

Susan Paul

**THE CORPORATION OF THE CITY OF PORT COQUITLAM
ENVIRONMENTAL PROTECTION COMMITTEE**

11
Wednesday, May 4, 1994

Meeting Room No. 2
2580 Shaughnessy Street, Port Coquitlam, BC

5:00 p.m.

AGENDA

PERSONNEL IN ATTENDANCE:

CONFIRMATION OF MINUTES OF PREVIOUS MEETING

ITEM I: DELEGATION: MR. ROBERT FELDHAUS - GRIPTION INDUSTRIES

ITEM II: SOLID WASTE MANAGEMENT PLAN REVIEW - DRAFT STAGE II

ITEM III: OTHER BUSINESS

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THE CORPORATION OF THE CITY OF PORT COQUITLAM
ENVIRONMENTAL PROTECTION COMMITTEE
MINUTES

A meeting of the Environmental Protection Committee was held at City Hall, 2580 Shaughnessy Street, Port Coquitlam, on Wednesday, May 11, 1994 at 5:00 p.m. in Meeting Room #3.

In attendance were:

Councillor M. Gates, Chairman
Councillor R. Talbot, Co-Chairman
J.E. Yip, P. Eng., Deputy City Engineer
F. Cheung, P. Eng., Project Engineer
C. Deakin, Engineering Secretary

The minutes for the April 27, 1994 Committee meeting were considered, read and adopted.
Carried

ITEM I: DELEGATION - GRIPTION SERVICES

Mr. Robert Feldhaus from Gription Services explained that they would like to provide facilities in multi-family dwellings to encourage recycling. His proposal included containers that would be removed when full and replaced with new clean bins. Mr. Feldhaus anticipated that the profit would generate from all the newspapers and magazines they collected from the bins. Committee asked that the Deputy Engineer write a letter to Mr. Feldhaus thanking him for the information and to ask them to keep Committee abreast of their situation. This item will be reviewed again at a future meeting.

ITEM II: SOLID WASTE MANAGEMENT PLAN REVIEW - DRAFT STAGE II

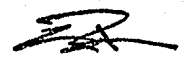
Committee received this memo for information and asked that discussion be deferred until a future meeting.

ITEM III: OTHER BUSINESS

a) Secondary Water Disinfectant Treatment

Committee agreed with all staff recommendations but further recommended that the following be added: In supporting Option 3b, consideration be given to have the project amortized/implemented over a longer period of time. This report will be forwarded to Council for final support and approval.

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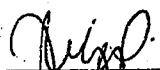
b) Telephone Book Recycling


Committee approved the three bin locations chosen for the collection of used telephone books. These locations included: Save On Foods parking lot at 1470 Prairie, Terry Fox Library at 2470 Mary Hill Road and the Recycling Transfer Station at 1675 Broadway.

c) City Newsletter

Councillor Gates asked that staff include water conservation, composting and the three receptacle limit issues in the next City newsletter. The Project Engineer will prepare draft for the newsletter.

There being no further business the meeting adjourned at 6:00 pm.


J.E. Yip P. Eng.
Deputy City Engineer


Councillor M. Gates
Committee Chairman

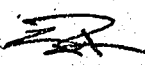
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NOTE

Minutes not read and adopted by the Committee until certified correct by the Chairman's signature.

cc:

Mayor and Councillors
City Administrator
City Engineer
Project Engineer
Project Technician


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C.P.C. May 6/94.
Item 1.

Gription Industries

March 29, 1994

Honourable Mayor Len Trabolay
Port Coquitlam City Hall
2580 Shaughnessy
Port Coquitlam B.C. V3C 2A8

Attention: Honourable Mayor Len Trabolay
Re: Multi-family dwelling recycling program

Gription Industries sees a need for recycling in the high density areas of the Greater Vancouver Regional District. All apartment buildings and condominiums equipped with dumpsters that we are aware of have little or no recycling programs available to the residents. We are also aware that at one time there was one provided to your area by the city of Port Coquitlam.

There is no longer a recycling service that we are aware of for apartments and condominiums in the Port Coquitlam

area. For the most part these buildings therefore, instead of recycling, put their recyclable refuse in the dumpsters. This increases the cost of refuse removal for these buildings and increases the speed at which the city land fills will be full. A recycling effort to service multi-family dwellings is to the city's benefit.

We at Gription Industries would like to fill this void in the city recycling programs by setting up a recycling service for these buildings. The service is funded through the 'user pays' principle.

There would be no cost to the city.

We are currently ready to receive newspaper, cardboard, non-glossy junk mail, (and something the city does not take) phonebooks. We are developing a recycling system for glass and metal (tin) and expect it to be operational in the near future.

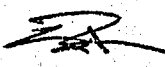
We ask for your endorsement written or otherwise, as a viable recycling service to your city and outer areas.

If you, or anyone else would like more information about this recycling service please call, write, or fax. If you would like me to attend a council meeting to get a better understanding of how the service will benefit your city please contact us.

Yours Truly,

Robert Feldhaus
Gription Industries
8619-187st
Surrey B.C. V4N 3G5

Phone#341-0977
Fax#882-0974


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SOLID WASTE MANAGEMENT PLAN REVIEW

DRAFT STAGE 2 REPORT

March 1994

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EXECUTIVE SUMMARY

This draft Report describes a recommended solid waste management strategy, which is being provided to the general public and advisory committees for input and comment before finalization. Upon finalization and approval of the Report by the GVRD Board and the Minister of Environment, Lands and Parks, the strategy will be incorporated into a revised Solid Waste Management Plan for the District.

The objectives of this revised Plan will be to reduce per capita garbage disposal in the year 2000 by at least 50 percent and to manage the residual in a cost effective and environmentally sound manner.

The recommended strategy encompasses a number of Key Recommendations developed by a technical consulting team lead by CH2M Hill Engineering Ltd. in consultation with two advisory committees and the general public. This was facilitated under a public consultation plan managed by Boutilier and Associates. The reports of these two consultants are to be read as appendices to this report. The recommended strategy would achieve the Plan objectives.

In the absence of new source reduction and reuse initiatives, it is estimated that the amount of solid waste generated by residential and Industrial, Commercial and Institutional (IC&I) sources would grow from 1.5 million tonnes in 1992 to 1.96 million tonnes in the year 2000.

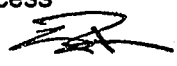
Recommended source reduction and reuse initiatives would reduce this waste generation by some 250,000 tonnes or 13 percent. All levels of government and manufacturers would contribute to this program through a number of initiatives. Major initiatives and the disposal reduction impact these would have are presented below.

Manufacturer Responsibility Program	59,900 tonnes
National Packaging Protocol	46,800 tonnes
Subsidized Backyard Composting	29,300 tonnes
Residential User Pay System	32,386 tonnes
Education and Training	23,385 tonnes

Other source reduction initiatives which would have a smaller, but still important, impact include: an expanded deposit/refund system for beverage containers, removal of subsidies on virgin materials, bans and tipping fee surcharges, government procurement programs, reuse promotion, and municipal planning and tracking of programs. These would combine to reduce projected waste by a further 59,000 tonnes.

Recommended residential and IC&I recycling and composting initiatives would combine to reduce year 2000 waste disposal by some 852,000 tonnes or over 43 percent. Recycling programs would be expanded to include 14-18 materials and composting would increase significantly for all residential and many IC&I waste generators.

Single family urban residences would be serviced by curbside collection for recyclables and yard waste. Multi-family urban residents would have a collection service or access


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of this amount. Initiatives which contribute to this reduction include the requirement for large generators to develop and implement waste reduction and recycling plans. These would be supported by bans and tipping fee surcharges on the disposal of specific recyclable materials. Education, training, market development and improved information exchange would support and encourage 3 R activities.

Market development for residential and IC&I generated materials which are commodities that would be stimulated by a manufacturer responsibility program. Failing this, backdrop legislation, such as that requiring incorporation of a specified minimum content of recycled material in new products, would be invoked. Market development for targeted materials which would be marketed locally, including DLC materials, would include financial and technical support from the Province for research and development.

Processing and marketing of recyclables and composting would continue to be done predominantly by private industry and non-profit organizations.

Despite the estimated reduction in disposal resulting from the proposed 3 R programs, there would still be some 860,000 tonnes of municipal type waste and 387,000 tonnes of DLC waste which would have to be incinerated or landfilled.

The collection and transport of waste to transfer stations or directly to disposal facilities would continue to be done by private industry except where undertaken by municipal forces. The average collection cost, in 1993 dollars, would be \$78/tonne and \$74/tonne for residential and IC&I sectors respectively.

The existing facilities would continue to receive garbage until their permitted capacities are reached. The Port Mann Landfill would reach this level around 1997. This facility would be replaced by a new transfer station, and out-of-region landfill capacity obtained through competitive bids or proposals. The City of Vancouver landfill at Burns Bog would continue to receive garbage from the area it now services. This is subject to the completion of further studies to ensure the 1993 B.C. Landfill Criteria can be met, and to determine what this might cost. The capacity provided under the existing permit at Cache Creek may be exceeded before the year 2010. Should this occur, an expansion of the landfill would be negotiated with the operators of this facility. The Burnaby incinerator would continue to operate at capacity. All facilities would be upgraded to meet new and changing requirements and standards, such as the 1993 B.C. Landfill Criteria. The average cost of transfer, transport and disposal would be \$62/tonne.

DLC facilities would continue to be owned and operated by private industry, but would be more closely regulated to ensure planned disposal reduction and adequate environmental standards.

The following table summarizes the major components of waste management under the recommended strategy.

YEAR 2000 WASTE GENERATION, RECYCLING AND DISPOSAL

	Waste Generation (Tonnes)	Disposal (Tonnes)	Reduction Thru 3 Rs (Tonnes)	% Dispo: Reducti
Residential	898,600	408,187	490,413	
IC & I	1,065,400	452,177	613,223	
Total (RES + IC&I)	1,964,000	860,364	1,103,636	
Per capita disposal reduction as a % of 1990 per capita Waste Generation				
DLC *	1,116,000	387,000	729,000	
TOTAL RES + IC&I + DLC	3,080,000	1,247,364	1,832,636	
Total per capita disposal reduction as a % of 1990 municipal and 1991 DLC per capita waste generation				

* Tonnages for DLC wastes are very uncertain.

The estimated cost of solid waste management under the recommended strategy would be 293 million dollars for the residential and IC&I sectors. This is about 10 percent higher than solid waste management costs would be if the 1992 programs and facility standards were to continue unchanged. However, the sources of payment would be dramatically different. Funding from municipal taxes, which currently pay most of the residential sector costs, would drop by over 90%. Of the \$138 million for residential waste management, only \$11.9 million would be paid from municipal taxes. The balance, with the exception of about \$0.2 million from senior governments, would be paid by manufacturers under the manufacturer responsibility program, and by those who put out the waste for collection under a user pay system. The \$156 million cost for IC&I waste management would continue to be borne primarily by the generators except that this cost could be reduced by funds provided under the manufacturer responsibility program. The final division of costs between manufacturers and generators for the residential and IC&I sectors would result from negotiations led by the Province and held with manufacturers to determine the extent and application of their contribution.

