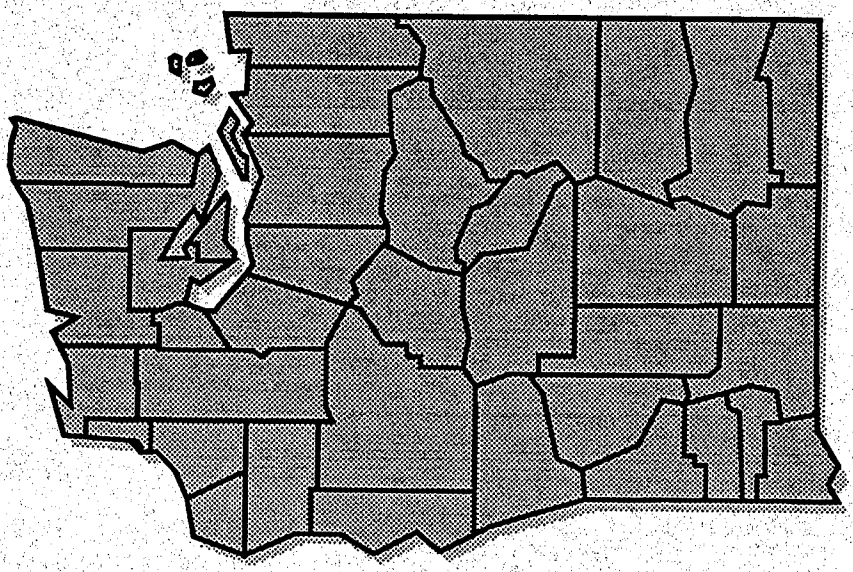

# Solid Waste in Washington State

*Second Annual Status Report*

WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Solid Waste Services Program
January 1994
Publication #94-08

*Printed on Recycled Paper*

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# SOLID WASTE IN WASHINGTON STATE
## *SECOND ANNUAL STATUS REPORT*

**Prepared By:**

**Jerry Alb** - **Ellen Caywood**

**Washington State Department of Ecology**
*Solid Waste Services Program*

*January 1994*

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# ACRONYMS

| | |
|---|---|
| CDL | Construction, demolition and landclearing debris |
| CESQG | Conditionally Exempt Small Quantity Generator |
| CFR | Code of Federal Register |
| CPG | Coordinated Prevention Grants |
| EPA | Environmental Protection Agency |
| GA | Department of General Administration |
| HHW | Household hazardous waste |
| JHD | Jurisdictional Health Department |
| MFS | Minimum Functional Standards |
| MRW | Moderate risk waste |
| MSW | Municipal solid waste |
| PSA | Public service announcement |
| RCRA | Resource Recovery and Conservation Act |
| RCW | Revised Code of Washington |
| SHB | Substitute House Bill |
| SEPA | State Environmental Policy Act |
| STIR | State/Tribal Implementation Rule |
| SWAC | Solid Waste Advisory Committee |
| WAC | Washington Administrative Code |
| WDOE | Washington Department of Ecology |
| WR/R | Waste Reduction/Recycling |
| WUTC | Washington Utilities & Transportation Commission |

# *EXECUTIVE SUMMARY*

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

This *Solid Waste in Washington State - Second Annual Status Report* updates the status of solid waste facilities, looks at trends in recycling, disposed amounts and waste types. Also included are discussions of the movement of waste within, and to and from the state, methods of disposal, waste reduction strategies being implemented by Ecology, and the status of local governments as they implement solid waste management programs in the state.

## *SUMMARY OF FINDINGS*

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

## SOLID WASTE HANDLING INFRASTRUCTURE

There are 279 solid waste facilities statewide, including landfills (97), intermediate transfer and storage facilities (151), and incinerators (7).[2] There are an additional 24 facilities classified as ancillary.

In 1992, 42 municipal solid waste (MSW) landfills accepted waste, compared with 45 in 1991. Of those, 36 were publicly owned (24 permitted) and 6 were privately owned (6 permitted). These landfills were in 32 of the 39 Washington counties, compared with 35 counties in 1991. After April 1994, only 24 landfills, in 20 counties, will remain operating. This includes two

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

[2] In the First Annual Status Report, the solid waste infrastructure included 146 sludge utilization facilities, one landspreading and two septage facilities. Because of modifications in Washington statute (see Chapter I for explanation) these facilities are not included in this years' report. Once the status of these facilities is clarified, those that fall under the solid waste standards will be included in future reports. In addition, other facilities that were closed prior to the 1992 reporting year were not included in this year's annual report.

new landfills opened in 1993. As MSW landfills continue to close, more counties will be relying on long-haul transport to facilities beyond their borders for disposal.

Of the remaining facilities in the landfill classification, two are ash monofills, 22 are inert/demolition landfills, 12 are limited purpose and 19 are woodwaste landfills.

## WASTE REDUCTION

Waste streams were assessed to determine what categories still made up a significant portion of the waste stream. Ecology is implementing waste reduction strategies for three targeted waste streams:

Paper from the commercial sector
Organics
Construction, demolition and landclearing debris

## RECYCLING

In 1992, 2,167,174 tons of the recyclable portion of the waste stream were recycled. This represents a 35.5% recycling rate for the recyclable waste stream generated in 1992, as compared with 32.7% in 1991. Although this is still below the target goals of 50% recycling by 1995, several commodities had higher recycling rates:

Ferrous metals - 81%
Nonferrous metals - 77%
Corrugated paper - 62%
Newspapers - 58%
High grade paper - 58%

## DISPOSAL OF SOLID WASTE

*Municipal Solid Waste Landfills*

In 1992, after 2,167,174 tons of solid waste were recycled, a total of 4,027,125 tons were disposed by either landfilling at an MSW landfill, or incineration. (This compares to a total of 3,988,337 in 1991.) Of that total, 3,560,738 tons of waste were disposed in the 42 MSW landfills, a decrease from 3,910,137 in 1991. However, the amount of waste incinerated in 1992 was 466,387 tons, compared to 78,200 tons in 1991.

In 1992, 88% of the waste disposed in Washington was disposed in landfills and 12% was incinerated. In 1991, 98% of the waste was landfilled, 2% was incinerated. The increase rate of incineration is the result of the Spokane incinerator operating for a full year in 1992. One new incinerator began operation in early 1994. With no new incinerators planned, the amount of waste incinerated should not increase significantly.

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

*Municipal Solid Waste Importation/Exportation*

In 1992, five of Washington's MSW landfills received 101,492 tons of waste from outside the state. This represents about 3% of the waste disposed in MSW landfills. In 1991, 26,655 tons of waste were received at MSW landfills, or about 2% of the total amount.

In 1992, Washington exported 705,608 tons of waste to landfills in Oregon.

*Remaining Capacity for Municipal Solid Waste Landfills*

Of the 42 MSW landfills that received waste in 1992, 22 of those will still be operating after April 1994; 20 will have closed. In 1993, two new MSW landfills opened in Washington.

As of 1993, self-reporting by the 24 MSW landfills that will be operating after April 1994, indicated about 173 million tons of remaining permitted capacity, or approximately 48 years at the current disposal rate. (This compares to 162 million tons, or 40 years, reported in 1992.) Of the remaining capacity, 69% is at one facility, the Roosevelt Regional Landfill in Klickitat County. The remaining capacity is at the other 23 landfills, most of which are operated to serve the citizens of the local area. The majority of the state's remaining capacity, located in one facility, is in eastern Washington.

*Other Solid Waste Landfills*

In 1992, 19 woodwaste landfills reported receiving 158,363 tons of waste.

In 1992, 22 inert/demolition landfills reported receiving 512,373 tons of waste.

In 1992, 12 limited purpose landfills reported receiving 280,252 tons of waste.

*Moderate Risk Waste*

In 1992, 5 million pounds of household hazardous waste were collected in Washington by either the 28 fixed hazardous waste collection facilities, mobile facilities or through collection events held by the counties.

## *CHAPTER I*

# *SOLID WASTE MANAGEMENT IN WASHINGTON*

The *Solid Waste Management - Reduction and Recycling Act*, chapter 70.95 RCW, establishes the following priorities for solid waste management:

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

To administer these objectives, the Legislature under RCW 70.95.010(1) created a state/local partnership for solid waste management. This partnership balances the state's standard setting and local plan approval responsibilities and local government's planning, implementation and regulatory responsibilities.

### *RESPONSIBILITIES OF SOLID WASTE MANAGEMENT?*

The Solid Waste Management Act details the roles of both state and local government. Table 1.1 details responsibilities and statutory references for the state, through the Department of Ecology, for solid waste management activities. These duties include: (1) local solid waste management plan approval; (2) rule making; (3) state solid waste plan development; (4) technical assistance; (5) financial assistance; (6) solid waste permit review; and (7) information management.

### *PROGRAM DEVELOPMENT*

#### The Planning Process

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

These comprehensive plans detail and inventory all existing solid waste handling facilities within a county and provide an estimate of long-range needs for solid waste facilities projected over a 20-year period. The plans are intended to serve as a guiding document for a county to develop its infrastructure (see Chapter II). 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.

| *TABLE 1.1:* THE DEPARTMENT OF ECOLOGY'S SPECIFIC RESPONSIBILITIES UNDER CHAPTER 70.95 RCW | |
|---|---|
| **TASKS/AUTHORITIES** | **RCW REFERENCE** |
| LOCAL PLAN APPROVALS | *RCW 70.95.094* County & city solid waste management plans--Review/approval process |
| | *RCW 70.95.096* Utilities and transportation commission to review local plan's assessment of cost impacts on rates; |
| | *RCW 70.95.110* Maintenance of plans-- Implementation of source separation programs; |
| RULE MAKING AUTHORITY | *RCW 70.95.060* Standards for solid waste handling; |
| | *RCW 70.95.165* Solid waste disposal facility siting--Site review--Local solid waste advisory committees; |
| | *RCW 70.95.215* Landfill disposal facilities--Reserve accounts required by July 1, 1987--Exception--Rules; |
| | *RCW 70.95.255* Disposal of municipal sewage sludge or septic tank sludge prohibited--Exemptions--Uses of sludge material permitted; |
| | *RCW 70.95.670* Rules; |
| | *RCW 70.95.720* Closure of energy recovery and incineration facilities--Recordkeeping requirements; |
| STATE PLAN | *RCW 70.95.260* Duties of department--state solid waste management plan--Assistance--Coordination; |
| | *RCW 70.95.295* Analysis and evaluation to be incorporated in state solid waste management plan; |
| TECHNICAL ASSISTANCE | *RCW 70.95.050* Solid waste advisory committee |
| | *RCW 70.95.100* Technical assistance for plan preparation--Guidelines--Informational and programs; |
| | *RCW 70.95.265* Department to cooperate with public & private departments, agencies and associations; |
| | *RCW 70.95.600* Educational material promoting household waste reduction and recycling; |

*TABLE 1.1:* THE DEPARTMENT OF ECOLOGY'S SPECIFIC RESPONSIBILITIES UNDER CHAPTER 70.95 RCW

| TASKS/AUTHORITIES | RCW REFERENCE | |
|---|---|---|
| FINANCIAL ASSISTANCE | *RCW 70.95.150* | Contracts with counties to assure proper expenditures; |
| | *RCW 70.95.220* | Financial aid to jurisdictional health departments--Applications--Allocations; |
| | *RCW 70.95.267* | Department authorized to disburse referendum 26 funds for local government solid waste projects; |
| | *RCW 70.95.268* | Department authorized to disburse funds for local government solid waste projects; |
| | *RCW 70.95.810* | Composting (food/yard wastes) - Grants/study |
| PERMIT REVIEW | *RCW 70.95.163* | Local health departments may contract with the department of ecology; |
| | *RCW 70.95.185* | Permit for solid waste disposal site or facilities--Review by department--Appeal of issuance--Validity of permits issued after June 7, 1984; |
| | *RCW 70.95.190* | Permit for solid waste disposal site or facilities--Renewal--Appeal--Validity |
| INFORMATION MANAGEMENT | *RCW 70.95.075* | Implementation of standards--Assessment--Analyses--Proposals; |
| | *RCW 70.95.263* | Additional powers and duties of department; |
| | *RCW 70.95.280* | Determination of best solid waste management practices--Department to develop method to monitor waste stream |
| | *RCW 70.95.290* | Solid waste stream evaluation; |
| | *RCW 70.95.530* | Vehicle tire recycling account--Use; |
| | *RCW 70.95.535* | Disposition of fee; |

While a county or city plans its solid waste system, the Legislature placed the authority for approving the plan with Ecology. Ecology is responsible for approving local solid waste plans and also determines if a county or city's comprehensive solid waste management plan is

"maintained in a current condition and reviewed and revised periodically by counties and cities *as may be required by the department.*"

Each of the 39 counties within the state, in cooperation with the various cities located within their respective county, are required by chapter 70.95 RCW, to prepare comprehensive solid waste management plans with the following information:

- An inventory of all existing solid waste handling facilities;
- An estimate of long-range needs for solid waste handling facilities projected over a twenty-year period;
- Programs for the orderly development of solid waste handling facilities inclusive of permitting, enforcement systems and the various processes to be followed by jurisdictional health departments;
- A six year construction and capital acquisition program;
- A plan for financing both capital costs and operational expenditures of proposed solid waste handling systems;
- Detail enforcement programs for surveillance and control of solid waste handling facilities;
- Inventory and describe current collection needs and operations;
- Include a comprehensive waste reduction and recycling element;
- Provide a comprehensive assessment of the plan's impact on the costs of solid waste collection; and
- Establish methodologies for identification of potential solid waste sites.

The local solid waste plans are developed under guidelines established by Ecology, *Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions* - WDOE 90-11. Each county and applicable city must undertake extensive public involvement through a series of public hearings on the plan. Plan adoption at the local level does not mean a plan is approved. Authority for plan approval is vested with Ecology under RCW 70.95.094. In this regard, Ecology is mandated to conduct two reviews of all solid waste management plans and

system development proposals, a preliminary[1] and a final plan review, prior to any final plan approval and before any handling system can be implemented.

In order for Ecology to approve the comprehensive solid waste management plan, which signifies acceptance of a county's solid waste handling system and subsequent permission of a local government to begin implementation responsibilities inclusive of permitting and enforcement duties, a county must satisfactorily demonstrate to Ecology that:

(1) All elements of plan preparation have been met;

(2) Adequate public comment was undertaken;

(3) Ecology and WUTC comments generated during the preliminary review were addressed;

(4) Chapter 43.21C RCW, the *State Environmental Policy Act* (SEPA), has been met;

(5) Participating cities have entered into the appropriate interlocal agreements;

(6) Participating jurisdictions, cities and the home county, have adopted the plan during public hearings;

(7) Local solid waste advisory committees (SWAC) participated in plan and program development; and,

(8) Methodologies and tracking procedures are in place for measuring the success of plan implementation components.

A plan's current condition status as determined by Ecology - RCW 70.95.110(1) - is a barometer of changed conditions of solid waste systems within a county, and is of particular importance with respect to the second component of the state's solid waste program - *implementation.*

Table 1.2 shows 1992 and 1993 status of local solid waste planning efforts for Washington state's counties based on "current condition" status.

[1] The Washington Utilities & Transportation Commission reviews all local plans during the preliminary draft phase to assess a plan's impact on the cost of solid waste collection. Comments are forward to Ecology for inclusion to the required list of comments a county must address prior to plan approval by Ecology.

The increased number of plans in current condition is a result of cooperation, education and technical assistance between local governments and Ecology as statutory deadlines for approvals approached.[2]

| STATUS | TOTAL | |
|---|---|---|
| | 1992 | 1993 |
| *PLANS IN CURRENT CONDITION* | 18 | 23 |
| *PLANS ON APPROVED SCHEDULES* | 21 | 16 |
| TOTAL | 39 | 39 |

**TABLE 1.2:** ***STATUS OF LOCAL SOLID WASTE MANAGEMENT PLANS***

### Moderate Risk Waste Management Plans

In 1985, the Legislature amended the *Hazardous Waste Management Act*, chapter 70.105 RCW, to require local governments to prepare plans for moderate risk waste. By November 1992, all Washington counties had approved plans to manage household hazardous waste (HHW) and conditionally exempt small quantity generator (CESQG) wastes.

In 1991, the Legislature enacted the *Used Oil Recycling Act*, chapter 70.95I RCW, which required local governments to amend their MRW plans to include used oil. Local governments were to discuss how they would provide convenient collection of used oil and how they would educate the public to make them aware of the need for proper disposal of used oil. By the end of 1993, the majority of the counties had completed their used oil amendments. (See Chapter VI for additional information on MRW)

## PROGRAM IMPLEMENTATION

The implementation of programs and the responsibility for the regulation of solid waste facilities is considered by the Legislature as a cooperative endeavor between the state and local government entities. RCW 70.95.020(3) stipulates that one of the primary purposes of the *Solid Waste Management - Reduction & Recycling Act* is to provide for the adoption and enforcement of basic minimum performance standards for solid waste handling.

[2] The classes of areas are defined in chapter 70.95 RCW is as follows: (1) Class One Areas must complete plans by July 1, 1991 and are the counties of - Spokane, Snohomish, King, Pierce, and Kitsap and all cities therein; (2) Class Two Areas must complete plans by July 1, 1992 and are considered to be all other counties located West of the crest of the Cascade Mountains; and, (3) Class Three Areas must complete plans by July 1, 1994 and are the counties East of the crest of the Cascade Mountains and all the cities therein, except for Spokane County.

The Legislature split the responsibilities for regulation and enforcement between Ecology and local governments. The Legislature vested the power to develop rules with Ecology. In addition, statewide consistency in standards for siting, performance, design, operation, maintenance, closure and post-closure of solid waste handling was also given as a responsibility of Ecology. With respect to enforcement and/or inspections of facilities, the Legislature deemed the local jurisdictional health department as the implementation agent.

The Legislature's decision to place system implementation at the local level stems from the premise that solid waste handling facilities are maintained, established, altered, expanded or improved within local jurisdictional boundaries only after Ecology approves the permit programs of local governments in the comprehensive solid waste management plan. Ecology's ability to declare a plan not current, thereby negating the solid waste program and/or permitting systems in a county, is a principal authority conferred upon the Department.

The counties are responsible for fulfilling the system objectives of the approved plan. Table 1.3 addresses specific statutory responsibilities of county governments under chapter 70.95 RCW, which include: (1) plan development; (2) plan preparation; (3) required levels of service; and, (4) matching financial aid responsibilities.

*Table 1.3:* COUNTY SPECIFIC RESPONSIBILITIES UNDER CHAPTER 70.95 RCW

| TASKS / AUTHORITIES | RCW REFERENCE | |
|---|---|---|
| PLAN DEVELOPMENT | *RCW 70.95.080* | County comprehensive solid waste management plan--Joint plans--Duties of cities; |
| | *RCW 70.95.090* | County and city comprehensive solid waste management plans--Contents; |
| | *RCW 70.95.110* | Maintenance of plans--Review, revisions--Implementation of source separation programs; |
| PLAN PREPARATION | *RCW 70.95.094* | County and city comprehensive solid waste management plans--Review and approval process. |
| LEVELS OF SERVICE | *RCW 70.95.092* | County & city comprehensive solid waste management plans--Levels of service, reduction and recycling. |
| FINANCIAL AID RESPONSIBILITIES | *RCW 70.95.140* | Matching requirements. |

Local health departments[3] are assigned the responsibility of issuing all solid waste permits within each county once the local comprehensive solid waste management plan is approved by Ecology.

Table 1.4 addresses specific statutory responsibilities of jurisdictional health departments under chapter 70.95 RCW, which include: (1) development of local ordinances for enforcement implementation consistent with the approved comprehensive solid waste management plan; (2) creation of cooperative agreements with Ecology; (3) review and issuance of solid waste facility permits; and, (4) matching financial aid responsibilities for enforcement grants.

*TABLE 1.4:* JURISDICTIONAL HEALTH DEPARTMENTS SPECIFIC RESPONSIBILITIES UNDER CHAPTER 70.95 RCW

| TASKS / AUTHORITIES | RCW REFERENCE | |
|---|---|---|
| LOCAL REGULATIONS | *RCW 70.95.160* | Local board of health regulations to implement the comprehensive plan--Section not to be construed to authorize counties to operate system. |
| COOPERATIVE AGREEMENTS | *RCW 70.95.163* | Local health departments may contract with the department of ecology. |
| PERMITTING | *RCW 70.95.170* | Permit for solid waste disposal site or facilities--Required. |
| | *RCW 70.95.180* | Permit for solid waste disposal site or facilities--Applications, fee. |
| | *RCW 70.95.190* | Permit for solid waste disposal site or facilities--Renewal--Appeal--Validity of renewal. |
| | *RCW 70.95.200* | Permit for solid waste disposal site or facilities--Suspension. |
| | *RCW 70.95.210* | Hearing--Appeal. |
| FINANCIAL AID RESPONSIBILITIES | *RCW 70.95.230* | Financial aid to jurisdictional health departments--Matching funds. |

All solid waste permits issued in the state must conform to the local comprehensive solid waste management plans with respect to issuance criteria (public involvement for example), to the

[3] Several counties have entered into interlocal agreements to create health districts which service the contracting counties, hence 39 counties and 33 jurisdictional health departments.

requirements of the *Minimum Functional Standards for Solid Waste Handling* (MFS), chapter 173-304 WAC, and to the new state municipal solid waste landfill rule chapter 173-351 WAC, *the Criteria for Municipal Solid Waste Landfills*[4]. The state, through Ecology, is authorized to review and monitor local government system development and implementation.

