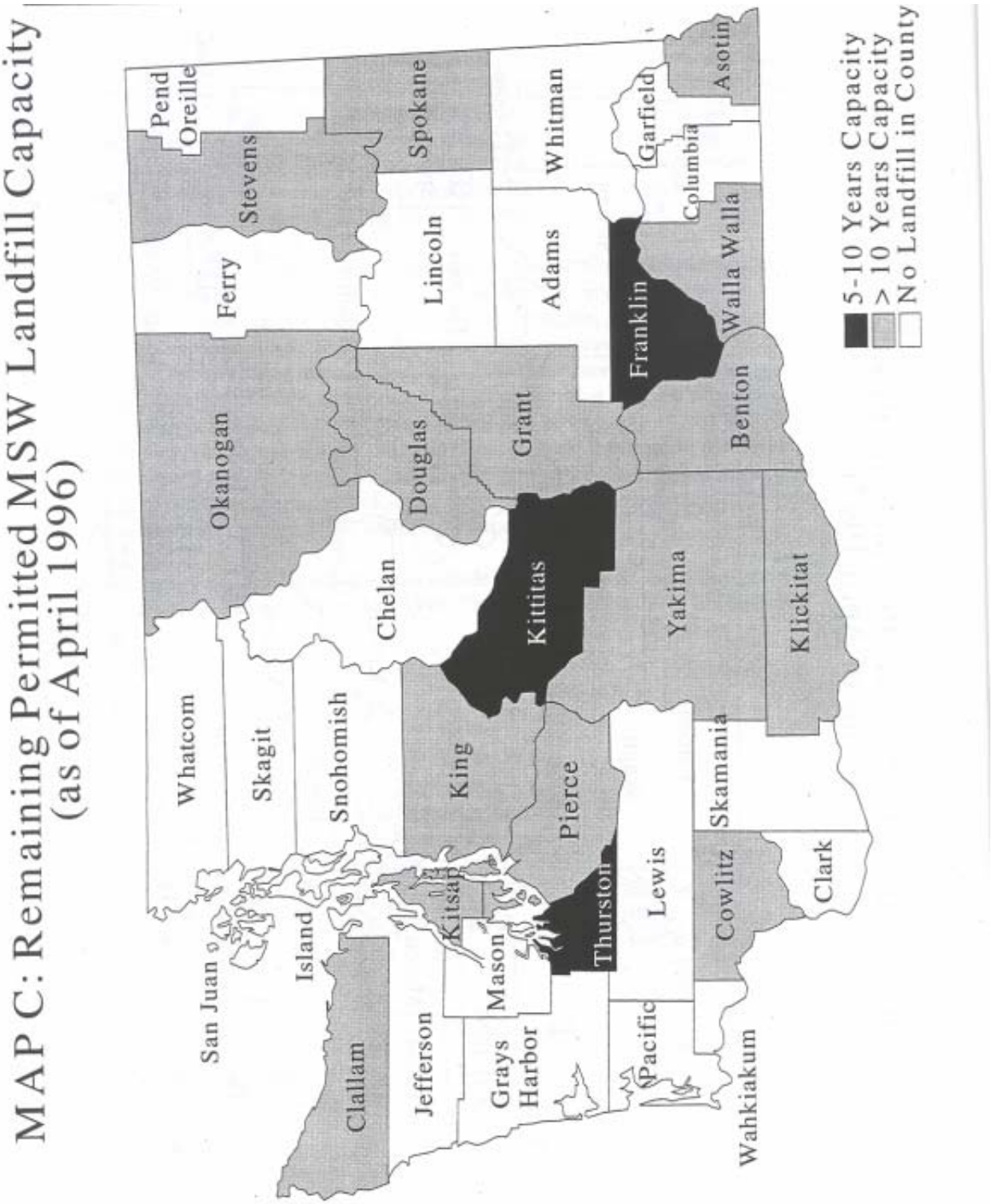
Besides the amount of remaining capacity, the availability of that capacity needs to be considered. The Roosevelt Regional Landfill is operated to accept waste from a wide variety of locations (see Map A). In 1996, the facility received some type of solid waste from 34 counties in Washington, including the majority of the solid waste from ten counties. Waste was also received from five other states, British Columbia and Antarctica. 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 40 year estimate of total remaining permitted capacity is based on the amount of waste disposed in MSW landfills in 1996. This amount will vary depending upon waste reduction and recycling activities, population growth or decline, as well as the impact of waste being imported into the state for disposal or additional waste which is currently disposed out-of-state, being disposed in-state. As discussed previously, there has been an increase in the types of waste, other than municipal waste, being disposed of in MSW landfills. Part of this is the liability concern (that is, it is better to pay a higher cost and transport further to dispose in a well designed landfill). If requirements for other types of landfills (woodwaste, inert/demolition, and limited purpose) become more stringent in the future, some of those facilities may close and there may be an additional shift of the types of solid waste moving to the MSW landfills for disposal.