Information is not available to prepare a defensible estimate on the cost of solid waste management for the DLC sector. An important element of the recommended strategy for this sector is the requirement to install weigh scales and improve the information base for financial and environmental reasons.

The success of the recommended strategy would depend on all levels of government fulfilling these roles as described in this Report and the supporting documents.

Acknowledgments

This Stage 2 Draft Report was prepared under the direction of the Solid Waste Management Steering Committee. It summarizes the recommended solid waste management strategy for the GVRD which was developed by a team of technical consultants lead by CH2M Hill Engineering Ltd. This strategy was developed through consultation with a Local Solid Waste Advisory Committee, a Technical Solid Waste Advisory Committee and the general public. This involved several thousand person hours of work. The consultation process was managed by Boutilier and Associates. GVRD staff provided support through development and management of consultant contracts and logistical assistance. The Ministry of Environment, Lands and Parks provided staff, guidance and funding. The Federal government provided funding assistance.

The Project Manager, on behalf of the citizens of the District, expresses thanks to all the individuals in the above organizations and members of the general public for their commitment to the Plan Review as evidenced by their hard work, patience, untiring support, constructive criticism and personal time contributed to the development of the recommended strategy. The names of current committee members and key personnel are listed in Annex A. To these should be added the many members of the public and former committee members.

STAGE 2 DRAFT REPORT

1. Purpose

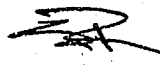
This draft Report describes a recommended new strategy for the management of solid waste within the Greater Vancouver Regional District. This strategy is being presented to facilitate public and stakeholder discussion and input on its acceptability.

The objective of this strategy is to reduce per capita garbage disposal by at least 50 percent by the year 2000 and manage the residual garbage in a cost effective and environmentally sound manner. This objective was established by the GVRD Administration Board under the terms of reference for a review of the Regional Solid Waste Management Plan which was approved in 1985. The Plan is to cover the period up to the year 2010.

This draft Report provides a summary of the strategy recommended by the review technical consultants CH2M Hill Engineering Ltd., and describes how this strategy was developed. The April, 1994 Report titled "Comprehensive Waste Management Strategy" by these technical consultants, and the Interim Stage 2 Public Consultation Report by Boutilier and Associates describe the recommended strategy in detail and document the process used to date in developing it respectively. These two reports are to be read as appendices to this Report. It should be noted that some of the recommendations in this Report differ from those in the CH2M Hill Engineering Ltd. Report. This results from changes made to reflect the input and decisions of committees established for this purpose for the Plan Review. These changes are noted in this draft.

The draft Report will be finalized following consideration of the input now being sought from the general public and discussion within the advisory committees. It will then be processed for approval by the Ministry.

Upon approval of this Report, the recommended strategy will be incorporated into a Revised Solid Waste Management Plan for the Region.


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2. Background

2.1 Provincial

In August 1989, Bill 58, The Province of British Columbia Waste Management Amendment Act was passed which required that Regional Districts submit new revised Solid Waste Management Plans on or before December 31, 1995. These to provide for the management of all types of waste generated within the Region except biomedical and special wastes other than household hazardous wastes. The Plans to include strategies for reducing the per capita disposal of solid waste by 50 percent by the year 2000. The 5 Rs in order of importance, **REDUCE, REUSE, RECYCLE, RECOVERY** and **RESIDUAL MANAGEMENT** are to be applied.

The Ministry of Environment, Lands and Parks issued Guidelines in 1990 describing the planning process which would satisfy the approval requirements of the Minister. They call for a plan to be developed using input from advisory committees and the general public. They also state that a three-stage process should be used, with each stage producing a report which:

(Stage 1) Outlines the present Solid Waste Management system and options for improving it, and recommends which of these are to be evaluated in Stage 2.

(Stage 2) Provides detailed analysis of options recommended in Stage 1, identifies subsequently and then recommends which of these should be included in the Revised Plan.

(Stage 3) Describes the Final Revised Solid Waste Plan for the Region which incorporates the recommendations approved as a part of the Stage 2 Report.

2.2 Regional District

The GVRD Board established a Solid Waste Steering Committee in March, 1991 to direct the development of the revised Solid Waste Management Plan for approval by the Board. The 1990 Ministry Guidelines were adopted as the planning process framework, a Project Manager was appointed and two advisory committees were established such that work was underway by May, 1991.

The organization for the Plan Review is illustrated on Figure 1. The membership of committees is provided in Annex A.

Under the Ministry definition, the per capita garbage disposal rate in the year 2000 should be reduced to 50 percent of the 1990 per capita waste (garbage, recyclables and compostables) generation rate. However, the per capita waste generation rate in the Regional District has been and is, in the absence of increased source reduction and reuse, expected to grow at an annual rate of about 1 percent. Therefore, achievement of the year 2000 per capita disposal objective as required by the Ministry necessitate source reduction, reuse and recycling initiatives which reduce per capita disposal by more than 50 percent of the projected year 2000 generation rate.

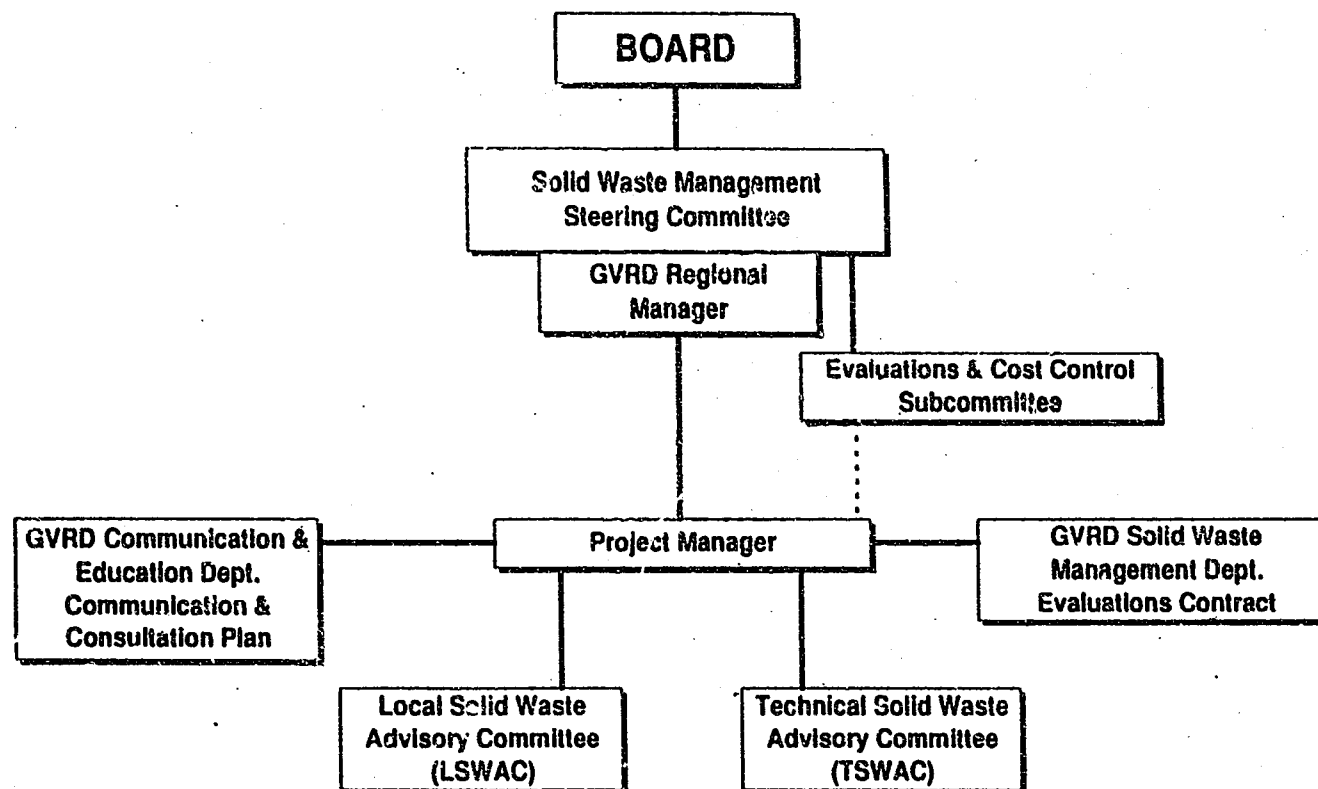


FIGURE 1
GVRD Solid Waste Management Plan Review Organizational Chart

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3. Plan Review Process to Date

3.1 Stage 1

Stage 1 began in May, 1991. The Report which was developed during Stage 1 contained two main components: 1) an overview on the Plan area and how the waste generated within it is managed under the 1985 Solid Waste Management Plan and 2) a description of options recommended for evaluation in Stage 2.

The overview of the Plan Area and waste management activities was prepared largely by staff of the GVRD Solid Waste Management Department. The recommendations on options to be evaluated were developed by the advisory committees and interested members of the public. This was done through 10 advisory committee workshops and six public forums. The focus was primarily on which options under the first 3 Rs (Reduce, Reuse, Recycle) should be evaluated in order to develop recommendations which would reduce per capita garbage disposal by at least 50 percent.

The Stage 1 Report was approved by the Steering Committee in January, 1992. Board and Ministry approval and agreement to proceed to Stage 2 was given at the end of May, 1992.

Pertinent information on the Plan Area and associated solid waste management activities have been extracted from the Stage 1 Report and are presented below with some updating of figures. This updating uses information from a Waste Flow and Recycling Audit which was recommended in the Stage 1 Report and was completed in 1993 for the Regional District by CH2M Hill Engineering Ltd. and other associated firms.

The area served under the 1985 Plan and the Revised Plan is shown on Figure 2. The population in 1990 was 1,654,705 and is now projected to grow to 2,067,000 by the year 2000, and to 2,497,000 by the year 2010.

For the purposes of this report, municipal type wastes include all recyclable, compostable and disposable wastes from the residential and IC&I sectors. DLC wastes are considered a separate waste stream.


The total municipal type waste generated in 1990 was estimated at 1,423,000 tonnes. Additional waste from demolition, landclearing and construction (DLC) is estimated at 830,000 tonnes for 1991. In the absence of efforts to reduce waste generation at source, the municipal type waste generated is projected to grow to 1,964,000 tonnes by the year 2000 and to 2,620,000 tonnes by 2010. DLC waste is estimated to increase to 1,116,000 tonnes by the year 2000.

The 1990 per capita generation of municipal type waste was about 0.86 tonnes per person. The Plan Review Objective is to develop a strategy which would reduce per capita garbage disposal to 50% of the 1990 generation rate, i.e., to a per capita disposal rate of 0.43 tonnes by the year 2000.

estimated amount of residential and IC&I waste generation for the year 2000 is 1,964,000 tonnes.

2.3 Funding

Cooperative arrangements resulted in the Plan Review being funded by the GVRD and the Provincial and Federal governments.


