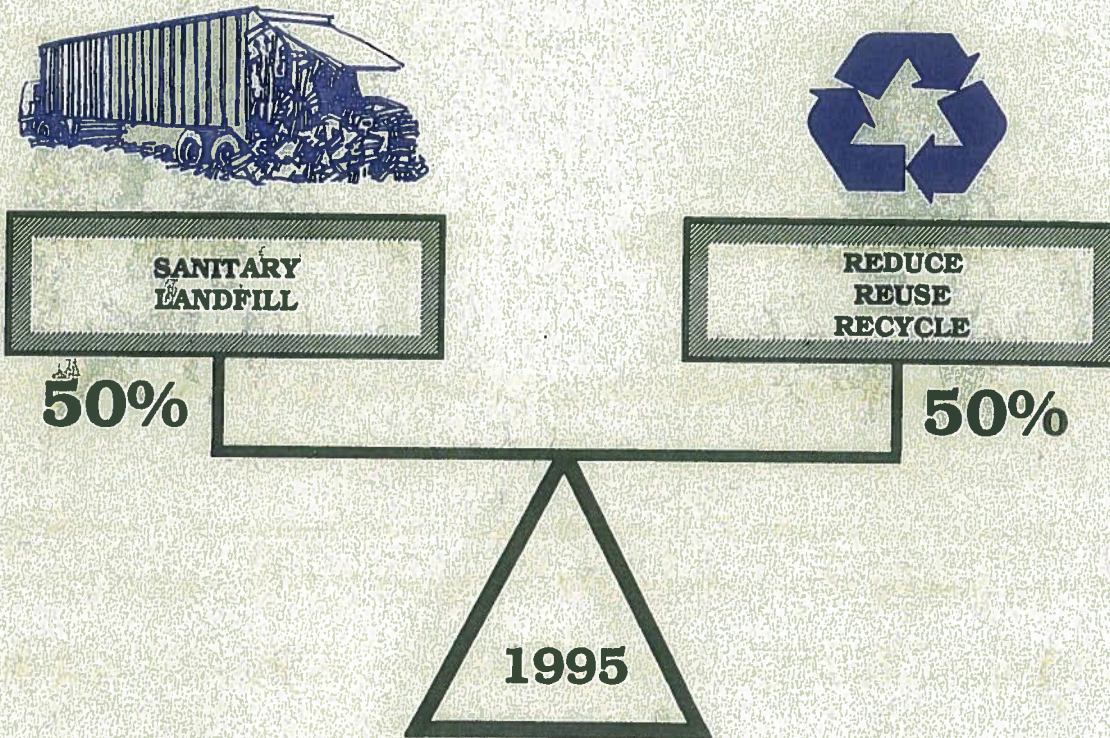


Capital Regional District

SOLID WASTE MANAGEMENT PLAN

Revision 1



SOLID WASTE MANAGEMENT PLAN

REVISION 1

**CRD Engineering
June 1991**

CAPITAL REGIONAL DISTRICT
SOLID WASTE MANAGEMENT PLAN

REVISION 1
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**CAPITAL REGIONAL DISTRICT
SOLID WASTE MANAGEMENT PLAN**

REVISION 1

INTERPRETATION

Where this document refers to:

The "CRD BOARD" or "BOARD", it shall mean the elected Board of the Capital Regional District.

The "DISTRICT", the "REGION", the "CRD" or the "REGIONAL DISTRICT", it shall mean the Capital Regional District.

The "HARTLAND LANDFILL", "HARTLAND" or "HARTLAND SITE", it shall mean the sanitary landfill operation located at #1 Hartland Avenue and is inclusive of property plant and operation.

The "MINISTRY" or the "MINISTER", it shall mean the Ministry of Environment or the individual designated as Minister of the Ministry of Environment respectively.

The "SOLID WASTE MANAGEMENT PLAN", "CURRENT PLAN", "APPROVED PLAN" or "1987 PLAN", it shall mean the Solid Waste Management Plan, compiled by the Capital Regional District in 1986/1987 and approved by the Ministry of Environment in 1989.

The "SOLID WASTE MANAGEMENT PLAN - REVISION 1", it shall mean the document as compiled in 1991 and attached hereto.

"BIOMEDICAL WASTE", it shall mean waste that is generated by:

- (a) human or animal health care facilities;
- (b) medical research and medical teaching establishments;
- (c) health care teaching establishments;
- (d) clinical testing or research laboratories; and
- (e) facilities involved in the production or testing of vaccines,

as defined by the Canadian Council of Ministers of the Environment (CCME) Code of Practise (January 1991).