The remaining permitted capacity does not include a site in Adams County that has been permitted with construction planned for 1998. The permitted capacity for this facility is 90,000,000 tons.

MAP B: Location of MSW Landfills and Energy Recovery Facilities (as of April 1997)




MAP C: Remaining Permitted MSW Landfill Capacity
(as of April 1996)
5-10 Years Capacity
> 10 Years Capacity
No Landfill in County
Pend Oreille
Stevens
Spokane
Whitman
Garfield
Asotin
Ferry
Lincoln
Adams
Columbia
Okanogan
Douglas
Grant
Franklin
Walla Walla
Benton
Chelan
Kittitas
Yakima
Klickitat
Whatcom
Skagit
Snohomish
King
Pierce
Skamania
Clark
San Juan
Island
Kitsap
Thurston
Lewis
Cowlitz
Mason
Clallam
Jefferson
Grays Harbor
Pacific
Wahkiakum

APPENDIX A

STATE MAP WITH COUNTY NAMES

Washington State County Map

APPENDIX B

Facility Specific Disposal Data for 1996

Table B.1. 1996 Total Waste Disposed for MSW Landfills - All Types

Landfill Name	County	MSW	Demolition	Industrial	Inert Waste	Comm'l	Wood Waste	Sludge	Asbestos	PCS	Tires	Other	Total Waste
Asotin County MSW	Asotin	35,458	0	0	0	0	0	0	0	0	0	0	**35,458**
Bruce -CLOSED 5/96	Adams	3,437	0	0	0	217	0	0	0	0	0	0	**3,654**
Cedar Hills	King	742,830	0	0	0	0	0	0	264	0	0	0	**743,094**
Cheyne Road	Yakima	58,327	0	0	0	0	3,884	23,017	0	0	906	9	**86,143**
Cowlitz County - B	Cowlitz	49,771	5,806	4,067	0	23,066	0	0	81	0	161	0	**82,952**
Delano	Grant	7,534	1,000	0	1,250	490	900	0	0	0	2	0	**11,176**
Ephrata	Grant	62,081	0	0	0	0	0	0	67	0	61	0	**62,209**
Fort Lewis #5	Pierce	28,023	26,834	0	25,970	0	3,351	0	636	5,162	0	0	**89,976**
Greater Wenatchee Reg.	Douglas	97,983	0	1,015	0	0	0	330	18	1,097	1	0	**100,444**
Hawks Prairie	Thurston	104,213	25,665	0	0	0	0	0	30	0	0	0	**129,907**
Hidden Valley	Pierce	166,354	46,857	890	0	0	0	0	17	0	63	79,528	**293,708**
Kittitas County Ryegrass	Kittitas	21,539	0	0	0	0	0	0	0	13,021	0	0	**34,560**
New Waste Inc.	Franklin	1,671	164	0	2,795	4,975	103	46	31	251	197	1,453	**11,686**
Northside	Spokane	2,521	2,036	0	46	0	0	0	0	0	0	6,832	**11,434**
Okanogan	Okanogan	19,853	1,200	0	0	0	23	10	2	0	4	0	**21,091**