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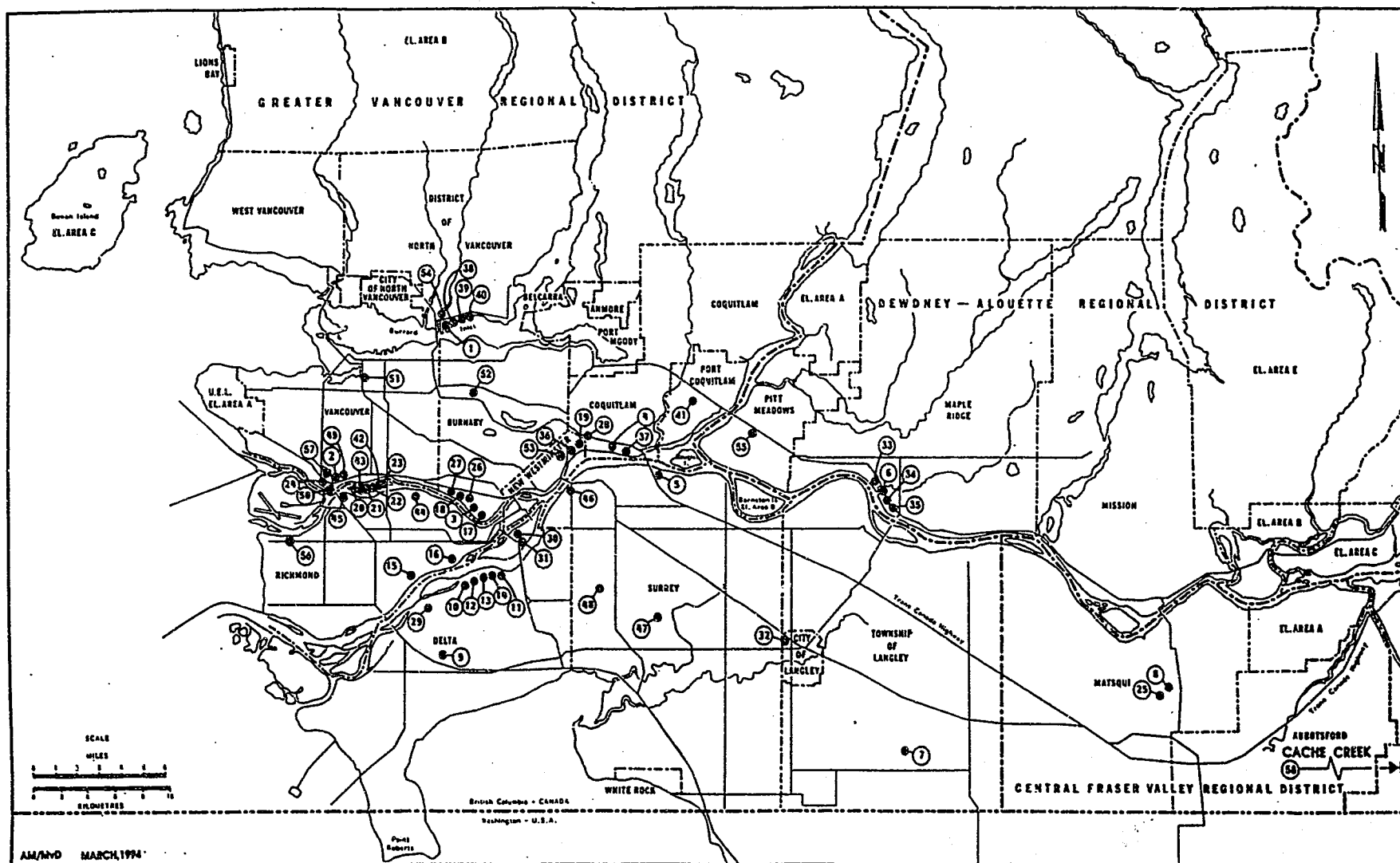


FIGURE 2
MAJOR WASTE MANGEMENT & RECYCLING FACILITIES

FIGURE 3 **Major Waste Management & Recycling Facilities**

Plan Facilities

1. North Shore Transfer Station
2. Vancouver South Transfer Station
3. Burnaby Refuse Incineration Plant
4. Coquitlam Resource Recovery Plant
5. Port Mann Landfill
6. Maple Ridge Transfer Station
7. Langley Transfer Station
8. Matsqui Transfer Station
9. Vancouver Landfill

Private Demolition Landclearing & Construction (DLC) Waste Landfills

10. Alpha Manufacturing (Burns Development) - 8662 River Rd., Delta
11. North Shore Disposal - 9376 River Road, Delta
12. Robert Brown - 8970 River Road, Delta
13. A & A Excavating Ltd. - 9265 River Road, Delta
14. Meadowland Peat - 9265 River Road, Delta
15. Ecowaste Industries - Triangle Road, Richmond
16. RRI - Resource Recovery International - 7791 Nelson Road, Richmond

Private Waste Transfer and Material Recovery Facilities

17. BFI Waste Systems - Thorn & Wiggins, Burnaby
18. Ech-Tec - 5350 Byrne Road, Burnaby
19. North Shore Disposal - Canfor Ave., New Westminster
20. Inner City Demolition - Mitchell Island, Richmond
21. Owl Terminals - Mitchell Island, Richmond
22. Pacific Coast Waste Systems - Mitchell Island, Richmond
23. Waste Away Disposal - Mitchell Island, Richmond
24. Kwik Way - Mitchell Island, Richmond

Private and Non-Profit Recycling Facilities

25. Matsqui-Abbotsford Community Recycling Depot - Valley Road, Matsqui
26. ABC Recycling Ltd. - 8081 Meadow Ave., Burnaby
27. Paperboard Industries - 8255 Wiggins St., Burnaby
28. Coquitlam Construction Recycling - 100 Braid St., Coquitlam
29. Delta Recycling Society - 7046 Brown St., Delta
30. ECO - Superwood - 917 Clivedon, Delta
31. Merlin Plastics - 917 Clivedon, Delta
32. Paperboard Industries - 19260 Enterprise Way, Langley
33. Ridge Meadows Recycling - 236th St., Maple Ridge
34. Ridge Meadows Recycling Society - 10092 - 236th, Maple Ridge

35. Recycling Dynamics Inc. (RDI) - 23638 River Road, Maple Ridge
36. New West Gypsum - #4 Spruce St., New Westminster
37. Newstech Recycling - 1050 United Blvd., Coquitlam
38. BA Blacktop - 6 Riverside Dr., North Vancouver
39. International Paper (IP) - 132 Riverside Dr., North Vancouver
40. Mohawk Used Oil Service - 130 Forester, North Vancouver
41. Paperboard Industries - 1860 Broadway, Port Coquitlam
42. Columbia Bitulithic - Mitchell Island, Richmond
43. Richmond Steel Recycling - Mitchell Island, Richmond
44. Rich Van Holdings - 15300 River Road, Richmond
45. Weyerhaeuser Canada Ltd. - 9200 Van Horne Way, Richmond
46. ETL - 12345 - 104th Ave., Surrey
47. International Paper (IP) - 955 W. Kent N., Vancouver
48. Paperboard Industries - 7678 - 132nd St., Surrey
49. International Paper (IP) - 955 W. Kent N., Vancouver
50. Pacific Metals - 8350 Ontario St., Vancouver
51. Paperboard Industries - 85 W. 1st Ave., Vancouver

Municipal Recycling Depots

52. Burnaby - 4800 Still Creek, Burnaby
53. New Westminster - 6th & McBride, New Westminster
54. North Shore - Riverside and Spicer, North Vancouver
55. Pitt Meadows - Harris Road, Pitt Meadows
56. Richmond - 5555 Lynas Lane, Richmond
57. Vancouver - 377 Kent Ave., Vancouver

Out-of-Region Facilities

58. Cache Creek Landfill

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TABLE 1. Provides the most recent information on waste generation, recycling and disposal.

TABLE 1

	Waste Generation Tonnes	Disposal Tonnes	Recycled Tonnes
Residential (1992)	691,550	592,250	99,300 (14.4%)
IC&I (1992)	809,050	540,050	269,000 (33.2%)
Total (R & IC&I)	1,500,600	1,132,300	368,300 (24.5%)
DLC (1991)	830,000	424,000	406,000 (48.9%)
Total (R & IC&I & DLC)	2,330,600	1,556,300	774,300 (33.2%)

The location of the waste management facilities are shown on Figure 2. The facilities and their locations are described in Figure 3.

The annual capacity of the Residential and IC&I waste disposal facilities serving the Region is 1,173,000 tonnes. However, this will be reduced by 180,000 tonnes when the Port Mann landfill closes. This is scheduled for 1997.

3.2 Stage 2

The purpose of Stage 2 is to develop a recommended solid waste management system for the achievement of the Plan Objectives. This required the evaluation of options identified in the Stage 1 Report and additional options which were identified as Stage 2 proceeded. It also required consultation with both advisory committees and the general public to facilitate incorporation of local knowledge and values into the evaluations and the development of the recommended system.

The approach used in developing the recommended system involved the use of independent consultants who undertook their work outside the influence of any single stakeholder or interest group. This involved the engagement of two consulting teams. One team headed by CH2M Hill Engineering Ltd. constituted the technical consultants team. Boutilier and Associates were the public consultation team.

Requests for proposals were used to select both consultants. The Request for Proposals for the technical consultants was based on the recommendations of the Stage 1 Report and was reviewed by the advisory committees. These consultants were selected through a two-step process and the decisions were reviewed with the advisory committees, and subsequently approved by the Steering Committee and the Board.

The technical consultants were required to independently develop a single recommended strategy for achievement of the Plan Objectives, but at the same time do

this with due consideration of the values of the community. The three fundamental criteria for the evaluations were:

1. Promotion of waste reduction, reuse and recycling
2. Cost effectiveness
3. Minimization of environmental and social impacts

The technical consultants followed a procedure which began with the preliminary evaluation of all options, the integration of the most viable of these into a "long list" of separate systems and then the short listing of these. This was followed by more detailed evaluations and the development of a draft Report containing the recommended system. Consultation took place with the advisory committees and the general public at key points during this procedure. Figure 4 illustrates these points.

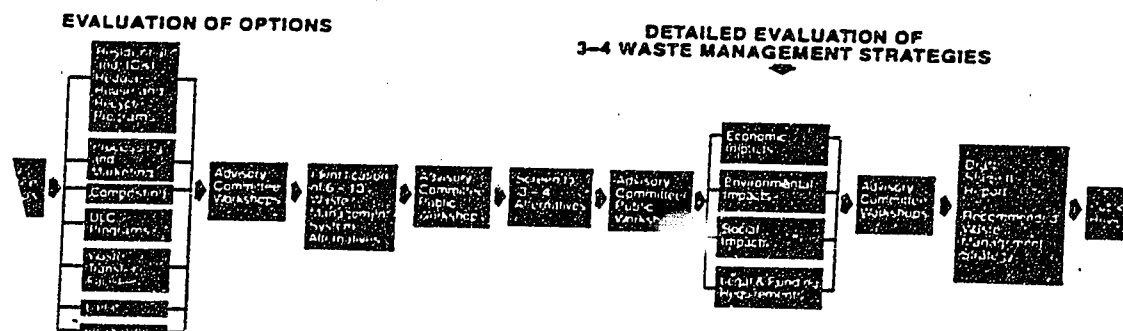


FIGURE 4
Evaluation and Consultation Process

The public education and consultation was managed by Boutilier and Associates under a public consultation plan which was reviewed within the advisory committees and approved by the Steering Committee. The detailed description of the implementation of this plan is provided in their Report titled Interim Public Consultation Report which is Appendix 2 to this draft Report.

