A G E N D A

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METRO

MEETING: Solid Waste Advisory Committee

DAY: Wednesday

DATE: July 19, 1995

TIME: 8:30 - 10:00 a.m.

PLACE: Metro Regional Center, 600 NE Grand Avenue
Conference Room 370

10 min.	2. Updates and Introductions . Solid Waste Department Reorganization . Other Updates	Shanks/Kvistad
5 min.	3. 1994 Recycling Level Survey - Status Report	Goddard/Sloop
1 hr..	4. Regional Solid Waste Management Plan Action Requested: . Review of public involvement efforts and comments received to date . SWAC vote to forward RSWMP recommendations to the Metro Executive Officer	Nelson
10 min.	5. Other Business/Citizen Communications	Kvistad
	6. Adjourn	

NO SWAC MEETING IS PLANNED FOR AUGUST

Enclosures:
1. 1994 Recycling and Recovery Level Survey
2. Preliminary Draft - Regional Solid Waste Management Plan (RSWMP)
   The Draft RSWMP was mailed to SWAC members earlier this week under separate cover
3. Analysis of Yard Debris Recycling System
4. RSWMP, Public Information Program - Meetintgs and Comments Summary

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SOLID WASTE ADVISORY COMMITTEE
SUMMARY OF MEETING OF June 21, 1995

MEMBERS

Ken Spiegel, Clackamas County
Merle IrvineWillamette Resources
David White, ORRA
Lexus E. Johnson, Oregon Hydrocarbon
Tom Miller, Wash. County Haulers
Jim Cozzetto, Jr., MDC
Dave Kunz, DEQ
Lynne Storz, Washington County
Susan Ziolko
Doug Coenen, Oregon Waste Systems
Jeanne Roy, Citizen
Steve Schwab, CCRRA
Steve Miesen, BFI
Ralph Gilbert, East County Recycling
Lynda Kotta, East County Cities
Jeff Murray, Far West Fibers

GUESTS

Bob Martin
Diana Godwin, Regional Disposal Co.
Ray Phelps, OWSI
Keri Painter, Columbia Resource Co.
Debra Fromdahl, Sanifill, N.W.

METRO

Jon Kvistad, SWAC Chair
Ruth McFarland, Metro Council Chair
Debbie Gorham
Doug Anderson
Marie Nelson
Jennifer Ness
Deborah Adams

1. Approval of May 17, 1995 Minutes - Action Item

Jeanne Roy requested that page 3, paragraph 5, first sentence, be amended to read: "Ms. Roy did not think that staff had ~~not~~ fully evaluated the estimated cost and tonnage impacts of practices described in the draft as "additional key elements." The minutes were unanimously approved as amended.

2. Updates and Introductions

Lex Johnson introduced Ed Keenen to the Committee. Mr. Johnson announced that Oregon Hydrocarbon had reorganized and merged management of its Tacoma and Portland facilities. Mr. Keenen would manage the two facilities and Mr. Johnson would serve as a consultant to the organization during the next year before retiring.

Terry Petersen reported the Metro Solid Waste Department was undergoing reorganization. Sam Chandler, former Operations Division Manager had resigned. Rather than hire a new Operations Manager, the operations functions would be assumed by existing managers. Reorganization decisions will be announced at the July SWAC meeting, he said.

3. Multi-Family and Status Report

ennifer Ness, Metro Solid Waste Planner, reviewed highlights of a printed summary which had been included in the agenda packet. She explained that the region's goal to implement recycling systems for 85% of the region's multifamily complexes was ambitious. Because of continued population increases and more complexes being built, the region had fallen short of that goal. Although the region is currently at 70% completion, a few jurisdictions had already exceeded the 85% goal. She explained the 1996 goal was a more realistic assessment would allow local governments and waste haulers to catch up with the backlog. The region's future plans were consistent with SWAC's Regional Solid Waste Management Plan recommendations, she said.

4. Yard Debris Waste Reduction - Status Report

Jim Goddard, Recycling Manager, presented highlights of a written report entitled "Analysis of Yard Debris Recycling System." One of the report's significant findings was that the region's rate of yard debris disposal had decreased significantly since 1987 and that the region had met the 1993 goals of the Yard Debris Recycling Plan. He pointed out that the new 1995-2005 Regional Solid Waste Plan (RSWMP), currently being developed by SWAC, would replace the former RSWMP, of which the Yard Debris Recycling Plan was a part.

Goddard explained that an estimated 47,000 tons of yard debris a year is still disposed. Much of this waste is disposed by self-haulers and through residential drop-box activity. Programs will be designed to divert this yard debris from disposal. Overall, he said the benchmark will be to divert 17,000 tons of yard debris from disposal by the year 2000.

Ms. Roy was concerned that yard debris disposal tonnage in the draft RSWMP were not consistent with the figures used in the Yard Debris Waste Reduction Status Report. Mr. Goddard and staff analyst Deborah Adams explained that the RSWMP tables would be adjusted to reflect an update to Metro's Waste Characterization Study analysis. The two documents would then be consistent.

Ms. Roy supported staff's proposal to develop waste diversion and recycling programs for residential self-haulers. Mr. Goddard said a work group would be formed to determine an action plan. The work group would be represented by the appropriate local governments, waste haulers, processors, and other parties. Ms. Roy said she also wanted to propose some language changes in the report. She and Mr. Goddard agreed to meet to work out these changes.

5. Licensing of Yard Debris Processors - Action Item

Bill Metzler, Solid Waste Planner, presented the recommendations of a regional work group of yard debris processors, local government representatives and others.

- Metro implement a licensing program for new and existing facilities, with a process to ensure coordination and problem solving with processors and local governments.

- Local governments amend zoning ordinances and development codes as needed to: 1) include clear and objective zoning standards; 2) require facilities to have a Metro license as a condition of land use approval; and 3) amend collection franchises to ensure that yard debris collected at curbside is delivered to only licensed facilities.

Mr. Metzler explained that Metro was asked by some local governments and processors to help develop effective, region-wide solutions for managing facility siting and operational concerns. The regional work group investigated various management options and after exploring a local government model ordinance approach, the group concluded that the licensing program would be the most effective option.

Lynne Storz relayed the concerns of Washington County about directing haulers to specific licensed facilities. She also indicated that the county nuisance control program could resolve potential issues relating to facility odor problems

Sue Kiel asked about the relationship of the licensing proposal to the yard debris product quality standards program. Mr. Metzler explained that currently they are separate issues. The licensing program deals primarily with operational issues that influence the physical impacts of facilities. The product quality program is now voluntary, but may be folded into the licensing program.

The proposed annual licensing fee of $300 was discussed and it was suggested that this amount would not be sufficient to administer the program.

Todd Sadlo discussed the licensing standards dealing with enforcement, financial assurance and indemnification. He explained the language similar to existing Metro Code language for facility franchising. He would consider proposing some modifications to these Code sections at the request of the regional work group.

Lynn Storz asked who would enforce the standards, and under what authority. Mr. Sadlo explained that the Metro Code was the authority and that Metro Solid Waste Enforcement Unit could be part of the process, if required, and that the.

Mr. Johnson thought that licensing was not the right term, rather it should be a franchise. Discussion followed about the differences between franchising and licensing yard debris processing facilities.

Sue Kiel suggested the work group focus on the end product, not the process. She expressed concern about too many layers of government, given that local government, DEQ and OSHA would all be involved in regulating the processors.

Dave Kunz explained that the DEQ dealt with odor issues on a complaint basis, and that currently, there was no funding for further DEQ involvement in managing these types of cilities.

Ken Spiegel discussed the siting and facility concerns in Clackamas County. The public wanted further assurances that facilities be managed appropriately, he said. The County asked for Metro's help and supported the licensing approach.

Further discussions included the need to complete the licensing standards sections that are under revision and to clarify program costs and administration procedures.

The licensing program proposal was tabled until SWAC's concerns were addressed, including revisions to the unfinished sections. Mr. Metzler thanked the committee for their comments and, and he would return with the necessary revisions.

6. Survey of 1,000 Households Regarding Recycling, Disposal, and Other Solid Waste Practices - Status Report

Deborah Adams, Solid Waste Analyst, reviewed highlights of a written report on the results of a recent telephone survey conducted by Metro. The survey objectives were to:

- Solicit opinions from a broad cross-section of the region's citizens, particularly those not normally involved in solid waste issues;
- Receive feedback on general questions relating to Metro's current update of the Regional Solid Waste Management Plan;
- Compare the results from a previous survey completed in 1990; and
- Gather information that would be helpful in designing education and promotion programs.

Highlights of survey results included: 86% of those responding said they used residential curbside recycling collection programs regularly or periodically; Only 6% reported to dispose of yard debris with regular garbage compared to 28% in 1990; 92% of the responding households said they subscribed to garbage and recycling collection services; 43% said they had used Metro's household hazardous waste disposal sites of collection events at least once; and 54% said they would support an advance disposal fee to help support the cost of household hazardous waste management.

7. Regional Solid Waste Management Plan - Action Item

Marie Nelson, Solid Waste Planning Supervisor, summarized the actions requested of SWAC at this meeting:

- Review the May 17, 1995, "Discussion Draft" of the Regional Solid Waste Management Plan (RSWMP) and make revisions as necessary;

- Release a "Preliminary Draft" RSWMP for public review and comment;

- Instruct staff to return to the SWAC on July 19 with the Preliminary Draft RSWMP and to provide an additional opportunity for SWAC to revise the draft based on public comments received through early July.

Ms. Nelson then reviewed changes that staff and SWAC members had requested be made to the draft RSWMP (based on review of the May 17 Discussion Draft):

Page 5-4
Goal 5, Performance
Add the words "on an annual basis" back into the sentence.
Performance will be compared annually to measurable benchmarks, although not all measurement studies will be conducted annually.

Page 7-21
2nd bullet, Key Elements of Alternative Practices
Delete the second sentence.
The example proposed to be deleted could be perceived as favoring dry waste processing over source separation. No disposal fee break has been proposed for recyclers, for example.

Page 7-22
2nd bullet, Roles and Responsibilities, 3rd paragraph
Change the last sentence to read: "Metro will consider what public actions might be taken to pursue RSWMP goals ~~arrange for or directly provide more processing service~~.
This language is consistent with page 7-17, 3rd bullet, 3rd paragraph.

Page 7-24
2nd bullet, Key Elements of the Recommended Practices
Delete paragraph a)
Paragraph a) is redundant and not necessary. Paragraph b) addresses the development of performance standards.

Page 7-25
1st paragraph, item 5
Delete the words "moved to next page."
The sentence was not moved to the next page. Rather, the concept was reworked and included on page 7-25, item e).

Page 7-27
4. Reload Facilities, Key Concept and Approach

Change the first sentence to read: "The recommended practice is to allow the siting of reload facilities for consolidation of loads hauled ~~sited, owned and operated by haulers for hauling~~ to appropriate disposal facilities."
Since Metro will review proposals to site reload facilities on a case-by-case basis (see item b) below), the key concept should not be worded to place arbitrary restrictions on siting.

Pages 7-8, 9, 13, 15, 16, 20, and 21
Bullets titled "Key Elements of Alternative Practices"
The last sentence of each "Alternative Practices" section should be dropped. This sentence, wherever it appears in Chapter 7, should now read: "Other alternative practices may be adopted that achieve the same performance as the recommended practices. ~~See Chapter 8, "Monitoring the Plan," for expected performance in terms of tons of waste disposed.~~"
This paragraph confused two issues. It was intended to say that alternative practices should meet the same performance standards as recommended practices. However, Chapter 8 addresses how to monitor the system, not how to establish the equivalence of recommended practices and alternatives.