The state Legislature recognized the need to establish statewide consistent programs in solid waste management implementation. It retained for the state, through Ecology, additional responsibilities deemed necessary to provide sufficient oversight over the jurisdictional health departments and county governments regarding solid waste programs. These duties include, in addition to local comprehensive solid waste management plan review and approval:

(1) Development of rules and regulations for solid waste handling facilities;

(2) Technical assistance programs to assist in program implementation;

(3) Distribution of financial aid;

(4) Development of a state solid waste management plan to guide statewide solid waste policy decisions;

(5) Permit reviews and appeal; and,

(6) Information and data management activities to track facility compliance.

[4] Chapter 173-351 WAC, *the Criteria for Municipal Solid Waste Landfills* meets or exceeds the requirements found in the Environmental Protection Agency's Solid Waste Disposal Facility Criteria, Part 258..

## *CHAPTER II*

# *SOLID WASTE HANDLING INFRASTRUCTURE*

The *Solid Waste in Washington State, First Annual Status Report*, described the basic facilities, equipment and installations making up the solid waste infrastructure for the management of solid wastes within Washington state. For the purposes of this report, solid waste materials are defined as: "all putrescible and nonputrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, demolition and construction wastes, abandoned vehicles or parts thereof, and recyclable materials."[1]

### *SOLID WASTE HANDLING CLASSIFICATION*

Once solid waste is generated, its handling[2] 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. By first classifying solid waste by what happens to it, a further distinction was made to explain how it is handled or disposed of, by type of regulated handling facility. A regulated facility, for the purpose of this report, means an installation required by federal or state statute and/or regulation to meet certain environmental and public health compliance standards.

Regulated solid waste facilities in the state are covered by three rules developed by Ecology. The first of these rules, chapter 173-304 WAC, *the Minimum Functional Standards (MFS)*, was first adopted in 1972.[3] Significant revisions to the rule occurred in 1985 in order to keep pace with new and changing technologies within the siting, performance, design, operation and maintenance standards, and closure/post-closure requirements of solid waste facilities. The MFS of 1985 identified 18 distinct solid waste facility types, each with its own

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[1] RCW 70.94.030(16)

[2] Solid waste handling is defined in the MFS as: "the management, storage, collection, transportation, treatment, utilization, processing or final disposal of solid wastes, including the recovery and recycling of materials from solid wastes, the recovery of energy resources from such wastes or the conversion of the energy in such wastes to more useful forms or combinations thereof."

[3] Chapter 173-301 WAC.

set of permitting criteria. These form most of the basic types of facilities for the classification system. (Two of the 18 types identified in the MFS and reported in last year's annual report, sludge and septage facilities, are in the process of being re-defined by federal criteria[4] and are being tracked separately from this annual status report.)

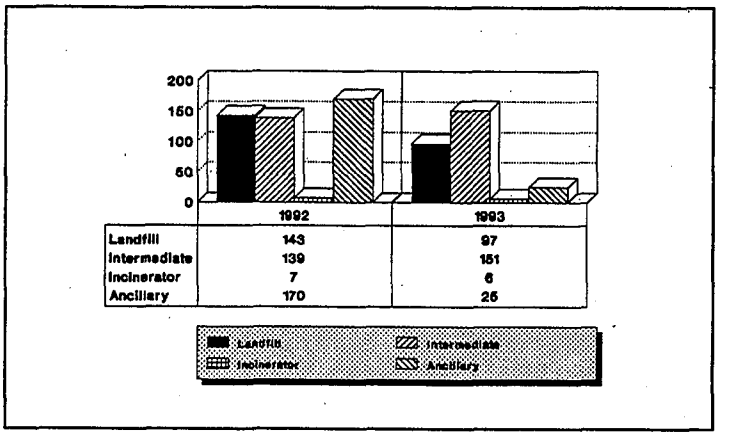
**TABLE 2.1: SOLID WASTE FACILITY INFRASTRUCTURE: CLASSIFICATION SYSTEM**

| LANDFILL CLASSIFICATION | INTERMEDIATE CLASSIFICATION | INCINERATION CLASSIFICATION | ANCILLARY-OTHER CLASSIFICATION |
|---|---|---|---|
| *Types & Governing Regulation* | *Types & Governing Regulation* | *Types & Governing Regulation* | *Types & Governing Regulation* |
| **Ash Monofill** *Chapter 173-306 WAC* | **Bale Station** *WAC 173-304-410* | **Energy Recovery Incinerators** *WAC 173-304-440* | **Composting Centers** *WAC 173-304-420* |
| **Inert/Demolition** *WAC 173-304-461* | **Compacting Stations** *WAC 173-304-410* | | **Exempt Facilities** *WAC 173-304-015* |
| **Limited Purpose** *WAC 173-304-460(5)* | **Drop Box Facilities** *WAC 173-304-410* | | **Landspreading** *WAC 173-304-450* |
| **Municipal Solid Waste** *Chapter 173-351 WAC* | **Pile Facilities** *WAC 173-304-420* | | **Others** *WAC 173-304-470* |
| **Woodwaste** *WAC 173-304-462* | **Recycling Facilities** *WAC 173-304-300* | | |
| | **Surface Impoundments** *WAC 173-304-430* | | |
| | **Transfer Stations** *WAC 173-304-410* | | |
| | **Tire Piles** *WAC 173-304-420* | | |

The second rule pertains to municipal solid waste landfills. In the past, these facilities were regulated under the MFS. In October 1993, federal criteria in Subtitle D of the *Resource Conservation Recovery Act (RCRA)*, 40 CFR Part 258, took effect nationally. The federal standards required all states to meet new, more stringent, minimum requirements for siting,

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

design, performance, ground water monitoring, financial assurance, closure/post-closure and remediation for municipal solid waste landfills. Washington elected to incorporate Subtitle D requirements into a new rule, chapter 173-251 WAC, *Criteria for Municipal Solid Waste Landfills.* (For further discussion see Municipal Solid Waste Facility Compliance below.)




The third rule regulating solid waste handling facilities is chapter 173-306 WAC, *Special Incinerator Ash* [5] Management Standards, which sets permitting, construction and operating standard for MSW incinerator ash monofills.

**TABLE 2.2:** ***STATE SOLID WASTE INFRASTRUCTURE***

| CLASSIFICATION DIVISION | STATEWIDE TOTALS | |
|---|---|---|
| | 1992 | 1993 |
| *LANDFILL* | 143 | 97 |
| *INTERMEDIATE* | 139 | 151 |
| *INCINERATION* | 7 | 6 |
| *ANCILLARY - OTHERS* | 170 | 25 |
| **TOTAL SOLID WASTE INFRASTRUCTURE** | 459 | 279 |

As a result of chapter 173-304 WAC, chapter 173-351 WAC and chapter 173-306 WAC, there are now 16 regulated types of facilities which deal with how the waste is handled, landfilled, intermediately handled or incinerated. Table 2.1 lists the classifications and corollary facility types of what Ecology calls the Solid Waste Facility Infrastructure Classification System.

In this report, Ecology has identified 279 solid waste handling facilities that are under regulation as depictedin Table 2.2. These facilities constitute the solid waste infrastructure for Washington.

[5] Facility information and was obtained from facilities and from the four Ecology regional offices: Eastern (ERO) - Spokane; Central (CRO) - Yakima; Southwest (SWRO) - Tumwater; and, Northwest (NWRO) - Bellevue.

In 1992, Ecology registered 459 facilities. The sharp decrease is a result of the re-designation of sludge and septage facilities as bio-solids[6] (148 facilities) coupled with Ecology's improvement in reporting forms and practices. For example, in 1992, Ecology sent annual reporting forms to all landfills. In some instances, facilities that were previously listed as active were, in fact, either closed or planned but never constructed. The number of landfills reported in this annual report are only those that accepted waste in 1992. It is within this infrastructure of 279 facilities, not including illegal dumping activities, that solid waste is handled in the state.

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

## *LANDFILL CLASSIFICATION*

The *Minimum Functional Standards (MFS)* define a landfill as a "disposal facility or part of a facility at which solid waste is permanently placed in or on land and which is not a land treatment facility."[7] 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; and (5) woodwaste landfills. (See Table 2.3.)

The MFS requires all solid waste handling facilities to report basic facility information by March 1 of each year to the local health jurisdiction and to Ecology.[8] In April 1992, Ecology prepared and sent to all municipal solid waste landfills an annual reporting form to track information required in the MFS. All but two of the 45 active facilities responded.

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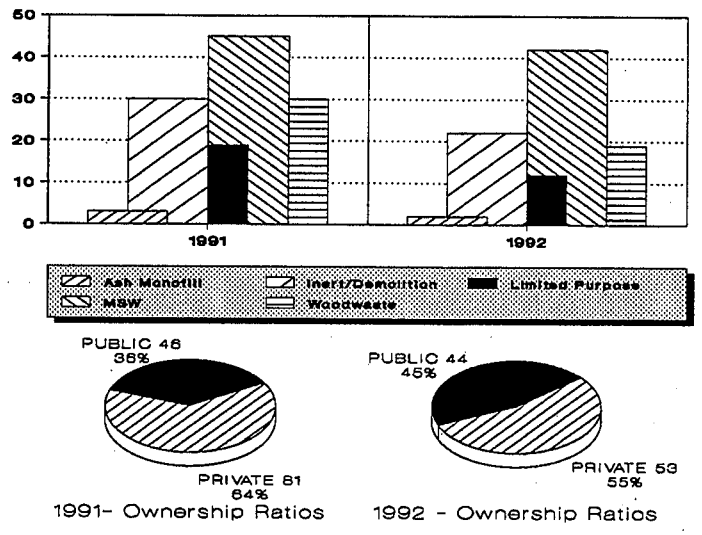
[6] The 1992 Legislature passed ESHB 2640, an *Act relating to municipal sewage sludge.* A portion of the act was later codified as chapter 70.95J RCW, *Municipal Sewage Sludge - Biosolids.* Chapter 70.95J RCW establishes biosolids as municipal sewage sludge which meets criteria for safe and beneficial use on the land. Ecology will establish those criteria in chapter 173-308 WAC, *Biosolids Management,* which is expected to be completed in late 1994. Once those criteria are established, biosolids will no longer be regulated as a solid waste under the *Solid Waste Management Act,* chapter 70.95 RCW, but as biosolids under chapter 70.95J RCW. Municipal sewage sludge which fails the criteria for biosolids, however, will remain a solid waste. Until the standards of chapter 173-308 WAC are established, municipal sewage sludge, commonly referred to as biosolids, will continue to be managed as a solid waste.

[7] WAC 173-304-100(42)

[8] WAC 173-304-405(4) of the MFS designates reporting criteria for landfill units in Washington State. The 1994 annual reporting requirements for MSW landfill units will be governed by chapter 173-351 WAC while inert/demolition, limited purpose, and woodwaste facilities will be required to report under the MFS. Ash monofills report per requirements of chapter 173-306 WAC.




## TABLE 2.3: *LANDFILL CLASSIFICATION*

| FACILITY TYPE | TOTAL # STATEWIDE | | TOTAL BY OWNERSHIP DESIGNATION | | | |
|---|---|---|---|---|---|---|
| | ACTIVE 1991 | ACTIVE 1992 | # PUBLIC | | # PRIVATE | |
| | | | 91 | 92 | 91 | 92 |
| ASH MONOFILL | 3 | 2 | 1 | 1 | 2 | 1 |
| INERT/DEMOLITION | 30 | 22 | 7 | 6 | 23 | 16 |
| LIMITED PURPOSE | 19 | 12 | 1 | 1 | 18 | 11 |
| MUNICIPAL SOLID WASTE | 45 | 42 | 36 | 36 | 9 | 6 |
| WOODWASTE | 30 | 19 | 1 | 0 | 29 | 19 |
| TOTAL | 127* | 97 | 46 | 44 | 81 | 53 |

* *Active facilities that received waste. Last year's report counted 61 MSW landfills of which 45 were designated as open to the public.*

In January 1993, Ecology sent its second MSW landfill reporting form to active MSW landfills, as well as a first-time report to all other landfill types, except for ash monofills. Facilities were given one month to conform with the March 1 reporting requirement of chapter 173-304 WAC. The intent of Ecology providing reporting forms was to:

- Standardize reporting requirements for all municipal solid waste facilities and other landfill types;
- Initiate regular data collection practices required by statute and rule; and,
- Make the reporting process easier for the facility owner.

The 97 landfills account for 35% of the state's 279 regulated solid waste facilities. Forty-six landfills that had been included in the total have been removed from the list of active landfills (either because of closures or misclassification). The greatest single change occurred within the municipal solid waste landfill category which had a reduction of 19 facilities from last year's database.

Of those 19 municipal solid waste landfills removed from the active list, 13 had closed prior to 1991, three are federal facilities not open to the public, two facilities closed during 1991 and did not received waste in 1992, and one facility was built, but never accepted waste. A total of 42 active MSW facilities, those that received waste in 1992, are included in this year's annual report.

As in the last annual report, facility ownership is categorized as either PUBLIC for those facilities owned by a recognized jurisdiction of government - a city, county or special purpose district - or as PRIVATE, for those facilities owned by corporations, partnerships or private individuals. Of all 97 active landfills statewide, 46% are public and 54% are private. Of the 97 identified landfills, 77% were in compliance in 1993 with the requirements of chapter 173-304 WAC and chapter 173-306 WAC.

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

**Ash Monofills**

Ash monofills are landfill units that receive ash residue generated by municipal solid waste incinerator/energy-recovery facilities. In 1987, the Legislature determined that incinerator ash needed special handling apart from the permitting and reporting requirements of chapter 70.95 RCW, *the Solid Waste Management Act,* which requires solid waste handling facilities to be permitted by local jurisdictional health departments with Ecology's oversight review. Recognizing the special and often dangerous characteristics of municipal solid waste ash

residue, the Legislature passed the *Incinerator Ash Residue Act*, chapter 70.138 RCW. The act 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 depositories of the ash residue generated by the incinerator.

Two ash monofills were identified in Washington in 1992, one public and one private[9] (Table 2.3). The largest permitted ash monofill is located adjacent to the Roosevelt Regional Landfill in Klickitat County and is owned and operated by the private corporation that manages the regional facility. The monofill operates under a permit issued by Ecology, and received 96,010 tons of special incinerator ash in 1992, all of which came from the Spokane Solid Waste Disposal Project.

The publicly operated ash monofill serves the Skagit County Incinerator. This monofill is located adjacent to the Inman landfill and is operated by the Skagit County Public Works Department. This facility received 14,450 tons of incinerator ash in 1992. In 1993, the county, decided to long-haul or transport the ash to the Roosevelt Regional Landfill Ash Monofill Cell. The county is in the process of closing the ash monofill at Inman.

Ash generated by the ReComp of Washington facility[10] in Whatcom County is currently in interim storage at the site. This practice is being evaluated by Ecology. The total of interim disposed ash at this facility was 8,825 tons for 1992. A total of 40,000 tons of ash is in interim storage at the facility.

The total amount of ash disposed of in 1992 was 141,865 tons, compared to 45,851 tons disposed in 1991. The increase was attributed mainly to the full year of operation of the Spokane incinerator.

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[9] A second ash disposal facility, located at Friday Harbor, was incorrectly classified in last year's annual report as an ash monofill. The Friday Harbor Incinerator does not fall under the ash monofill requirements because it does not burn over 12 tons per day of MSW. Therefore the ash is disposed in the local landfill.

[10] This facility provides interim storage of ash at this time; it was considered an existing facility at the time of rule adoption and has been permitted accordingly.

## Inert/Demolition Waste Landfills

Inert/Demolition Waste landfills are facilities which receive "more than two thousand cubic yards of inert wastes and demolition wastes."[11] These facilities are regulated under WAC 173-304-461.

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 7 | 6 | 5 | 5 |
| *PRIVATE* | 23 | 16 | 14 | 16 |
| **TOTAL** | **30** | **22** | **19** | **21** |

**TABLE 2.4:** ***INERT/DEMOLITION LANDFILLS***

By definition, "inert wastes" are "noncombustible, nondangerous solid wastes that are likely to retain their physical and chemical structure under expected conditions of disposal, including resistance to biological attack and chemical attack from acidic rainwater."[12] "Demolition wastes are correspondingly defined as "solid waste, largely inert waste, resulting from the demolition or razing of buildings, roads and other man-made structures. Demolition waste consists of, but is not limited to, concrete, brick, bituminous concrete, wood and masonry, composition roofing and roofing paper, steel, and minor amounts of other metals like copper. Plaster (i.e., sheet rock or plaster board) or any other material, other than wood, that is likely to produce gases or a leachate during the decomposition process and asbestos wastes are not considered to be demolition waste for the purposes of this regulation."[13]

Ecology has identified 22 inert/demolition landfills in this report as compared to a 1992 total of 30. Table 2.4 illustrates the profile of inert/demolition facilities statewide over the past two years. The drop in reported facilities results from owners responding to the annual reports with information on previous closures or miscategorization for their facilities. Most, 73%, of the inert/demolition landfills are privately owned and operated. Public inert/demolition landfills constitute 27% of this facility type.

The MFS requires inert/demolition landfills to be annually permitted by the applicable jurisdictional health department with review by Ecology. Of the inert/demolition landfills active in 1992, 95% were permitted.

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

[12] WAC 173-304-100(40)

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

## 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."[14] These facilities are regulated under WAC 173-304-460(5).Limited purpose landfills are identified by the type of waste. In other words, the waste associated with a limited purpose landfill is unique to that fill.

Ecology has identified 12 limited purpose landfills statewide that accepted waste in 1992. This represents a reduction of seven facilities from last year's total. Those facilities removed from the active list were either closed or miscategorized.

Based on information received from the limited purpose landfills, there is some confusion about what is a limited purpose landfill. (See Chapter VI for information on the types of waste disposed at these facilities.) A limited purpose landfill facility is "limited" by the nature of the waste it receives. In most cases, the landfill is operated by a specific entity, serving its own disposal needs for a particular waste that it produces. For example, agricultural waste from the cranberry growers in Southwestern Washington or woodwaste ash by-products from hog fuel burning facilities could each be disposed in their own landfill. A limited purpose landfill does not mean "not open to the public" and therefore "limited" in use to a private organization, entity or group of people. Several facilities permitted as limited purpose landfills reported disposing of a variety of waste in the facility.

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 1 | 1 | 1 | 1 |
| *PRIVATE* | 18 | 11 | 10 | 11 |
| TOTAL | 19 | 12 | 11 | 12 |

**TABLE 2.5:** ***LIMITED PURPOSE LANDFILLS***

Table 2.5 illustrates the profile of limited purpose facilities statewide and the results of increased scrutiny. Virtually all of the regulated limited purpose landfills are private (94%) because the waste disposed in these facilities is generated from an entity or group of entities engaged in a particular type of business. There is only one public limited purpose landfill identified in the state.

The MFS requires limited purpose landfills to be permitted annually by the applicable jurisdictional health department with review by Ecology. Significantly, all of the limited purpose landfills have met the permitting requirements of the MFS.

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

## Municipal Solid Waste Landfills

Municipal Solid Waste Landfills in Washington, for most of 1993, were regulated under the chapter 173-304 WAC, *the Minimum Functional Standards*. However, on October 9, 1993, federal MSW landfill criteria in Subtitle D of the Resource Conservation Recovery Act (RCRA), 40 CFR Part 258, took effect nationally. The federal standards required all states to meet new, more stringent, minimum requirements for siting design, performance, ground water monitoring, financial assurance, closure/post-closure and remediation. Washington, like all states, was given three options in complying with the standards. First, it could adopt subtitle D outright and choose to administer the federal program verbatim. Second, a state could opt to allow the federal government to administer its solid waste program. And, third, a state could develop its own rule and seek approval from the US Environmental Protection Agency (EPA) solid waste program by submitting a solid waste permit program application for "determination of adequacy" under the federal State/Tribal Implementation Rule (STIR).