The technical consultants' draft December, 1993 Report titled "Comprehensive Waste Management Strategy" was reviewed within both advisory committees in mid-December. These committees met again in mid-February, 1994 and developed positions on the acceptability of the Key Recommendations in the Draft Executive Summary. The Steering Committee then held a workshop with the consultants to review the Key Recommendations and the associated positions of the advisory committees.

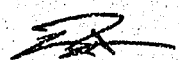
The Steering Committee modified seven of the Key Recommendations, such that they differ to some degree from those recommended by the technical consultants. The Key Recommendations, including these modifications comprise the recommended strategy which, along with this Draft Report, is presented for review and comment by the general public. These Key Recommendations are presented in Section 4.

SOLID WASTE MANAGEMENT PLAN REVIEW

DRAFT STAGE 2 REPORT

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The technical consultants then considered the positions of the advisory committees and the Steering Committee and completed the final April, 1994 report titled "Comprehensive Waste Management Strategy". This Report is to be read as Appendix 1 to this draft Report.



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4. The Recommended Solid Waste Management Strategy

4.1 Introduction

The solid waste management system recommended in this Report is a combination of many recommended interdependent and interrelated activities and initiatives under the Key Recommendations. The success of this strategy requires the implementation of all these activities and initiatives. Therefore, approval of the recommendations in this report must include a commitment by all levels of government to fully implement them.

4.2 Key Recommendations

The technical consultants developed a set of Key Recommendations which combine to make up the recommended strategy. In some cases, these recommendations were modified or reworded by the Steering Committee after consultation with the two advisory committees. Therefore, there are some differences between these recommendations and those made by the technical consultants in their strategy document. Footnotes describe these differences.

4.2.1 Province

For more information on these and other recommendations, please refer to the index of detailed recommendations in the CH2M Hill Report: Comprehensive Waste Management Strategy

1. *The Province, and the Federal Government where jurisdictional authority exists, should implement manufacturer responsibility programs for all packaging and short-life products not included in the beverage container deposit/refund system. Phase in manufacturer responsibility for durable products as a second priority. Ensure that the responsibility for markets for recyclable and compostable materials is included within manufacturer responsibility programs. All funds derived from this program should remain dedicated solely to 3R programs. Contribution from manufacturers must be maximized and should extend to all sectors.¹*

- In this recommendation, manufacturers of certain products would be required to help pay for the costs of recycling and disposing of their products when they become waste. For example, newsprint manufacturers would subsidize the costs of recycling and disposing of newsprint. In the case of manufacturers located outside of B.C., the contributions would be collected at the first point of sale in the Province.
- Funds collected would be dedicated for the management of the products as wastes, rather than going into general revenues.

¹ The Technical Consultants did not endorse extending responsibility to all sectors because it has not been proven effective elsewhere, and would make the program more difficult to implement. Their recommendation was to start with residential "short-life" products, then consider expansion at a later date. Funds provided by manufacturers would be provided to support only residential recycling and perhaps composting programs.

- The manufacturer responsibility program would give the manufacturers a strong financial incentive to reduce waste at the source (i.e. at the point of manufacture). While the manufacturer would pass the costs of the program on to the consumer, the cost per unit (e.g. a jar) of managing waste is very small. Therefore, the consumer would likely see only a very small increase in the price of a single product unit. However, a manufacturer of millions of units would be faced with a large cumulative cost for managing those wastes, encouraging changes in the materials or methods used in its manufacture to reduce that cost.
 - The manufacturers' contribution would also reduce the amount of funding paid by waste generators under the user pay program proposed in the recommended strategy.
 - The details of the manufacturer responsibility program would be negotiated between the Provincial and Federal Government, and the various stakeholders.
2. *Based on the 3Rs hierarchy principle², until life cycle analysis proves otherwise, implement an expanded provincial deposit/refund system for beverage containers not included in a broader manufacturer responsibility program.*
- The existing deposit/refund system for beverage containers would be expanded in stages to include virtually all beverages in plastic, glass, metal, gable-top and aseptic containers.
 - Deposit refund systems have been shown to be highly effective in preventing beverage containers from being disposed. The expansion of the deposit refund system has the potential to divert significant quantities of beverage containers away from disposal, but has only been applied to a limited degree to date. Eventually, the deposit/refund principle might be applied to many other items other than beverage containers.
 - The provincial government has been drafting legislation in this regard for some time. A new corporation would be needed to set policies and deposit fees, and possibly administer a new network of depots and reuse centres. This corporation could be a beverage industry-run organization, or a provincial government body, depending on the final version of the legislation.
3. *Promote and encourage the development of manufacturer responsibility initiatives in other provinces and at the national level through participation in the National Packaging Protocol (NAPP) and the Canadian Council of Ministers of the Environment (CCME).*

² The Technical consultants did not see a need to link the recommendation to the current 3R's hierarchy principle, given that the Province has already developed its general approach to new beverage container deposit legislation.

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- The National Packaging Protocol has a mandate to reduce packaging waste from 1988 levels by 50% by the 2000. The protocol includes educational campaigns and provision for regulations as required.
 - The manufacturer responsibility program stands to affect the manufacturers' packaging practices, and must be compatible and consistent with the policies of NAPP and the CCME.
 - It would be the responsibility of the Provincial and Federal governments to ensure compatibility and consistency of their programs.
4. *Provide targeted incentives to stimulate and support the development of markets for selected secondary materials.*
- The province would study and observe the supply, demand, and market constraints of specific recyclable materials, and implement appropriate financial or other incentives to help develop markets for them. Those incentives could be grants, loan guarantees, R&D support etc.
 - Such specific, targeted incentives are expected to be more efficient in stimulating and developing local and other markets than incentives broadly applied to an entire recycling industry sector.
5. *Increase provincial government procurement of reusables or products of post-consumer secondary materials³.*
- In this recommendation, the provincial government would develop and implement formal policies specifying that the products and services that they purchase would meet certain standards for reduced packaging, minimum recycled content, etc. Eventually, other organizations and businesses could elect to adopt similar policies.
 - Procurement policies for large organizations ensure a degree of market demand for products and services which are environmentally superior, and support the development of better practices among suppliers and purchasers.
 - The purchasing departments of the provincial ministries, crown corporations and the purchasing commission would be responsible for developing the policies.
6. *Evaluate subsidies on virgin materials and adverse impacts on waste management and remove where appropriate.*
- Industries that process or extract virgin materials often enjoy subsidies, grants, loan guarantees, or other financial advantages which industries that produce recycled materials do not. These would be reassessed and revised to provide a "level playing field" between virgin and secondary materials.

³ The Technical consultants' recommended considering post-consumer recycling minimum content legislation at a later date, and then only if other manufacturer responsibility programs are unsuccessful.

- The financial advantages which virgin materials may receive can unfairly prevent secondary materials from being cost effective or competitive with virgin materials.
 - The provincial and federal government ministries responsible for administering virgin material subsidies, grants, etc. would be the ones responsible for reassessing their use.
7. *Establish a life cycle assessment task force within 180 days of approval of the Stage II SWMP Report⁴.*
- Life Cycle Assessment (LCA) involves the quantification of all environmental impacts from "cradle to grave" to allow objective comparison between different products or processes. Numerous organizations worldwide are presently working on developing methods and standards for performing LCAs. A task force would be established to monitor, review and participate in this work.
 - LCA is a field which is still in its infancy, and widely accepted methods and standards do not yet exist. Should it achieve a sufficient level of sophistication and acceptance, LCA has the potential to become an extremely important tool in waste management decision-making.
 - The Province would establish the task force, with representation from stakeholders and government as it sees fit.
8. *Ensure that adequate backdrop regulations (e.g. minimum material utilization rate) are in place to take effect should measures implemented in the GVRD waste management plan fail to achieve waste reduction targets in the IC&I sectors.*
- The Province would bring these Regulations into effect should the manufacturer responsibility programs fail to reduce materials and develop markets as required.
9. *Develop and distribute IC&I waste audit and reduction plan guide documents to the GVRD, local municipalities, and waste generators. Develop a formal communications strategy that complements those being developed for the various regional districts.*
- A formal guide would be developed for IC&I waste generators explaining how waste audit and reduction plans are to be carried out. Waste audits and reduction plans would be a requirement for large IC&I waste generators in the new Solid Waste Management Plan.
 - This would ensure that the audits and plans carried out in the GVRD are equitable and consistent with each other and those in other regional districts, should they also adopt this approach.

⁴ The Technical consultants' original recommendation did not include a timeline. Their belief was that it would be presumptuous to dictate a schedule to the Ministry, and that the schedule was an implementation detail that was not intended to be part of the strategy.

- This guide would be developed by the Ministry for use by any regional district in the province.

10. Implement the BC Landfill Criteria and work with regional and municipal governments to provide improved regulation and enforcement of all recovery/transfer and disposal facilities.

- In June, 1993 the Ministry of Environment, Lands and Parks issued Landfill Criteria for Municipal Solid Waste. This document specified criteria for the performance, siting, design, operation and closure of municipal solid waste landfills. Recent amendments to the Waste Management Act have been made to enable the provincial, regional and municipal governments to more closely regulate the practices of facilities which handle municipal solid wastes.
- The operating conditions and performance standards of some waste management facilities require improvement, but close regulation of these has not always been possible.
- It is expected that the Province will continue to be the primary government regulating landfills. The Province, regional districts and municipalities, along with industry stakeholders, are presently in the process of determining the exact roles and responsibilities of improved regulation and enforcement of waste recovery/transfer facilities

11. Sponsor and cooperate with the IC&I sector in research and development into new and expanded markets for secondary materials and identify and refine source reductions and source separation technologies for DLC waste.

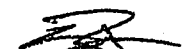
- Funding for research and development of new markets and technologies for IC&I and DLC waste reduction, reuse and recycling would be made available. Specifications and other constraints on the utilization of reused or recycled materials would also be reviewed.
- Industry and governments already make some expenditures for R&D into new markets and technologies for the more "traditional" recycled materials. However, relatively little has historically been done for DLC wastes, despite the volume of material it represents.
- Increased funding for this purpose would be the responsibility of the Province.