SWAC agreed to all the above language changes. In addition to the above changes, the following amendments were made to the document:

Page 5-4
Objective 3.8 should be changed to read: "After consideration of technical and economic feasibility, Metro ~~and local governments~~ will support a higher system cost for waste reduction practices to accomplish the regional waste reduction and recycling goals.
Lynne Storz recalled that at an earlier SWAC Planning Subcommittee, it had been agreed to delete the "local government" reference from this objective. Staff concurred.

Page 7-2 and 7-3
Last bullet, last sentence, change to read: "Practices that would likely be more costly in the current system, such as the collection of residential food waste, are included as recommendations contingent on ~~the future development of new techniques that would reduce the costs of the practice~~ cost effective collection and processing techniques.
Jeanne Roy proposed this amendment.

Page 7-7
First bullet, first paragraph, last sentence, change to read: "The media efforts will be patterned on current recycling campaigns ~~with inventive story lines~~ and will use radio, television, and print media."
Lynda Kotta proposed this amendment in order to simplify the description of the recommended practice.

Page 7-22
First bullet, item (e), key element to the recommended practice of developing dry waste processing facilities: add a new paragraph describing Metro's current policy on vertical integration.
There was considerable discussion about whether SWAC should deliberate what Metro's policy on vertical integration should actually be in this context and forward that recommendation to the Executive Officer as part of the draft RSWMP. However, due to time constraints, SWAC decided not amend item (e) at this time but to add a

new sentence that would clearly state the current Metro policy on vertical integration. Staff acknowledge that SWAC would participate in the deliberation process when Metro revisited its current vertical integration policy.

Page 7-23
Item 1, Yard debris processing system: replace all references in this section to "licensing" with the words "franchising or otherwise authorizing."
This amendment was proposed by Doug Coenen because SWAC had not yet decided to recommend whether yard debris processors should be licensed.

Page 7-31
First bullet, "Key Concepts," changed to read: "Household hazardous waste collection services are expensive to provide. The minimum ~~$5~~ handling fee currently charged ~~at the two permanent facilities~~ covers a small portion of operating costs. ~~As disposal fee revenues decrease due to effective waste reduction and recycling programs, new revenue sources must be secured to pay for HHW collection.~~ Costs have been paid primarily by all garbage generators through disposal fees. A more appropriate source of funds would be from those who purchase the hazardous products."
Amendments to this section were proposed by both Jeanne Roy and Lynne Storz to more accurately describe the key concept.

SWAC voted to accept the revisions described above. The revisions were unanimously accepted. SWAC then voted unanimously to instruct staff to incorporate these revisions into the May 17 "Discussion Draft" RSWMP and to release a "Preliminary Draft" RSWMP for public review and comment.

8. Other Business/Citizen Communications

None.

9. Adjourn

There being no further business, Chair Kvistad adjourned the meeting. The next SWAC meeting is scheduled for Wednesday, July 19, 8:30 a.m.

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1994 Metro Recycling and Recovery Level Survey

July 1995

Purpose

The primary purpose for Metro to perform the 1994 Recycling and Recovery Level Survey is to monitor the development and performance of the recycling system from year-to-year for market development and planning purposes.

The secondary benefits of performing the survey are:

- Provide market information and assistance to recycling businesses.
- Help to fulfill measurement and monitoring requirements of the Regional Solid Waste Management Plan (RSWMP).
- Maintain a working knowledge of DEQ's Material Recovery Report which is the basis for measuring Metro's compliance with statutory recycling goals. Maintain a working relationship with DEQ staff who prepare this report.

Highlights

- The amount of material recycled increased nearly 113,000 tons (or 20%) from 1993 to 1994, while the amount disposed increased 23,695 (or 2%). Per capita waste disposed increased 1% and the recycling rate (i.e., the percentage of all waste generated that was recycled) increased from 38% to 41%.
- While the amount of material recycled increased significantly between 1993 and 1994, the amount burned for energy decreased more than 10,000 tons (or 8%).
- Forty three percent of the increase in total recycling was due to increased recycling of paper. The increase in this category was lead by gains in ONP, magazines and mixed scrap paper. These can be attributed primarily to continued implementation of a variety of collection, education and promotion programs, coupled with growing recycled paper manufacturing capacity in the Pacific Northwest, and strong domestic and Asian demand for all recycled paper grades. Prices for all grades of recycled fiber have more than doubled in the last 18 months, and this has increased the activity of free-lance (i.e., "mosquito") collectors. Also, substitution of lower grade recycled fibers into traditionally higher value paper products (i.e., magazines in newsprint, mixed scrap paper in corrugating medium, etc.), continues to enhance demand for lower grade recycled fibers.
- Paper continues to anchor the recycling system in the Metro area and paper recycling continues to be driven by a handful of very large, publicly owned companies. In 1994, paper accounted for 46% of all material recycled in the Metro area, and five companies used and/or were the final brokers of 85% of Metro paper that was recycled.
- Post-consumer plastics recycling continued to be weak and fragmented in 1994. Total plastics recycling declined between 1993 and 1994, and less than 1% of all material recycled in 1994 was plastic. Four companies used and/or were the final brokers of 68% of Metro plastic recycled and 16 companies handled the remaining 32%. Sixty-nine percent of the plastic that was recycled was either Bottle Bill PET or HDPE milk jugs. The decline in post-consumer plastics recycling is due primarily to the strategic decision of a local reclaimer to

focus on post-industrial plastics and shift away from post-consumer plastics. Additionally, another local plastics reclaimer went out of business in October 1994. Recovery of post-consumer plastics is expected to increase in 1995 due to several factors, including: strong recycled resin prices; the construction of a high-speed, automated plastics sorting facility near Salem; and region-wide collection of all plastic bottles.

- Recovery of yard debris increased significantly in 1994, as did the percentage of this material that was burned for energy. The increase in recovery of this material is due to expanded processing capacity and curbside collection services in the region.

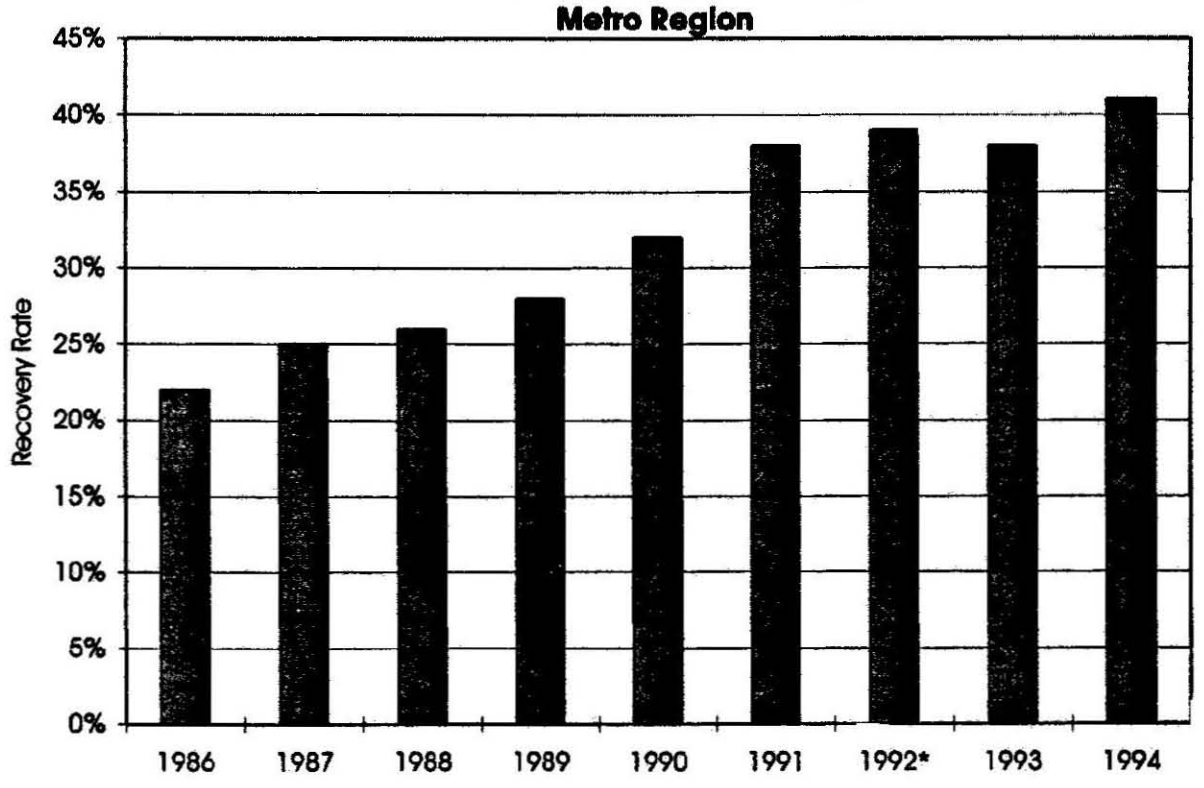
- Wood recovery remained essentially even. Note, however, that the percentage of all wood recovered that was converted into new wood products instead of burned for energy went from 21% in 1993 to 36% in 1994.

- The quantity of tires recovered dipped in 1994, mostly due to the closure of a major tire processor. Virtually all of the tires in the Metro area now flow to one processor.

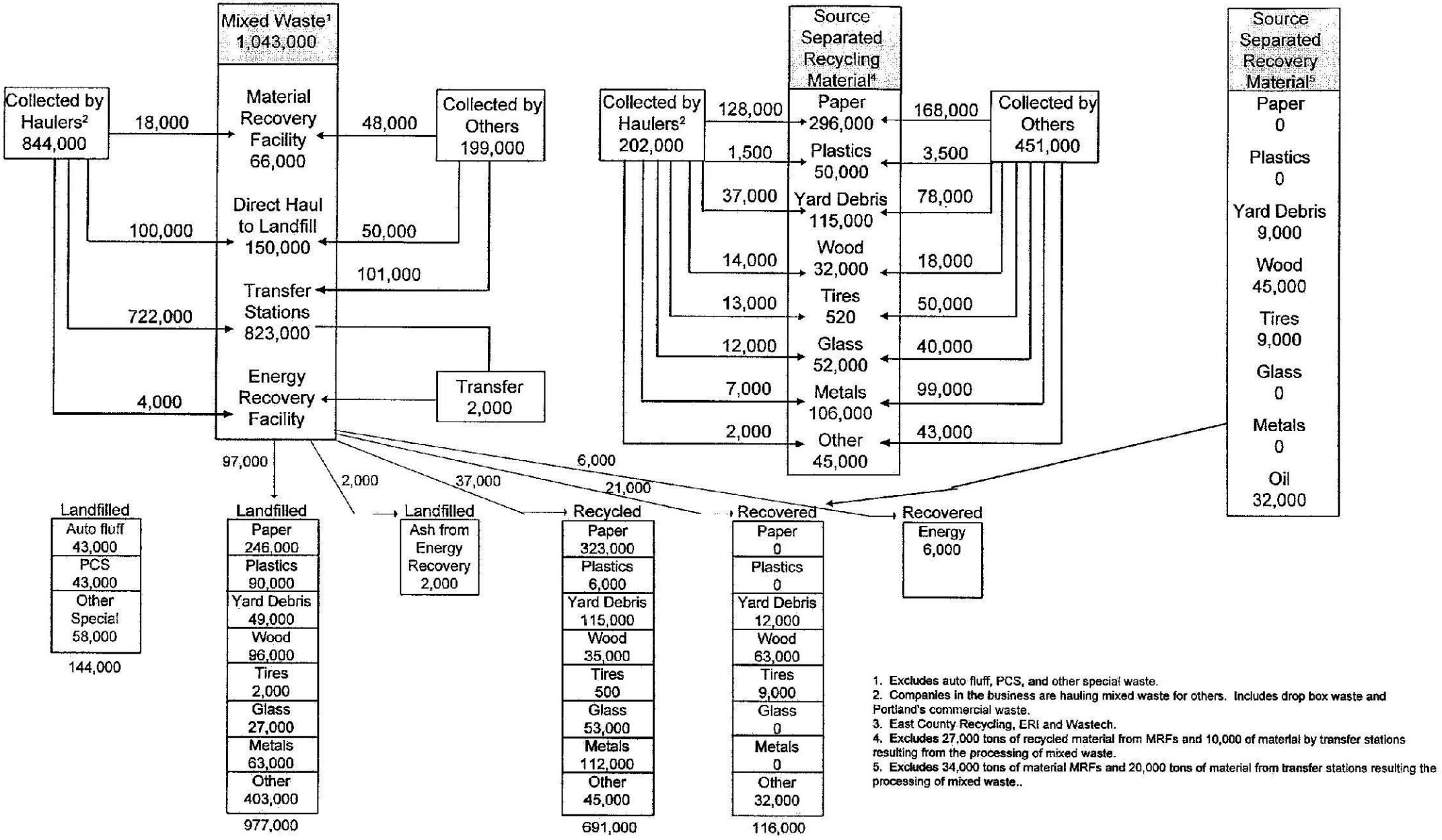
Results

Tables 1 through 6 graphically depict the results of the 1994 Metro Recycling and Recovery Level Survey and historical data. Table 7 contains the data from the survey.