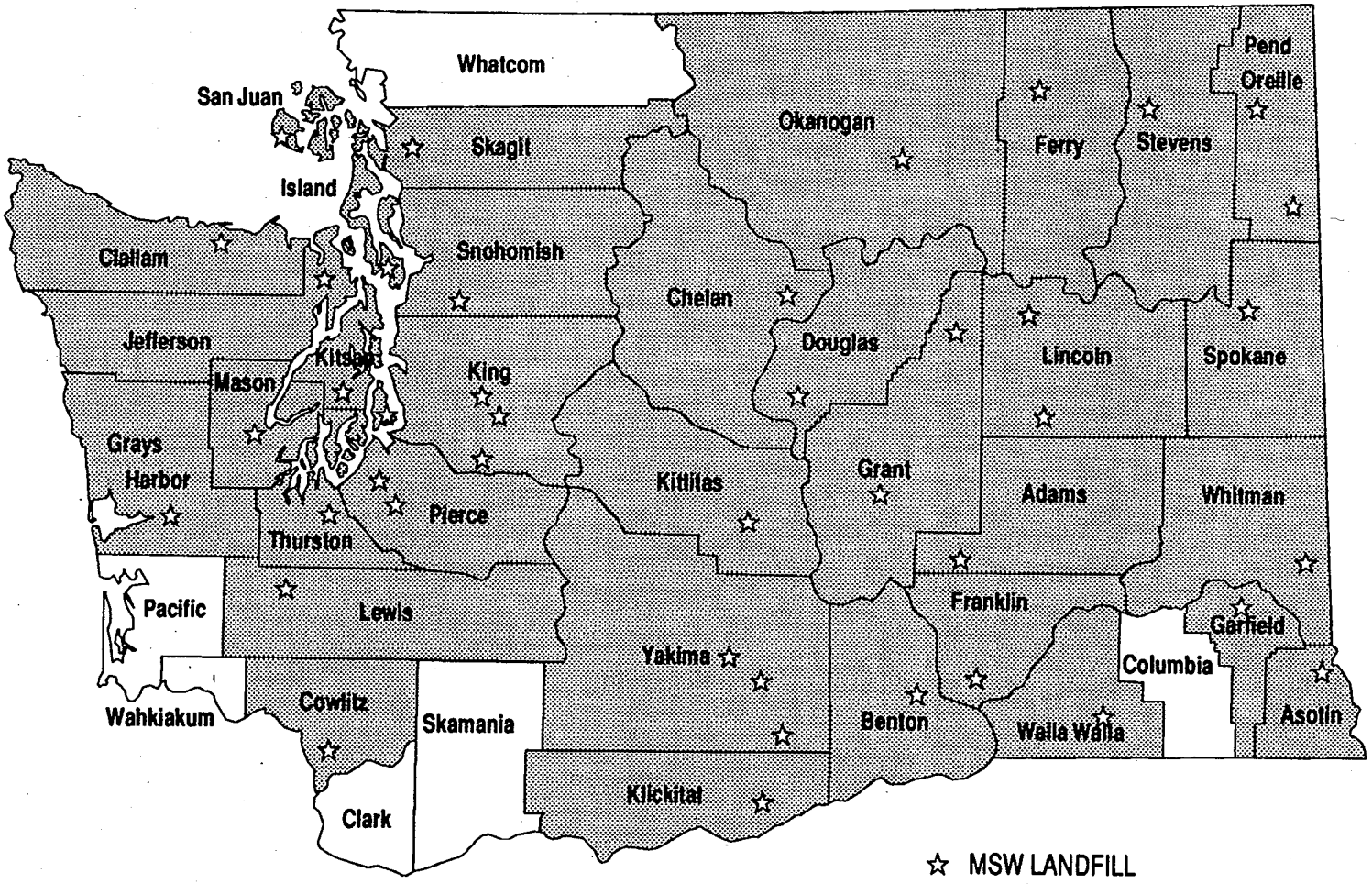
| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | ACTIVE 1991 | ACTIVE 1992 | ACTIVE 1992 | ACTIVE 1993 |
| *PUBLIC* | 36 | 36 | 24 | 24 |
| *PRIVATE* | 9 | 6 | 8 | 6 |
| **TOTAL** | **45** | **42** | **32** | **30** |

**TABLE 2.6:** ***MUNICIPAL SOLID WASTE LANDFILLS***

In examining the options, Washington rejected option one outright since federal criteria and language did not take into consideration the uniqueness of the state's geo-climatic conditions nor its anti-degradation requirements for ground water protection. Second, the option to allow the federal government to administer the state's program was not considered appropriate since the Legislature charged the state and local governments to perform a multitude of tasks related to solid waste management. The third option was selected, to develop a rule to incorporate subtitle D requirements and/or exceed the federal criteria and to submit an application with the EPA for adequacy determination.

As a result of selecting this option, a new MSW landfill requirement, chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills* (351 Rule) which incorporated federal criteria became effective November 1993. Ecology also submitted an application to the EPA for adequacy determination. The adequacy application was determined to be administratively complete in December 1993, with final approval pending publication in the Federal Register in early 1994.

## MAP A: COUNTIES WITH MSW LANDFILLS OPEN IN 1992



Forty-two (42) MSW landfills accepted waste in 1992[15] and all of them returned an annual reporting form to Ecology. (See Chapter VI for additional discussion.) Table 2.6 identifies the statewide infrastructure profile for 1991 and 1992. Map "A" includes the location of the MSW landfills statewide

The majority, 86%, of MSW landfills are operated by public entities which has historically been true in Washington. Private MSW landfills constitute only 14% of this facility type, down from last year's 20%. All three municipal solid waste facilities that closed in 1991, were private facilities. Despite this low percentage, the majority of landfill capacity is under the control of the private sector. (Also see the discussion on landfill capacity in Chapter VI.)

The MFS and the new chapter 173-351 WAC require all MSW landfills to be annually permitted by the applicable jurisdictional health department, with review by Ecology. The overall permitting level of all MSW facilities is 71%. Public MSW landfills have the same permit compliance rate as last year (67%), while the remaining private facilities have all obtained the required permit. (All three private landfills that closed in 1991 were unpermitted.)

*MSW Compliance*

The new federal requirements set higher levels of compliance standards, especially for closure/post closure, financial assurance requirements and ground water monitoring standards. This report will not go into the full details of the new federal criteria as they were incorporated into chapter 173-351 WAC; rather it will discuss the immediate impact on MSW facilities in Washington state. A more detailed analysis of the long term affects will be discussed in next year's report.

Of importance is that federal standards require the period for closure/post closure to be extended by ten years from the current level of 20 years. This has the corollary effect of increasing the amount of financial assurance required to guarantee proper facility closure. In addition, the increased level of monitoring required adds to a facility's cost of operation.

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

[15] Three of the 45 active facilities reported in last year's annual report (having received waste in 1991) closed prior to January 1992.

Of the 42 active MSW landfills in 1992, 20 have indicated they would close rather than operate under the new requirements. The stopped receiving waste prior to October 9, 1993, with the other ten smaller landfills are targeted to close by the April 1994 extension date. The 20 facilities will be closing under the MFS.

Authority for the enforcement of solid waste laws and regulations resides with local jurisdictional health departments. In implementing the MFS and chapter 173-351 WAC, Ecology continues to view compliance as an evolving process, recognizing that compliance with all regulatory criteria will not happen over night. To this end, Ecology approaches compliance in a seven step process.

### *The Seven Step Approach to Facility Compliance*

In determining facility compliance, audits were completed by Ecology's regional offices in
August 1993, for the 42 MSW landfills that actively received waste in 1992. As last year, MSW facilities were evaluated based on chapter 173-304 WAC[16] which requires municipal solid waste handling facilities to comply with: **(1) technical criteria -** *(performance standards, design requirements, ground water monitoring, environmental monitoring standards)*; **(2) planning criteria -** *(operational planning,*

**TABLE 2.7: MFS COMPLIANCE CRITERIA**

| TECHNICAL STANDARDS | WAC REGULATION | NARRATIVE |
|---|---|---|
| *Performance Standards* | WAC 173-304-460(2) | Standards for surface water, ground water, air quality & gases. |
| *Design Standard* | WAC 173-304-460(3) | Standards for liquids, leachate systems, & liners. |
| *Ground Water Monitoring* | WAC 173-304-490 | Standards for sampling & testing. |
| *Environmental monitoring* | WAC 173-304-460(3)f) | Gas monitoring for controlling methane & other gases. |
| | WAC 173-304-460(4)(b) | Standards to control vectors, daily cover, scavenging. |
| **PLANNING STANDARDS** | **WAC REGULATION** | **NARRATIVE** |
| *Operational Plans* | WAC 173-304-460(4) WAC 173-304-405(2) | Standards for solid wastes handling, inspections & monitoring. |
| *Closure Requirements* | WAC 173-304-407(4)(5) | Sets planning & performance standards for closure. |
| *Post-closure Planning* | WAC 173-304-407(6)(7)(8) | Sets planning & performance standards for post-closure such as monitoring of air, land and water. |
| *Financial Assurance* | WAC 173-304-467 WAC 173-304-468 | Provides for the types of financial instruments to be used to insure funds are available for post closure |
| *Annual Reporting* | WAC 173-304-405(4) | Sets minimum criteria for reporting facility information to Ecology and the health department. |
| **GENERAL STANDARDS** | **WAC REGULATION** | **NARRATIVE** |
| *Permit* | WAC 173-304-600 | Sets requirements for obtaining a solid waste permit. |

[16] At the time compliance information for the active MSW landfills was obtained, the MFS were the regulations in effect. Although the facilities that remain operating after April 1994, will be under chapter 173-351 WAC, information about the level of compliance with that regulation was not available. This report assessed the remaining facility compliance with the MFS to provide an indication of needed improvements to meet the newer, more stringent standards.

*closure/post-closure requirements, financial assurance preparedness, annual reporting standards*); and, (3) **general criteria** -(*facility permitting requirements*). Table 2.7 provides a summary and reference of MFS compliance criteria.

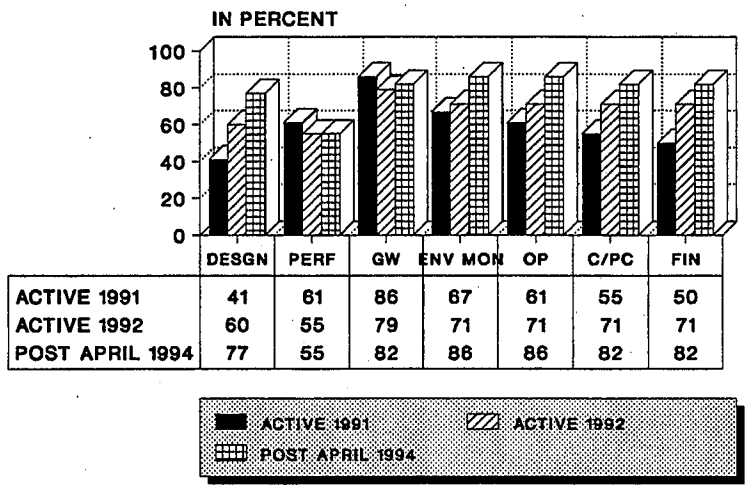
Compliance information for active MSW landfills is summarized according to the technical, planning and general criteria included in Table 2.8. A second compliance summary was made by evaluating the 22 MSW landfills that plan to remain operating after April 1994. All compliance information is based on the existing MFS audit completed in August 1993. This analysis discussed below in the Seven Step Approach to Facility compliance, will provide the reader an understanding of the before and after conditions and improvement needed to meet the new MSW landfill standards.

**Step One - Cooperation:** The first step in protecting the environment and the public health is to work hand-in-hand with local health jurisdictions and the operators of facilities to foster awareness of sound solid waste management practices. Ecology considers cooperation with local governments the cornerstone of its facility compliance strategy accomplished by providing local governments with easy accessibility to trained technical solid waste support staff. To promote this cooperation, Ecology has four regional offices throughout the state, each staffed and designed to improve communication and service levels with local governments by providing the technical and, in some cases, financial resources necessary to carry out compliance-related activities.

**Step Two - Education & Training:** Chapter 70.95 RCW, *The Incinerator & Landfill Operators Act*, requires all individuals in responsible charge of solid waste landfills to be trained and certified in the operation of regulated landfills. Ecology sponsors annual certification training sessions to qualify applicants for examination. Inspectors of solid waste landfills are required to be trained in the same manner. To date, 469 individuals have been certified statewide. A continuing education program in landfill operations is currently being evaluated by Ecology in conjunction with the Department of Labor & Industries.

**Step Three - Technical Assistance:** At the request of either facility operators, local government officials or jurisdictional health department staff, Ecology provides support services in areas such as permit preparation, engineering standards review, operational and closure/post-closure planning, inspections, hydrogeology analysis and testing procedures. In addition to these requested work sessions, Ecology maintains a listing of "Technical Information Memoranda" (TIMs) to provide concise regulatory interpretation of its various solid waste regulations.

**Step Four - Detection of Contaminants:** The emphasis in the fourth step of compliance is the detection of contaminants. Table 2.8 illustrates the efforts to secure compliance with ground water monitoring requirements, the fundamental testing component for environmental contamination. The required monitoring has been achieved at 33 of the 42 active MSW landfill facilities statewide, for an overall compliance rate of 75%. Of the 22 facilities that will be open after April 1994, 18 (82%) have met all ground water monitoring requirements of the MFS.




| | DESGN | PERF | GW | ENV MON | OP | C/PC | FIN |
|---|---|---|---|---|---|---|---|
| ACTIVE 1991 | 41 | 61 | 86 | 67 | 61 | 55 | 50 |
| ACTIVE 1992 | 60 | 55 | 79 | 71 | 71 | 71 | 71 |
| POST APRIL 1994 | 77 | 55 | 82 | 86 | 86 | 82 | 82 |

| TABLE 2.8: MSW COMPLIANCE SUMMARY | TOTAL ACTIVE FACILITIES | | |
|---|---|---|---|
| | ACTIVE 1991 | ACTIVE 1992 | POST APRIL 1994 |
| | 45 | 42 | 22 |
| MEETS ALL MFS STANDARDS | 5 | 8 | 7 |
| ALL TECHNICAL STANDARDS: | 8 | 9 | 7 |
| *Design Standards* | 18 | 25 | 17 |
| *Performance Standards* | 23 | 23 | 12 |
| *Ground Water Monitoring* | 40 | 33 | 18 |
| *Environmental Monitoring* | 31 | 30 | 19 |
| ALL PLANNING STANDARDS | 21 | 23 | 15 |
| *Operational Plan* | 31 | 30 | 19 |
| *Closure/Post-Closure Plan* | 29 | 30 | 18 |
| *Financial Assurance* | 27 | 30 | 18 |
| *Submitted Annual Report* | 43 | 39 | na |
| PERMITTED FACILITY | 32 | 30 | 19 |

The other component of contamination detection is compliance with secondary environmental monitoring standards, such as gas detection systems. In 1993, 30 of the 42 (71%) active facilities have instituted environmental monitoring systems. Facilities open after April 1994, will have an 86% compliance rate with the MFS for gas detection requirements.

**Step Five - Compliance with Technical Standards:** The fifth step in the compliance hierarchy is compliance with the technical standards of performance and design. Meeting the design and performance standards of the MFS are considered by Ecology to be essential to the long term protection of public health and the environment. In this regard, both Ecology and jurisdictional health departments recognize the costs associated with bringing facilities into compliance. While new facilities have been constructed and permitted to meet the new federal criteria, all MFS requirements and the new landfill criteria of chapter 173-351 WAC, older facilities are having to be brought into compliance through technical assistance, education and grant programs. Twenty-three of the 42 (55%) active facilities complied with these standards. Twelve of the 22 (55%) existing facilities operating after April 1994, will comply with the performance standards of the MFS.

Of all the technical standards reviewed, the most significant change from 1992 occurred in the area of design standard conformance. Twenty-five of the 42 active facilities complied with design standards. Seventeen of the 22 (77%) existing facilities operating after April 1994 comply with the MFS design standard requirements. The improvement in this category of compliance is a result of committing the resources of Ecology and the jurisdictional health departments to assist non-complying facilities to either meet technical standards or to stop receiving waste.

**Step Six - Operational Planning & Closure Requirements:** The sixth step of compliance is based on the premise that the development of plans - operational, closure/post-closure and financial assurance - are fundamental tools for the protection of the environment and the public health. By detailing operational, maintenance, and closing practices and costs of facilities, these plans define the required monitoring programs. This year's data reveals that 72% of the active facilities comply with operational plan requirements. Nineteen of the 22 (86%) existing facilities that will be operating after April 1994 comply.

Similarly, closure/post-closure planning has been developed at 30 of the 42 active facilities for a 72% rate of compliance as compared to 65% last year. Eighteen of the 22 (82%) existing facilities that will remain operating after April 1994 will comply.

Providing financial assurance instruments, designed to ensure adequate fiscal capabilities to close and monitor facilities in accordance with the law and applicable rules, follows the pattern of operational and closure/post-closure planning. That is, 30 of the 42 active facilities (72%) met the standard. Eighteen of 22 (82%) existing facilities that will remain open after April 1994, comply.

The last of the planning standards, annual reporting, though not considered a plan in itself, is the fundamental tool used by Ecology for tracking such things as waste characteristics and total capacity. This quasi-planning instrument of facility reporting has been submitted by all of the 42 active facilities.

**Step Seven - Enforcement:** Last year's report explained in detail the enforcement policy of Ecology. Ecology's Solid Waste Services Program's enforcement policy emphasizes the statutory role of the participants. Jurisdictional health departments are the primary enforcement agency for solid waste facilities in the state of Washington. If and when jurisdictional health departments cannot achieve compliance on their own, Ecology's regional solid waste staff can assist in enforcement actions. According to the department's enforcement policy, Ecology is to take the necessary steps to ensure the protection of the public health and environment when a health department either needs assistance or is unable to effectively carry out enforcement actions.

The ultimate goal of Ecology and the local health departments is to achieve compliance with the planning and technical criteria for all MFS facilities. Future annual reports will continue to monitor compliance. As the administration of the chapter 173-351 WAC begins, reliance upon the first phases of the Seven Step Approach by health departments and Ecology becomes even more crucial - cooperation, education & training, and technical assistance.

**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."[17] 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."[18]

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 1 | 0 | 1 | 0 |
| *PRIVATE* | 29 | 19 | 13 | 11 |
| **TOTAL** | **30** | **19** | **14** | **11** |

**TABLE 2.9: *WOODWASTE LANDFILLS***

In this year's direct annual reporting tracking study, Ecology has identified 19 woodwaste landfills statewide, 11 less than last year. Two factors account for the reduction. First, after direct mailing annual reporting forms to these facilities, many operators completed the reporting forms, even though their facilities were closed. The facilities were appropriately verified as closed, and recorded as such in the facility database. Second, Ecology incorrectly listed several facilities as active regulated MFS

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

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

woodwaste landfill units when they were actually facilities that either accepted less than 2,000 cubic yards per year - exempt from regulation under the MFS - or were permitted by the state Department of Natural Resources under Washington's *Forest Practices Act,* also exempt from regulation under the MFS. Table 2.9 depicts the profile of woodwaste landfill units statewide. Currently, all active regulated woodwaste landfills are privately operated.

The MFS requires woodwaste landfills to be annually permitted by the applicable jurisdictional health department, with review by Ecology. In 1993, 11 of the 19 (58%) woodwaste landfills were permitted.

### *INTERMEDIATE CLASSIFICATION*

Solid waste, prior to its final disposal or incineration, is often accumulated at a storage facility, consolidated at a transfer station, or 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[19] or intermediate classification of solid waste handling facilities.

Specifically, a storage facility primarily holds "solid waste materials for a temporary period"[20] while a processing center is in the operation of converting "solid waste into a useful product or to prepare it for disposal."[21] 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."[22] The distinguishing characteristic of all interim or intermediate classification solid waste handling facilities is that the facility is not designed for the final disposal of the materials. There are eight types of intermediate facilities: (1) baling stations; (2) compacting stations; (3) drop box facilities; (4) pile facilities; (5) recycling centers; (6) surface impoundments; (7) transfer stations; and, (8) tire pile facilities.

Intermediate classification facilities account for 54% of the state's solid waste infrastructure, or 151 of the 279 identified solid waste facilities. Table 2.10 compares the intermediate classification for 1992 and for 1993. The most significant increase in facility types occurred with drop boxes, an increase of 15 facilities. Of the 151 intermediate facilities statewide, 73% (110) are public and 27% (41) are private facilities.