4.2.2 GVRD and Municipalities

For more information on these and other recommendations, please refer to the index of detailed recommendations in the CH2M Hill Report: Comprehensive Waste Management Strategy

1. *The GVRD should set performance standards for mandatory residential 3Rs programs to be delivered by municipalities while ensuring flexibility to allow municipalities to decide how to meet the standards. Key aspects of residential 3Rs programs that should be implemented by municipalities include the following:*

- ▷ *variable-rate based user-pay systems that reinforce the 3Rs hierarchy for residential waste collection, residential recycling, and composting for that portion of recycling/composting costs not covered by manufacturer responsibility programs*
 - ▷ *subsidized backyard composter programs*
 - ▷ *curbside collection of yard waste offered to all single-family urban households*
 - ▷ *expanded material categories (14-18)*
 - ▷ *expand service areas so that all households have opportunities to recycle using either curbside collection or drop-off depots*
- To ensure that the user pay system is not, or is not seen to be a "tax grab", the cost for solid waste, other than general administration expenses, would be removed from municipal taxes. The user pay system would then be implemented to cover the costs of the service.
 - The GVRD would require that the key waste reduction and above recycling initiatives be applied to all municipalities in the District in a fair and equitable manner. The municipalities would have flexibility in determining the exact methods for implementing these initiatives, to accommodate their particular needs.
 - The initiatives listed above have been shown in other jurisdictions to be effective in reducing per-capita waste disposal. In order for the District to meet or exceed the provincially-mandated goals, it will be important for all municipalities to be consistent and aggressive in their waste reduction and recycling efforts.
 - The GVRD, in conjunction with the municipalities, would set the standards for application and performance of these initiatives. Implementation and administration of the initiatives would be the responsibility of the municipalities.
2. *The GVRD should require the preparation of waste inventories for all IC&I generators and require waste audits and reduction plans for all waste generators in the IC&I and DLC sectors (with exemptions). All IC&I generators would be required to conduct and submit a simple waste inventory form to the GVRD. These inventories would be analyzed by GVRD staff to recommend a threshold size above which waste audits and reduction plans would be required. The threshold would be established for a target coverage of 90 percent of dry recyclables, 90 percent of yard waste, and 50 percent of food waste generated by the IC&I sector. In the DLC sector, waste audits and reduction plans would be initially required for all developments greater than 2,000 square metres.*
- All IC&I waste generators would be required to complete a simple inventory of the amounts and types of wastes they generate. The information from this one-time activity would be used to decide which generators would be required to perform an


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audit of their waste practices, and develop a plan for how their wastes could be reduced, reused or recycled.

- Information from waste inventories is necessary for implementation of subsequent initiatives such as waste audits and reduction plans. In other jurisdictions in Canada and the U.S., mandatory waste audits and reduction plans have been used effectively to increase awareness and activity in reducing and recycling wastes from IC&I generators.
 - The GVRD would develop the waste inventory forms, and would, in conjunction with the municipalities administer the audits and reduction plans. If necessary, these required activities could be tied in with business licenses.
3. *The GVRD should require source separation of designated recyclable materials by all IC&I and DLC waste generators (with exemptions approved by the GVRD). Off-site processing of mixed recyclables is an acceptable option for IC&I generators,*
- Large IC&I and DLC waste generators would be required to separate certain materials on the site, and have them recycled. The designated materials would be those for which there are reasonable recycling alternatives to disposal. The generator would not only keep the recyclables separate from the garbage, but also separate them into various categories (e.g. glass, metals, paper) for recycling. However, some generators might be unable to provide sufficient manpower and space to source separate their recyclables. An acceptable alternative would be for these generators to keep their recyclables separate from their garbage, but place them into a single container for an offsite processor to collect and sort. At the very least, generators would have to separate recyclables from garbage; they would not be allowed to send mixed garbage and recyclables to a processor.
 - In order to meet or exceed the provincial goal of a 50% decrease in per capita disposal, recycling would need to become mandatory for large IC&I and DLC waste generators.
 - The GVRD and the municipalities would enact bylaws and possibly include mandatory separation of recyclables as part of a generator's business license.
4. *The GVRD (or other appropriate governmental body) should develop and apply a system of operational certificates and/or waste management stream licenses for all waste processing (recycling and composting) facilities and all DLC disposal facilities. For processing facilities, the GVRD should set standards and ensure a level playing field while using existing private-sector/municipality processing and marketing capabilities and capacities in a flexible and competitive manner.*
- Operational certificates could specify minimum standards for the operation, performance and/or environmental conditions of a waste facility.
 - In the past, regulation and control of waste facilities have not been sufficient to prevent some facilities from causing adverse environmental impacts, and/or from

operating questionable transfer and disposal sites under the guise of recycling facilities.

- Currently, the Province, regional districts, municipalities and industry stakeholders are in consultation to determine the details of operational certificates and/or waste stream management licenses, and the roles and responsibility for applying them.

5. *The GVRD (or other appropriate governmental body) should implement a system of permits or licenses for waste haulers operating within the GVRD. This recommendation may be applied as a backdrop measure.*

- As a last resort, local waste haulers would be, as a condition of their continued operation, required to obtain licenses or permits that would control the disposal facilities to which they could deliver wastes.

- Due to jurisdictional and manpower limitations, there has historically been relatively little control over the dumping of wastes in inappropriate locations. These inappropriate locations include public lands, ditches, and private disposal facilities with inadequate environmental safeguards. Permits or licenses for waste haulers is viewed as a means of ensuring that more of the waste stream is disposed of at facilities designed for that purpose.

- Currently, the Province, regional districts, municipalities and industry stakeholders are negotiating to determine the need for waste hauling licenses, and the roles and responsibility for applying them.

6. *The GVRD should coordinate with member municipalities to procure additional in-vessel composting capacity.*

- It is recommended that the private sector, which currently provides the vast majority of the region's commercial composting capacity, be allowed to create or expand existing facilities to accommodate future growth in organics processing requirements. Should this appear to be inadequate, government would establish a centralized composting facility of its own, or could contract with the private sector. It is recommended that this additional capacity be "in-vessel" or enclosed in nature to control odours, and manage a wider range of feed stocks (and particularly food wastes).

- If implemented fully, the initiatives in this recommended strategy would significantly increase the amount of compostable organic material diverted from disposal. Therefore, additional composting capacity would be required in the region by the year 2000.

- The GVRD and member municipalities would determine the need for a centralized contracted or public sector composting facility.

7. *As soon as acceptable alternatives to disposal are operational, phase in disposal bans of recyclable and compostable materials generated by the residential, IC&I and DLC sectors at all disposal facilities.*

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- Recyclable and compostable materials for which there are reasonable alternatives to disposal would be banned from all disposal facilities. One prerequisite for banning a material would be its ability to be easily identified in a waste load by visual inspection.
 - Disposal bans give complementary support to other initiatives, such as mandatory source separation and recycling bylaws. They also give waste haulers an incentive to help ensure that waste generators are complying with the disposal bans.
 - Disposal bans at GVRD facilities would be enforced by the facility operators; bans for the same materials at private DLC facilities would be monitored by the GVRD to ensure compliance by the owner/operator.
8. *Maintain the current system of standardized tipping fees at GVRD/municipal disposal facilities, and use differential tipping fees and tipping fee surcharges to support program implementation at all disposal facilities (including DLC) to support 3Rs program implementation.*
- Currently, all of the publicly operated municipal solid waste disposal facilities in the lower mainland charge a uniform tipping fee (\$69 per tonne), regardless of the actual cost of operating that facility. Some of the excess revenues are used to support recycling, education and other 3Rs programs. It is recommended that this system be continued. Furthermore, surcharges and differential tipping fees (eg. for waste loads that have not complied with mandatory recyclables separation bylaws) would be put in place to further finance 3Rs programs.
 - Without standardized tipping fees, wastes would be hauled from all other municipalities to the facility that has the lowest fee. Also, revenues to help finance waste reduction, reuse, and recycling programs might not be available.
 - The GVRD would continue to set the tipping fee in the region, and would determine differential tipping fees and surcharges.
9. *If practical on a site specific basis, maintain staffed recycling depots at all transfer, disposal, centralized composting, and multimaterial recyclables processing facilities in the region.*
- It is recommended that areas be added at all transfer stations, landfills and other processing facilities in the GVRD for staffed depots at which residents and businesses could deliver recyclable materials. However, some facilities would not provide depot areas if space, safety, or other considerations did not allow them.
 - Drop off depots at waste facilities would serve to complement the onsite collection of recyclables from homes and businesses. They would likely accept a wider range of materials than could be collected from the generators' sites, and would provide an outlet for recyclable materials throughout the week.

- Responsibility for providing, staffing and administering the depots would be negotiated between the GVRD, municipalities and owner/operators of the facilities.

10. Expand public information/education programs targeted at residential, IC&I and DLC generators. The GVRD and all municipalities should develop formal communications plans, and develop ongoing programs of audience research to support overall educational promotional campaigns.

- An extensive list of education and promotion programs is recommended in the new strategy. Specific program targets are suggested for the Federal government, Provincial government, GVRD, municipalities, IC&I establishments, recyclables processors, and environmental organizations to implement. It is also recommended that the GVRD and municipalities document (as formal communications plans) their anticipated educational and promotional programs.
- Education and promotion are vital to the success of the new Solid Waste Management Plan. The basic principles and philosophies of responsible waste management must be communicated to the public in order to effect significant behavioral change. In addition, the public must be made aware of all the new policies, bylaws, bans, facilities and programs contained in the new plan.
- All levels of government, many IC&I establishments, recyclables processors, and environmental organizations will have the responsibility of implementing some of the new educational and promotional programs.

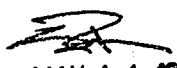
11. The private sector should continue its role in providing processing capacity for residential and IC&I recyclables under competitive conditions. The GVRD could assist in the development of cooperative arrangements among local municipalities⁵.

- At this time, the private sector and non-profit organizations process and prepare for market virtually all of the residential and IC&I recyclables in the Region. It is recommended that this continue, and that any required future capacity be provided by the private sector. It is also recommended that, if requested to do so, the GVRD could work with municipalities to form cooperative arrangements for recycling collection and promotion.
- The private sector's current capacity to process recyclables is more than sufficient, and its potential to expand that capacity to meet the projected demand up to at least the year 2000 eliminates the need for government to involve itself in creating its own facilities for that purpose.

12. Increase government procurement of reusables and products containing post consumer recyclable secondary materials.

- In this recommendation, the GVRD and municipalities would develop formal policies specifying that the products and services that they purchase would meet certain

⁵ The Technical consultant's recommendation was that the GVRD offer a regional marketing service at the request of some or all of its member municipalities.


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standards for reduced packaging, minimum recycled content, etc. Eventually, other organizations and businesses could elect to adopt similar policies.

- Procurement policies for large organizations ensure a degree of market demand for products and services which are environmentally superior, and support the development of better practices among suppliers and purchasers.
- The purchasing departments of the GVRD and municipal governments would be responsible for developing the policies.

13. The GVRD should develop a waste exchange database for all⁶ materials.

- It is recommended that the District develop a computerized service by which generators of waste materials which could be reused or recycled could find potential users of their specific materials. Such a service is currently in existence for industrial wastes, and is operated by the Recycling Council of B.C., but at this time the system is not fully operational. In particular, diversion of DLC wastes from disposal could be increased by inclusion in a waste exchange program.
- Often the reuse and recycling of materials is hampered only by the ability to place a generator and a user in contact with each other. The current industrial waste exchange service has been shown to be effective in diverting some materials from disposal.

14. Market development (i.e. technical advice, grants, loans) should become an integral part of municipalities' economic development function, and be viewed as a local strategy for both waste reduction and job creation.

- Municipalities should include economic instruments and other incentives to develop markets for recycled materials and recycling technologies. This should be included in the mandate of each municipality's economic development department.
- In order for the recycling and composting initiatives of the new plan to be successful in the long term, adequate markets must be developed and/or maintained and supported for the utilization of the recycled materials that will be produced. By including market development within economic development, it is recognized that recycling creates more jobs (on the basis of tonnages or investment amounts) than disposal, and that potential secondary industries such as remanufacturing add to the true value of recycling.