Landfill Name	County	MSW	Demolition	Industrial	Inert Waste	Comm'l	Wood Waste	Sludge	Asbestos	PCS	Tires	Other	Total Waste
Central													
Olympic View	Kitsap	46,719	16,095	18,177	0	68,438	0	1,077	1,570	109,313	0	37,452	**298,841**
Port Angeles Sanitary	Clallam	40,272	0	0	0	0	0	0	0	0	0	0	**40,272**
Richland	Benton	14,492	8,574	5,029	0	10,380	4,233	1,110	0	0	0	6,486	**50,304**
Roosevelt Reg.-MSW	Klickitat	1,068,683	241,181	110,317	0	0	35,214	9,695	4,603	125,570	10,559	101,713	**1,707,535**
Stevens County	Stevens	21,541	0	6,122	0	1,527	0	0	0	0	0	0	**29,190**
Sudbury Road	Walla Walla	51,562	0	0	0	0	0	0	47	0	32	44	**51,685**
Tacoma, City of	Pierce	21,330	0	0	0	0	0	0	21	0	0	0	**21,351**
Terrace Heights	Yakima	134,736	0	0	0	0	9,959	13,920	578	0	802	20	**160,015**
Vashon	King	7,070	0	0	0	0	0	0	0	0	0	0	**7,070**
Fac. Count: 24	**TOTAL**	**2,807,998**	**375,412**	**145,617**	**30,061**	**109,093**	**57,667**	**49,205**	**7,965**	**254,414**	**12,787**	**233,537**	**4,083,755**

Table B.2. 1996 Total Waste Disposed Energy Recovery/Incinerators - All Types

Landfill Name	County	MSW	Demolition	Industrial	Inert Waste	Comm'l	Wood Waste	Sludge	Asbestos	PCS	Tires	Other	Total Waste
Fort Lewis Waste-to-Energy Plant	Pierce	7,805	0	0	0	0	228	0	0	0	0	0	**8,033**
Inland Empire Paper	Spokane	0	0	0	0	0	7,507	0	0	0	0	0	**7,507**
Olivine Corporation	Whatcom	10,223	0	0	0	39	92	0	0	0	0	0	**10,354**
RECOMP of Wash. Incinerator	Whatcom	32,031	0	0	0	0	0	0	2,741	0	0	0	**34,772**
Spokane Reg. Waste to Energy Facility	Spokane	263,392	0	0	0	0	0	0	5	0	0	0	**263,397**
Tacoma RDF Steam Plant #2	Pierce	41,402	0	0	0	0	0	0	0	0	0	0	**41,402**
Facility Count: 6	**TOTAL**	**354,853**	**0**	**0**	**0**	**39**	**7,827**	**0**	**2,746**	**0**	**0**	**0**	**365,465**

Table B.3. 1996 Total Waste Disposed for Inert/Demolition Waste Landfills All Types