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

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

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

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

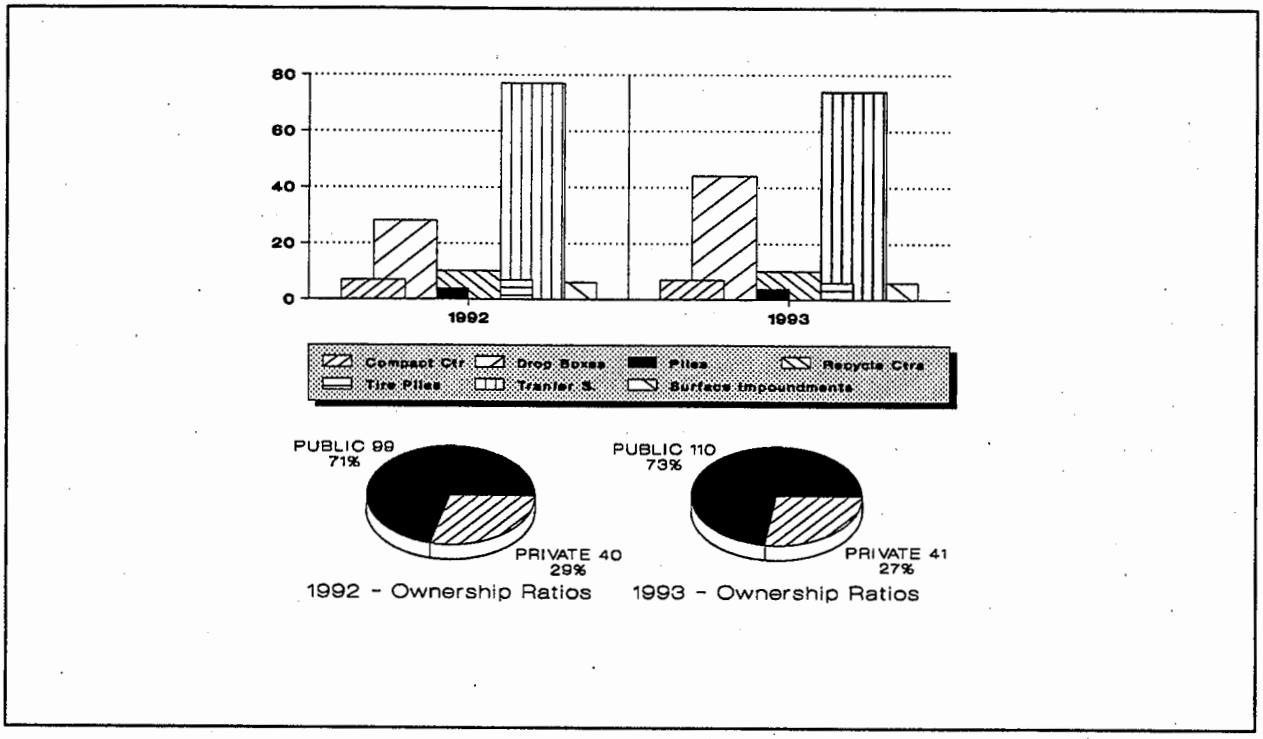


**TABLE 2.10:** ***CLASSIFICATION - INTERMEDIATE SOLID WASTE HANDLING FACILITIES***

| FACILITY TYPE | TOTAL # STATEWIDE | | TOTAL BY OWNERSHIP DESIGNATION | | | |
|---|---|---|---|---|---|---|
| | | | # PUBLIC | | # PRIVATE | |
| | 1992 | 1993 | 92 | 93 | 92 | 93 |
| BALE STATION | 0 | 0 | 0 | 0 | 0 | 0 |
| COMPACTING CENTER | 7 | 7 | 7 | 7 | 0 | 0 |
| DROP BOX FACILITIES | 28 | 44 | 24 | 40 | 4 | 4 |
| PILES | 4 | 4 | 3 | 3 | 1 | 1 |
| RECYCLING CENTERS | 10 | 10 | 2 | 2 | 8 | 8 |
| SURFACE IMPOUNDMENTS | 6 | 6 | 5 | 5 | 1 | 1 |
| TRANSFER STATIONS | 77 | 74 | 58 | 53 | 19 | 21 |
| TIRE PILES | 7 | 6 | 0 | 0 | 7 | 6 |
| TOTAL | 139 | 151 | 99 | 110 | 40 | 41 |

In 1993, 77% of the 151 reported intermediate facilities in the state were permitted according to the MFS requirements. A discussion of each intermediate classification "facility type" and its relationship to the state's solid waste infrastructure follows.

### Bale Station

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

### Compacting Station

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

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 7 | 7 | 7 | 7 |
| *PRIVATE* | 0 | 0 | 0 | 0 |
| TOTAL | 7 | 7 | 7 | 7 |

**TABLE 2.11:** ***COMPACTING STATIONS***

Ecology has identified seven compacting stations statewide. Table 2.11 illustrates the profile of compacting stations within the state for the past two years. Like last year, all compacting facilities are under public ownership and are affiliated with recycling operations. Compacting centers 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.

The MFS does require compacting stations to be permitted annually by the applicable jurisdictional health department, with review by Ecology. All seven compacting stations have met the permitting requirements.

### Drop Box Facilities

A drop box facility is defined in the MFS as "a facility used for the placement of a detachable container including the area adjacent for necessary entrance and exit roads, unloading and turn-around areas."[23] They are regulated under WAC 173-304-410.

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

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

Ecology has identified 44 drop box facilities in the state, an increase of 16 since the last reporting period. Table 2.12 depicts the profile of regulated drop box facilities statewide. The majority of the drop box facilities, well over 90%, are public and are primarily operated by county public works departments. Private drop box facilities constitute less than 10% of this facility type.

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 24 | 40 | 15 | 21 |
| *PRIVATE* | 4 | 4 | 4 | 4 |
| **TOTAL** | **28** | **44** | **19** | **25** |

**TABLE 2.12:** ***DROP BOX FACILITIES***

The MFS does require drop box facilities to be annually permitted by the applicable jurisdictional health department, with review by Ecology. Twenty-five (25) of the 44 drop-boxes were permitted in 1993. Fourteen (14) facilities were permitted by one health department but were not included in this total because Ecology had not completed its required review[24]. Ecology and the jurisdictional health departments are devoting greater resources to tracking and monitoring these facilities.

**Pile Facilities**

A solid waste pile facility is described in the MFS as any "noncontainerized accumulation of solid waste that is used for treatment or storage."[25] Pile facilities or areas used for storage and treatment are regulated by WAC 173-304-420.

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 3 | 3 | 3 | 3 |
| *PRIVATE* | 1 | 1 | 1 | 1 |
| **TOTAL** | **4** | **4** | **4** | **4** |

**TABLE 2.13:** ***PILE FACILITIES***

Pile storage/treatment areas are usually associated with the storage and processing of wastes requiring remedial actions such as petroleum-contaminated soils.

Only four of these pile sites have been identified by Ecology. Table 2.13 shows the profile of regulated pile sites statewide. All four regulated pile facilities or sites treat petroleum- contaminated soils. Three of the four identified regulated pile sites are publicly owned and are primarily operated by county public works departments.

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[24] Note: Ecology and the local health department involved are working on rectifying this situation, with resolution anticipated by the end of 1993. However, at press time the permit status of the 14 drop boxes are still considered invalid by Ecology since they were issued without the mandated review by the department.

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

The MFS does require pile sites to be permitted on an annual basis by the applicable jurisdictional health department with review by Ecology. Each identified pile site has received the required solid waste permit.

**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. 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."[26] Recycling facilities are regulated under WAC 173-304-300.

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 2 | 2 | 1 | 2 |
| *PRIVATE* | 8 | 8 | 6 | 8 |
| **TOTAL** | **10** | **10** | **7** | **10** |

**TABLE 2.14:** ***RECYCLING CENTERS***

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 of solid waste stored in surface impoundments, which are otherwise regulated in the MFS (WAC 173-304-400); woodwaste or hog fuel piles to be used as fuel or raw materials stored temporarily in piles being actively used; nor do they apply to any facility that recycles or uses solid wastes in containers, tanks, vessels, or in any enclosed building, including buy-back recycling centers.

Because of the distinction between regulated recycling facilities and non-regulated activities that promote recycling, only 10 regulated recycling facilities were identified by Ecology. Table 2.14 illustrates the profile of regulated recycling centers in Washington for 1992 and 1993. The majority (80%) of the regulated recycling facilities are private facilities and public recycling facilities constitute 20% of this facility type.

The MFS requires recycling facilities to be permitted annually by the local jurisdictional health department, with review by Ecology. In this regard, all regulated recycling facilities in the state are permitted.

[26] RCW 70.95.030(14)

## Surface Impoundment Facilities

A surface impoundment site 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.

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 5 | 5 | 1 | 2 |
| *PRIVATE* | 1 | 1 | 1 | 1 |
| **TOTAL** | **6** | **6** | **2** | **3** |

**TABLE 2.15:** ***SURFACE IMPOUNDMENT FACILITIES***

The term includes holding, storage, settling, and aeration pits, ponds, or lagoons, but does not include injection wells."[27]

Some surface impoundments are regulated under WAC 173-304-430.[28] Ecology has identified six such regulated facilities in the state. All six of these surface impoundment facilities are septage lagoons. Table 2.15 shows the surface impoundment ownership/ permitting profile. The category remains in the intermediate classification pending interpretation or clarification in the forthcoming biosolids rule.

The number of facilities is the same as last year. The majority of the regulated surface impoundment facilities are publicly-owned, and one is privately-owned.

The MFS requires certain surface impoundment facilities to be permitted annually by the applicable jurisdictional health department, with review by Ecology. The private facility is permitted while two of the public facilities are permitted.

## 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."[29] 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.

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

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

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

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 58 | 53 | 51 | 50 |
| *PRIVATE* | 19 | 21 | 17 | 21 |
| **TOTAL** | **77** | **74** | **68** | **71** |

**TABLE 2.16: *TRANSFER STATIONS***

In the past, transfer stations were generally located in larger, urban areas; however, with the new federal regulations applicable to municipal solid waste landfills, jurisdictions are now viewing transfer stations as an option to operating a landfill. Wastes can be collected at these centers for long-hauling to regional MSW landfills. The advantages of transfer stations include fewer vehicles going to the disposal facility, improved efficiencies by reducing the number of truck loads of waste disposed at facilities, and the opportunity to transfer and dispose of wastes at off-peak hours.

Transfer stations often have areas where the public can bring trash for disposal. Many also have recycling facilities and/or household hazardous waste collection areas. Seventy-four (74) regulated transfer stations are identified across the state, constituting the largest single category of solid waste handling facility. Table 2.16 illustrates the infrastructure component of transfer stations.

The profile shows that the number of transfer stations has decreased by three since 1992. This does not portray the great amount of activity associated with this category in the last year. For example, several new transfer stations opened at locations that were formerly MSW landfills. More jurisdictions seem to be following this trend. Last year's list also included several transfer stations that were planned but never opened, or were not in operation for many years. With the greater emphasis on this type of facility, Ecology will be preparing a report form in order to obtain more information on these facilities.

What the profile shows is that the majority of the transfer stations continue to be publicly operated entities, 72% - similar to 1992. Private facilities comprise approximately 28% of the transfer station infrastructure. The profile further shows that transfer stations, being the largest single facility type reported in 1993, also have one of the highest rates of permit compliance overall, 96%. All private transfer stations are permitted, while 50 of the 53 public facilities have been permitted, a 94% compliance rate.

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 0 | 0 | 0 | 0 |
| *PRIVATE* | 7 | 6 | 2 | 3 |
| **TOTAL** | **7** | **6** | **2** | **3** |

**TABLE 2.17: *TIRE PILE FACILITIES***

### Tire Pile Facilities

In Washington state, about four million tires are discarded each year. The discarded tires often are taken to tire pile storage facilities. A regulated tire pile facility in Washington is any tire pile that

temporarily stores or accumulates more than 800 tires. Tile pile standards are contained in WAC 173-304-420.

A major component of tire disposal in the state has been illegal tire dumping. This section, however, deals specifically with regulated tire pile facilities. (For more information regarding other tire piles, please see Chapter III.) Ecology identified six tire pile facilities in the state during 1993, one less than last year. Each regulated tire pile remains under private ownership. Table 2.17 depicts the ownership/ permit status of tire pile facilities in Washington for the last two years. Three of the tire piles in the state have received the required permit.

*INCINERATION CLASSIFICATION*

Energy recovery and incineration of separated waste, and energy recovery and incineration of mixed wastes are the third and fourth priorities solid waste management in Washington.

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."[30] 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."[31]

Energy recovery and incinerator facilities are regulated under WAC 173-304-440 and apply to "all facilities designed to burn more than twelve tons of solid waste per day, except for facilities burning woodwaste or gases recovered at a landfill."[32] Incineration constitutes the third method for handling solid wastes in Washington, with landfill and storage/transfer/processing being the others.

Ecology has identified six regulated solid waste incinerator facilities within the state[33]. Table 2.18 depicts the classification profile of the facilities by ownership status. The profile shows that the energy recover and incinerator facilities are equally divided between public and private ownership.

The MFS requires these facilities to be permitted annually by the applicable jurisdictional health department with review by Ecology. All facilities have obtained the required permit.

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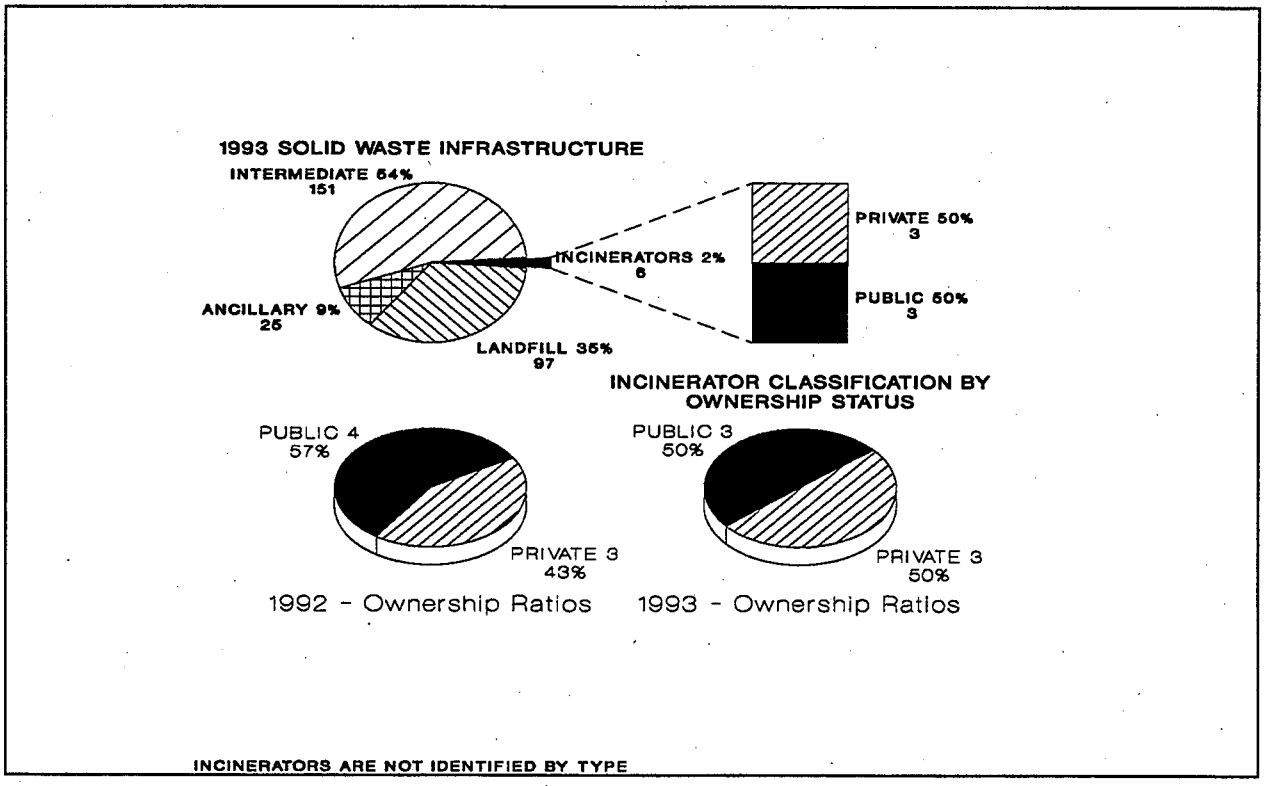
[30] WAC 173-304-100(26)

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

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

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




## TABLE 2.18: *CLASSIFICATION - INCINERATION*

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 4 | 3 | 3 | 3 |
| *PRIVATE* | 3 | 3 | 3 | 3 |
| **TOTAL** | **7** | **6** | **6** | **6** |

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

Of the six solid waste incinerators operating during 1993, four of these facilities are subject to both the requirements of chapter 173-304 WAC and chapter 173-306 WAC[34]. These four facilities are required to have generator ash management plans. A generator ash management plan is, in essence, a blueprint prepared by the facility operator concerning the handling, storage, transport and disposal of incinerator ash. The generator ash management plan must be reviewed and approved by Ecology. An approved ash management plan is a requirement for municipal solid waste incinerator operation. All four facilities, three public and one private, have approved generator ash management plans and solid waste handling permits.[35]

Energy recovery and incineration facilities represent approximately 3% of the solid waste handling infrastructure. Ecology also estimates that municipal solid waste incinerators burned approximately 12% of the solid waste disposed, by weight, during 1992, an increase from 2% in 1991. This increase is attributed to the Spokane Disposal Project operating at full capacity for the entire year, and to more accurate reporting. For further discussion of the amount of solid waste incinerated and disposed, see Chapter VI.

### *ANCILLARY - OTHER CLASSIFICATION*

The classification of Ancillary - Other, is not covered or spelled out in regulation but is denoted here to explain certain anomalies discovered in the reporting process that may have an effect in subsequent reporting years. To qualify for inclusion in this category, a facility type must be either under regulatory modification, be exempted from regulation, or determined to be an obscure facility type needing reclassification or elimination outright. The Last year this classification included: (1) Composting facilities; (2) Exempted-Tribal Facilities; (3) Landspreading; (4) Sludge; (5) Septage; and, (6) Other. This year, sludge and septage, which constituted 148 of the 170 facilities in the previous report, have been removed pending further consideration of the specific facility classifications based on a new law passed in 1992.

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

[35] One of the municipal solid waste incinerators was completed and permitted in 1993, but was not expected to start operations until early 1994.

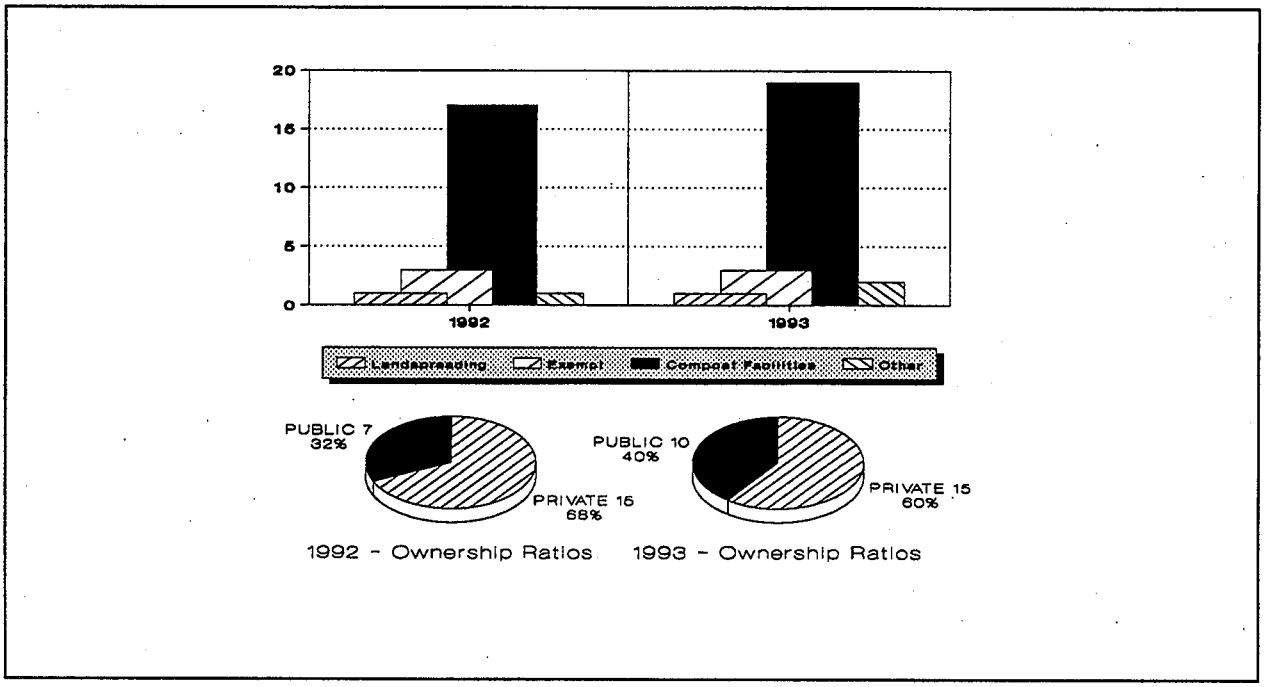


**TABLE 2.19:** ***CLASSIFICATION - ANCILLARY / OTHER***

| FACILITY TYPE | TOTAL # STATEWIDE | | TOTAL BY OWNERSHIP DESIGNATION | | | |
|---|---|---|---|---|---|---|
| | | | # PUBLIC | | # PRIVATE | |
| | 1992 | 1993 | 92 | 93 | 92 | 93 |
| *COMPOSTING FACILITIES* | 17 | 19 | 6 | 8 | 11 | 11 |
| *EXEMPT* | 3 | 3 | 0 | 0 | 3 | 3 |
| *LANDSPREADING* | 1 | 1 | 1 | 1 | 0 | 0 |
| *OTHER* | 1 | 2 | 0 | 1 | 1 | 1 |
| TOTAL | 22 | 25 | 7 | 10 | 15 | 15 |

The facility types identified in this classification are highlighted in Table 2.19. The 25 facilities identified represent 9% of the state's solid waste infrastructure. A discussion of each facility type in this classification follows.

**Composting Facilities**

A composting facility is a facility which controls the biological decomposition of organic solid waste, 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.

| OWNERSHIP | TOTAL | | PERMITTED | |
|---|---|---|---|---|
| | 1992 | 1993 | 1992 | 1993 |
| *PUBLIC* | 6 | 8 | 5 | 7 |
| *PRIVATE* | 11 | 11 | 9 | 9 |
| **TOTAL** | **17** | **19** | **14** | **16** |

TABLE 2.20: *COMPOSTING FACILITIES*

The MFS regulates composting facilities under the non-containerized composting standards for recycling 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., if the waste produces leachate or not. Composting has been placed in the Ancillary - Other Classification because of continued evaluation of this facility type by Ecology.