15. Municipalities should support the establishment of local reuse and repair centres.

- The municipalities would promote local reuse and repair centres, and if site specific conditions allow, the GVRD and municipalities would establish salvage centres at

⁶ The Technical consultants' had recommended a waste exchange database for Demolition, Landclearing and Construction wastes, not all wastes. Their reasons were (a) the Recycling Council of BC already operates a waste exchange for the Province, (b) waste exchanges are most cost-effective and appropriate when focused on certain waste sectors and material types, such as DLC.

some of their transfer and disposal facilities. Financial support for local reuse and repair centres would also be a possibility.

16. The GVRD, with the City of Surrey, should construct a transfer station for residual wastes from Surrey that currently go to the Port Mann landfill.

- With the Port Mann Landfill due to close, it is recommended that a new waste transfer facility be sited and constructed in Surrey.
- To reduce the traffic and air pollution of the smaller vehicles used for municipal collection or for hauling directly from businesses and residences, a new transfer facility could consolidate those loads into a smaller number of larger loads for transport to a disposal location. It would also provide opportunity for additional recovery of recyclable materials.

17. The GVRD should continue to monitor population trends and transfer station waste receipts throughout the district, monitor the potential for transfer capacity shortages at the Coquitlam RRP and at Maple Ridge, and prepare and revise annually a 5-year plan that identifies any need to expand, augment, or replace each existing transfer facility.

- As population and waste trends in specific areas change, a transfer facility's effective usage, appropriate service area, capacity requirements, etc. may also change. Periodically reassessing the existing transfer facilities could allow a more efficient and effective allocation of resources.

18. In view of the Port Mann landfill closure in 1997, the GVRD should immediately issue a request for proposals or bids for very specific waste transport and disposal services for the residual waste from Surrey.

- Within the GVRD, the only disposal facilities remaining after the closure of Port Mann Landfill would be the City of Vancouver Landfill at Burns Bog (for which further studies are recommended) and the incinerator (which is already at full capacity). It is recommended that the GVRD should procure disposal at a facility outside the GVRD for the residual wastes currently going to the Port Mann landfill.

19. Continue operating the Burnaby incinerator at near maximum capacity throughout the plan period unless changes in environmental, financial, or operational conditions warrant otherwise.

- The Burnaby incinerator is currently operating at or near full capacity. This would continue for the foreseeable future. However, initiatives that would be implemented in the new Plan may cause changes in the characteristics of the waste stream going to the incinerator. This in turn may cause changes in operation of the incinerator or properties of the ash streams that warrant reconsidering its operation.

20. Continue operating the Vancouver landfill at Burns Bog subject to the outcome of the facility evaluations recommended.



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- It has been recommended that a number of specific additional studies be conducted at the Vancouver Landfill such as seismic, stability, leachate properties and migration, and groundwater conditions. The results of those studies could determine the appropriateness of longer term use of the facility.
21. *The GVRD should fulfill the existing contract with Wastech for transportation and disposal of waste at the Cache Creek landfill unless changes in environmental, financial, or operational conditions warrant otherwise.*
- The Permit for this landfill is held jointly by the Village of Cache Creek and Wastech. The District would continue to use this facility under the existing contract until the full permitted capacity has been utilized.
22. *Subject to the results of Recommendation #18 and as the end of the existing contract with Wastech approaches, the GVRD should enter into discussions with Wastech to develop acceptable terms for expanding the Cache Creek landfill to provide extended disposal services to the GVRD.⁷*
- Should the Village/Wastech not be successful proponents for the Port Mann Landfill replacement capacity, there would be adequate capacity under the existing Permit to satisfy the District's disposal needs providing the per capita disposal objective is met under the Revised Plan.

4.3 Roles and Responsibilities

The GVRD has the overall responsibility to ensure, within the limits of its authority, the full and effective implementation of the system which is created by the Key Recommendations for the Revised Plan and therefore the achievement of its Objectives. This includes making every effort to ensure all parties, and particularly other levels of government meet their responsibilities. It also means the District must commit the resources to fully implement the measures which would be its direct responsibility.

The Province would be required to provide the legislative framework required to enable implementation of recommended activities and to regulate facilities, including disposal services outside the District. The Province would also establish manufacturer responsibility programs which reduce waste products, develop markets and provide funds to support the waste management programs for the municipalities and the IC&I sector.

The District would establish standards for recycling and composting programs undertaken by the municipalities primarily to serve the residential sector. It would be essential for this to be done under a consultation process including all municipalities. For the IC&I and DLC sectors the District would require large waste generators to develop and implement source reduction and recycling plans and would establish

⁷ The Technical consultants had also recommended that in addition to negotiating with Wastech for expansion of Cache Creek Landfill, the GVRD should issue a request for competitive proposals or bids to receive the most favourable market-driven contract terms for future waste disposal needs.

disposal reduction incentives to drive these plans. Also, the District would inspect the operations of facilities for the processing of recyclables and compostables and for the disposal of DLC waste. Regulatory measures would be taken as required to ensure the waste reduction and recycling plans are effectively implemented, and that all privately owned facilities are operated to control the flow of waste and meet environmental requirements. The District would continue to manage those transfer and disposal facilities for municipal waste which currently are their responsibility and would establish required additional facilities. Also the District would, in the absence of adequate private initiatives, cooperate with municipalities to procure composting capacity for food wastes.

All municipalities would continue to plan and operate the programs serving the residential sector up to and including the delivery of garbage, recyclables and compostables to transfer, disposal and processing facilities. They would do so in accordance with standards developed by the District. These would be developed in consultation with the municipalities. This would require acceptance that the standards must be such that the Plan Objectives would be met. They also would continue to operate transfer and disposal facilities which they own.

Private industry would continue to pick up garbage, recyclables and compost from IC&I and DLC generators and some residential waste under arrangements with certain municipalities. The provision of services for processing and marketing of recyclables from all sectors would continue to be undertaken by private industry except where provided by non-profit organizations. The ownership and operation of in-vessel composting facilities and DLC landfills would remain an industry responsibility.

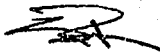
Large IC&I and DLC generators would be required to respond to financial incentives and disposal bans by reducing their garbage through the development and implementation of source reduction and recycling plans.

Members of the public would create less waste as a result of programs which provide incentives for source reduction, reuse and recycling. They would now pay for waste mostly in accordance with the amount they, as individuals, purchase and put out for pickup, instead of through their municipal taxes. Also, as interested members of the public or as representatives of public interest organizations, they would assist in the implementation of communication and education programs.

All levels of government, institutions, business, industry, public interest groups and individuals would have a role to play and a responsibility to ensure that the communications and education programs, so necessary for the success of the recommended strategy, are effectively planned, coordinated and implemented.

5. Programs

The above Key Recommendations would result in a Revised Solid Waste Management Plan made up and/or supported by the following programs and initiatives:


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5.1 Senior Governments and Manufacturers

The senior governments and the manufacturers would play a vital role in providing incentives and support for source reduction, reuse and the development of markets for recyclable commodities. Also, the manufacturers would provide significant funding for waste management activities which have historically been paid from municipal taxes. The Province would provide the legislation needed to ensure manufacturer responsibilities are met and to enable management of the pickup, transport, processing and disposal of garbage as required to achieve the disposal reduction and environmental objectives of the revised Plan.

Estimated costs in 1993 dollars and reduction in garbage disposal are provided in Table 2 for senior government and manufacturer responsibility programs.

TABLE 2

Reduction in Garbage Disposal and Costs - Year 2000 Waste Stream of 898,600 Residential and 1,065,400 IC&I tonnes.

Program	Residential Sector			IC&I Sector		
	Tonnes	%	Cost \$'000	Tonnes	%	Cost \$'000
Manufacturer Responsibility	21,478	2.4	7,307	38,456	3.6	21,478
Expanded Deposit/Refund System	1,802	0.2	811	2,133	0.2	960
NAPP	11,008	1.2	1,939	35,830	3.4	5,073
Procurement				7,014	0.7	2,400
Removal of Subsidies	9,917	1.1		14,808	1.4	
Guidelines for Waste Reduction Plans				8,372	0.8	745
Education	2,298	0.3	150			
TOTALS	46,503	5.2	10,207	106,613	10.1	19,898

Totals may not add due to rounding.

The costs would be distributed as follows:

Residential generators: \$2,684,000
 IC&I generators: \$6,500,000
 Municipal taxes: \$200,000
 Senior Governments: \$2,694,000
 Manufacturers: \$18,028,000

5.2 Residential Sector Programs

5.2.1 Source Reduction and Reuse

The major initiatives would be the subsidized backyard composting program and the user pay system. These would be supported by expanded education programs and bans on the disposal of specific recyclables or compostables. Reuse/repair programs would be promoted. Overall program success would be planned, tracked and reported.

The reduction in disposal and the cost in 1993 dollars of **source reduction and reuse** initiatives are shown in Table 3 for the year 2000 residential waste stream of 898,600 tonnes.

TABLE 3
REDUCTION IN GARBAGE DISPOSAL AND COSTS

Activity	Residential Sector		
	Tonnes	%	\$'000
Backyard composting	29,300	3.3	1,348
User pay	32,386	3.6	75
Education	2,298	0.3	1,860
Reuse/Repair centres	838	0.1	100
Annual Reporting of S.W. Plans	357	0	74
Disposal Bans			15
TOTALS	65,179	7.3	3,472

The costs would be distributed as follows:

Municipal generators	\$75,000
Municipal taxes	\$3,397,000

5.2.2 Recycling Programs

Under Recycling Programs:

- Existing programs would expand, such that 14-18 types of recyclable materials (preferably in four streams) and yard waste would be picked up or taken to an expanded system of recycling depots.
- All urban single family residences would have available a container, such as a blue box or bag for weekly curbside pickup of source-separated recyclables. Yard waste would also be picked up weekly during the 9-month growing season but bi-weekly during the other three months. The charges for collection of recyclables and compostables would be less than for garbage and would be phased in.


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- Urban multi-family residences would be required to develop a system for the collection of recyclables where this is physically possible. All buildings would have yard waste collection. Backup depots would be available where structural limitations make collection of recyclables impossible.
- Rural residences would be provided with a container, such as a blue box. The residents would take the recyclables and compostables to depots. There would be no drop-off charge for recyclables but there would be one for compostables.

The Recycling programs would be supported by District and municipal education programs, disposal bans and the use of municipal solid waste plans to track the effectiveness of the programs.

The cost, in 1993 dollars, of collection and processing, and the effectiveness of these recycling programs and supporting initiatives in reducing disposal are shown on Table 4 for the year 2000 residential waste stream of 898,600 tonnes.

TABLE 4
REDUCTION IN GARBAGE DISPOSAL AND COSTS

Program Materials	Residential Sector			
Activity	Tonnes	%	\$'000	\$/Tonne
Single Family Res. Recyclables	205,125	22.8	37,167	
Multi-Family Res. Recyclables	42,180	4.7	6,726	
Rural Family Res. Recyclables	5,389	0.6	878	
SUBTOTAL	252,694	28.1	44,771	177
Single Family Res. Compostables	108,282	12.0	17,497	
Multi-Family Res. Compostables	14,951	1.7	1,265	
Rural Compostables	2,806	.3	217	
SUBTOTAL	126,039	14.0	18,980	151
SUBTOTAL Recycling and Composting	378,733			
Education			1,240	
Bans and Admin.			3,681	
SUBTOTAL	378,733		4,921	13
TOTAL	378,733	42.1	68,672	181

Totals may not add due to rounding.