Table 1
Recycling Rate (1986-1994)
Metro Region



*Due to revised estimating procedures for disposed tonnage by material, statistics for 1993-94 and those for previous years are not strictly comparable.



1. Excludes auto fluff, PCS, and other special waste.
2. Companies in the business are hauling mixed waste for others. Includes drop box waste and Portland's commercial waste.
3. East County Recycling, ERI and Wastech.
4. Excludes 27,000 tons of recycled material from MRFs and 10,000 of material by transfer stations resulting from the processing of mixed waste.
5. Excludes 34,000 tons of material MRFs and 20,000 tons of material from transfer stations resulting the processing of mixed waste..

Table 2
Recycling and Recovery Levels (1986-1994)
Metro Region

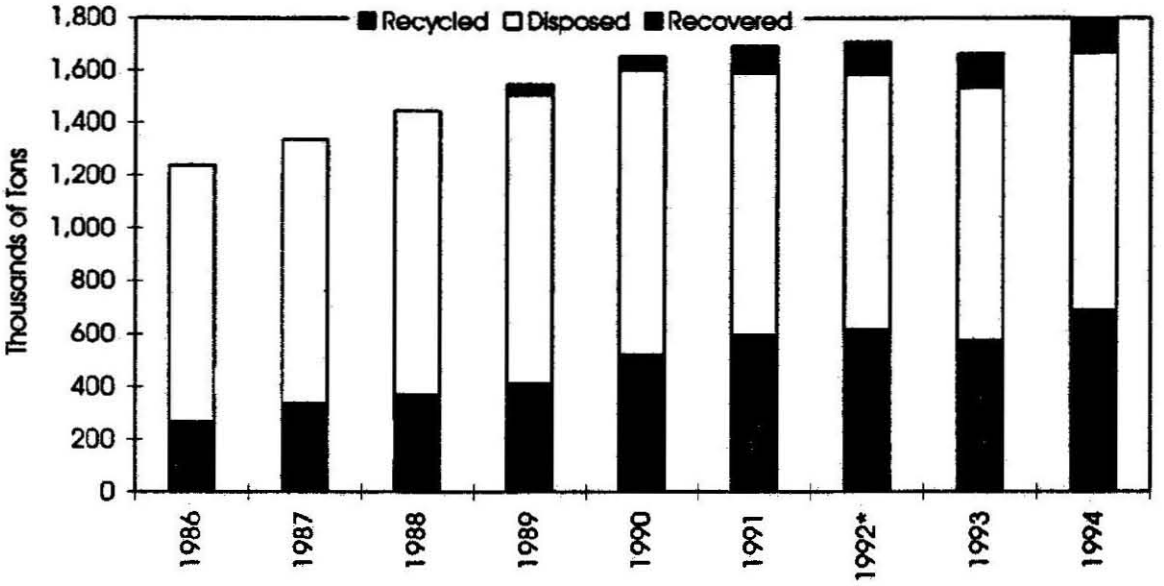
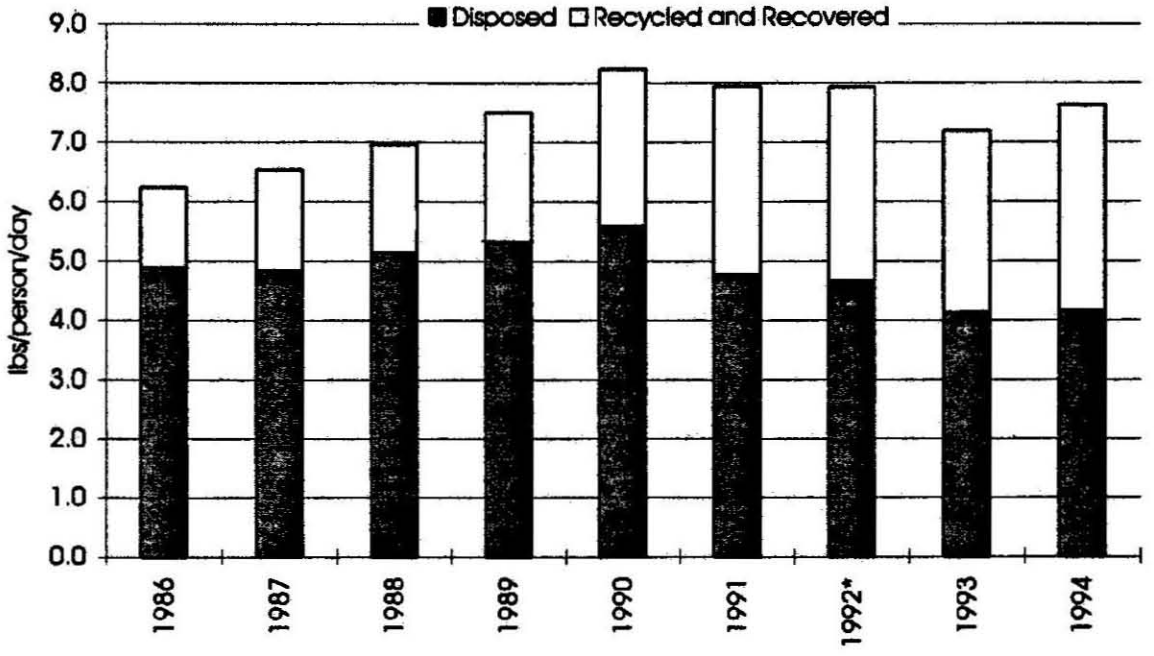


Table 3
Per Capita Recycling and Recovery Rates (1986-1994)
Metro Region



*Due to revised estimating procedures for disposed tonnage by material, statistics for 1993-94 and those for previous years are not strictly comparable.

Table 4
Recycling, Recovery and Disposal Data (1993 vs. 1994)
Metro Region

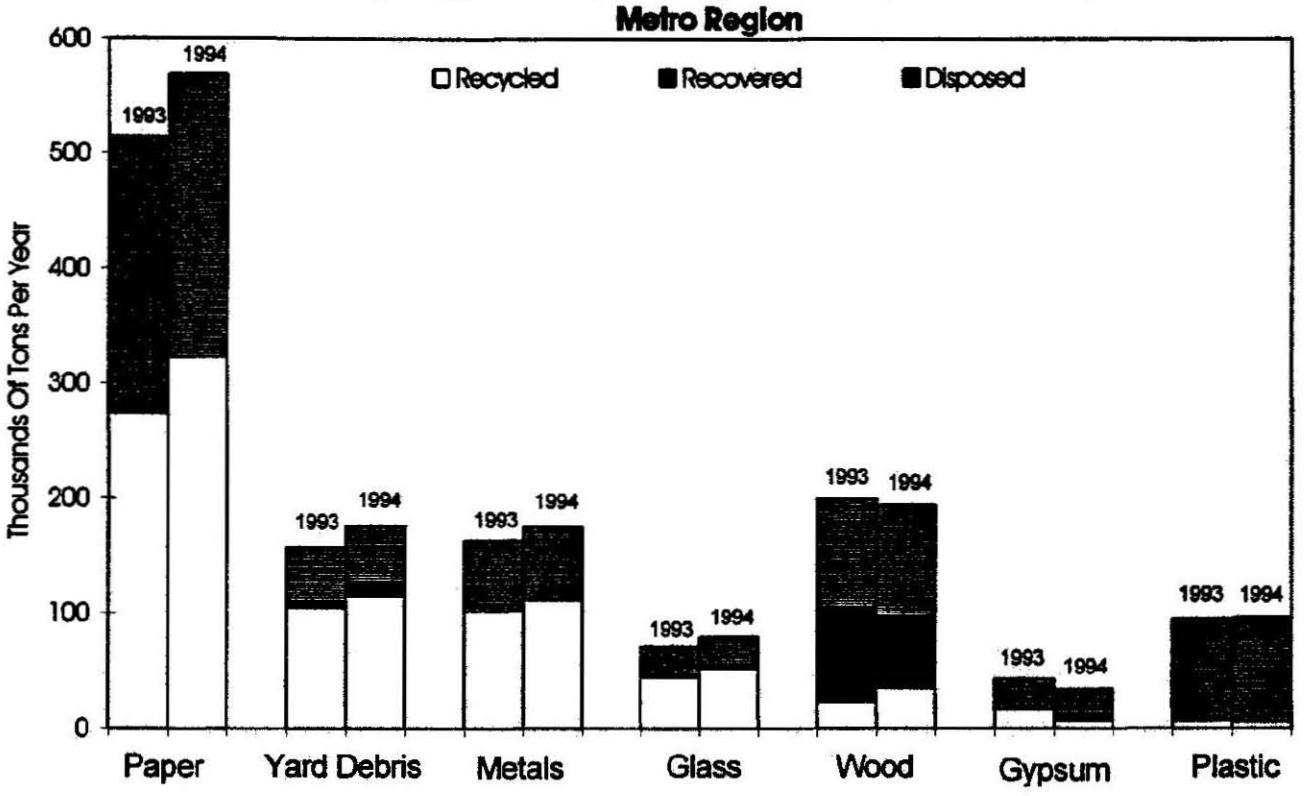
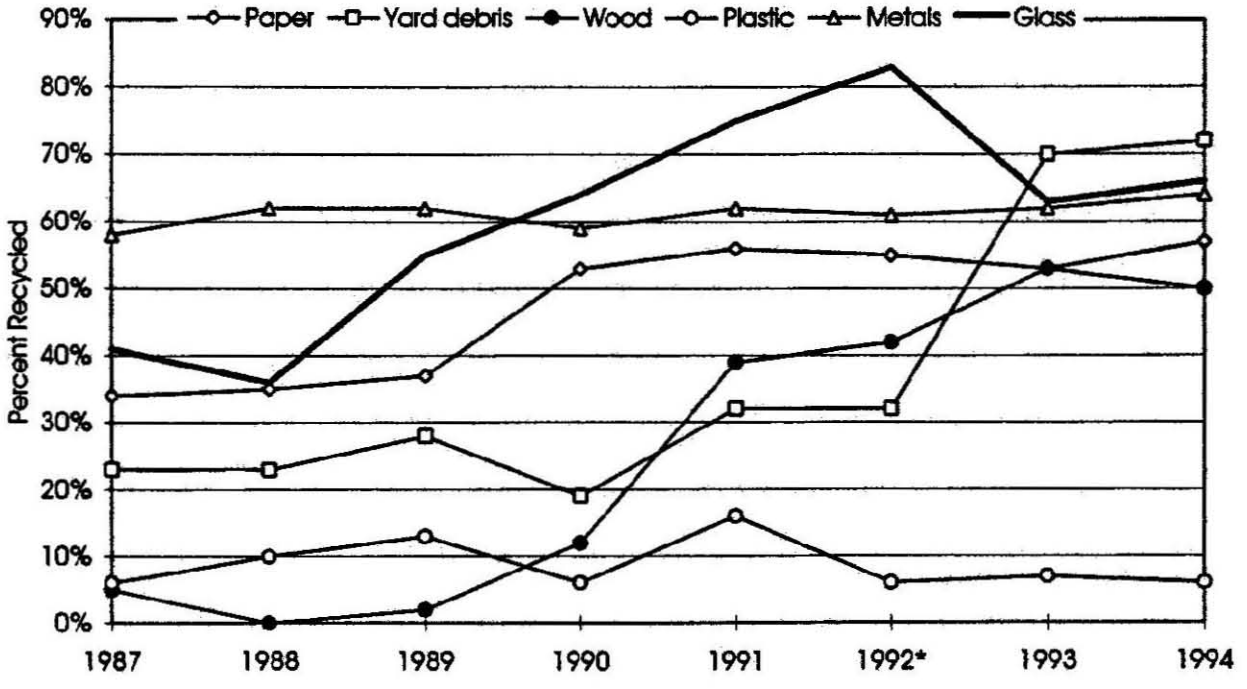
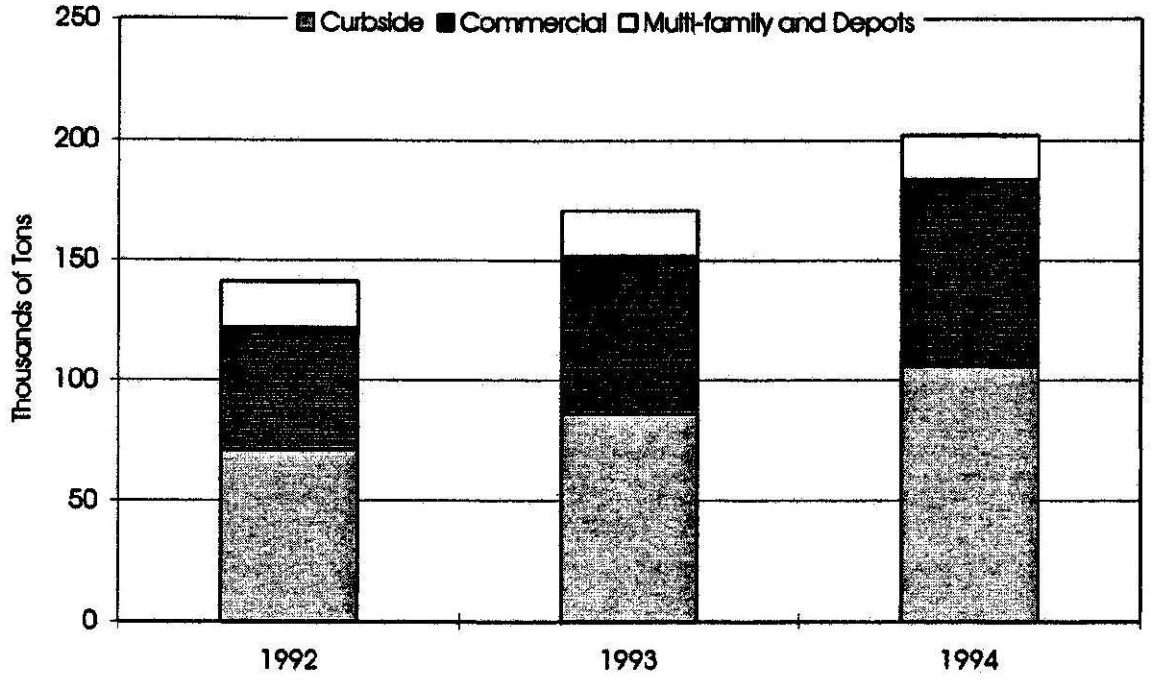