Ecology issued draft Interim Compost Quality Guidelines for public review and comment in May of 1993. One of the primary objectives of the guidelines is to promote consumer acceptance of composted products by creating statewide standards and enhanced consumer confidence in the safety of these products. The guidelines are scheduled to be completed in early 1994.

Ecology has identified 19 regulated composting facilities in the state, two more than last year. Table 2.20 highlights the infrastructure characteristics of composting facilities in Washington.

The profile shows that compost facilities are primarily under private ownership (58%). Public composting sites comprise 42% of the regulated composting infrastructure. The MFS requires composting facilities to be permitted annually by the applicable jurisdictional health department. The level of compliance for private and public facilities is 84%.

**Exempted Facilities**

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

### Landspreading Disposal Facilities

A landspreading disposal facility under the MFS is a facility that applies sludges or other solid wastes onto or incorporates solid waste into the soil surface at greater than agronomic rates and soil conditioners/immobilization rates. Landspreading disposal facilities are regulated under WAC 173-304-450. Only one permit has been issued in this category this year, a renewal of the permit issued last year.

### 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"[36] identified elsewhere in the MFS. The specific regulations for "other" facilities is covered by WAC 173-304-470. This type of facility is basically a miscellaneous category which is designed to cover new solid waste technologies that are developed between MFS revisions. The incinerator at Friday Harbor has been included under this category for this year because it does not meet the MFS definition of an incinerator. One other permit was issued in this category to a medical waste recycling facility.

[36] WAC 173-304-470

## *CHAPTER III*

# *IMPLEMENTING SOLID WASTE ACTIVITIES*

Ecology helps local governments fulfill their role of planning, enforcing laws and ordinances, and providing waste reduction and recycling opportunities to citizens, by providing financial assistance in the form of grants.

### *GRANTS TO LOCAL GOVERNMENT*

Grants support the efforts of local governments to manage their solid and moderate risk waste by helping them develop and implement waste management plans, and provide additional funding for special projects.

Ecology awarded $35,533,908 in waste grants from July 1, 1991 through April 23, 1993.[1] The grants leveraged local matching funds to support $56,352,816 worth of solid and moderate risk waste projects. Ecology also supported efforts to clean up contaminated sites through the remedial action grants program, awarding over $24.3 million from July 1, 1991 through April 23, 1993.

### Coordinated Prevention Grants (CPG)

Until 1991, Ecology provided separate grant programs for each funding account and activity. In 1992, Ecology replaced this structure with a consolidated program, Coordinated Prevention Grants (CPG). This program combines funds from all sources, except the vehicle tire recycling account. It funds most of the grants for solid and moderate risk waste activities, ranging from household hazardous waste collection events to landfill closures. The consolidated program also reduces the grant management oversight needed to properly administer the programs.

The new structure encourages local governments to work together, examining their waste management needs and deciding what activities they will propose for grant funding. Ecology allocates the available funds for county-wide areas, using a formula based on a fixed amount per county plus a certain amount per capita. Grant recipients must provide a cash match of at least

[1] This figure reflects Ecology's transition during 1992 into the Coordinated Prevention Grants structure. It includes all grants awarded in Fiscal Year 1992 (July 1, 1991 - June 30, 1992) and the majority of Coordinated Prevention Grants awarded in the first cycle (January 1, 1992 - December 31, 1993).

25 to 40% of the total eligible costs of their projects.

**SOURCES OF GRANT FUNDING**

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

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

**Solid Waste Management Account**, funded by a surcharge on garbage collection.

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

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

The CPG program coordinates with local governments budgeting cycles by basing its operating cycle on calendar years, rather than Fiscal Years. Each full cycle of grant awards is for two years.

The first two-year cycle of Coordinated Prevention Grants began January 1992, and ended December 1993. During this time, Ecology awarded $29,706,481 in grants to local governments to support $48,802,866 worth of solid and moderate risk waste projects. The majority of the money funded waste reduction and recycling, and household hazardous waste activities. Approximately one-fifth is used to close inactive landfills to meet state standards.

As an example, Benton County and the Benton/Franklin District Health Department used their $437,003 grant package to:

- Help residents reduce the amount and hazardous nature of the waste they produce, and recycle as much as possible;
- Began developing a permanent facility where residents can safely dispose of household hazardous waste, and conduct collection events throughout the county;
- Inspect landfills, a transfer station and sludge utilization sites;
- Investigate complaints of illegal dumping and other violations of solid waste laws and ordinances.

The City of Longview used its $116,748 grant for curbside collection of aluminum, glass, tin, newspapers, magazines and plastics from 12,560 households. The grant also supported a campaign to make residents aware of recycling opportunities and ways to reduce the amount of waste generated, and a collection system to obtain data needed for the city to evaluate the effectiveness of the curbside collection program.

Twelve communities have received grants totalling $5,331,150 to assist with the proper closure of their municipal solid waste landfills. Ecology has allocated $6,000,000 for the 1994-95 CPG funding cycle for additional landfill closure project.

## Composting Study Grants

In 1993, work continued on the compost study projects that were funded by the Solid Waste Management Account in 1990. The city of Spokane completed its study project and published the final report in September 1992. The city collected 10,000 tons of yard and garden debris for composting, much of it from the fall 1991 leaf pick-up. Laboratory tests showed that source ingredients and the final compost products were of high quality, similar to many commercial soil amendments. It compared favorably in growth trials to a product used for many years in the city park greenhouses.

The project assessed markets for compost and found strong interest from retail and wholesale consumers for many uses of compost. According to the survey, the highest demand for compost in the next few years should come from commercial landscapers and homeowners using it as a soil conditioner. The project found that Spokane residents support composting because it helps reduce solid waste disposal costs, results in a useful product, and is beneficial to the environment. Surveys showed high public awareness of composting due to the project's information program, which included a demonstration site of home composting and a master composter program of volunteers showing the public how to compost.

Snohomish County's Compost Market Development project focused on the benefits of small-scale "backyard" composting, educating people on how to compost their own yard waste and using the resulting product themselves. The county will soon publish its final report.

Three other compost study projects, in Seattle and King County, will be completed during the next three years.

## Waste Reduction & Recycling Public Information & Education Program (WRRPIE)

The 1989 Waste Not Washington Act (chapter 70.95 RCW amendment), mandated that Ecology develop a statewide waste reduction and recycling public education campaign and provide a toll-free information hotline, and assist local governments in carrying out their education efforts.

Ecology in 1990, developed a grant program to assist local governments in the implementation or further development of their waste reduction education programs. The grant program required local governments to apply for funding and provide a 25-50% match.

These grants were used to implement the 1990 WRRPIE Program developed, which focused on reducing waste through smart shopping. It included a mass media campaign, a manual and catalog of educational programs and materials, added waste reduction information to 1-800-RECYCLE, and provided technical assistance to local governments.

In response to suggestions for improving the previous WRRPIE Program, Ecology worked with local governments to develop a new program for 1992-93. Using information received from local governments through surveys, discussions at regional meetings held around the state, and day to day contact with local staff, the program was restructured to better meet local needs.

The WRRPIE Program was redesigned to offer a wide variety of educational goods and services, without requiring any grant applications or matching funds. To accomplish this, local allocations were established in accounts at Ecology. Local governments used their account to purchase items from a menu of goods and services focusing on three areas: general waste reduction education, household toxics reduction education, and composting education.

The wide variety of resources available through a menu approach allowed local programs to choose items or services to fulfill their specific needs. Ecology purchased educational materials and services for local agencies statewide. This not only took the burden of procurement for education program needs off of local staff, but also reduced costs substantially. The following outline shows the menu options that were available to local government:

- *Existing Waste Reduction Materials* - Reprints or duplications of existing or newly developed materials such as videos and publications developed by local and state governments and non-profit groups, shared statewide. These materials were customized to included locally specific information such as phone numbers and logos.

- *Demonstration and Promotional Items* - These included giveaway items such as canvas shopping or lunch bags with local logos and waste reduction messages (over 27,000 were provided statewide), demonstration and teaching aids such as composting bins, and paper making kits, and audio-visual equipment such as slide projectors or VCR's.

- *Training Opportunities* - Training opportunities for county/city staff or residents included master composter training, hazard free home training and smart shopper training.

- *Mailing and Media* - Local governments were able to use their allocation to pay for mailing waste reduction materials, for purchasing space for advertising educational programs, or for increasing public awareness through newspapers, on buses and billboards, and on TV and radio.

- *Cooperative Regional Projects* - Other cooperative programs were proposed by local governments and funded through the WRRPIE Program. Six Puget Sound area counties and three cities worked together with Ecology to develop the KCPQ-TV Kids Club Program. This 9-month project used an existing kids television program with an established audience of 8,000 Kids Club members to teach about waste reduction, household toxics reduction and backyard composting.

- *New Education Campaign Materials* - An educational media campaign was developed in cooperation with local governments which focused on general waste reduction, household toxics reduction, and backyard composting. Materials developed as part of this campaign included, three interactive displays, two videos, radio and TV PSAs, waste reduction clip art, and newspaper, billboard and transit ads. Local allocations were used to duplicate the videos, displays and clip art for use statewide. Ecology and local governments worked in concert to place the media campaign elements in October 1993. Ecology placed billboard and transit ads, and radio and TV PSA's using the 1-800-RECYCLE number, and local governments placed newspaper ads which provided local contact points.

A crucial part of the program was ongoing local involvement. The input and support of the people who were using the materials developed was a key factor in the program's success. Local governments helped Ecology design the structure and helped select the specific goods and services made available on the WRRPIE Menu.

Through this cooperative effort Ecology and local governments developed a media campaign which raised public awareness of the need to reduce waste and provided an avenue for further information. Other elements of the program helped equip local governments to provide more information in various ways. Thus, WRRPIE is an example of state and local government working together in a way that uses resources directly while providing education programs that reach Washington residents more effectively. Unfortunately, funding was not available to continue this program in 1994.

## Capital Costs, Demonstration Projects, and Pre-Implementation Grants

In 1992, Ecology made $12 million in grants available from the Referenda 26 and 39 accounts for solid waste reduction and recycling equipment and facilities. Five local governments have so far availed themselves of $1,302,140 in assistance. The funds are available through 1995. These capital cost grants are considered Phase 2 of the Referenda 26/39 waste reduction and recycling grant program. Phase 1, in 1989, provided $4 million in grants for demonstration and pre-implementation projects. This gave local governments the opportunity to try out recycling collection options and to research and design regional recycling systems. Some finished their Phase 1 projects and filed final reports during 1992.

As an example of grant uses, Clark County wanted to design a recycling program to serve residents of the Vancouver municipal area as well as people living in the more rural northern and eastern areas of the county. The county used an $88,644 Phase 1 grant to help design a comprehensive curbside collection program for the entire county, one that could possibly increase the municipal recycling rate to 56%. The program design included:

- Urban and rural residential recycling
- Commercial, industrial and institutional waste generators
- Yard waste management
- Education programs

Island County, with its limited land area and vulnerable aquifer, must haul all solid waste to mainland landfills. Naturally, the county wants to reduce its waste volume. A $213,780 Phase 2 grant will help the county build a yard waste composting facility and storage sheds for recycled materials, and to buy a drop box with a compactor for cardboard.

## *CONTRACTS TO THE PRIVATE SECTOR*

### Tire Pile Cleanup Contracts

In 1989, the Legislature established a one-dollar-per-tire fee on the retail sale of new vehicle tires. This funding source was to be used to clean up existing unauthorized tire piles around the state. Over three million tires were cleaned up by October 1992. During Fiscal Year 1993, Ecology awarded $1,726,248 in contracts from the Vehicle Tire Recycling Account to clean up additional unauthorized tire piles and contractors removed over 1.6 million tires. Many of these tires will become fuel for cement plants and pulp mills. Others will be retreaded, made into marine bumpers, or shredded or pulverized for use in road projects.

In 1993, the last major Thurston County pile of 600,000 tires was cleaned up. The Department of Transportation used the tire shreds as fill under pavement for a major construction project.

There are five unauthorized tire piles, about eight million tires, remaining from the original list. There are sufficient funds available to deal with all five sites. Four of the sites are in Spokane County, the other is in Pierce County. Cleanup of the last major pile (1.6 million tires) in Pierce County should begin in early 1994. Cleanup of the largest piles in Spokane County could begin in Spring 1994.

The tire fee is scheduled to expire October 1, 1994. Ecology will have sufficient funds in the dedicated tire account to complete cleanup of tire sites on the original list, but cleanup of future tire sites will be the responsibility of local government and site owners. Any residual funding may be used for enforcement and education grants to local agencies.

## *GRANTS TO CITIZENS*

### Public Participation

Ecology also provides small grants, called Public Participation Grants, to citizen groups whose projects help implement the state's priorities of waste reduction and recycling. One group, the Community Services Work Group in the Chelan Valley, used a $10,000 grant for composting programs for orchards and homes and an English-Spanish information campaign on waste reduction. Metrocenter YMCA used a $43,660 grant to continue its "Hazard Free Home" program. This program targets hazardous household products, training volunteers and providing materials to teach people about safer alternatives and the best ways to use, store and dispose of the hazardous items.

## *OTHER INNOVATIONS*

Ecology is a member of the Infrastructure Assistance Coordinating Council, an ad hoc committee of state and federal agencies that assist local governments with their infrastructure needs. This was formerly called the Intergovernmental Public Facilities Finance Committee. The Council is studying how it can match available programs to a local government's needs through an on-site consultation by a team of agency representatives tailored to the community's situation. The council plans a pilot program for the fall of 1993, with the ongoing program to begin in early 1994.

Ecology continues to examine its grant process to find ways to streamline service delivery. This "grants streamlining effort" was the subject of a report sent to the Legislature in December 1993. Work will continue in this area during the coming year.

## *CHAPTER IV*

# *WASTE REDUCTION IN WASHINGTON*

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

**SOLID WASTE MANAGEMENT PRIORITIES**
*chapter 70.95 RCW*

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

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

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

## *LOCAL GOVERNMENT EFFORTS FOR WASTE REDUCTION*

Local governments in their local comprehensive solid waste management plans must address how they will contribute to reaching the states' 50% waste reduction and recycling goal, discuss options for waste reduction, make recommendations for waste reduction programs for residential and commercial sectors, and include an educational component. Local governments also address how they will measure waste reduction.

Some of the local government options for waste reduction include:

1. Public awareness education, such as encouraging consumers to use secondhand, rental and repair businesses, and bulk buying.

2. School curricula that encourage waste reduction.

3. Commercial, retail and industrial education and technical assistance.

4. Variable garbage can rates that impose extra fees for additional cans.

5. Procurement standards for durability, recyclability, reusability and recycled material content.

6. On-site composting, including education, technical assistance and demonstration projects.

7. Product or product packaging reduction programs.

8. Container product or packaging deposits.

9. Product use and reuse standards.

10. Support of state and/or federal programs that promote waste reduction.

11. Waste exchanges.

12. In-house programs, such as employee education, increased use of scrap paper, increased use of electronic mail, increased double-sided copying and printing, cloth towels or electric hand dryers in restrooms, and decreased use of nonrecyclable paper,

13. Awards and other forms of public recognition.

Local governments have implemented waste reduction by providing bins to encourage backyard composting, by offering Master Composting courses, and by sponsoring educational campaigns. Materials exchange facilities and services provide opportunities for reuse to a wide audience. "Shop Smart" tours and classes, and business audits also provide information and methods for accomplishing waste reduction.

Ecology has provided technical assistance to local governments, the public and the private sector by assisting with the development of local solid waste plans, working with local recycling coordinators to share information, organizing media share meetings, training teachers to use the "A-Way-with-Waste" curriculum, conducting statewide educational campaigns, helping local governments conduct waste audits and education events, training local residents and moderate risk waste coordinators to conduct waste audits, recruiting and training Senior Environmental Corps volunteers to work on local government programs and providing brochures, posters and displays.

## *STATE GOVERNMENT EFFORTS FOR WASTE REDUCTION*

In 1993, Ecology developed waste reduction strategies for three target waste streams: paper from the commercial sector, organics, and construction, demolition and landclearing debris. The *1992 Washington State Waste Characterization Study*[1] conducted in 1992 and 1993 showed that each of these waste streams continued to be a significant portion of the total waste generated and disposed in the state. These strategies will focus appropriate Ecology resources to minimize the amount of these wastes generated. Each waste stream is briefly discussed below, and the proposed strategies which Ecology is currently implementing are outlined.

### Paper from the Commercial Sector

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

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

For commercial establishments, 64% of the generated paper was comprised of corrugated paper, computer paper, office paper, and mixed recyclable paper (including telephone books, magazines and colored paper). The strategies for waste reduction and recycling target these largest segments of the commercial paper stream by:

- Providing direct technical assistance to businesses, local governments, state agencies and schools. The technical assistance will consist of on-site waste audits, promotion of waste reduction methods available to business, and education about paper recycling techniques that emphasize source separation of paper streams by providing a high-value commodity, and options for collection of recyclables.

[1] *1992 Washington State Waste Characterization Study*, Volume 1: Executive Summary, July 1993, Solid Waste Services Programs, Department of Ecology, Publication #93-45.

- Preparing "Model Program" packets outlining successful paper waste reduction and recycling efforts from businesses and government agencies.

- Coordinating between state and local government staff, paper collectors and recyclers to enhance diversion of high grade paper, such as computer paper.

- Developing a system for collecting recyclable paper from small generators.

## Organics

The *1992 Washington State Waste Characterization Study* indicated that 24% of the solid waste disposed in Washington was organics, composed of food, yard wastes and other organics. "Food" is defined as food preparation waste, food scraps, and spoiled food. "Yard wastes" includes grass clippings, leaves, tree pruning, and weeds. "Other organics" are defined as cork, soap, wax, animal feces, hair and leather goods.

Since the last waste characterization study in 1987[2], statewide yard waste disposal to landfills has decreased from about 18% to 8% of the organic waste stream. Food waste, however, has increased from 9% to 12% as a portion of the organics waste stream. In eastern Washington, yard waste still makes up more of the organics waste stream than food waste. In addition, burning restrictions implemented in 1993 for air quality protection are likely to increase the amount of yard waste disposed in municipal solid waste facilities if alternatives are not developed quickly.

The generators targeted for the waste reduction strategies for organics include residential sources, restaurants, groceries and educational facilities. One of the main methods for dealing with increased amount of organic waste from the targeted generators is composting. In order to have adequate means of handling the organics, the following strategies are being pursued:

- Clarifying water quality requirements for compost facilities and compost utilization.

- Promoting research to test for the existence of organic compounds in compost products, monitor possible exposure risks related to the use of compost and develop appropriate measures for pathogens.

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[2] **Best Management Practices Analysis for Solid Waste, Statewide Findings and Recommendations**, Volume III, prepared by the Matrix Management Groups, R. W. Beck and Associates and Resource Conservation Consultants, January, 1989, Publication No. 88-33C.

- Maintaining staff technical support to assist health departments, facility operators, Ecology staff and other interested parties with compost issues.

- Compiling information from the compost study grants to summarize the results of yard waste testing, marketing projects and food waste composting projects. The final report is due in June 1995.

## Construction, Demolition and Landclearing Debris

Construction, demolition and landclearing (CDL) debris is the term commonly used to define the waste stream generated from various site preparation, building and demolition services. The *1992 Washington State Waste Characterization Study* estimated CDL at approximately 13-17% of the total waste stream.

CDL wastes are regulated differently, even though they are frequently referred to as one mixed solid waste stream. Part of this inconsistency arises from imprecise definition in state standards and is more a reflection of the manner in which the materials are generated, rather than how they are managed or disposed.

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

Ecology's strategies will target builders, contractors, salvage operators, demolition operators, lenders, realtors and others. One of the objectives of the strategies is to increase waste reduction, through reuse and composting, and recycling of construction and demolition waste and landclearing debris. The following strategies are planned:

- Assisting local governments to develop and implement an integrated CDL waste reduction and recycling program.

- Increasing waste reduction through reuse and salvage at demolition sites; reuse, waste reduction and recycling at construction, remodeling and demolition sites; and reuse and composting of landclearing debris.

- Educating target audience about waste reduction, reuse and recycling/composting options and alternatives.

- Working with industry to consider conservation in construction, demolition and landclearing.