The costs would be distributed as follows:

Municipal taxes: \$8,463,000

Generators: \$60,209,000 minus the negotiated contribution from manufacturers.

The processing and marketing of recyclables would continue to be undertaken by the private industry and non-profit organizations. Existing municipality and private composting facilities would, with some expansion, provide the needed capacity for organics.

5.2.3 Garbage Collection

Collection of garbage from residences in the urban area would continue to be done by municipal forces, private industry under contract to the municipality or, as often is the case, by private industry from multi-family residences. The year 2000 collection for garbage and transport to transfer or disposal facilities would amount to 395,672 tonnes at an average estimated cost in 1993 dollars of \$140/tonne.

5.3 Industrial, Commercial and Institutional (IC&I) Programs

5.3.1 Source Reduction and Reuse

The major initiatives would be the mandatory development of waste reduction and recycling plans by large generators and supporting incentives in the form of bans and tipping fee surcharges on the disposal of specific recyclables and compostables. Significant education and training programs would be provided to support these plans. Procurement policies by all local governments, support for reuse/repair centres and the planning, tracking and reporting on overall program success would also be important initiatives.

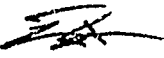
The reduction in disposal and the cost, in 1993 dollars, of **source reduction and reuse** initiatives are shown in Table 5 for the year 2000 waste stream of 1,065,400 tonnes.

TABLE 5
REDUCTION IN GARBAGE DISPOSAL AND COSTS

Activity	IC&I Sector		
	Tonnes	%	\$'000
Gov't. Procurement	3,548	0.3	800
Training of Generators	10,417	1.0	120
Reuse/Repair Centres	2,092	0.2	500
Annual Reporting	424	0	86
Bans/Surcharges	16,380	1.5	81
TOTALS	32,861	3.0	1,587

The costs would be distributed as follows:

Municipal Taxes	\$1,542,000
IC&I Generators	45,000


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5.3.2 Recycling

Recycling programs would include:

- Expansion of existing activities, such that 90 percent of potentially recyclable materials, 90 percent of yard waste and 50 percent of food waste would be delivered to processing and composting facilities.
- Large generators would be mandated to develop and implement source reduction and recycling plans which would be approved, monitored and enforced by the District. The size of generator would be dictated by the above targets of 90 percent coverage for recyclables and yard waste and 50 percent for food wastes. The information for designating which large generators are to be included in the program would be provided through a simple waste audit that all IC&I generators would be required to complete.
- Regional District support for large generators and others in the development of source reduction and reuse plans through the provision of kits, training and advice.
- Allowing recyclables which have been separated from compostables and garbage to be put out for collection in several source separated streams, or as a commingled load.
- Providing incentives for recycling through the establishment of disposal bans, tipping fee surcharges and increased tipping fees.
- Requiring generators under their waste reduction and recycling plans, to compost their own yard waste or have it, as well as their food wastes, delivered to Regional composting facilities.

Services for collection, transport, processing and marketing of recyclables would continue to be provided predominantly by private industry. Existing facilities would provide adequate capacity to process the quantity of materials which would result from achievement of the disposal reduction objective of the Revised Plan. The residuals from the processing of materials which are commingled would be regulated to ensure the percentages of recyclables recovered is high enough to achieve this objective.

The processing of the organic food and yard wastes would be done at composting facilities owned and operated by municipalities and private industry. Currently, the private sector operates all food waste facilities and would be expected to expand these as required. In the absence of such expansion, the District would coordinate with municipalities to provide additional in-vessel composting capacity.

The cost in 1993 dollars, of collection and processing 1,065,400 tonnes of IC&I recyclables and compostables generated in the year 2000 and the effectiveness of these recycling initiatives in the reduction of garbage disposal are shown in Table 6.

TABLE 6
REDUCTION IN GARBAGE DISPOSAL AND COSTS

Program/Initiative	IC&I Sector			
	Tonnes	%	\$'000	\$/Tonne
Recycling	386,105	36.2	66,068	171
Composting	87,643	8.2	12,789	146
Subtotal	473,748	44.4	78,857	166
Administration - Source Reduction & Recycling Plans			3,260	
Administration - Bans & Tipping Fee Surcharges			189	
Subtotals			3,449	78
TOTALS	473,748	44.4	82,306	174

The costs would be distributed as follows:

Municipal Taxes: \$1,166,000

Generators: \$81,140,000 minus negotiated manufacturer's contribution.

5.3.3 Garbage Collection

Collection and transport to disposal some 319,000 tonnes of waste from IC&I generators in the year 2000 would continue to be almost totally done by private industry at an estimated cost in 1993 dollars of \$136/tonne.

5.4 Impact of all 3R Programs

The combined impact of all recommended source reduction, reuse and recycling and the cost in 1993 dollars of initiatives and programs is summarized in Table 7



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TABLE 7
REDUCTION IN GARBAGE DISPOSAL AND COSTS FOR YEAR 2000
WASTE STREAM

	Residential Waste Stream = 898,600 tonnes				IC&I Waste Stream = 1,065,400 Tonnes			
Programs & Initiatives	Tonnes	%	Cost \$/000	\$/ Tonne	Tonnes	%	Cost \$/000	\$/ Tonne
Senior Gov'ts & Manufacturer's Reduction & Reuse	46,503	5.2	10,207	219	106,613	10.1	19,899	187
GVRD & Municipalities Reduction & Reuse	65,179	7.3	3,472	53	32,861	3.0	1,587	48
Recycling	252,694	28.1	44,771	177	386,755	36.2	66,068	171
Composting	126,039	14.0	18,980	151	87,733	8.2	12,789	146
Recycling & Composting Admin.			4,921				3,449	
TOTALS AND AVERAGES	490,415	54.6	82,351	168	613,222	57.6	103,792	169

Totals may not add due to rounding.

Therefore, the total impact of all 3R activities under the proposed strategy would be the avoidance of garbage disposal amounting to about 1,104,000 tonnes. The cost of about \$186 million, except for \$14.8 million which would be funded from the municipal tax base, would be paid by the manufacturers of products and the generators of the waste. The proportions paid by manufacturers would be negotiated with the manufacturers, leaving the balance to be paid by the generators.

5.5 Market Development

The development of markets for recyclables and compostables would recognize the existence of two market places for selling recyclables for secondary processing and incorporation into products. These are the international market and the local market.

The international market is changing and expanding rapidly. Products in this market are bought and sold as commodities and flow freely across international borders. The continued development of these markets would of necessity continue to be left to private industry. However, the manufacturer responsibility program would create incentives for industry to develop these markets further and quicker. These incentives would result from the impetus to reduce recycling costs because manufacturers would be required to pay all or a part of these under the manufacturer responsibility program. Backdrop legislation containing minimum materials content legislation would provide further impetus for industry to improve markets.

Local markets pertain to products which are not normally processed and marketed internationally. These include compost and DLC wastes, such as asphalt, concrete, drywall and some wood products. Development and improvement of these markets would be supported by the Province through financial and technical assistance for facilities and for research and development.

Government procurement programs and the removal of subsidies on virgin materials would also support the development of markets.

5.6 Transfer and Disposal of Waste from Residential and IC&I Sectors

Despite a reduction of some 1,104,000 tonnes in disposal through reduction, reuse and recycling, about 860,000 tonnes of residential and IC&I waste would remain to be landfilled or incinerated by the year 2000. This could grow to 1,039,000 tonnes by the year 2010. The closure of the Port Mann landfill scheduled for 1997 would result in a short fall of available capacity.

The program recommended for transfer and disposal of residual waste takes into account both costs and environmental impacts. An acceptable site for an additional landfill in the Region could not be identified.

Therefore, additional capacity will have to be provided by either more incineration capacity or an out-of-region landfill. Incineration has an advantage over landfilling in that with proper care of the ash, there is less adverse impact on water resources than with landfilling. However, this difference is minimized for a landfill in a dry climate area, such as Cache Creek. On the other hand, incineration is more expensive than either out-of-region landfilling and/or landfilling at Burns Bog. The air impact studies performed for this project have suggested that it has a greater adverse impact than landfills on the air environment even when the impacts of long haul transport are taken into account. This is particularly so for the low level Regional contaminants, such as the nitrogen oxides, sulfur dioxides and particulate which are of significant concern in the Region's air shed. Therefore, out-of-region landfilling is recommended as the most acceptable means of providing additional capacity to handle wastes which would have gone to the Port Mann landfill had it remained open. Also, out-of-region landfilling would be used in the event it becomes necessary in the future to reduce or stop the landfilling at Burns Bog.

The program to provide adequate transfer and disposal capacity to the year 2010 would include:

- The early construction of a transfer station in Surrey and the establishment of out-of-region landfill capacity to handle and receive the waste that would have gone to the Port Mann landfill, had it remained open. The majority of waste received at this facility originates in Surrey but it does receive waste from nearby municipalities, including some nuisance and industrial wastes. The transfer station would have a capacity of 200,000 tonnes to provide a contingency margin and also to provide for capacity beyond the year 2010. The disposal capacity to replace Port Mann would be obtained through an immediate request for proposals or public tenders called by the District. The Port Mann landfill currently receives about 140,000 tonnes of waste per year. With the disposal reduction under the Plan, the amount of waste generated within Surrey would be about 117,000 tonnes in the year 2000 and 165,000 tonnes in the year 2010 based on a disposal rate of 0.42 tonnes/capita. The contract would be such that the guaranteed minimum garbage tonnage would not become an impediment for reductions in per capita garbage disposal beyond the

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50% level. The use of 3 to 5 year contracts would be considered as a means of ensuring this.

- The continued operation of the Burnaby incinerator at an operating capacity of 240,000 tonnes per year. Its operating standards would be upgraded as necessary to meet changing requirements. This facility annually produces about 45,000 tonnes of bottom ash and about 7,000 tonnes of fly ash which is classified as a special waste under the Waste Management Act. The bottom ash would continue to be used as road construction and cover material at landfills until such time as other markets are developed through the efforts of the District. The fly ash would continue to be placed in secure landfill cells until the District develops or proposes recycling or other disposal methods which are approved by the Ministry of Environment, Lands and Parks.
- Continued operation of the City of Vancouver landfill at Burns Bog to receive garbage from the area it currently serves. Future operation and particularly expansion to new cells within the existing permit would be in accordance with the June 1993 Provincial Landfill Criteria. This continued operation is subject to the outcome of a technical review commissioned by the City to confirm that the June, 1993 Landfill Criteria can be met, and to determine what this would cost.
- The modification of the existing operating plan for the Cache Creek landfill to affect compliance with the 1993 Landfill Criteria and to make available the additional 2,000,000 tonnes of capacity provided under the permit. With achievement of the disposal reduction objective, this permitted capacity would satisfy the District's disposal needs to the year 2010 providing Cache Creek landfill is not successful in the selection process for replacement of the Port Mann Landfill. However, if it is successful, there would be a need to provide capacity beyond that available under the Cache Creek permit. This would be accomplished through negotiations for and expansion of the Cache Creek Landfill beyond its present permit area. Contrary to the recommendation of the technical consultants, this additional capacity would not be obtained through competitive bids or a call for proposals by the District in concert with these negotiations.
- Monitoring of the adequacy of the waste transfer capacities for the Coquitlam Resource Recovery Plant and the Maple Ridge Transfer Station. This would ensure early warning of capacity shortages resulting from faster than anticipated population growth or lower than planned per capita disposal reduction.