Landfill Name	County	Demolition	Industrial	Inert Waste	Comm'l	Wood Waste	Sludge	Asbestos	PCS	Tires	Special	Other	Total Waste
Acme Crestline Recycling		0	0	0	0	0	0	0	0	0	0	58,948	**58,948**
Adams Street Inert Wst Site	Grays Harbor	0	0	2,116	0	0	0	0	0	0	0	0	**2,116**
Asotin County I & D Landfill		1,124	0	0	0	0	0	0	0	0	0	0	**1,124**
Associated Sand & Gravel		44,813	0	67,459	0	0	0	0	846	0	0	453,494	**566,612**
Box Canyon Site		3,027	0	7,154	0	0	0	0	0	0	0	0	**10,181**
Busy Bee Landfill		4,100	0	0	0	0	0	0	0	0	0	0	**4,100**
Central Pre-Mix Site		0	0	72,250	0	0	0	0	0	0	0	0	**72,250**
Centralia Mining CDL		0	0	313	0	0	0	0	0	3	0	0	**316**
Chester Landfill		28,227	0	6,161	0	0	0	0	0	0	0	0	**34,388**
Clark Demolition Facility II		15,000	0	0	0	0	0	0	0	0	0	0	**15,000**
County Construction Recyclers		23,825	0	0	0	0	0	0	0	0	0	0	**23,825**
Coupeville Demolition LF		2,591	0	140	0	0	0	0	0	0	0	0	**2,731**
Fillion Inert/Demolition Site		3,916	0	0	0	0	0	0	0	0	0	0	**3,916**
Foran Landfill		0	0	66,896	0	0	0	0	0	0	0	0	**66,896**
Garfield County Landfill		20	0	0	0	0	0	0	0	30	0	5	**55**
Indian Island Landfill		275	0	0	0	0	0	0	0	0	0	0	**275**
McChord Landfill		0	0	3,534	0	39	0	0	0	0	0	0	**3,573**
Poe Asphalt Paving Inc		4,400	0	0	0	0	0	0	0	0	0	0	**4,400**
Prosser Inert-Demo Site		0	0	339	0	0	0	0	0	0	0	0	**339**
Whitman College Site		2151	0	0	0	0	0	0	0	0	0	0	**2,151**
Facility Count: 20	**TOTAL**	**133,469**	**0**	**226,362**	**0**	**39**	**0**	**0**	**846**	**33**	**0**	**512,447**	**873,196**

Table B.4. 1996 Total Waste Disposed for Limited Purpose/Special Use Facilities - All Types

Landfill Name	County	Demolition	Industrial	Inert Waste	Comm'l	Wood Waste	Sludge	Asbestos	PCS	Tires	Special	Other	Total Waste
Arco Products Company		0	0	0	0	0	0	0	875	0	0	1,365	**2,240**
Boise Cascade/Rufener		0	0	0	0	252	0	0	0	0	0	0	**252**
Dayton Landfill		0	0	0	0	7,434	0	0	0	0	0	5,866	**13,300**
Graham Road Recycl & Disp		153,398	11,796	26,875	0	3,388	0	472	25,561	29,175	0	0	**250,665**
Intalco Aluminum Corp		0	4,600	4,697	0	0	0	0	0	0	0	975	**10,272**
Lady Island Landfill		0	0	7,200	0	9,566	0	0	0	0	0	0	**16,766**
Lawson Limited Purpose Site		0	0	0	0	0	0	0	0	0	0	26,907	**26,907**
Odessa Limited Purpose Site		0	0	0	0	0	0	0	0	0	0	0	**0**
Port Townsend Paper		0	0	0	0	0	0	0	0	0	0	4,949	**4,949**
Rayonier Inc (Shotwell)		9,937	0	0	0	0	0	0	0	0	0	0	**9,937**
TPS Technologies Inc		0	0	0	0	0	0	0	68,585	0	0	0	**68,585**
Weyerhaeuser Bio-Pond Site	Grays Harbor	0	0	0	0	200	0	0	0	0	0	0	**200**
Weyerhaeuser Landfill		14,500	355,100	0	0	1,820	0	0	1,500	0	0	0	**372,920**
Whitman County Landfill		2,694	0	0	0	0	0	40	1,700	52	0	0	**4,486**
Wm Dickson Co Landfill (1)		0	0	53,463	0	0	0	0	0	0	0	0	**53,463**
Wm Dickson Co Landfill (2)		0	0	49,524	0	0	0	0	0	0	0	0	**49,524**
WWP Ash Landfill		0	0	0	0	0	0	0	0	0	0	25,613	**25,613**
Facility Count: 17	**TOTAL**	**180,529**	**371,496**	**141,759**	**0**	**22,660**	**0**	**512**	**98,221**	**29,227**	**0**	**65,675**	**910,079**