## *CHAPTER V*

# *RECYCLING IN WASHINGTON*

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

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

### *RECYCLING RATES*

Each year since 1987, Ecology has conducted a recycling survey with information provided by local governments, haulers, recyclers, brokers and other handlers of recyclable materials on the

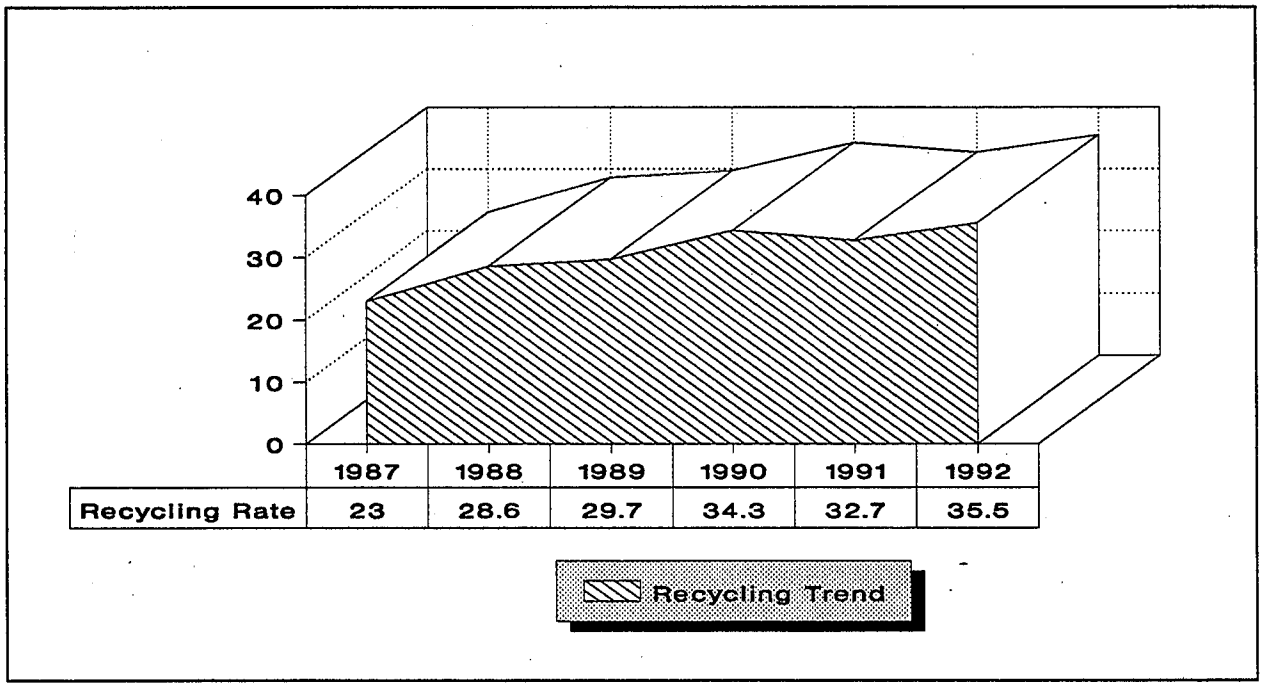


**TABLE 5.1:** ***RECYCLING TRENDS***

amount of materials from the recyclable portion of the waste stream that are collected for recycling.[1] Refinements of methodologies over the years do not make the results directly comparable, but for an assessment of the trends in recycling.

Since 1987 to 1992, the statewide recycling rate has increased from 23% to 35.5%.[2] As can be seen in Table 5.1, this increase has been fairly steady, with a slight dip in 1991.[3] While the overall statewide recycling rate of 35.5% is still below the 1995 target of 50% recycling, several commodity categories show even better rates (Table 5.2). Categories that exceeded 50% include:

- Ferrous metals at 81%
- Nonferrous metals at 77%
- Corrugated paper at 62%
- Newspapers at 58%
- High grade paper at 58%

Solid waste streams that need improvement in recycling include paper from the commercial sector, and food and yard wastes. These waste streams are the target of Ecology's waste reduction and recycling efforts for 1994, as discussed above. Increases in the recycling of construction and demolition debris should also result from the implementation of the waste reduction/recycling strategies.

There are problems in obtaining all of the information needed to prepare a complete and accurate recycling survey. Recycling survey forms are sent to recycling firms and haulers to obtain information about types, quantities, sources and destinations of recyclable materials. However, since there is no penalty for not returning the information, some firms choose not to respond. Others, because they want to protect the confidentiality of who they sell their materials to (although Ecology holds the information confidential), send in incomplete data which can be unusable.

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

[2] *1992 Washington State Recycling Survey*, Solid Waste Services Program, Department of Ecology, Publication 93-102.

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

## TABLE 5.2: SUMMARY OF RECYCLED MATERIALS COLLECTED IN WASHINGTON STATE - 1992

| COMMODITY CATEGORY | PRODUCT | AMOUNT GENERATED | TONS RECYCLED | 1992 RECYCLING RATE |
|---|---|---|---|---|
| PAPER PRODUCTS | Newspapers | 375,929 | 219,227 | 58% |
| | Corrugated Paper | 755,307 | 468,317 | 62% |
| | High Grade Paper | 137,512 | 79,574 | 58% |
| | Mixed Waste Paper | 508,428 | 160,211 | 32% |
| METALS | Aluminum Cans | 42,719 | 18,732 | 44% |
| | Tin Cans | 74,287 | 16,720 | 23% |
| | Ferrous Metals | 820,638 | 662,818 | 81% |
| | Nonferrous Metals | 74,866 | 57,284 | 77% |
| WHITE GOODS | | 132,195 | 126,540 | 96% |
| GLASS | Refillable Bottles | 3,094 | 492 | 16% |
| | Container Glass | 205,565 | 55,629 | 27% |
| PLASTICS | PET Bottles | 15,718 | 1,762 | 11% |
| | HDPE Plastics | 30,933 | 2,437 | 8% |
| | LDPE Plastics | 7,473 | 6,210 | na |
| | Other Plastics | na | 396 | na |
| VEHICLE BATTERIES | | na | 19,604 | na |
| TIRES | | na | 12,784 | na |
| USED OIL | | na | 1,845 | na |
| ASSORTED RECYCLABLES | Yard Waste | 461,301 | 157,673 | na |
| | Food Waste | 502,675 | 38,624 | na |
| | Wood Waste | na | 30,181 | na |
| | Photographic Films | na | 9* | na |
| | Gypsum | 31,981 | 3,605 | 11% |
| | Assorted Rubber | na | 20 | na |
| | Assorted Textiles | na | 10,061 | na |
| TOTAL | | 6,096,043 | 2,150,756 | 35.3 |

## *RECYCLING EFFORTS BY THE STATE*

### Recycling Information Line

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

| INFORMATION LINES 1992 TOTAL CALLS | |
|---|---|
| *1-800-RECYCLE* | **116,527** |
| *1-800-LITTERS* | **2,837** |
| *BUSINESS ASSISTANCE* | **3,276** |

In the past, the Hotline offered assistance to businesses through the Business Technical Assistance portion of the information line. Local governments have now increased their efforts to assist the business sector and calls now received by the information line are referred to the appropriate local government. Because the need has decreased for the business assistance, Ecology has reallocated that resource to the regional offices to better provide direct technical assistance.

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

### Ecology Youth Corps

The summer of 1993 was the 15th year that the Ecology Youth Corps (EYC) conducted summer litter pick up as provided for chapter 70.93 RCW, *Waste Reduction, Recycling and Model Litter Control Act.* In a two-month sweep, EYC crews cleaned 2,649 miles of roadway, bagging 142 tons (18,876 bags) of litter and recycling 16.3 tons of glass, aluminum and other metals.

Another 3.3 tons (438 bags) of litter was collected from state parks, rest areas, sportsman access areas and beaches as part of a joint program with the Department of Wildlife to clean water access sites in Thurston, Mason, Grays Harbor and Pierce counties in western Washington, and Grant, Franklin, Adams, Whitman and Asotin counties in eastern Washington.

### State Agency and Institution Waste Reduction and Recycling

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

Ecology's role is to help state facilities write and implement their G.O.L.D. plans. GA's role is to track the progress state facilities have made in waste reduction and recycling. Sixty-two (62) of the 90 state facilities submitted a G.O.L.D. plan to Ecology, and during the reporting period of July 1, 1992 to June 30, 1993, half of the state agencies reported a combined 44.4% recycling rate.

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

### A-Way With Waste Curriculum

The *A-Way With Waste* curriculum, first developed in 1985, is a K-12 multi-disciplinary classroom activity guide that includes lessons on waste reduction, recycling, landfilling, incineration, litter control, hazardous waste management and household hazardous wastes. Each year, teachers can attend a one day training session on the use of the curriculum. In 1992 and 1993, 1,364 teachers attended the sessions.

In 1993, the *Journal of Environmental Education* evaluated major waste management curricula in the country, including *A-Way With Waste*. Several states around the country have requested authorization to use the *A-Way With Waste* curriculum in their schools.

## *RECOGNIZING WASTE REDUCTION AND RECYCLING EFFORTS*

### School Awards Program

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

All K-12 public schools are eligible to apply. A team of judges scored the applications, and finalist schools are visited. Awards are provided on the basis of waste reduction and recycling

methods, education, training, purchasing practices and innovative features. Table 5.3 lists the 1992-1993 award winners.

Cashmere Middle School won the *Best Recycling Program Award* by recycling 51,200 pounds of material in the first six months of the school year, including 33,000 pounds of newsprint, 7,500 pounds of magazines, 4,900 pounds of cardboard, 2,500 pounds of glass and 2,275 pounds of aluminum. White paper and plastics were also recycled. The 51,200 pounds averaged 118 pounds for each student.

Tillicum Middle School won the *Best Waste Reduction Program Award* by replacing throw-away cups with a set of 190 reusable plastic cups made of recycled plastic, reusing cardboard boxes for storage, using both sides of paper, giving unclaimed clothing to the Goodwill or the Salvation Army, sponsoring a paperless day in the classrooms, and developing two prototype reusable aluminum pizza delivery boxes from recycled aluminum cans.

Recycling statistics compiled from schools that applied for the *Best Recycling Award* show that the schools recycle an average of 16,571 pounds of materials in the six-month recording period.

Senior high schools averaged 21,926 pounds of materials recycled or 29.8 pounds per student. Students recycled 7.1 pounds of white paper, 19 pounds of mixed paper, 1.0 pound of aluminum and 1.1 pounds of other metals and 1.4 pounds of glass. They also recycled plastics, motor oil, wire and miscellaneous items.

Middle/junior high students recycled an average of 25,501 pounds per school or 46 pounds per student, of which 2.3 pounds were white paper, 2.1 pounds were aluminum and 3.6 pounds were other metals. Most of the remaining recyclable material was mixed paper.

Elementary schools recycled an average 7,419 pounds of materials or 17 pounds per student. Paper was about 83% of the recyclables in elementary schools, with an average of 14 pounds per student. Aluminum was recycled at a rate of 1 pound per student. Steel cans, plastics, and glass were also recycled at the elementary level.

Senior high students averaged 0.25 pounds per student per day. Middle school and junior high school students averaged 0.38 pounds per student per day. Elementary school students averaged 0.14 pounds recycled per day.

**TABLE 5.3: *1992 - 1993 SCHOOL AWARDS***

| AWARD | SCHOOL | LOCATION | AMOUNT |
|---|---|---|---|
| **BEST WASTE REDUCTION** | Tillicum Middle School | Bellevue | $5,000 |
| **BEST RECYCLING PROGRAM** | Cashmere Middle School | Cashmere | $5,000 |
| **OUTSTANDING WASTE REDUCTION & RECYCLING PROGRAM**[4] | Whittier Elementary School | Seattle | $2,000 |
| | Spiritridge Elementary School | Bellevue | $2,000 |
| | Rainier Valley Elementary School | Auburn | $2,000 |
| | Excel at Stevens Elementary School | Seattle | $2,000 |
| | Riverside Elementary School | Chattaroy | $2,000 |
| | Illahee Junior High | Federal Way | $2,000 |
| | Lewis and Clark Middle School | Yakima | $2,000 |
| | Horizon Junior High | Spokane | $2,000 |
| | McLoughlin Middle School | Vancouver | $2,000 |
| | Riverside Middle School | Chattaroy | $2,000 |
| | Woodland High School | Woodland | $2,000 |
| | Sumner High School | Sumner | $2,000 |
| | Eisenhower High School | Yakima | $2,000 |
| | Ocosta High School | Westport | $2,000 |
| | Cle Elum-Roslyn High School | Cle Elum | $2,000 |

## Waste Reduction and Recycling Awards

Each year, Ecology presents Waste Reduction and Recycling Awards at the Washington state Recycling Association Conference. These awards recognize a wide variety of programs being instituted by state and local governments, the private sector, non-profit groups and individuals, that show a commitment to finding ways to reduce waste or recycle material. Table 5.4 lists the award winners for 1992.

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

**TABLE 5.4: 1993 WASTE REDUCTION & RECYCLING AWARDS**

| 1993 WINNERS | | |
|---|---|---|
| CATEGORY | BUSINESS / ENTITY | ACCOMPLISHMENT |
| **BEST INDUSTRY PROGRAM** | *Household Hazardous Waste Services*<br>**BURLINGTON ENVIRONMENTAL INC.** | Reprocess latex paint discards at household hazardous waste collection centers to meet industry standards and compete in new product marketplace. Paint cans sent for detinning and metals recycling. |
| **BEST WASTE REDUCTION PROGRAM** | *Holiday Waste Reduction Program*<br>**KING COUNTY SOLID WASTE DIVISION** | Project informed and educated King County residents on tips for waste reduction during the holidays, hoping they would continue in the future. Designed to reduce the peak waste level that comes during the holidays. |
| **BEST PUBLIC INFORMATION & EDUCATION PROGRAM** | *Household Recycling and Waste Reduction Education Program*<br>**KING COUNTY SOLID WASTE DIVISION SERVICES OF BELLINGHAM** | Used radio and bus billboards, in addition to brochures and newsletters, to tell residents the benefits of the yard waste program and how to tell if a plastic is recyclable. |
| **BEST MULTI-FAMILY PROGRAM** | *Navy Whidbey Recycle*<br>**NAVAL AIR STATION WHIDBEY ISLAND, PUBLIC WORKS DEPARTMENT** | Achieved 100% participation in waste reduction recycling program. Wastes recycled have increased from 4% in 1990, to 30% in 1992. Income from the sale of recyclables purchases recreation and entertainment equipment for community use at the base. |
| **BEST BUSINESS / COMMERCIAL PROGRAM** | *Waste reduction, Re-use and Recycling*<br>**STORMANS, INC. GROCERY STORES** | Waste reduction, re-use and recycling activities began in-house and extend out to customers. Staff work with community groups, local government and other businesses to increase waste awareness and recycling opportunities in the Olympia area. Also buy a wide range of recycled products. |
| **MOST INNOVATIVE PROGRAM** | *Arts and Crafts Supply Store*<br>**THE CREATION STATION** | Takes clean batches of discards from Puget Sound manufacturers and creates the ultimate arts and craft supply store. |
| **BEST SMALL GOVERNMENT** | *Waste Reduction and Recycling Program*<br>**SAN JUAN COUNTY SOLID WASTE DIVISION** | Three recycling centers at maximum capacity, an aggressive public information campaign reduces household and small business hazardous waste and an "Exchange" provides re-use life extension for discards. |
| **BEST LARGE GOVERNMENT** | *Waste Reduction and Recycling Program*<br>**WHATCOM COUNTY** | Comprehensive collection system accepts numerous types of recyclable material from households and businesses. System emphasizes choice and convenience. Highest recycling rate in state at 42%, and a 4% reduction in waste generation. |
| **BEST PUBLIC/PRIVATE MEDIA COVERAGE OF RECYCLING ACTIVITIES** | *KCPQ-TV*<br>**KELLY TELEVISION COMPANY** | KCPQ-TV and Q 13 Kids Club share information concerning environmental issues with viewers as part of an ongoing effort to educate and inform kids about the problems affecting our planet and how to solve them. - |
| **HONORABLE MENTION** | *Blakely Island Recycling Depository*<br>**Blakely Island Maintenance Commission** | An island with no ferry service keeps discards from becoming waste by 95% of residents using the "Bird" (Blakely Island Recycling Depository). Materials are baled, compacted and stored up to one year before shipping to the mainland. Mixed solid waste hauls from the island have decreased 65% since the facility began operation. |

*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 in the state. This includes waste that moves into the state for disposal, as well as waste that is exported for disposal.

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

As part of the annual reporting requirements of the MFS, in January 1992, forms were sent to the various types of landfills (except for ash monofills) for them to report the types and quantities of waste they received for disposal. The categories of solid waste specified on the form were municipal, demolition, inert, commercial, wood waste, sewage sludge, asbestos, petroleum contaminated soils and other. The information provided below is from the landfill reports.

## *MUNICIPAL SOLID WASTE LANDFILLS*

### Amount of Waste Disposed in Municipal Solid Waste Landfills

In 1992, 42 municipal solid waste landfills accepted waste totaling 3,560,738 tons. Of the 42 landfills, 36 were publicly owned, and six were privately owned. Three landfills, all privately owned, that had accepted waste in 1991, did not accept waste in 1992.

In analyzing the size of the MSW landfills it was found that of the 42, eight received over 100,000 tons of waste in 1992, while 12 received less than 10,000 tons. Five of the largest landfills and all of the smaller landfills are publicly owned.

Table 6.1 depicts the relationship of waste disposed to public/private ownership. As the table illustrates, 2,051,475 tons of solid waste disposed went to publicly owned facilities (58%), with the remaining 1,509,264 tons going to private facilities (42%). Ninety-two percent of the waste was disposed in permitted MSW landfills, with 8% going to unpermitted facilities. Five of the 12 unpermitted, noncomplying landfills will have closed by April 1994.[1]

The amount of solid waste disposed in the 42 MSW landfills decreased from the 1991 amounts, but this does not necessarily represent a decrease in the total amount of waste disposed. Other

[1] One additional unpermitted MSW landfill has indicated it will close in 1994.

| OWNER-SHIP | NUMBER OF LANDILLS | | AMOUNT OF WASTE DISPOSED | | % TOTAL WASTE DISPOSED | |
|---|---|---|---|---|---|---|
| | 91 | 92 | 91 | 92 | 91 | 92 |
| PUBLIC | 36 | 36 | 2,704,191 | 2,051,475 | 69 | 58 |
| PRIVATE | 9 | 6 | 1,205,946 | 1,509,264 | 31 | 42 |
| TOTAL | 45 | 42 | 3,910,137 | 3,560,738 | 100 | 100 |

**TABLE 6.1:** ***TOTAL WASTE DISPOSED IN MSW LANDFILLS***

waste disposal options, such as exporting to Oregon and waste-to-energy incineration account for much of the difference.

The trend that is seen from the ownership of facilities is that although the number of private facilities has decreased by three, the amount of waste disposed in the private facilities has increased by 11% since 1991.

The majority of this increased amount can be accounted for by the Roosevelt Regional Landfill in Klickitat County and Hidden Valley Landfill in Pierce County.

## 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.[2] Annual reports show that a much wider variety of waste is disposed of in the MSW landfills. These wastes need to be considered in terms of remaining available capacity. Eleven of the 42 landfills reported a significant amount of solid waste disposed, other than municipal solid waste. Demolition, industrial, commercial and woodwaste were the major waste streams. Table 6.2 summarizes the types and amount of waste disposed of in 1991 and 1992 in MSW landfills. In examining the types of waste that were disposed in the MSW landfills in 1992, there was a decrease in municipal solid waste and increased amounts noted for demolition waste, wood waste, sewage sludge, asbestos and petroleum contaminated soils. Part of the difference could be a result of better reporting of individual waste streams by the facilities. The majority of the increased amounts were associated with the Roosevelt Regional Landfill in Klickitat County.

Of these increased amounts of solid waste, sewage sludge was the only waste where the increase was significantly from out-of-state. For petroleum-contaminated soils, only about 6% of the

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

**TABLE 6.2:** ***WASTE TYPES REPORTED DISPOSED IN MUNICIPAL SOLID WASTE LANDFILLS***

| WASTE TYPES | 1991 | 1992 |
|---|---|---|
| *Municipal Solid Waste** | 3,211,857 | 2,694,800 |
| *Demolition Waste* | 191,518 | 250,144 |
| *Industrial Waste* | 189,908 | 101,607 |
| *Inert Waste* | 2,023 | 1,027 |
| *Commercial Waste* | 157,862 | 143,466 |
| *Woodwaste* | 39,184 | 60,523 |
| *Sewage Sludge* | 42,618 | 64,311 |
| *Asbestos* | 3,931 | 8,247 |
| *Petroleum-Contaminated Soils* | 66,879 | 224,560 |
| *Other*** | 4,357 | 12,053 |
| TOTAL | 3,910,137 | 3,560,738 |

* *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 tires, yard waste, ash, medical waste, and white goods.*

increased disposal amount originated from other states. The remaining increased wastes were all generated in Washington and sent to the Roosevelt Regional Landfill for disposal.

## *MOVEMENT OF MUNICIPAL SOLID WASTE*

### Movement of Waste Between Counties

MSW landfills were asked to report the source, types and amounts of waste they received from out-of-county, if they received any. Twenty of the 42 active MSW landfills reported receiving waste from other counties in 1992.

Most of this waste movement was because of closer proximity to neighboring landfill, although some counties are looking at other locations for their waste disposal. Three of the 20 landfills received waste from other counties through long-haul agreements. One of those, Roosevelt Regional Landfill in Klickitat County, received waste from 22 of the 39 Washington counties, and also from out-of-state.