Table 5
Recycling and Recovery Rates by Material (1994)
Metro Region



*Due to revised estimating procedures for disposed tonnage by material, statistics for 1993-94 and those for previous years are not strictly comparable.

Table 6
Collected Recyclables Reported by Hauler (1992-1994)
Metro Region



1994 Methodology

Metro first produced a recycling level survey in 1986. The methodology used for gauging the level of recycling activity in the region since that time has been to survey known end markets which receive recyclables from the Metro region. More recently, recycling companies and intermediate processors have been included. The recycling system has become more fragmented and complex in the past few years. The 1993 survey included 98 companies of which 61 were included in the final tally. This year 112 companies were surveyed and 96 were included in the final tally. A considerable amount of time and resources was devoted to obtaining and analyzing the data.

Before starting the 1994 survey, a review of the past survey techniques was undertaken to determine if data reliability could be maintained while reducing the resources required to complete the work. It was concluded that all companies should be surveyed but the exhaustive efforts to obtain data from non-respondents would not be undertaken. Instead, missing data were estimated using the following known information:

- Previous years' data from the same company.
- Recycling data from companies of similar type and size.
- Material market and industry trends.
- Site visit observations and information.
- Commercial hauler survey data.

Data for 20 companies were estimated. These "imputed" data account for approximately 50,000 tons of the 806,853 tons (6%) recycled or recovered in 1994.

In 1992 and 1993, Metro surveyed all companies in the region and supplied this information to DEQ. In 1994, DEQ surveyed all companies receiving waste from the Metro region. Metro then obtained this data from DEQ. Since Metro no longer had to spend substantial resources to collect data, its efforts were focused on gaining a better understanding of the expanding recycling system. Over 45 recyclers, intermediate processors and end markets were visited. In addition, extensive searches were performed to uncover previously unsurveyed recyclers. These efforts led to the identification of over 200 processors of which 96 were included in the final tally. Companies were not included in the final tally if the material they processed was marketed to other companies surveyed, thus eliminating double counting, or if the nature of their activity didn't meet Metro's definition of "post-consumer recycling."

The 1994 Metro recycling and recovery levels are expected to vary from those calculated by DEQ for 1994. This has been the case in previous years. The reasons for the difference lie largely in the statutory rules followed by DEQ. These rules disallow counting certain materials that Metro has historically counted. For consistency, 1994 Recycling and Recovery Level Survey follows the same practices Metro has used for counting materials as it has since 1986. It is expected that the methods used for obtaining and analyzing data in the 1994 Metro Recycling and Recovery Level Survey will continue to be used in the future and be refined as needed to adapt to system and data changes.

For More Information...

The information provided in the 1994 Recycling and Recovery Survey is not intended to answer all questions that could arise from the data. A number of other documents are regularly produced by Metro which address certain aspects of the recycling and recovery system in the region. These may be obtained by contacting Metro at (503) 797-1650.

1. *Material Market Profiles* — Profiles of the regional recycling infrastructure and market dynamics for 13 recyclable materials. Updated annually after the Recycling and Recovery Level Survey is produced.

2. *1993-94 Waste Characterization Study* — A comprehensive classification of waste disposed in the region. This study is performed every four years and provides the basis for allocation of disposal tons to material types in the Recycling and Recovery Level Survey.

3. *Oregon Recovery Survey* — This annual report, released in early fall each year, calculates the recycling and recovery levels per state statutory regulations. It also shows activity in all areas of the state.

4. Solid Waste Information System (SWIS) Report — published biannually by Metro. Reports history and projections for waste generation, disposal and recycling in the Metro region.

Table 7

1994 Recycling And Recovery Levels In The Metro Region

Material		Tons Recycled, Recovered, And Disposed			Recycling: Generation And Rate		Recovery: Generation And Rate	
Category	Type	Recycled	Recovered	Disposed	Tons Generated*	Recycling Rate	Tons Generated**	Recovery Rate
Paper	OCC	155,919	0	59,963	215,882	72%	215,882	72%
	Newspaper	97,769	0	24,734	122,497	80%	122,497	80%
	High Grade Paper	24,245	0	21,415	45,660	53%	45,660	53%
	Magazines	13,159	0	18,661	31,820	41%	31,820	41%
	Mixed Paper & Phone Books	31,839	0	60,251	92,090	35%	92,090	35%
	Other	0	0	60,893	60,893	0%	60,893	0%
	Subtotal For The Paper Category	322,925	0	245,916	568,841	57%	568,841	57%
Plastic	#1 PET Plastic	2,013	0	1,330	3,343	60%	3,343	60%
	#2 HDPE	2,230	0	5,693	7,923	28%	7,923	28%
	#3 PVC	12	0	184	196	6%	196	6%
	Film Plastic & #4 LDPE	327	0	44,574	44,901	1%	44,901	1%
	#5 PP	124	0	290	414	30%	414	30%
	#6 PS	407	0	376	783	52%	783	52%
	Other Plastic	511	0	37,549	38,060	1%	38,060	1%
	Subtotal For The Plastics Category	5,624	0	89,996	95,620	6%	95,620	6%
Yard Debris		115,229	12,471	49,127	164,356	70%	176,827	72%
Wood		34,879	63,320	96,319	131,198	27%	194,518	50%
Textiles		3,290	0	21,526	24,816	13%	24,816	13%
Tires		520	9,501	1,997	2,517	21%	12,018	83%
Glass	Clear Container Glass	17,806	0	13,401	31,237	57%	31,237	57%
	Colored Container Glass	29,060	0	6,758	35,818	81%	35,818	81%
	Other Glass	8,400	0	6,939	13,339	48%	13,339	48%
	Subtotal For The Glass Category	53,266	0	27,107	80,393	66%	80,393	66%
Metals	Aluminum	7,894	0	3,983	11,877	66%	11,877	66%
	Tinned Food Cans	4,518	0	7,323	11,841	38%	11,841	38%
	Other Metals	100,237	0	51,519	151,756	66%	151,756	66%
	Subtotal For The Metals Category	112,449	0	62,826	175,275	64%	175,275	64%
Gypsum Wallboard		6,936	0	26,982	33,918	20%	33,918	20%
Paint		147	0	1,050	1,197	Not Applicable	1,197	Not Applicable
Oil Filters		0	0	521	521	0%	521	0%
Food Waste		2,000	0	188,679	190,679	1%	190,679	1%
Antifreeze		516	0	33	549	Not Applicable	549	Not Applicable
Lead-Acid Batteries		56	0	573	629	9%	629	9%
Solvents		0	282	1,113	1,113	Not Applicable	1,395	Not Applicable
Oil		0	31,371	447	447	Not Applicable	31,818	Not Applicable
Other		32,487	0	162,517	195,004	17%	195,004	17%
Total Of Above (excludes tonnage to Marion County Burner)		690,344	116,945	976,729	1,667,073	41%	1,784,018	45%
Marion County Burner		0	5,557	2,382	7,939	0%	7,939	70%
Grand Total (Including Tri-County Waste To Marion County Burner)		690,344	122,502	979,111	1,675,012	41%	1,791,957	45%
Per Capita Rates (pounds per person per day)		2.94	0.50	4.16	7.11	Not Applicable	7.61	Not Applicable

* Generation is defined as (Recycled + Disposed) for calculating the Recycling Rate.