The costs of transfer, transport and disposal of garbage and the residuals from recyclables processing along with costs of garbage collection are summarized in Table 8.

TABLE 8

Activity	Residential Sector			IC&I Sector		
	Tonnes	\$'000	\$/Tonne	Tonnes	\$'000	\$/Tonne
Collection	395,672	30,772	78	319,374	23,634	74
Residuals from Processing	12,515			132,803		
Transfer, Transport and Disposal		25,351	62		28,083	62
TOTALS	408,187	56,123	137	452,177	51,716	114


In total, about 860,364 tonnes of garbage and residuals would be managed at an estimated cost of about \$108 million, or an average of \$125/tonne. The inclusion of residuals from processing facilities lowers the average estimated cost for collection, transfer, transport and disposal of residential and IC & I garbage which are \$140/tonne and \$136/tonne respectively. This cost would be paid for by generators except for that portion provided under a manufacturer responsibility program contribution.

5.7 Demolition Landclearing and Construction (DLC) Programs:

Source Reduction, Reuse and Recycling programs and related activities include:

- Mandating that all large DLC waste generators must develop and implement waste audits and waste reduction and recycling plans.
- Imposing tipping fee surcharges and bans on materials for which there are markets. This would require weigh scales to be operated at all but very small facilities. These would also provide additional information necessary to plan and support disposal reduction measures. Surcharges and bans would be supported by education and enforcement programs to minimize illegal dumping.
- Supporting market development through the provision of funds by the provincial government for research. Also, a recycled product task force would be formed to review current standards and remove barriers to the use of recycled asphalt and concrete where it is reasonable to do so.
- Establishing a waste exchange database to facilitate matching the needs of waste generators and waste reusers.
- Initiation of education and training programs to modify traditional attitudes and practices. These programs would be developed through a stakeholder promotion and education organization.

The ownership and operation of DLC transport, processing, transfer and disposal equipment and facilities would remain with private industry. However, these would be regulated to ensure:


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- Processing facilities remove required recyclables and transfer the residual to approved disposal facilities.
- The direct haul or transfer of DLC waste to only approved disposal facilities.
- Facilities are operated to acceptable environmental standards, such as the 1993 Provincial Landfill Criteria.

A lack of reliable information precludes an estimate of DLC materials flows, however, Table 9 provides at least an indication of the waste generation in the year 2000 and the degree to which disposal might be reduced by the above 3 R initiatives.

TABLE 9
PROJECTED DLC MATERIAL FLOWS
YEAR 2000

Material	Potential Generation (tonnes)	Reduction Reuse Recycling (tonnes)	Disposal (tonnes)	3Rs Percent of Potential Generation
Concrete/Asphalt	564,000	508,000	56,000	90
Gypsum	62,000	56,000	6,000	90
Wood	170,000	85,000	85,000	50
Other	320,000	80,000	240,000	25
Total	1,116,000	729,000	387,000	65
Per capita disposal as a % of 1990 per capita generation				61

5.8 Household Hazardous Waste

The Province is initiating a household hazardous waste program under which the manufacturers of hazardous products become responsible for receiving, recycling and disposing of the household hazardous waste from these products. This is a recent initiative by the Province and therefore was not addressed by the technical consultants. However, the Region would, under the Revised Plan, implement landfill disposal bans and education programs to provide incentives for generators to return household hazardous wastes to the manufacturers so that they do not end up in the facilities serving the District.

6. Summary Table

SYSTEM COMPONENTS	RECOMMENDED STRATEGY - YEAR 2000		
	Tonnes	\$'000 (1993)	\$/Tonne
Potential Generation			
Residential	898,600		
IC&I	<u>1,065,400</u>		
Total Potential R + IC&I	1,964,000		
DLC	<u>1,116,000</u>		
Total Potential all Sectors	3,080,000		
Source Reduction and Reuse			
Residential			
GVRD/Municipalities	65,178	3,472	53
Senior Gov't/Private Sector	<u>46,502</u>	<u>10,207</u>	219
Subtotal Residential	111,680	13,578	Av. 122
IC & I			
GVRD/Municipalities	32,862	1,587	48
Senior Gov't/Private Sector	<u>106,613</u>	<u>19,899</u>	187
Subtotal IC & I	139,475	21,486	Av. 154
Subtotal Source Reduction and Reuse	251,155	35,164	Av. 140
Recycling - Collection and Processing			
Residential			
Dry Materials			
Collection	252,694	42,857	170
Processing (net and revenue)		6,834	27
Subtotal Dry Materials	252,694	49,691	197
Organics			
Collection	126,039	15,181	120
Processing (net of revenue)		3,799	30
Subtotal Organics	126,039	18,981	151
Subtotal Residential	378,733	68,672	Av. 181
IC & I			
Dry Materials			
Collection	386,105	53,343	138
Processing (net of revenue)		16,174	42
Subtotal Dry Materials	386,105	69,517	180
Organics			
Collection	87,643	6,993	80
Processing (net of revenue)		5,796	66
Subtotal Organics	87,643	12,789	146
Subtotal IC & I	473,748	82,305	174
Subtotal Collection and Processing Res. + IC & I	852,481	150,977	Av. 177
DLC - Collection and Processing	729,000	-	-
Subtotal Recycling	1,581,481	-	-

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SYSTEM COMPONENTS	Tonnes	\$'000 (1993)	\$/Ton
Residuals Collection and Disposal			
Residential			
Collection (Regular Garbage)	395,672	30,772	78
Transfer, Transport and Disposal		24,574	62
Subtotal Residential Garbage	395,672	55,346	140
Residuals from Processing	12,515	777	62
Subtotal Residential Waste	408,187	56,123	Av. 137
IC & I			
Collection (Regular Garbage)	319,374	23,634	74
Transfer, Transport and Disposal		19,936	62
Subtotal IC & I	319,374	43,470	136
Residuals from Processing	132,803	8,246	62
Subtotal IC & I Waste	452,177	51,716	Av. 114
Subtotal Residuals Collection & Disposal Res. + IC & I	860,364	107,839	Av. 125
DLC Collection and Disposal	387,000	?	?
Total System Residuals Collection and Disposal	1,247,364	DLC + 107,839	
POTENTIAL GENERATION			
Total Residential Waste	898,600	138,473	154
Total IC & I Waste	1,065,400	155,507	146
Total R + IC & I Waste	1,964,000	293,980	Av. 149
Total DLC Waste	1,116,000	?	?
TOTAL SYSTEM WASTE	3,080,000	DLC + 293,980	
Disposal Reduction			
3 Rs % of Potential Generation R + IC & I			56.2
3 Rs % per Ministry Definition* R + IC & I			51.6
3 Rs % of Potential Generation DLC			65.3
3 Rs % per Ministry Definition* DLC			62.7
3 Rs % of Potential Generation All Sectors			59.6
3 Rs % per Ministry Definition* All Sectors			55.7

Table may not add because of rounding off.

* Ministry definition - reduction in per capita disposal as a percentage of 1990 per capita waste generation. Assumes 1990 DLC generation is same as in 1991.

ANNEX A

Lists of Committee Members

GVRD Solid Waste Steering Committee

Councillor George G. Puil, Chairperson	City of Vancouver
Mayor Jack Loucks, Vice Chairperson	City of North Vancouver
Councillor John Keryluk, Chairperson, Evaluations and Cost Control Subcommittee	City of Port Coquitlam
Councillor Don Bell	District of North Vancouver
Councillor Trudi Campen	Township of Langley
Councillor Andy Danyliu	City of West Vancouver
Councillor Bruce MacDonald	Corporation of Delta
Councillor Lee Rankin	City of Burnaby
Mayor Lou Sekora	City of Coquitlam
B.E. Marr	Regional Manager, GVRD
Peter Brady	Project Manager

Local Solid Waste Advisory Committee

Wendy Turner	Chairperson
Rock Appleton	B.C. Waste Management Association/BFI
Karen Asp	Ridge Meadows Recycling Society
Anita Boyd	Delta Recycling Society
Irma Boyd	Paperboard Industries Corporation
John Bremner (TSWAC)	District of North Vancouver
Ada Brown	Consumers' Association of Canada (B.C.)
Rick Chase	Consolidated Envirowaste Industries
Ken Davidson	CUPE 1004 - Unit #2
Bruce Elphinstone	Hospital Employees Union
Ken Erne	Worldwide Homemakers Environmental Network
Robert Feldstein	Davis Trading Ltd.
Lorne Filippelli	Independent Consultant
Julie Gordon	City of Vancouver
Grant Hankins	Overwaitea Food Group
Lenore Herb	Society Promoting Environmental Conservation
Sharon Horsburgh	Corporation of Delta
Councillor John Keryluk	Port Coquitlam
Brendan Killackey	B.C. Hydro
Gordon Lee	Surrey Regional Chamber of Commerce
Emmie Leung	International Paper Industries
Ruth Lotzkar	Environmentally Sound Packaging Coalition
Don Mazankowski	ETL Environmental Technology Ltd.
John Metras	University of British Columbia
Pamela Nel	GVRD - Solid Waste/Recycling
Rob O'Day	Cooperative Housing Assoc. of B.C.
Deborah Ramsay	Vancouver Board of Trade
Tim Reeve	Institutes for Environmental Initiatives

Greg Rideout
Jim Romano
Peter Simpson
Jim Storie
Rosa Telegus (TSWAC)
Andy Telfer
Gerry Wild
Mike Wong
Tony Wood

B.C. Telephone Company
Recycling Council of B.C.
Greater Vancouver Home Builders Assoc.
Building Owners & Managers' Assoc.
District of Coquitlam
West End Recycling Connection
North Shore Disposal
Ministry of Environment, Lands & Parks
Restaurant & Food Services Association

Technical Solid Waste Advisory Committee

Jack Loucks, Chairperson
Ralph Bischoff
John Bremner
Brian Davies
Dave Douglas
Tom Gardner
Grant Hankins (LSWAC)
Lenore Herb (LSWAC)
Tom Hunt
Jim Laughlin
Ruth Lotzkar (LSWAC)
Arthur Louie
Ken Low
Jim Lowrie
Gerry McKinnon
Don Mazankowski (LSWAC)
Hugh McKay
Fred Peters
David Semczyszyn
Rosa Telegus
Ed Trottier
Jeff van Haastregt
Phil Wong
Doug Wylie
Igon Zahynacz

City of North Vancouver
City of Burnaby
District of North Vancouver
City of Vancouver
Ministry of Environment, Lands & Parks
District of Maple Ridge
Overwaitea Foods
Society Promoting Environmental Conservation
City of Port Moody
Corporation of Delta
Environmentally Sound Packaging Coalition
City of Richmond
City of White Rock
District of Pitt Meadows
District of Surrey
ETL Environmental Technology Ltd.
City of North Vancouver
Township of Langley
City of New Westminster
City of Coquitlam
City of Langley
Ministry of Environment, Lands and Parks
Environment Canada
District of West Vancouver
City of Port Coquitlam

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