### Waste Imported from Outside the State

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

received from out-of-state for disposal are included in Table 6.3. Of that amount, 71,860 tons was received from other states by five landfills. Some of this waste, 26,446 tons, was from Idaho and

is considered incidental movement because of the closer proximity of Washington state landfills. In one instance, Asotin County, Washington and Nez Perce County, Idaho, prepared a joint local comprehensive solid waste management plan to meet the requirements of Asotin Washington state statute. The MSW waste from Nez Perce County is currently disposed in the Asotin County landfill.

Roosevelt Regional Landfill in Klickitat County received an additional 29,632 tons of solid waste from British Columbia, for a total of 75,045 tons. The out-of-state waste included 669 tons of municipal solid waste, with the remaining 74,376 tons consisting of petroleum-contaminated soils, asbestos, sludge and woodwaste. For comparison, in 1991, the landfill received a total of 1,655 tons of out-of-state waste (petroleum-contaminated soil, sludge and woodwaste); none of this waste was municipal solid waste. As the Regional Disposal Company (owners of the Roosevelt facility) and other facility owners in the state continue to market their disposal capacity beyond Washington state's borders, the amount of waste received from out-of-state, and out-of-country, will likely continue to increase.

| TYPE OF WASTE | QUANTITY OF WASTE - IN TONS |
|---|---|
| *Municipal Solid Waste* | 27,114 |
| *Petroleum Contaminated Soils* | 12,388 |
| *Asbestos* | 41 |
| *Sludge* | 34,457 |
| *Woodwaste* | 27,492 |
| TOTAL | 101,492 |

TABLE 6.3: *OUT-OF-STATE WASTE DISPOSED IN WASHINGTON DURING 1992*

Table 6.4 shows the states that imported the most waste nationwide in 1992. Washington state ranked 15 of the top 22 states.[3]

In response to the increased movement nationwide of waste beyond state borders, the 1993 Washington Legislature passed SHB 1047, an "Act Relating to Solid Waste Received from Outside the State". This act added new sections to chapter 70.95 RCW, the *Solid Waste Management Act.*

[3] Information obtained from CRA Report for Congress, Interstate Shipment of Municipal Solid Waste, James E. McCarthy, Environmental and Natural Resources Policy Division, Congressional Research Service, the Library of Congress, August 17, 1993.

| RANK | STATE | QUANTITY (tons/year) |
|---|---|---|
| #1 | *Pennsylvania* | 3,748,000 |
| #2 | *Indiana* | 1,843,000 |
| #3 | *Ohio* | 1,799,000 |
| #4 | *Virginia* | 1,505,000 |
| #5 | *Illinois* | 1,200,000 |
| #6 | *West Virginia* | 975,000 |
| #7 | *Massachusetts* | 700,000 |
| #7 | *Oregon* | 700,000 |
| #9 | *Kansas* | 632,000 |
| #10 | *New Hampshire* | 400,000 |
| #11 | *Wisconsin* | 352,000 |
| #12 | *New Mexico* | 200,000 |
| #13 | *Maine* | 122,000 |
| #14 | *New York* | 111,000 |
| #15 | *Washington* | 100,000 |
| #16 | *Nebraska* | 78,000 |
| #17 | *Nevada* | 50,000 |
| #18 | *North Dakota* | 40,000 |
| #18 | *Maryland* | 40,000 |
| #20 | *Missouri* | 27,000 |
| #21 | *Kentucky* | 19,000 |
| #22 | *Michigan* | N/A |

TABLE 6.4: *1992 NATIONWIDE IMPORTS OF MSW WASTE*

The act authorized Ecology to require a 60-day notification of shipments to be received from out-of-state by disposal facilities in Washington. It also authorized Ecology to determine if the waste reduction and recycling programs of importing entities are substantially equivalent to those of Washington.

To implement this act, Ecology has prepared *Guidance for Importation of Solid Waste*. This guidance is to be issued for review in draft form in February 1994, and is scheduled to be effective April 1994. This guidance provides reporting forms for solid waste disposal facilities, including MSW landfills, incinerators and ash monofills, and substantially equivalent forms to be completed for all government entities importing more than 1,000 tons of solid waste annually into Washington.

## Waste Exported from the State

Another aspect of waste disposed is the amount that is exported from Washington to another state for disposal. In 1992, exports were limited to Oregon.[4] Nine landfills in Oregon

[4] Idaho Department of Environmental Quality indicated that they were not aware of any Washington waste that was disposed of in Idaho landfills in 1992.

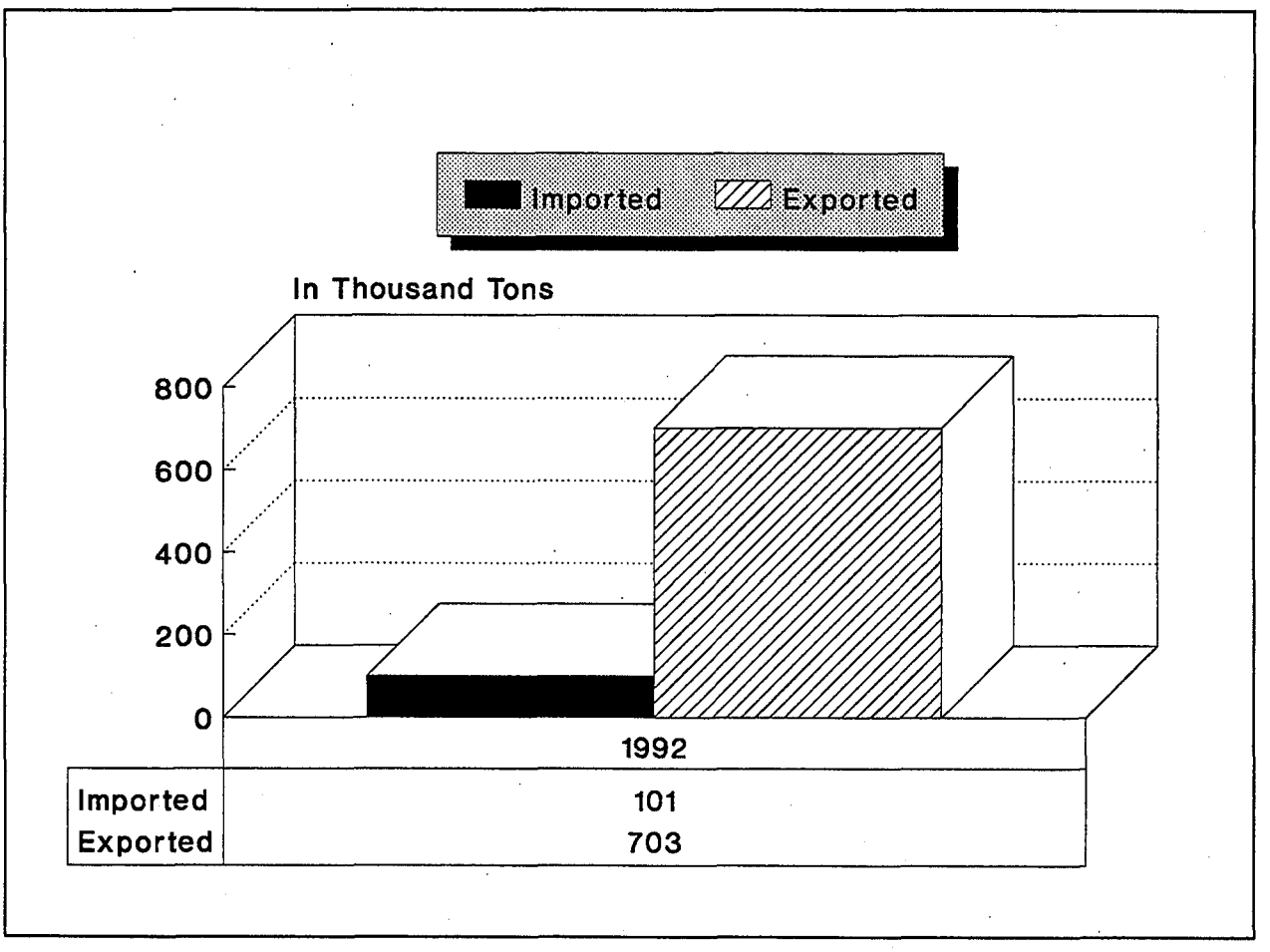


**TABLE 6.5:** ***COMPARISON - WASTE EXPORTED TO WASTE IMPORTED***

for Washington. Although detailed information was not available from all of the landfills, those reporting indicated the majority of waste received from Washington was municipal solid waste, received 705,608 tons of waste from Washington. Table 6.5 shows the comparison of waste exported to waste imported in 1992with some petroleum-contaminated soils and asbestos. Nationally, among waste exporting states, Washington ranks seventh out of 24 states. Table 6.6 shows the states that exported the largest amounts of waste in 1992.

Major exporters of municipal solid waste in Washington included the city of Seattle (438,786 tons), Clark County, Pacific County, Island County, Prosser and Kennewick. Reasons for exportation out-of-state are related to the closure of local landfills, and negotiation of favorable long-haul contracts with Oregon facilities. As more landfills close because of subtitle D, there will likely be an increase of waste movement to large regional landfills in Washington and Oregon.

| RANK | STATE | QUANTITY |
|---|---|---|
| #1 | *New York* | 3,870,000 |
| #2 | *New Jersey* | 1,657,000 |
| #3 | *Illinois* | 1,640,000 |
| #4 | *Ontario, Canada* | 1,430,000 |
| #5 | *Missouri* | 1,200,000 |
| #6 | *Pennsylvania* | 1,000,000 |
| #7 | *Washington* | 700,000 |
| #8 | *District of Columbia* | 600,000 |
| #9 | *Rhode Island* | 550,000 |
| #10 | *Massachusetts* | 300,000 |
| #11 | *Texas* | 230,000 |
| #12 | *Kentucky* | 202,000 |
| #13 | *Delaware* | 182,000 |
| #14 | *Indiana* | 160,000 |
| #15 | *Michigan* | 159,000 |
| #16 | *West Virginia* | 104,000 |
| #17 | *Maine* | 82,000 |
| #18 | *Minnesota* | 71,000 |
| #19 | *Maryland* | 70,000 |
| #20 | *California* | 67,000 |
| #21 | *New Hampshire* | 66,000 |
| #22 | *Ohio* | 30,000 |
| #23 | *Idaho* | 25,000 |
| #24 | *North Dakota* | 9,000 |

TABLE 6.6: *1992 NATIONWIDE EXPORTS OF MSW WASTE*

In 1989, the state of Oregon adopted laws to manage the types and amounts of waste disposed in its landfills; i.e., Oregon Revised Statutes (ORS) 459.055 and ORS 459.305 established requirements for recycling certification and waste reduction programs.

The Oregon Administrative Rules (ORA) Division 91 provides clarification to the statutes. A recycling certification is required when more than 1,000 and less than 75,000 tons of waste per year is received by an Oregon disposal site from a single generator (either within or outside of Oregon) and a waste reduction program is required before acceptance of more than 75,000 tons of waste per year. A surcharge of $2.25 per ton of solid waste imported to the state was also to be charged, but was suspended because of pending Supreme Court action.

## *W A S T E - T O - ENERGY/INCINERATION*

In 1992, there were four waste-to-energy facilities or incinerators that processed municipal solid waste. While annual

reporting forms were not sent to these facilities[5], Ecology did obtain information on the amount of municipal solid waste incinerated and the amount of ash produced.

The four facilities incinerated 466,387 tons of solid waste in 1992. Of that amount, 2,024 tons was identified as medical waste. The facilities produced about 141,865 tons of ash. The amount of solid waste statewide that was incinerated increased from 2% in 1991 to 12% in 1992. The majority of this increase is a result of the Spokane Waste-to-Energy facility operating for a full year in 1992.

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.

Ash from the incinerator in Spokane was disposed in an ash monofill at the Roosevelt Regional Landfill in Klickitat County. The Skagit County incinerator disposed of ash at an on-site monofill. (This monofill will be closing, and the ash will go to the Roosevelt monofill.) One facility in Whatcom County is working with Ecology to determine the proper disposal location for its ash. Another facility in Whatcom County started operations in January 1994. Its ash will be sent to the ash monofill at Roosevelt Regional Landfill.

## *TRENDS IN MUNICIPAL SOLID WASTE DISPOSAL METHODS*

There are two basic ways to dispose of solid waste - landfilling or burning. A comparison of the amount of solid waste disposed in municipal solid waste landfills and waste-to-energy facilities and incinerators in 1991 and 1992 is shown in Table 6.7.

The largest change in disposal methods has been between landfilling and energy recovery/ incineration. In 1991, 98% of the waste was disposed of in MSW landfills and 2% was incinerated. In 1992, this had changed to 88% landfilled and 12% incinerated. There was a slight increase in the amount of solid waste being imported to MSW landfills, from 1% to 2%.

At this time, Ecology reporting only tracks the amount of waste disposed, not the amount generated. The annual recycling survey does determine the amount of waste generated, but only for the "recyclable" portion of the waste stream. What the trends do show, however, is that incineration has become a more significant factor in waste disposal. This trend will likely stabilize over the next few years because the next incinerator to start operation is relatively small

[5] Ecology will be preparing forms for annual reporting by waste-to-energy facilities and incinerators per their permit requirements under chapter 173-304 WAC. This will provide information on the types, amounts, and source of solid waste burned at the facility, amounts of waste bypassed for disposal, location for that disposal, and information about any waste that is composted at the facility. This information will be included in next year's annual status report.

and no new large waste-to-energy facilities or incinerators, or expansions of existing facilities, are currently planned.

| LOCATION | 1991 | | 1992 | |
|---|---|---|---|---|
| | TONS | % | TONS | % |
| *In-state to MSW landfills* | 3,883,482 | 97 | 3,459,247 | 86 |
| *Imported to MSW landfills* | 26,655 | 1 | 101,491 | 2 |
| *Incinerated* | 78,200 | 2 | 466,387 | 12 |
| TOTAL | 3,988,337 | 100 | 4,027,125 | 100 |

TABLE 6.7: *SOLID WASTE DISPOSED IN 1992*

### *INERT/DEMOLITION, LIMITED PURPOSE AND WOODWASTE LANDFILLS*

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

In January 1993, Ecology sent annual reporting forms to a list it developed of these types of landfills. Their reports show a variety of waste types disposed, as seen in Table 6.8. In some instances, wastes that are not technically included in the definition of the facility type were disposed. Some of this results from confusion in interpreting the MFS and the variability in the way the local health jurisdictions classify a facility. An additional confusion arises when the use of a facility changes over the years.

### *DETERMINING THE AMOUNT OF SOLID WASTE DISPOSED*

The amount of solid waste disposed in Washington varies depending upon the categories included. For example, since 1987 Ecology has conducted a recycling survey that has reported the amount of waste generated, recycled and disposed each year. This waste stream was the "recyclable waste stream" made up of waste types included in the recycling categories, but not including sludge, asbestos, petroleum-contaminated soils, construction and demolition, or industrial waste (when it could be specifically identified[6]). It was also typically the waste stream generated and reported by municipalities (cities and counties).

The three other categories of landfills for which information was obtained this year include woodwaste, inert/demolition and limited purpose/special use. The waste disposed in these

[6] 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, inert and commercial waste.

facilities is more typically generated by the private sector (business and industry). There is a significant amount of waste that is disposed of in the state that is not included in the recycling survey disposal numbers.

To gain a more complete picture of solid waste disposal in the state, it is necessary to include all categories of waste that are disposed or incinerated. Then when all categories are included, 4,978,113 tons of waste was disposed of in all types of landfills and incinerators in Washington in 1992 (see Table 6.9).

## *INDUSTRIAL SOLID WASTE IN WASHINGTON*

Another source of waste disposed of in Washington state that is not entirely included in this discussion is waste generated and disposed of on private industrial sites. These disposal facilities fall under several regulations and in some cases, are regulated and permitted by Ecology for water discharges, air quality and dangerous waste.

**TABLE 6.8:** ***WASTE TYPES & AMOUNTS OF WASTE DISPOSED AT VARIOUS LANDFILL TYPES***

| WASTE TYPES | LANDFILL TYPE | | |
|---|---|---|---|
| | WOODWASTE | INERT/ DEMOLITION | LIMITED PURPOSE |
| *Municipal* | 0 | 0 | 0 |
| *Demolition* | 34,397 | 426,220 | 11,280 |
| *Industrial* | 0 | 0 | 95,468 |
| *Inert* | 0 | 79,257 | 43,072 |
| *Commercial* | 0 | 0 | 0 |
| *Wood* | 122,381 | 609 | 94,541 |
| *Sludge* | 0 | 0 | 0 |
| *Asbestos* | 0 | 0 | 0 |
| *PCS* | 0 | 0 | 0 |
| *Other** | 1,585 | 6,287 | 35,891 |
| TOTAL (tons) | 158,363 | 512,373 | 280,252 |

* *Some examples of "other" types of waste include wood ash, boiler ash, slacker grits, and cranberry waste*

| Disposal Method | Amount of Waste (tons) |
|---|---|
| *Municipal Solid Waste Landfills* | 3,560,738 |
| *Incinerated MSW Waste** | 466,387 |
| *Woodwaste Landfills* | 158,363 |
| *Inert/Demolition Landfills* | 512,373 |
| *Limited Purpose Landfills* | 280,252 |
| TOTAL | 4,978,113 |

* *For the purposes of this table, "Incinerated MSW Waste" means the actual tons of MSW waste incinerated in Washington.*

**TABLE 6.9:** ***TOTAL AMOUNTS OF SOLID WASTE DISPOSED IN WASHINGTON, 1992***

In February 1993, Ecology completed an industrial solid waste survey[7] designed to provide a general overview of industrial solid waste types generated in Washington. Funding limitations did not allow for the development of detailed information on the quantities or disposal methods used by the industrial sector.

For this survey, the definition of "industrial solid waste" was derived from the current federal definition (listed in the 1991 U.S. EPA Part 258 regulations):

> *"Solid waste generated by manufacturing or industrial processes that is not hazardous waste regulated under Subtitle C of RCRA and not otherwise designated as a dangerous waste under chapter 173-303 WAC, with specific inclusions and exclusions listed."*

The survey excluded the following waste streams[8]:

- Agricultural wastes
- Mining wastes
- Nuclear or "mixed" wastes
- Oil & gas exploration wastes
- Commercial wastes,
- Construction & demolition wastes
- Municipal solid wastes

Most of these wastes were excluded to focus efforts on the traditional industrial sector. Wastes handled under municipal solid waste (MSW) systems were excluded from the report because MSW is managed under existing regulations by local jurisdictional health departments in Washington. However, large volumes of the waste generated by manufacturing facilities are disposed of in MSW landfills. Further study is needed to evaluate the volumes and to identify the types and impacts of industrial solid waste handled in MSW disposal facilities.

Several criteria were evaluated in selecting industries with potentially significant industrial solid waste streams, including the waste volume generation rate, the number of facilities, annual statewide revenues, and the level of risk to human and environmental health.

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[7] Industrial Solid Waste Survey, Task 1: Summary of State Regulations prepared by Synergic Resources Corporation, Booz-Allen Hamilton, GBB and Stoel Rives Boley Jones & Grey, June 10, 1992; Task 2: Industrial Solid Wastes of Concern in Washington, prepared by Synergic Resources Corporation, Booz-Allen Hamilton and GBB, February 25, 1993; and Task 3: Future Study in Industrial Solid Waste, prepared by Synergic Resources Corporation, Booz-Allen Hamilton and GBB, February 25, 1993.

[8] Examples of the waste streams excluded from the report were mine tailings and waste rock from mining operations; drilling muds from oil and gas exploration; and office and food service wastes from commercial activities. Waste streams from vehicle motor pools, such as used tires, filters and oil were considered commercial wastes, though many industrial facilities have motor pools on-site.

As a result, the following eight industries were identified as the major industries of focus for the survey:

- Food & kindred products
- Lumber, wood, pulp & paper
- Printing & publishing
- Chemicals & allied products
- Petroleum refining & related industries
- Primary iron & steel
- Primary nonferrous metals
- Aircraft production

Eight important waste streams were identified. They were selected for a variety of reasons including: the potential for harmful impacts on the environment and human health, the generation of extremely high volumes of waste, and the lack of information available to assess the nature and impact of the waste stream.

The results of the analysis of these waste streams are summarized below.

**Sludges** originate from pulp and paper industry processes and contain varying amounts of heavy metals, along with dioxin and furan precursors. Potential risks are associated with landfill leachates and sludge incineration.

**Fly and bottom ash** are produced in the hog fuel boilers and furnaces of the lumber and wood products industry. Potential for risk is associated with dioxin formation during the incineration process, and with the high pH levels that characterize the ash. Potential use of ash as a liming agent is being explored in other states.

**Brine muds**, generated by the chemical and allied products industry, have not been adequately characterized. They may be of concern due to possible contamination by industrial processes, and the unregulated nature of disposal lagoons.

**Spill wastes and contaminated soils** occur as a result of petroleum refining industry operations, and may pose health hazards due to the high level of dangerous constituents found in all petroleum products.

**Spent catalysts** generated by the petroleum refining industry may also pose a threat to human and environmental health due to the large volumes generated, metal contents, and current disposal practices.

**Scrubber sludge** is a byproduct of the primary nonferrous metals industry, and its high fluoride content suggests a potential for risk if the sludge is managed at a landfill.