** Generation is defined as (Recycled + Disposed + Recovered) for calculating the Recovery Rate.

Notes:

1. 80,000 tons of recycled metals are included as "other metals."
2. Disposal, recycling, and recovery all exclude auto fluff and special waste (such as petroleum contaminated soils).
3. Recovery Percentage = (Energy Recovery + Recycling)/Generation
4. "Other" recycled includes 20,000 tons of sandblasting grit.
5. For the purposes of this report, oil and steel from recycled oil filters were counted in the "oil" and "other scrap metal" categories, respectiv

Appendix 1

Revised 1993 Recycling and Recovery Survey Data

The 1993 Recycling and Recovery Survey Report (Metro, July 1994) used Metro's 1993-94 waste characterization study to determine the allocation of waste disposed among the material categories.

The preliminary data, from October through December 1993, was the only data available at the time the 1993 survey was completed. Subsequently waste characterization data for January through September 1994 was added to the data base, representing a complete year of disposal information.

The 1993 recycling and recovery rates have been revised with the new data. Results are included in the Appendix.

1993 Recycling And Recovery Levels In The Metro Region

Material		1993 Regional Tonnage			Recycling		Recovery	
Category	Type	Recycled	Recovered	Disposed	Generation*	Percentage	Generation**	Percentage
Paper	OCC	143,368	0	58,456	201,824	71%	201,824	71%
	Newspaper	77,009	0	24,114	101,123	76%	101,123	76%
	High Grade Paper	23,506	0	20,876	44,386	53%	44,386	53%
	Magazines	8,252	0	18,193	26,445	31%	26,445	31%
	Mixed Paper & Phone Books	21,762	0	58,739	80,501	27%	80,501	27%
	Other	0	0	59,366	59,366	0%	59,366	0%
	Subtotal For The Paper Category	273,897	0	239,747	513,644	53%	513,644	53%
Plastic	#1 PET Plastic	1,831	0	1,297	3,128	59%	3,128	59%
	#2 HDPE	3,812	0	5,550	9,362	41%	9,362	41%
	#3 PVC	9	0	179	188	5%	188	5%
	Film Plastic & #4 LDPE	523	0	43,455	43,978	1%	43,978	1%
	#5 PP	155	0	283	438	35%	438	35%
	#6 PS	353	0	367	720	49%	720	49%
	Other Plastic	38	0	36,607	36,645	0%	36,645	0%
	Subtotal For The Plastics Category	6,721	0	87,739	94,460	7%	94,460	7%
Yard Debris		105,483	4,144	47,894	153,377	69%	157,521	70%
Wood		22,726	83,904	93,903	116,629	19%	199,933	53%
Textiles		3,290	0	20,986	24,276	14%	24,276	14%
Tires		0	16,124	1,946	1,946	0%	18,070	89%
Glass	Clear Container Glass	16,027	0	13,065	29,092	55%	29,092	55%
	Colored Container Glass	22,249	0	6,598	28,847	77%	28,847	77%
	Other Glass	6,400	0	6,765	13,165	49%	13,165	49%
	Subtotal For The Glass Category	44,676	0	26,427	71,103	63%	71,103	63%
Metals	Aluminum	5,976	0	3,883	9,859	61%	9,859	61%
	Tinned Food Cans	4,695	0	7,140	11,835	40%	11,835	40%
	Other Metals	91,102	0	50,227	141,329	18%	141,329	18%
	Subtotal For The Metals Category	101,773	0	61,249	163,022	62%	163,022	62%
Gypsum Wallboard		16,741	0	26,305	43,046	39%	43,046	39%
Paint		190	0	1,024	1,214	Not Applicable	1,214	Not Applicable
Oil Filters		0	544	508	508	0%	1,052	52%
Food Waste		1,000	0	183,945	184,945	1%	184,945	1%
Antifreeze		943	0	32	975	Not Applicable	975	Not Applicable
Lead-Acid Batteries		8	0	559	567	1%	567	1%
Solvents		0	285	1,086	1,086	Not Applicable	1,371	Not Applicable
Oil		0	20,924	436	436	Not Applicable	21,360	Not Applicable
Other		0	0	158,440	158,440	0%	158,440	0%
Total Of Above (excludes tonnage to Marion County Burner)		577,448	125,325	952,226	1,529,674	38%	1,654,999	42%
Marion County Burner		0	7,442	3,190	10,632	0%	10,632	70%
Grand Total (including Tri-County Waste To Marion County Burner)		577,448	132,767	955,416	1,540,306	37%	1,665,631	43%
Per Capita Rates (pounds per person per day)		2.50	0.57	4.13	6.66	Not Applicable	7.20	Not Applicable

* Generation is defined as (Recycled + Disposed) for calculating the Recycling Rate.

** Generation is defined as (Recycled + Disposed + Recovered) for calculating the Recovery Rate.

Notes:

1. 80,000 tons of recycled metals are included as "other metals."
2. Disposal, recycling, and recovery all exclude auto fluff and special waste (such as petroleum contaminated soils).
3. Recovery Percentage = (Energy Recovery + Recycling)/Generation
4. "Other" recycled includes 20,000 tons of sandblasting grit.

M E M O R A N D U M

METRO

DATE: June 12, 1995

TO: SWAC members and alternates

FROM: Jim Goddard, Recycling Program Manager

RE: Analysis of Yard Debris Recycling System

Attached is the final "Analysis of Yard Debris Recycling System." The draft of this report was reviewed with SWAC on June 21, 1995. Comments from that meeting were incorporated into the final version.

Please call Jim Goddard at 797-1677 if you have any questions.

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Analysis of Yard Debris Recycling System

Waste Reduction Division

June 1995

METRO
600 NE Grand Ave
Portland, OR 97232-2736
(503) 797-1650

Executive Summary

The yard debris recycling rate in the Metro region increased from 23% in 1987 to 70 percent (110,000 tons) in 1993. This recycling rate is even higher than the rate for cardboard. During that same period, the proportion of yard debris found in municipal solid waste dropped from 11% to 5% (47,000 tons). The dramatic success in diverting yard debris from the waste stream coincided with the initiation of effective yard debris curbside collection programs for virtually every house in the region. Curbside programs currently capture 35,000 tons of yard debris per year. About 20,000 tons per year continue to be disposed of in residential garbage but this is expected to decrease as the effects of new yard debris collection programs are realized. It appears that the level of service provided by yard debris curbside collection programs is adequate. Improvements in program participation can be made through increased education as was shown in a 1995 program evaluation.

About 75,000 tons of yard debris were delivered directly to the 18 processors throughout the region from non-curbside sources. Still, about 26,000 tons of yard debris is disposed of each year mixed with other non-residential waste. Three measures are proposed to reduce the amount of yard debris disposed of in this manner. First, a service should be developed to allow for separation of yard debris from mixed waste when a single drop box is used. Second, self-haulers of mixed waste should be educated about the lower cost options for recycling yard debris available at most mixed waste facilities throughout the region. Third, yard debris collection should be provided to select businesses.

Yard debris diversion in the region developed differently than was projected in the Regional Yard Debris Recycling Plan adopted in 1991. The plan projected that curbside collection of yard debris would capture about 80% of all yard debris diverted in 1996. Current experience shows that the plan's prescribed level of curbside collection service (weekly or equivalent) has been established throughout the region and accounts for 32% of all yard debris recycled. The plan did not anticipate the large quantity of yard debris that would be hauled directly to processors. Based on this, the projections from the Regional Yard Debris Recycling Plan should be revised to reflect the system as it has actually developed.

It is recommended that the residential weekly collection service standard (or equivalent) be maintained from the Regional Yard Debris Recycling Plan. This would establish a benchmark for yard debris disposal to 5% of residential garbage (based on weekly collection performance measured in 1994 and 1995). To meet this benchmark, an additional 5,000 tons of yard debris would need to be diverted based on 1994 disposal rates. Still 15,000 tons would be disposed of in residential garbage. If the same 15,000 ton per year disposal benchmark was established for non-curbside yard debris, then an additional 12,000 tons would need to be diverted each year from these non-residential sources. These two benchmarks would result in yard debris making up no more than 3% of all solid waste landfilled. This is consistent with the actual experience in Seattle and Minnesota Twin Cities Region. They both have aggressive yard debris programs that have reduced disposal of yard debris to 3% of all garbage. The yard debris recycling rate would be over 80%, which would be the highest rate of all principal recyclables. This benchmark should be attainable by the year 2000. Progress made toward meeting this would be measured during the next comprehensive waste characterization study scheduled for FY 1997-98.

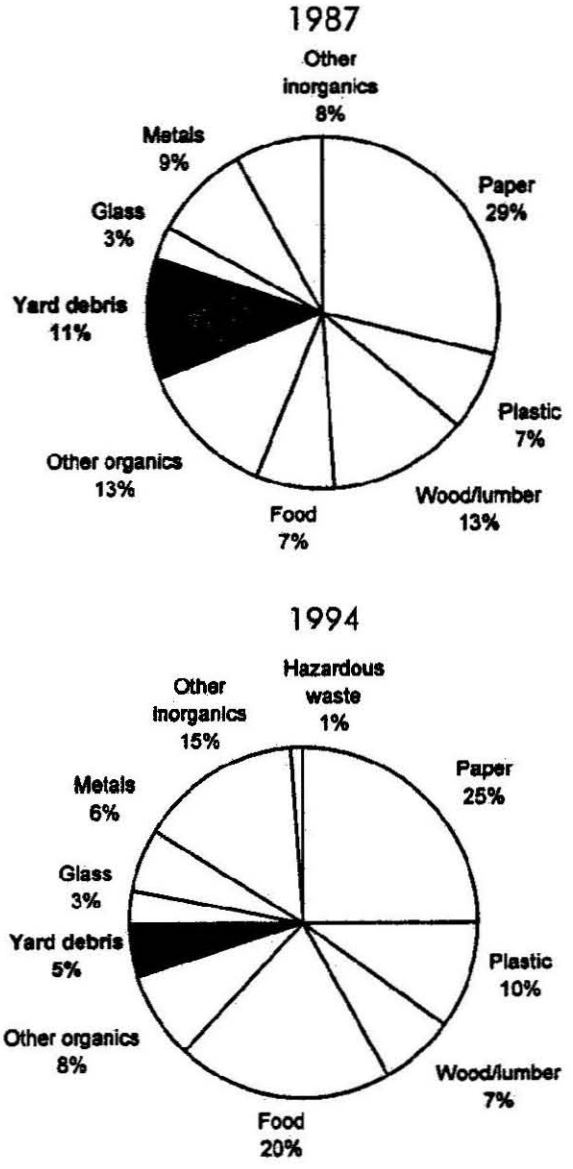
1. Why should we be concerned about diverting yard debris from the landfill?

Yard debris can be recycled through composting. Compost is used as a valuable soil conditioner that improves soil quality, or as a mulch that reduces weeds and retains soil moisture. Yard debris lends itself to recycling since it is usually produced in large quantities at one time and is uncontaminated by other garbage until it is placed in a trash can. When yard debris is disposed of in a landfill, it creates leachate and gasses which must be captured and treated.

In the past, yard debris has been a significant portion of solid waste landfilled. As shown in *Figure 1,* yard debris was the third most prevalent single material in the wastestream in 1987. Yard debris was 11% (over 100,000 tons) of all waste disposed of in landfills annually. By 1994[1] this amount had been reduced by over 50% to approximately 48,000 tons. This amount still represented 5% of all waste. During this same period, the amount of yard debris disposed of has fallen from 185 pounds per person per year to 74 pounds per person per year.

The 1987 yard debris statistics were used as the basis for development of the Regional Yard Debris Recycling Plan. The plan directed the region to reduce the amount of yard debris in the garbage while promoting composting. This was adopted as part of the Regional Solid Waste Management Plan in January 1991. July 1994 was established as the target date for full implementation of yard debris diversion programs throughout the region.