Table B.5. 1996 Total Waste Disposed for Wood Waste Landfills - All Types

Landfill Name	County	Demolition	Industrial	Inert Waste	Comm'l	Wood Waste	Sludge	Asbestos	PCS	Tires	Special	Other	Total Waste
F & F Stafford Creek Landfill	Grays Harbor	18,780	0	0	0	55,871	0	0	0	0	0	0	**74,651**
Georgia Pacific Corp	Whatcom	0	0	0	0	0	0	0	0	0	0	0	**0**
Hilltop Farm WW Landfill	Whatcom	0	0	0	0	0	0	0	0	0	0	0	**0**
Northwest Hardwoods	Snohomish	0	0	0	0	1,200	0	0	0	0	0	0	**1,200**
Omak Wood Products	Okanogan	0	0	0	0	10,481	0	0	0	0	0	2,031	**12,512**
Peterson Woodwaste Site	Mason	0	0	0	0	780	0	0	0	0	0	0	**780**
Simpson/Matlock Landfill	Mason	0	0	0	0	12,450	0	0	0	0	0	0	**12,450**
Summit Landfill	Snohomish	0	0	0	0	1,104	0	0	0	0	0	0	**1,104**
Facility Count: 8	**TOTAL**	**18,780**	**0**	**0**	**0**	**81,886**	**0**	**0**	**0**	**0**	**0**	**2,031**	**102,697**

Table B.6. 1996 Total Waste Composted

Company Name	County	Yard Waste	Wood Waste	Sawdust	Biosolids	Vegetative	Manure	Post Consumer	Mixed MSW	Other	Total Waste
Bailey Compost	Snohomish	2,500	0	0	0	0	3,000	0	0	0	**5,500**
Cedar Grove Composting Co	King	124,000	700	0	0	8,650	0	0	0	0	**133,350**
Cheney Compost Facility	Spokane	3,054	1,360	0	3,000	0	0	0	0	0	**7,414**
Cheyne Road Landfill	Yakima	150	0	0	0	140	2,000	0	0	2,500	**4,790**
Cowlitz County Landfill-B	Cowlitz	1,928	3,862	0	4,351	0	0	0	0	0	**10,141**
Dykstra Composting Facility	Skagit	0	0	0	0	0	800	0	0	300	**1,100**
Ecocycle Inc	Spokane	3,589	0	0	0	0	0	0	0	0	**3,589**
GroCo	King	0	0	15,000	2,400	0	0	0	0	0	**17,400**
Hawks Prairie Landfill	Thurston	6,799	0	0	0	0	0	0	0	0	**6,799**
Hi Q Compost Facility	Skagit	80	192	0	0	0	0	0	0	352	**624**
Lloyd's Compost Facility	King	18,000	2,000	200	0	500	0	0	0	300	**21,000**
Miller Creek Compost Facility	King	0	0	0	200	0	0	0	0	325	**525**
Monroe, City of WWTP	Snohomish	0	0	0	2,725	0	0	0	0	0	**2,725**
O M Scott & Sons Co	Spokane	23,217	0	0	0	0	0	0	0	0	**23,217**
Pacific Topsoils	Snohomish	25,151	14,171	0	0	0	7,328	0	0	0	**46,650**
Phoenix Organic YW Composting	Snohomish	3,000	0	0	0	0	0	0	0	0	**3,000**
Pierce County Compost Facility	Pierce	33,515	0	0	0	0	0	0	0	0	**33,515**
RECOMP of Washington	Whatcom	3,358	1,150	0	0	0	0	0	9,762	0	**14,270**
Skagit Soils	Skagit	2,668	0	1,500	0	1,782	0	0	0	0	**5,950**
Soil Life Systems	Walla Walla	0	0	0	0	0	5,643	0	0	19,200	**24,843**
Vern's Organic Topsoil	Kitsap	1,256	1,300	0	0	0	5	0	0	0	**2,561**
WSU/Pullman Compost Facility	Whitman	279	0	0	260	0	6,660	124	0	2,152	**9,475**
Facility Count - 22	**TOTAL**	**252,544**	**24,735**	**16,700**	**12,936**	**11,072**	**25,436**	**124**	**9,762**	**25,129**	**378,438**