**Pulping rejects** generated by the paper and allied products industries are of concern because of the sheer volume generated, and because of the existence of toxic constituents in these waste streams.

**Packaging wastes** generated by most secondary manufacturing sectors can be generated in significant volumes, and exhibit potential for source reduction.

These wastes streams require further study to make a more accurate assessment of their significance to Washington. Recommendations for further research to fill the information gaps and to develop sound industrial solid waste policies for Washington were included in *Task 3: Future Study in Industrial Solid Waste.* The report described additional data collection efforts and policy studies with an estimate of the time and cost requirements. At this time however, there are no plans or funding to pursue additional information.

### *MODERATE RISK WASTE*

Another waste stream produced in Washington, but not included in the disposal amounts is Moderate Risk Waste (MRW). MRW is a combination of household hazardous waste and conditionally exempt small quantity generator waste (CESQG), both exempt from regulation as hazardous waste under state and federal law. The MRW stream is considered part of the solid waste stream, although there are local differences and similarities in the way it is planned for, collected and disposed.

| *WASTE TYPE* | *POUNDS* | *%* |
|---|---|---|
| *Used oil* | 2,373,000 | 46.5 |
| *Paint* | 1,406,000 | 27.5 |
| *Solvents* | 473,000 | 9.2 |
| *Auto Batteries* | 347,000 | 6.7 |
| *Pesticides* | 205,000 | 4.8 |
| *Antifreeze* | 143,000 | 2.7 |
| *Corrosives* | 70,000 | 1.4 |
| *Aerosols* | 64,000 | 1.2 |
| TOTAL | 5,081,000 | 100.0 |

*TABLE 6.10: 1992 HOUSEHOLD HAZARDOUS WASTE COLLECTION ESTIMATES*

The similarity with solid waste is that local governments are responsible for planning and implementing MRW programs at the local level. Ecology supports this effort by providing guidance for plan preparation, and technical assistance, collection events, facilities and grants for MRW program implementation. As discussed, all counties in Washington have approved plans. The difference in MRW handling is that local governments either have mobile facilities and/or collection events to accept HHW and/or CESQG wastes. Of the 39 counties in Washington, 14 are operating a total of 28 permanent fixed facilities, with 19 additional planned fixed facilities. (See Map B.)

In 1992, HHW collection events accepted over 5 million pounds of HHW[9]. (See Table 6.10 for specific types and amounts.) This amounts to a pound of HHW per Washington resident in 1992. Washington also has an active agricultural pesticides collection program where farmers bring in unusable pesticides during collection events sponsored by the Washington Department of Agriculture. In 1992, nearly 41 tons of pesticides were collected through this program.

The ultimate destination of the MRW collected is not currently being tracked. In general, the following wastes are being recycled: used oil, paint, solvents, vehicle batteries, and antifreeze. If not recycled, used oil is burned for energy recovery. Unrecycled oil based paints and solvents are incinerated at hazardous waste incinerators. Pesticides, corrosives, aerosols, and residuals from the other waste streams are usually landfilled, most at the hazardous waste landfill in Arlington, Oregon or the one in Grandview, Idaho.

Ecology and local governments started a program in 1993 to encourage businesses to accept used household motor oil for recycling. A major business concern has been that some used oil received could be contaminated by hazardous waste and a business could be "stuck" with high disposal costs. The 1993 Legislature allocated $75,000 and instructed Ecology to provide financial assistance to local governments to dispose of contaminated used oil until the fund is exhausted. Ecology is implementing the program by using its own used oil disposal contractor to pick up contaminated oil from local governments. Local governments contact Ecology's regional offices to access this service. As of mid-November 1993, there had been two contaminated loads taken care of by this new process.

Ecology is currently proposing an on-line database for moderate risk waste. Participating local governments are being provided the software and training so they can directly input the results of their programs. If the system can be fully implemented in 1994, collection and other data will be available through the database. The database has three major goals:

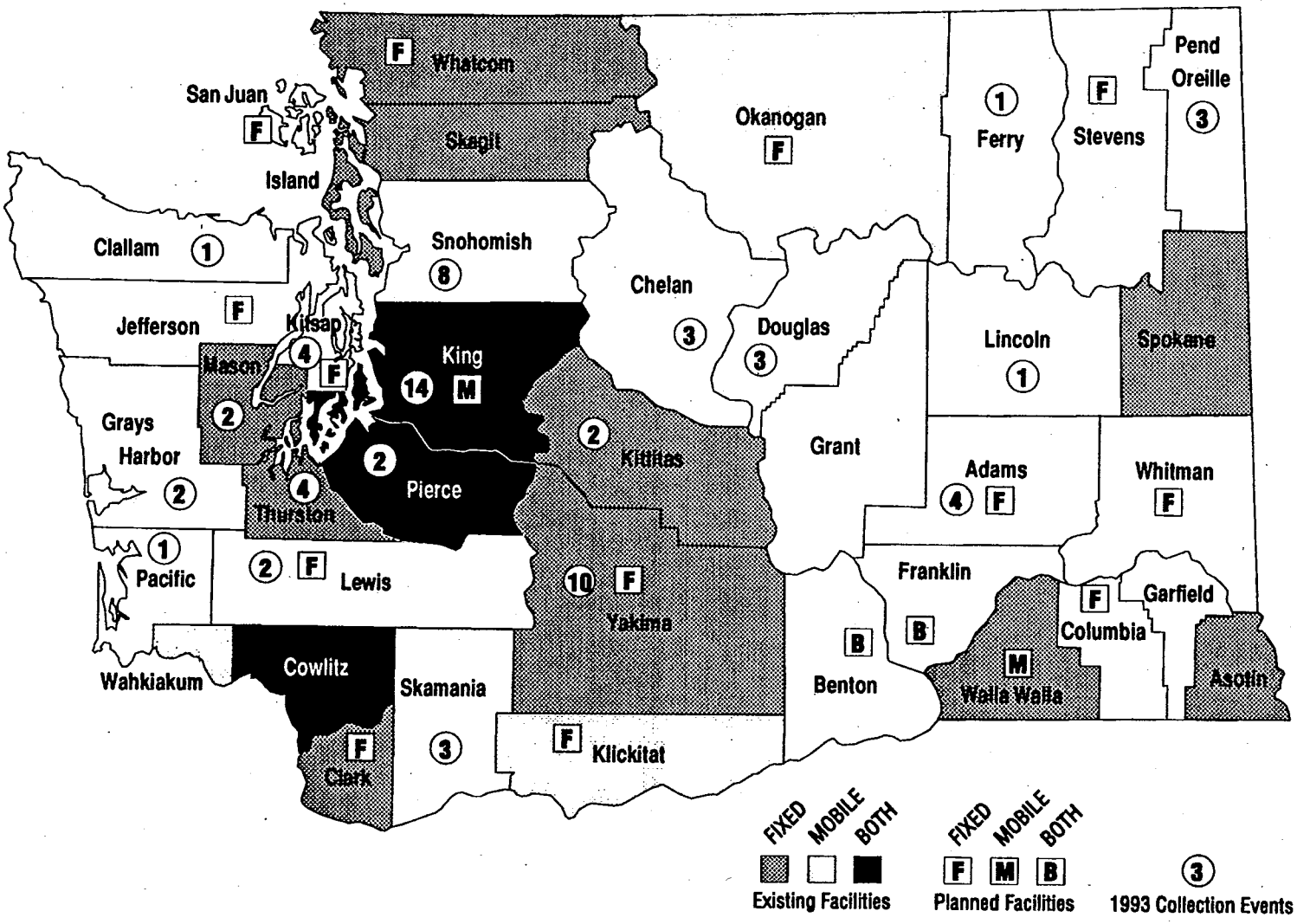
- Provide the counties a local tracking and reporting system for their MRW activities, including MRW collection and SQG visit record;

- Provide a mechanism for the counties to interact and share information directly regarding MRW activities and management. It is hoped that this linkage will encourage quicker implementation of innovative programs and management technologies; and

- Provide Ecology access to accurate, up-to-date information for the preparation of reports and to assist in identifying common problems for statewide resolution.

[9] Collection amounts for automotive products (used oil, auto batteries, and antifreeze) include only the amount collected at household hazardous waste events and facilities, not that collected at retail or other specialized outlets.

## MAP B: 1993 EXISTING AND PLANNED MRW COLLECTION SYSTEMS



## *REMAINING CAPACITY*

### Changes in the Federal Subtitle D Criteria

In October 1991, the EPA issued the final rule of *Solid Waste Disposal Facility Criteria* (40 CFR Part 258). This rule set forth new criteria for the construction and operation of municipal solid waste landfills. Facilities were required to come into compliance with these new criteria by October 9, 1993, or stop accepting waste before that date.[10]

A major consideration for facilities that planned to close was the length of the post-closure care period required. Those closing before October 9, 1993, would have a post-closure care period of 20 years as required under chapter 173-304 WAC, MFS. Facilities closing after that date are required under the federal criteria to have a 30-year post-closure period, a significant increase in costs to the facility owner.

States were required to modify their MSW landfill rules to comply with the federal criteria. Ecology, rather than revising the MFS, chose to write a new regulation, chapter 173-351 WAC, *Criteria for Municipal Solid Waste Landfills*. This rule was adopted October 8, 1993 and became effective November 27, 1993.

In order for a state to implement the federal program, EPA had to determine if a state's program was adequate. On April 8, 1993, Ecology submitted to EPA its "Washington State's Solid Waste Management Permit Program Application for Determination of Adequacy" in response to the draft 40 CFR 239 *Municipal Solid Waste Landfills; State/Tribal Permit Program Determination of Adequacy*. EPA notified Washington on November 17, 1993 that its application for partial approval was administratively complete. Publication in the Federal Register occurred on January 13, 1994. After the required public review period, Washington's program will receive partial approval as outlined in the Federal Register notice, estimated to be March 1, 1994.

Because Washington's program was not approved by the EPA by October 9, 1993, both the currently effective Washington regulation and the federal criteria were applicable to all MSW landfills in the state for the period of time between October and final publication in the Federal Register. After Federal Register Publication, Washington's chapter 173-351 WAC will become the only effective criteria.

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[10] On October 1, 1993, EPA amended 40 CFR Part 258 to delay the implementation of portions of the facility criteria. A portion of the delay affected small landfills, those that took less than 100 tons of waste per day. Four (4) MSW landfills in Washington that had planned to close by October decided to remain open after that date and close by April 9, 1994.

## Effects of Subtitle D on Indian Tribes

Subtitle D landfill facility criteria also apply to Indian Tribal lands. In Washington there are 26 recognized Indian Tribes. Only three had active municipal solid waste landfills in 1992 - the Makah, Colville and Spokane tribes. With the additional requirements for MSW landfills, all of the tribes within Washington decided to close the facilities. The EPA, the Bureau of Indian Affairs and the Indian Health Service are working with the affected tribes to properly close their landfills. This has necessitated the transfer of municipal solid waste from the reservations to local publicly or privately owned MSW landfills, either by a contracted firm or by a reservation owned collection company.

## Future Capacity at Municipal Solid Waste Landfills

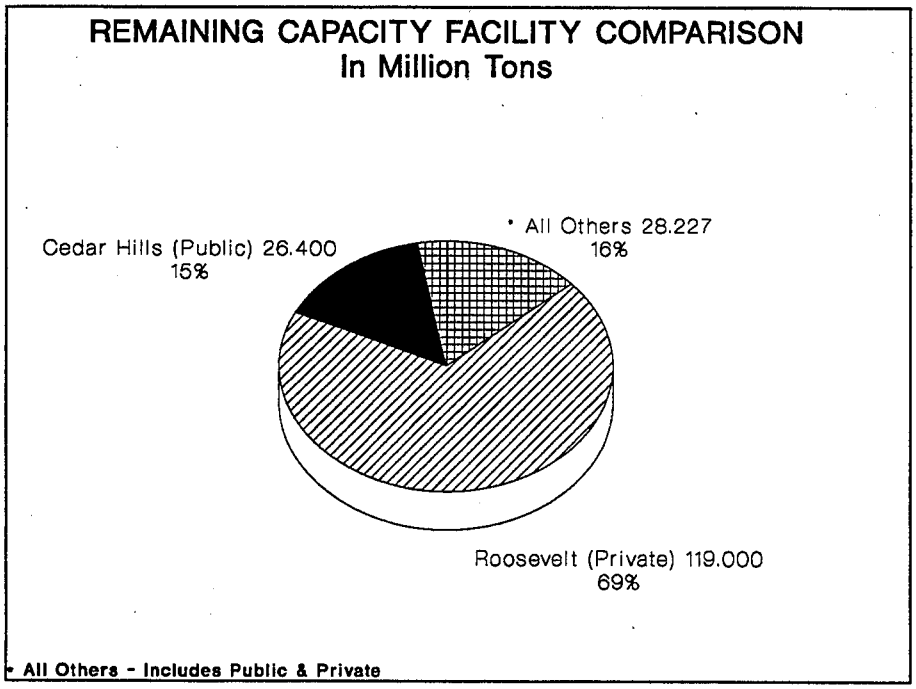



**TABLE 6.12:** ***MSW CAPACITY BY OWNERSHIP DESIGNATION***

Of the 42 MSW landfills that accepted solid waste in 1992, only 22 will actively receive waste after April 1994[11]. Landfill closures were partially in response to Subtitle D requirements. Those that had little or no remaining capacity determined not to expand because of the expense in meeting the new requirements. Others, although they had some remaining capacity, decided to close rather than upgrade to meet the new requirements. Those facilities accounted for less than 1% of the estimated remaining permitted capacity reported last year. Other MSW landfills have been required to close as part of their existing permit variances or because they have been declared Superfund sites that require cleanup under the state's *Model Toxics Control Act Cleanup Regulation*, chapter 173-340 WAC.

[11] During the final preparation of this report, two additional MSW landfills decided to close. One is located in San Juan County and the other in King County.

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

The amount of remaining capacity for municipal solid waste landfills in Washington was determined by asking the facilities to report remaining permitted capacity, as well as the expected closure date. In 1993, for the 24 MSW landfills that will be operating after April 1994, the facilities estimated about 173 million tons, or 48 years, of capacity at the current disposal rate. Last year, facilities reported approximately 162 million tons of remaining capacity, about 40 years of remaining capacity statewide.[12]

| *YEARS TO CLOSURE* | *# OF FACILITIES* | *PUBLIC* | *PRIVATE* |
|---|---|---|---|
| *Less than 5 Years* | 2 | 2 | 0 |
| *5 to 10 Years* | 2 | 2 | 0 |
| *Greater than 10 Years* | 20 | 15 | 5 |
| TOTALS | 24 | 19 | 5 |

*TABLE 6.11: MSW LANDFILLS - ESTIMATED YEARS TO CLOSURE*

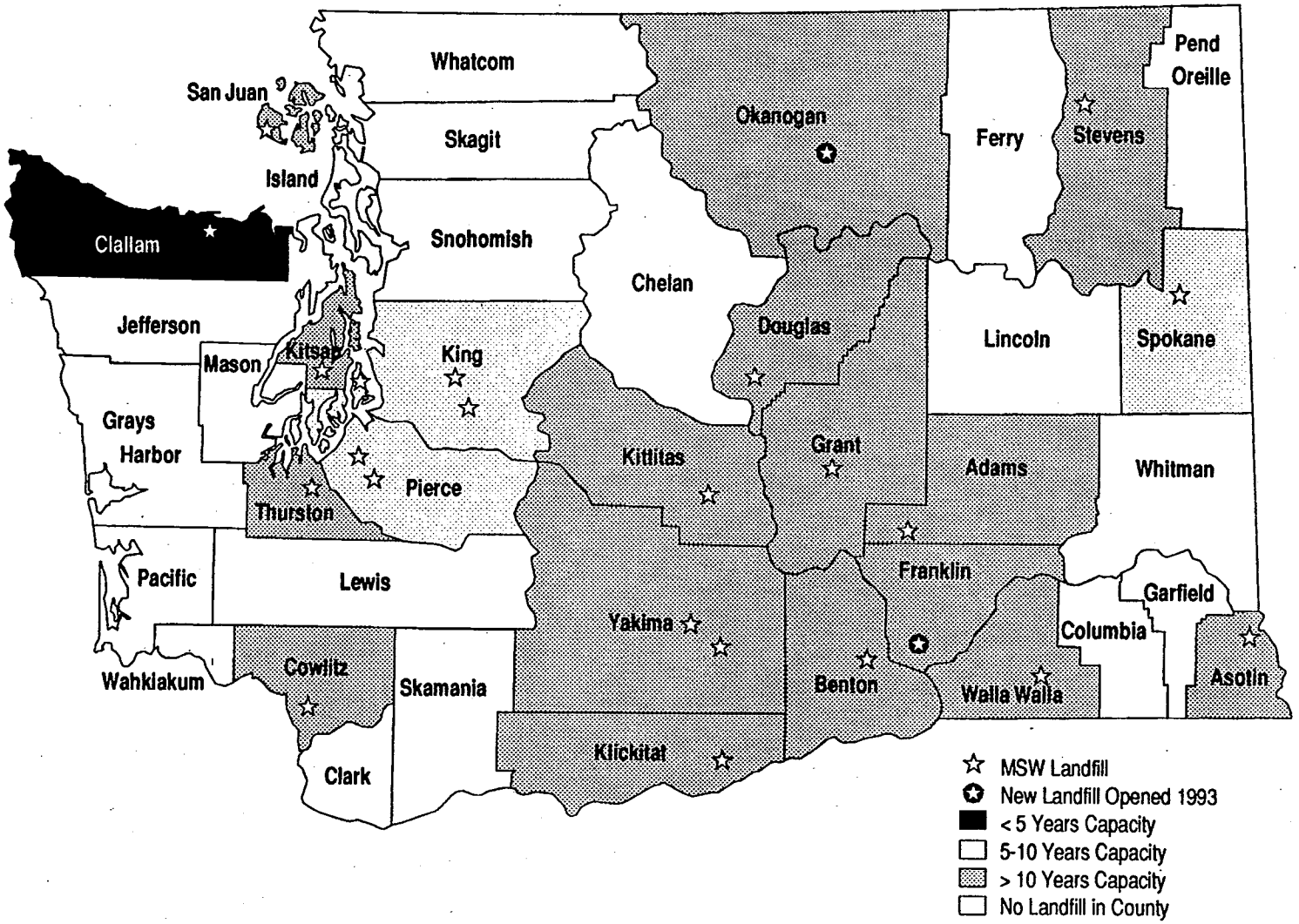
The number of remaining landfills that are publicly owned, 19 of 24, is much greater than the five privately owned MSW landfills. However, 73% of the remaining permitted capacity is at the privately-owned facilities. See Table 6.11 for an estimated number of facilities with specified remaining years of life.

While 48 years of remaining capacity appears to be a lot, it needs to be put into the perspective of availability and ownership of that capacity. The majority of the capacity is in the private sector, with about 69% of the total statewide capacity being at Roosevelt Regional Landfill in Klickitat County. Another 15% of the statewide total capacity is at the Cedar Hills Landfill in King County, with the remaining 16% of capacity spread among the remaining 22 landfills in the state (see Table 6.12).

The access to landfill capacity also needs to be considered. The Roosevelt Regional Landfill is operated to be a landfill that accepts waste from a wide variety of locations. In 1992, the facility received some type of solid waste from 22 counties in Washington, two other states and British Columbia. Other landfills in the state are operated to accept the majority of waste from the

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

## MAP C: COUNTIES WITH MSW LANDFILLS OPEN AFTER APRIL 1994



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 48 years of total capacity is based on the amount of waste disposed in MSW landfills in 1992. This amount could vary depending upon waste reduction and recycling activities, as well as the impact of waste being imported into the state for disposal or additional waste that is currently being disposed out-of-state being disposed in state. As discussed previously, there has been an increase in the types of waste, other than municipal waste, being disposed of in MSW landfills. Part of this is the liability concern (that is it is better to pay a higher cost and transport further to dispose in a well designed landfill). If requirements for other types of landfills (woodwaste, inert/demolition, and limited purpose) become more stringent in the future, there may be an additional shift of the types of solid waste moving to the MSW landfills for disposal.

## Other Landfill Classifications and Remaining Capacity

The other landfill classifications required to submit annual reports for their 1992 activities, woodwaste, inert/demolition and limited purpose landfills, were also requested to specify remaining permitted years of operation. Capacity is reported for these facilities in terms of remaining years, rather than in tons or cubic yards, because many of these facilities are operated solely for the owning company and the remaining permitted years is an estimate for their continued use. Based on the information supplied by the facilities, the number of these other types of landfills and their remaining life based on years is shown in Table 6.13.

| *1993 ESTIMATED REMAINING CAPACITY* | *WOODWASTE* | *LIMITED PURPOSE* | *INERT/ DEMOLITION* |
|---|---|---|---|
| *Less than 5 Years* | 2 | 1 | 1 |
| *Between 5 - 10 Years* | 1 | 3 | 10 |
| *Greater than 10 years* | 2 | 6 | 7 |
| TOTALS | 5 | 10 | 18 |

*TABLE 6.13: REMAINING CAPACITY FOR OTHER LANDFILL TYPES*