Figure 1
Regional Major Material Categories as Disposed of

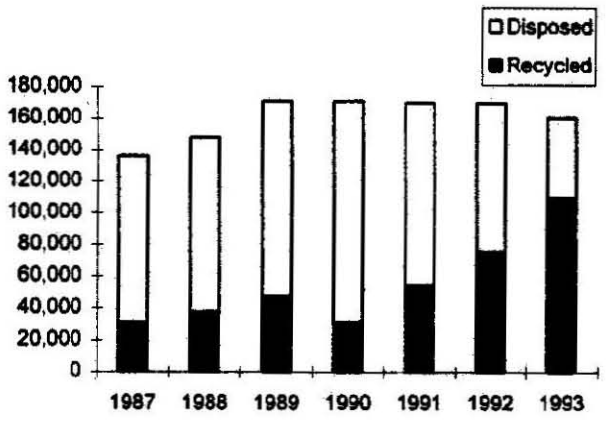


[1]The 1994 yard debris statistics were taken from the 1995 revision to the 1993-94 Waste Characterization Study. These tonnages differ from those in the Final Report of the Waste Characterization Study by about 9,000 fewer tons of yard debris. Improved information concerning post-collection recovery from regional disposal facilities resulted in a reduction in total tonnages landfilled. Changes in the profile of landfilled tonnages also resulted. The 1995 Revision is used throughout this report.

2. How much has yard debris recycling increased?

Yard debris recycling increased from 31,000 tons in 1987 to over 110,000 tons in 1993.[2] This represents a change in the yard debris recycling rate of 28% to 70% (*Figure 2*).

Figure 2
Yard Debris
Recycled vs. Disposed of



Yard Debris Recycling Rate

Year	DISPOSED OF Yard Debris	RECYCLED Yard Debris	Generated Yard Debris	Yard Debris Diverted from Landfill
1987	105,000	31,000	136,000	23%
1988	111,000	38,000	149,000	26%
1989	123,000	48,000	171,000	28%
1990	139,000	32,000	171,000	19%
1991	115,000	55,000	170,000	32%
1992	94,000	76,000	170,000	45%
1993	47,000	110,000	157,000	70%

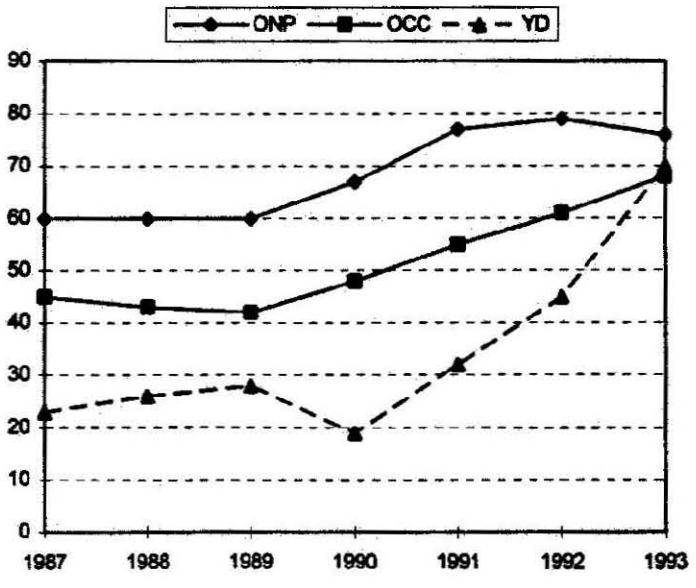
[2]Based on Metro's Recycling Levels Surveys, 1987 through 1993.

3. How does yard debris recycling compare to other recyclable materials?

The yard debris recycling rate can be put into context by comparing it to other recyclable materials. Of the 10 principal recyclable materials collected in Oregon, only newspaper and colored container glass had higher recycling rates in 1993.

Other materials have a long history of being recycled *(Figure 3)*. As an example, in 1987 newspaper and corrugated cardboard had already established relatively high recycling rates of 60% and 45%, respectively. However, yard debris had only a 23% recycling rate. By 1993, the 70% recycling rate for yard debris had surpassed the corrugated cardboard recycling rate of 68%. Newspaper had risen to 76%. This demonstrates a tremendous improvement in yard debris recycling compared to other recyclables. This improvement occurred during the period of the development and implementation of the Regional Yard Debris Recycling Plan.

Figure 3
Recycling History of Newspaper, Corrugated Cardboard, and Yard Debris



A similar comparison can be made based on the amount of a recyclable material disposed of in a landfill. As an example, *Figure 4* shows yard debris disposal compared to corrugated cardboard disposal.[3]

Figure 4
Comparison of Landfilled Yard Debris and Corrugated Cardboard

	% of Total Waste Landfilled		% of Residential Waste Landfilled	
	1989	1994	1989	1994
Yard debris	11%	5%	26%	7%
Corrugated cardboard	12%	6%	11%	6%

As a proportion of the total wastestream, yard debris and corrugated cardboard have both experienced similar drops in disposal of about 50% between 1984 and 1994. As a percentage of residential waste being landfilled, yard debris has decreased substantially from 26% to 7% while cardboard disposed of in the residential wastestream only dropped from 11% to 6%.

Future improvements in the recovery of yard debris and other recyclables may require a more drastic policy such as a disposal ban, to achieve higher recovery.

4. What has been done to remove yard debris from the wastestream?

The primary focus of the Regional Yard Debris Recycling Plan was to divert yard debris from residential garbage. To this end, local governments implemented curbside collection programs in virtually all areas of the region. *Figure 5* shows where and when yard debris collection programs were implemented throughout the region.

Yard debris collection programs vary by jurisdiction, but the vast majority of the region's residents have curbside collection of yard debris. Of Metro's 1.25 million residents, approximately 1.2 million live in areas served by weekly or every-other-week yard debris recycling programs. Many of the programs were first implemented in 1994.

As yard debris collection programs were established, other programs were implemented to keep yard debris out of residential garbage. The most noteworthy was an extensive home composting program initiated by Metro with cooperation and assistance from local governments. Activities included establishing five permanent home composting demonstration sites, providing home composting workshops in the spring and fall, distributing compost bins, promoting composting at fairs and tradeshows, and providing regular how-to compost information through educational mailings to every resident in the region.

In addition, efforts have been made to promote the use of compost produced from yard debris. Programs include compost testing and standards, mitigation of stormwater runoff and erosion control with compost, and the use of compost as a biological filter medium.

Another ongoing effort is to determine if there is sufficient processing capacity for the yard debris and markets for yard debris compost. There currently appears to be a sufficient demand for compost products throughout the region, based on field visits and interviews with processors. There also appears to be adequate processing capacity since the number of privately developed processors has grown from nine in 1993 to 18 in 1995. There is also a regional effort to help improve the performance of compost facilities and develop siting standards.

[3] Based on Metro's Waste Characterization Studies, 1989 and 1993/94.

Figure 5
Metro Region Yard Debris Collection Programs

Service and Program Areas		Service Frequency: Weekly	Every other week	Other	Exemption Program[1]	Container: Hauler Provided	Customer Provided	Date Implemented
CLACKAMAS								
Clackamas County								
	Unincorporated area in USB, Happy Valley, Sandy, Molalla, Canby	X			X (annual fee)	X (60 gal)	X (32 gal)	1992
	Oregon City	X				X (60 gal)	X	1980
	Gladstone	X				X (60 gal)	X	1983
	West Linn	X		X[2]		X (60 gal)	X (32 gal)	1995
Johnson City		X					X (32 gal)	1989
Lake Oswego	Incorporated area	X			X (no fee)	X (60 gal)	X (32 gal)	1992
Milwaukie	Incorporated area	X				X (60 gal)	X (32 gal)	1992
MULTNOMAH								
Portland	Incorporated area plus USB		X	X[2]		Carts offered	X (32 gal)	1993
Maywood Park	Incorporated area	X[3]					X	
East Multnomah County Cities	Fairview	X			X (one time fee)	X (60 gal)	X (32 gal)	1992
	Gresham[4]	X		X[2]	X (one time fee)	X (60 gal)	X (32 gal)	1992
	Wood Village	X			X (one time fee)	X (60 gal)	X (32 gal)	1992
Troutdale	Incorporated area	X			X (one time fee)	X (60 gal)	X (32 gal)	1992
WASHINGTON								
Washington Co.								
	Unincorporated area in USB		X			X (60 gal)	X (32 gal)	1994
	Beaverton		X			X (60 gal)		Oct-94
	Hillsboro		X			X (60 gal)		1994
	Tigard		X			X (60 gal)		1994
	Tualatin	X				X (90 gal)		1991
	Forest Grove			X[5]				TBD
	Cornelius			X[5]				TBD
	Sherwood		X[6]					1994
	King City			X[5,7]				TBD
	Durham		X				X (60 gal)	1994
	Wilsonville[8]	X		X	X (no fee)	X (60 gal)	X (35 gal)	1994

[1]Allows customers to not pay for yard debris services. Most programs require that exempt participants demonstrate usage of home composting or landscaping services and pay a small yearly or one-time fee.

[2]City Collection and composting of street leaves from residential areas.

[3]Weekly yard debris curbside 7 months, on-call for other 5 months, 2 community collection events annually.

[4]A large percentage of the City of Gresham is located outside the metropolitan burn ban area.

[5]Yard debris in garbage found to be equivalent to weekly.

[6]Every other week collection or compost bin distribution option. Also has an annual collection event.

[7]King City holds two yard debris collection events annually. No other program is proposed.

[8]Charbonneau area has 3 programs: small lots= 35 gal. roll carts collected on 1st garbage day of month; larger lots=60 gal. carts collected weekly; and no- fee exemption program w/approved landscape service. All others = 60 gal. serviced weekly.

TBD - To Be Determined

5. How effective have these programs been in diverting yard debris?

The Regional Yard Debris Recycling Plan placed the greatest emphasis on establishing yard debris collection from households. *Figure 6* shows hauler collected yard debris tonnage from 1992 through 1994.[4]

Figure 6
Hauler Residential Yard Debris Collection Trends

	Jan-June Tons	July-Dec Tons	Total Tons
1992	5,000	6,000	11,000
1993	10,000	13,000	23,000
1994	16,000	19,000	35,000

The 1993 and 1994 tonnage accounted for approximately 22% and 32% of all yard debris recycled, respectively. Many programs did not come on-line until late1994 so their contribution would not be fully noted until 1995.

[4] Based on hauler reported tonnages provided to Metro.

It is obvious that curbside collection has made a big impact on yard debris diversion but it has not accounted for all of the improvement. Other generators of yard debris such as commercial, industrial, building industry and residential self-haul accounted for the remaining 75,000 tons diverted in the region in 1993.

The effectiveness of the home composting component of the program has not been tested to date. The best measure of composting activity has been telephone surveys about the composting practices of the public.

A 1995 survey performed by Metro[5] indicated that 44% of residents in the region recycled yard debris curbside, while only 1% did in 1990. During the same period the percentage of residents disposing of yard debris in their garbage decreased from 28% to 5%. Home composting levels remained relatively unchanged over the 5-year period.

6. Where can additional yard debris be diverted from the wastestream in the future?

As shown in previous sections, the focus of yard debris diversion programs has been placed on curbside collection from residents. The Waste Characterization Study indicates that of the 47,000 tons of yard debris disposed of in landfills annually, only 20,000 of those tons are received from garbage trucks carrying residential waste *(Figure 7)*.[6]

Figure 7
Generators of Yard Debris
Disposed of in 1994

Commercially hauled residential	20,000
Residential self-haul	6,000
Commercial	12,000
Industrial	2,000
Building industry	7,000
TOTAL	47,000

There is obviously more yard debris that can be diverted from residential garbage and the programs already in place are diverting increasing amounts of yard debris from this source. Disposal of yard debris in residential garbage should continue to decrease.

The remaining 27,000 tons of disposed yard debris are spread between self-hauled residential, commercial business, industrial business and the building industry. The main diversion option available to these generators is to deliver a source-separated load of yard debris to any of the 18 processors in the region. This generator group already accounts for 75,000 tons of yard debris sent to processors even though there are currently no programs targeting these generators to increase source separation of yard debris. Some businesses that regularly produce small quantities may be well served with a collection program expanded from the residential program in their area.

Another way to look at yard debris disposal is to determine how it is delivered to a disposal site. *Figure 8* shows that drop boxes and self-haul account for 56% of yard debris disposed of.[7]

Figure 8
Method of Delivery for
Disposed of Yard Debris

Front/Rear/ Side Loaders	Drop Boxes	Self-Haul	Total Ton/Year
21,000	12,000	14,000	47,000

Currently, drop box haulers will provide a drop box for source-separated yard debris on request. However, there is no service available where small amounts of yard debris could be separated with a single box. If this type of service is initiated, it would need to be tested to ensure a workable arrangement for both the hauler and the generator.

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[5] Solid Waste & Recycling Survey, Gilmore Research Group, June 1995.
[6] Based on the 1995 Revision of Metro's 1993/94 Waste Characterization Study
[7] Ibid.

Yard debris that is self-hauled for disposal requires different solutions than hauler-provided service since the generators load their own vehicle and take it to any of the region's disposal sites. Most of these disposal sites have a discounted rate for source-separated yard debris but this has not been enough of an incentive for the generator to keep the yard debris separated. More education, publicity, or more convenient arrangements at the facility would help capture this portion of the wastestream. This would also need to be tested to ensure that it had the intended effect and was workable at the facility.

One remaining observation about yard debris arriving for disposal is that approximately 70% of it is leaves and grass. Once these small pieces are mixed with other waste it is virtually impossible to separate. Recovery of leaves and grass from mixed waste is not likely to remove significant quantities. Source-separation is most likely to succeed.

7. How does yard debris diversion in the region compare to the diversion projected in the Regional Yard Debris Recycling Plan?

The Numbers

The Regional Yard Debris Recycling Plan projected that in 1996 approximately 160,000 tons of yard debris would enter the solid waste system though curbside collection, direct haul to processors and disposal as solid waste. This is very close to the actual generation of 157,000 tons in 1993 *(Figure 9)*. The sources of the yard debris that make up the total generation do not track with the plan.

Figure 9
Projected vs. Actual Yard Debris Tonnage

	Yard Debris Plan Tonnage Projection for 1996	Actual Yard Debris Tonnage
Curbside collection	117,000	35,000[8]
Direct haul to processors	30,000	75,000[9]
Disposal as solid waste	16,000	47,000
Generation	163,000	157,000
Recycling Rate	90%[10]	70%

The plan projected that 80% (117,000 tons) of all yard debris recycled would come from the curbside collection programs. Only 35,000 tons was collected curbside in 1994, however, all programs had not been implemented for the full year. Direct haul to processors accounted for the remaining 75,000 tons diverted while only 30,000 tons was projected. Part of the explanation for this is that large loads of residential yard debris are not set out for curbside collection, since only one yard debris container is generally included in the base rate and additional containers have an extra charge. Instead, large loads are delivered to one of the of 18 processors distributed throughout the region. Few of these large yard debris loads are destined for the transfer stations since processors are generally more conveniently located and have lower prices for source-separated yard debris than transfer stations.

This is quite a shift from when the plan was written. At that time, now closed local landfills were convenient to most parts of the region and charged low tipping fees of about $15 per ton. Landfills attracted large quantities of the direct haul yard debris. Also at that time, there were not as many recycling options with only two large yard debris processors in the region and six small processors. The plan projected a shift from direct haul for disposal or recycling to use of curbside collection. This shift has not materialized to the extent expected.

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[8] Based on hauler reported tonnages for 1994.
[9] Based on Metro's 1993 Recycling Levels Survey.
[10] Metro's Regional Yard Debris Recycling Plan included tonnage from chipping services and home composting to project a total recycling level of 93%.

The plan projected that chipping services and home composting, which prevent yard debris from entering the solid waste system, would lose tonnage to curbside collection. It is not known if this happened since activity in these areas has not been measured. Diversion through home composting will be measured in FY 1995-96.

The plan projected a 67% and 93% recycling rate for yard debris in 1993 and 1996 respectively. These rates were based on implementation of yard debris collection programs plus chipping services and home composting. The 1993 rate was met based only on recycling activity while not taking credit for contributions made by home composting and chipping services. The 1996 rate relied heavily on the curbside collection programs to supply almost all of the increase in recycling. This now appears to be an erroneous assumption. It may be better to revise the projected rate based on the experience gained since the plan was written.

The Level of Service

Another objective of the Regional Yard Debris Recycling Plan was to ensure that all areas of the region had weekly collection of yard debris or an equivalent alternative. A number of jurisdictions chose alternative programs. The effectiveness of these alternatives at keeping yard debris out of residential garbage was tested in the Spring of 1994 and 1995. Results from both years show that areas with weekly curbside yard debris collection had about 5% yard debris in their residential garbage. This is equivalent to a little under 1-1/2 pounds per household per week. If all households had this level of service, there would be about 15,000 tons of yard debris disposed of in residential waste instead of 20,000 tons currently disposed of in 1994.

The 1994 study showed that the weekly programs were more effective than the non-weekly programs tested. The City of Portland and West Linn were informed that their programs had to improve by the spring of 1995 or they would be required to provide weekly curbside yard debris collection. West Linn went to weekly curbside collection and Portland tested enhanced programs in select areas of the city.

The 1995 study showed that the enhanced programs tested by Portland were as effective at keeping yard debris out of the garbage as weekly programs. In fact, all areas tested in the 1995 study indicate that the region's non-weekly 32-gallon collection programs would be equivalent to weekly 32-gallon collection, provided that Portland implements its enhanced every other week collection program city-wide. There is some room for improvement through increased education, particularly where one 32 gallon container is collected every other week.

A number of yard debris collection programs exceed the 32-gallon weekly collection standard. Jurisdictions are encouraged to exceed the minimum standard and divert as much yard debris as possible. As an example, every-other-week 60-gallon roller carts were found to be significantly better than weekly 32-gallon curbside collection in the 1995 study. The added volume of the 60 gallon container and the convenience of a wheeled cart are apparently attractive for the residents to use. The roller carts were implemented where semi-automated garbage collection equipment is used. As more areas of the region begin automated or semi-automated garbage collection, it is expected that yard debris service will be provided in roller carts which should further improve the residential yard debris diversion.

Overall, the region has met the standard established by the Regional Yard Debris Recycling Plan of having weekly curbside collection to all residents of the region or an equivalent alternative. This shows the tremendous progress that has been made in the diversion of yard debris. However, it does not mean that there will not be any yard debris in the garbage. Even newspaper, with a 76% recovery rate, had 24,000 tons disposed of of the 101,000 tons generated in 1993.

8. How does yard debris diversion in the Metro region compare to other areas of the country?

Many cities have banned yard debris from the landfill in concert with implementation of diversion

programs. The September 1994 issue of *Biocycle* indicates that yard debris is still present in garbage even where yard debris has been banned. Yard debris in Seattle residential garbage dropped from 14% to 3% with implementation of diversion programs and a ban. The Metro region has already experienced a drop from 25% to 7% yard debris in residential cans. This drop was measured before all of the region's yard debris collection programs were in place. It can be expected that this will continue to drop as the effects of new programs are realized.

The Minnesota's Twin Cities area determined that yard debris accounted for 11% of residential and commercial garbage before diversion programs and a ban was put in place. After that time, yard debris dropped to 3% of the garbage. Yard debris in all of Metro area garbage has dropped from 11% to 5%. In both Minnesota and Seattle, the diversion and collection programs were given credit for the dramatic drop in yard debris disposal. The ban was largely considered a symbolic measure to get people to use the services.

At current disposal rates, the Metro region could match Minnesota's performance and still send approximately 30,000 tons of yard debris to the landfill. The Regional Yard Debris Recycling Plan projection of landfilling only 16,000 tons of yard debris per year is equivalent to less than 2% of landfilled waste.

9. Where do we go from here?

Yard debris diversion programs have been very successful at reducing the amount of yard debris disposed of in garbage. In 1993, 70% of all yard debris entering the solid waste and recycling system was diverted from landfills. This places yard debris diversion on par with other recyclable materials. The special attention yard debris has received in the past is no longer warranted. The question is how much effort should be made to remove a portion of the 47,000 tons landfilled each year?.

Curbside Collection

The Regional Yard Debris Recycling Plan was very successful at ensuring that curbside recycling of yard debris was made available to virtually all residents of the region. It was determined in the spring of 1995 that all of the region's curbside collection programs will be equivalent to weekly service, as prescribed by the plan once Portland implements its enhanced program city-wide.

Tonnage diverted through the curbside programs is expected to continue to increase as the programs mature and improve. Hauler data should be used to monitor these trends. The Regional Yard Debris Recycling Plan projections for collection tonnage are no longer appropriate since they expected almost all residential yard debris to be captured through curbside collection. Experience has shown that curbside programs do divert significant amounts of yard debris, but large quantities will also be delivered directly to processors.

Measurement of yard debris disposed of in residential garbage cans is the most direct measure of residential program effectiveness. It is recommended that yard debris in garbage cans be measured in 1996 as it was in 1994 and 1995. This should confirm that the collection programs continue to be on track. If the measurement indicates otherwise, a recommendation about follow-up action should be made. It is expected that the time and expense required to make this measurement will not be warranted after 1996.

Overall there are no major deficiencies in the level of service that need to be addressed in the region's yard debris curbside collection programs. Instead, educating the public about use of the yard debris collection services should be a major focus to improve residential diversion rates. The 1995 yard debris study showed this to be effective at reducing yard debris disposal. Continued home composting education should also be included to prevent yard debris from entering the solid waste system in the first place.

Non-Curbside Programs

Non-curbside yard debris diversion was given less emphasis in the Regional Yard Debris Recycling Plan. While 75,000 tons of source separated yard debris is hauled directly to processors , a significant amount is still mixed with garbage in drop boxes and in self-haul loads. It is recommended that methods be developed to provide the opportunity to separate yard debris (or other recyclables) from mixed waste when a single drop box is rented. This will require cooperation by haulers, processors, local governments and Metro to develop effective methods and equipment to accomplish this.

Similarly, a cooperative approach should be developed to reduce the amount of yard debris disposed of in self-hauled garbage. It appears education and publicity is needed to make the public aware that the majority of facilities that accept mixed garbage also accept source separated yard debris at a lower fee. It is also possible that a more convenient arrangement for self-haul drop-off of yard debris at the facilities is needed.

Another option is to provide collection to businesses that regularly generate smaller quantities of yard debris. This may be most practical for businesses located near established curbside collection areas. This option would most likely be applied to individual businesses based on their need for the service rather than a blanket approach.

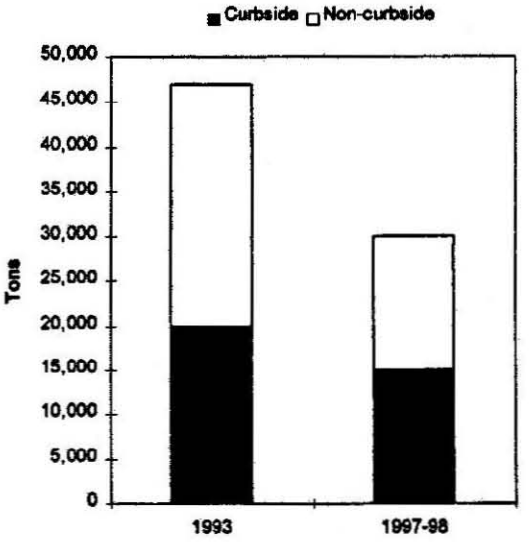
Target Benchmarks

It would be reasonable to expect that the yard debris disposed of in the landfill can be reduced to 3% of all solid waste (levels observed in Seattle and Twin Cities). In terms of current tonnage, this translates to 30,000 tons per year or a yard debris recycling rate of about 80%. This would require diversion of an additional 17,000 tons of yard debris from the 1993 levels. If residential curbside programs reduce disposal to 5% of garbage region-wide (based on the weekly collection service standard), then 15,000 tons would be disposed of in household garbage instead of the current 20,000 tons. Non-curbside programs would account for the remaining 15,000 tons disposed of per year or a drop of 12,000 tons from 27,000 tons *(Figure 10)*. Per capita statistics equivalent to these annual tonnages should be used to establish targeted benchmarks for the program. The per capita approach removes confusion about the effects of population growth on the benchmarks.

The benchmarks should be attainable by the year 2000. The effects of improvements made in recycling yard debris should be evident in the next waste characterization study scheduled for FY 1997-98. If these benchmarks are not met, more drastic measures could be taken, such as a ban on yard debris disposal. This step is not considered necessary currently since tremendous progress has been made in the past few years. Continued progress toward the above goals is expected if the recommendations from this report are implemented throughout the region.

Figure 10

Projected Yard Debris Disposal



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Regional Solid Waste Management Plan

Summary of Comments and Meeting Summaries
Through July 9, 1995

I. Residential Waste Reduction

	Comments Received	Addressed in Preliminary Draft?	Preliminary Draft Corresponding Reference(s)	Suggested Revision to Preliminary Draft
A.	Waste Prevention:			
1	Support for focus on waste prevention in Plan.	Yes	Throughout Plan, support for waste management hierarchy; pages 7-5 & 7-6, Practices 1 and 2	None
2	Support for cost/benefit analysis in waste prevention / reduction efforts.	Yes	Page 7-2 - Overview of Recommended Practices; Pages 7-5 & 7-6, Practice 1	None
3	Explore ways to decrease overpackaging.	Yes	Pages 7-5 & 7-6, Practice 1	Add language to Practice 1, Roles and Responsibilities: Metro will support existing or expanded state packaging legislation.
B.	Home Composting:			
1	Support for this activity, especially bin distribution program.	Yes	Page 7-6, Practice 2	None
2	Some support for a ban on landfilling yard debris; others felt voluntary system successful.	Yes	Page 7-7, Practice 3	None
C.	Residential Curbside Programs:			
1	Residential generators participating in recycling, but not being rewarded. Rates are too high.	Yes	Public education, and page 7-8, Practice 4	None
2	Do not raise rates. High rates contribute to illegal dumping / littering.	Yes	Page 7-8, Practice 4	None

I. **Residential Waste Reduction**, continued

	Comments Received	Addressed in Preliminary Draft?	Preliminary Draft Corresponding Reference(s)	Suggested Revision to Preliminary Draft
C.	Residential Curbside Programs, continued:			
3	Standardize curbside yard debris service across region.	Yes	Requirement is weekly curbside pick-up or equivalent, upon local government discretion	None
4	Recycling preparation too complicated and time consuming.	Yes	Page 7-8, Practice 4	None
5	Work with end markets to encourage increased recycling of least-recycled materials.	Yes	Pages 7-5 & 7-6, Practice 1	None
D.	New Collection Technologies:			
1	Keep source-separated system, but allow commingling where it will not degrade material value.	Yes	Page 7-8, Practice 4	None
E.	Residential Food Wastes:			
1	Using sewage system as a disposal method is inefficient - need alternatives.	No		Add language to Page 7-9, Practice 5, Key Elements: It is the regional policy to encourage home composting and processing of organics (excluding meat), rather than use of garbage disposals and sewer systems for disposal of food. (Language from 3/15/95 SWAC Planning Subcommittee)
2	Support prevention and home composting as first priorities.	Yes	Pages 7-5 & 7-6, Practices 1 and 2	None
3	Do not raise rates to pay for programs.	Yes	Page 7-2 - Overview of Recommended Practices	None

II. Business Waste Reduction

	Comments Received	Addressed in Preliminary Draft?	Preliminary Draft Corresponding Reference(s)	Suggested Revision to Preliminary Draft
A.	Waste Prevention:			
1	Support for focus on waste prevention in Plan.	Yes	Throughout Plan, support for waste management hierarchy; pages 7-10 & 7-11, Practice 1	None
2	Implement waste evaluation program.	Yes	Pages 7-10 & 7-11, Practice 1	None
3	Support for cost/benefit analysis in waste prevention / reduction efforts.	Yes	Page 7-2 - Overview of Recommended Practices	None
4	Explore ways to decrease overpackaging.	Yes	Pages 7-10 & 7-11, Practice 1	Add language to Practice 1, Roles and Responsibilities: Metro will support existing or expanded state packaging legislation.
B.	Source-Separated Recycling:			
1	Support for shifting focus of waste reduction efforts to businesses.	Yes	Pages 7-9 through 7-14, Practices 1 - 5.	None
2	Perform market research to determine barriers to / incentives for business recycling.	No	Page 7-10, Practice 1	Will be addressed by implementation work group.
3	Consider mandatory recycling and/or recycling plans.	Yes	Pages 7-11 & 7-12, Practice 2	None
4	Provide more economic incentives for recycling.	Yes	Pages 7-11 & 7-12, Practice 2	None
5	Simplify it so more businesses will participate.	Yes	Page 7-13, Practice 4	None
6	Some support for bans on landfilling certain materials; others felt offering more assistance would be a better solution.	Yes	Page 7-11, Practice 2	None
7	Address event waste recycling.	No	Page 7-10, Practice 1	Include in Business Waste Reduction Practices as part of the targeted generator strategies.

II. Business Waste Reduction, continued

	Comments Received	Addressed in Preliminary Draft?	Preliminary Draft Corresponding Reference(s)	Suggested Revision to Preliminary Draft
C.	Business Food Waste:			
	No Comments Received			
D.	Dry Waste Processing:			
1	Support for this technology over landfilling, but prevention and source-separation should have priority.	Yes	Pages 7-10 through 7-12, Practices 1 and 2	None
E.	Fiber-Based Fuel:			
	No Comments Received			

III. Building Industries Waste Reduction

	Comments Received	Addressed in Preliminary Draft?	Preliminary Draft Corresponding Reference(s)	Suggested Revision to Preliminary Draft
A.	Technical and Educational Programs:			
1	Integrate education efforts with strong markets for recyclables.	No	Pages 7-15 & 7-16, Practice 3	Add language to Practice 3, Key Concept and Approach of the Recommended Practice: Education efforts will be integrated with efforts to encourage strong markets for recyclables.
2	Require recycling plan as a condition of receiving a building permit.	No		Remains a local government option.
3	Explore ways to decrease overpackaging.	Yes	Page 7-14, Practice 1	Add language to Practice 1, Roles and Responsibilities: Metro will support existing or expanded state packaging legislation.
B.	On-Site Source Separation			
1	Provide bins at transfer stations for separation of self-haul loads into their recyclable components.	Yes	Page 7-19, Practice 1 - Key Elements of the Recommended Practice, item (e)	None
C.	Markets to Support Reuse and Recycling:			
1	Support and encourage markets for recycled materials.	Yes	Pages 7-15 & 7-16, Practice 3	None
D.	Dry Waste Processing Facilities:			
1	Support for this technology over landfilling, but prevention and source-separation should have priority.	Yes	Pages 7-14 & 7-15, Practices 1 and 2	None

IV. Solid Waste Facilities and Services - Regulation and Siting

	Comments Received	Addressed in Preliminary Draft?	Preliminary Draft Corresponding Reference(s)	Suggested Revision to Preliminary Draft
A.	Yard Debris Processing Facilities:			
1	Concern over potential environmental / siting impacts.	Yes	Pages 7-17 & 7-18, Practice 1	None
B.	Organics Processing Facilities:			
	No Comments Received			

V. Solid Waste Facilities and Services - Transfer and Disposal System

	Comments Received	Addressed in Preliminary Draft?	Preliminary Draft Corresponding Reference(s)	Suggested Revision to Preliminary Draft
A.	Maintain Existing System of Three Transfer Stations:			
1	Concern about distance East County garbage haulers must travel to regional transfer stations.	Yes	Pages 7-20 & 7-21, Practice 4, Reload Facilities - Roles and Responsibilities	None
B.	Maintain Existing System of Private Landfills:			
	No Comments Received			
C.	Haulers Choose Among Disposal Alternatives:			
	No Comments Received			
D.	Reload Facilities:			
	No Comments Received			

VI. Solid Waste Facilities and Services - Household Hazardous Waste Management

	Comments Received	Addressed in Preliminary Draft?	Preliminary Draft Corresponding Reference(s)	Suggested Revision to Preliminary Draft
A.	Continue Collection at Metro South and Central:			
	No Comments Received			
B.	Waste Prevention:			
1	Support for educating public about alternatives to household hazardous waste.	Yes	Pages 7-21 & 7-22, Practice 2	None
C.	Promote Existing Facilities:			
	No Comments Received			
D.	Provide Service to Outlying Areas:			
	No Comments Received			
E.	Secure Alternative Funding:			
1	General support for advance disposal fee (ADF) on household hazardous wastes to reduce their use and help fund disposal.	Yes	Pages 7-23 & 7-24, Practice 4	None

VII. Background Section

*Note - These comments were submitted after 7/9/95, and are not included in the 7/10/95 Meeting Comments and Summary.

	Comments Received	Addressed in Preliminary Draft?	Preliminary Draft Corresponding Reference(s)	Suggested Revision to Preliminary Draft
1	Table 2.6 on page 2 does not include Northern Wasco County Landfill.	No		Add Northern Wasco County Landfill to Table 2.6.
2	Page 4-2, first paragraph and first sentence under **Service Provision - Transfer Stations**, clarify that 90% of acceptable waste is transferred to Columbia Ridge Landfill and presently 10% to another Subtitle D disposal facility, as this accurately reflects existing contractual obligations and current conditions. In the paragraph following, note that the Wilsonville Transfer Facility was the facility rejected.	No		Change page 4-2, Service Provision - Transfer Stations, first paragraph, to read: ~~Three transfer stations (~~Metro Central~~,~~ and Metro South~~, and Forest Grove)~~ transfer stations currently receive most of the region's waste from ~~regional~~ haulers and transfer it to the Columbia Ridge Landfill. A third transfer station in Forest Grove receives approximately 10% of the region's waste from haulers which is transferred to another general purpose disposal facility. While these facilities are logistically sited for most haulers in the region, certain outlying areas of the region are less well served. Metro's past policy has been to support uniform levels of transfer station service throughout the region.

VIII. Other Suggested Revisions

	Comments Received	Addressed in Preliminary Draft?	Preliminary Draft Corresponding Reference(s)	Suggested Revision to Preliminary Draft
1	Page 2-7, reference to Map 2.2, Northwest Solid Waste Facilities	No		Delete reference; map will not be included in document.
2	Page 8-2, change last bullet under "Design and Implementation Principles".	No		Change to read: Waste and Metro Charges. The following categories determine whether materials that are delivered for disposal at solid waste facilities within the Metro boundary may be subject to Metro charges: 1) Waste that is generated within the Metro boundary; and 2) waste, regardless of location of origin, that is disposed within the Metro boundary.

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