"CONTROLLED WASTE", it shall mean certain hazardous waste, liquid waste, and refuse which is approved for disposal at the Hartland Avenue Landfill site but which, because of its inherent nature and quantity, may require special handling and disposal techniques to avoid creating health hazards, nuisances, or environmental pollution, as further referenced in CRD Bylaw 1615.

"HAZARDOUS WASTE", it shall mean gaseous, liquid and solid waste which because of its inherent nature and quantity requires special disposal techniques to avoid creating health hazards, nuisances or environmental pollution. Hazardous wastes are toxins or poisons, corrosives, irritants, strong sensitizers, flammables, explosives, infectious wastes, condemned foods, etc. as further referenced in CRD Bylaw 1615. Flammable wastes exclude plastics, paper, paper products and the like.

"SPECIAL WASTE", it shall mean any chemical, compound, mixture, substance or article which is defined as such in the Special Waste Regulation.

"SPECIAL WASTE REGULATION", it shall mean a regulation of the Province of British Columbia under the Waste Management Act or the draft Special Waste Regulation issued by the Province of British Columbia on 15 October 1987, until a Special Waste Regulation is promulgated.

"RESIDUALS", it shall mean what is left after reuse, reduction and recycling.

CAPITAL REGIONAL DISTRICT
SOLID WASTE MANAGEMENT PLAN

REVISION 1

1.0 INTRODUCTION

1.1 Subject

The Capital Regional District, with public involvement, developed a Solid Waste Management Plan in 1986 and 1987 which was subsequently approved by the Minister of Environment under the Waste Management Act. The Plan targeted a 15% reduction in municipal waste landfilled in the District by 1998, to be achieved by recycling, composting and possible materials recovery programs and provided for continued use of the Hartland Landfill site as the major strategy for waste disposal.

Implementation of the plan progressed, but the District met with significant public concern on the portion of the Plan outlining the requirement to expand landfilling operations at the Hartland Avenue Sanitary Landfill. An independent review of the Plan was concluded which reaffirmed the need to landfill at the Hartland Avenue Landfill site but recognized the support for waste reduction by the public and recommend that waste reduction programs be pursued.

While the review was underway, the Capital Regional District Board approved a variety of solid waste reduction initiatives and established a much more aggressive goal to reduce waste landfilled at the Hartland Avenue Landfill site by 50% by the end of 1995. The Board also called for the Solid Waste Management Plan to be amended to reflect the newly approved waste management strategy.

1.2 Purpose and Plan of Development

This document, Solid Waste Management Plan - Revision 1, updates the current 1987 Plan (approved 1989), summarizes progress made to date in administration of the Plan, identifies goals and objectives, and reaffirms the direction of the Board in solid waste reduction, reuse, recycling and disposal.

2.0 BACKGROUND

2.1 History

The Capital Regional District Solid Waste Management Plan, was developed with public involvement in 1986 and 1987. The Plan was accepted by the Capital Regional Board in 1987, and was approved by the Minister of the Environment January 24, 1989. The Plan set out certain recommendations and objectives for solid waste reduction and disposal, and provided a schedule for implementation. Projections made in the plan were based on data available at the time.

The District proceeded with the implementation of the Plan, maintaining the Hartland Landfill and initiating curbside recycling.

During implementation, the expansion of landfilling operations at the Hartland Landfill into the Phase II area, which included Heal lake caused public concern. The Capital Regional District Board responded in August 1990 by retaining an independent Commissioner, Mr. Douglas MacKay, P.Eng., to provide a review of the Solid Waste Management Plan, with specific emphasis on reexamining the District's need to continue disposal by landfilling, alternatives to landfilling and alternate landfill sites.

The Commissioner submitted his report¹ to the CRD Board in January 1991. Mr. MacKay reaffirmed the need for a well designed and carefully operated landfill and concluded that within the Greater Victoria area Hartland Landfill was the most suitable for this purpose. A remote site for a landfill could have been an option, however, time constraints eliminated this option from further consideration. In summarizing his review of the Solid Waste Management Plan, Mr. MacKay drew a number of conclusions and detailed a series of recommendations which are listed in Appendix A. The Commissioner concluded that the Solid Waste Management Plan should be revised to include details of all reduction, reuse, recycling and recovery programmes to be implemented, and recommended that the CRD apply to have the amended Solid Waste Management Plan approved under the Waste Management Act.

On March 13, 1991, the Board approved the MacKay Report Recommendations.

2.2 Planning Process

The planning process leading up to the approval by the Province of the original Solid Waste Management Plan in 1989, proceeded in two stages, as follows:

Stage I - Preliminary analysis of options available.

Stage II - In depth analysis of the options identified by five technical subcommittees.

During Stage II, an extensive public participation program was developed. The public, at a series of open houses and information meetings were presented with the various options for their consideration and input. The direction received in this regard was formulated into the current Solid Waste Management Plan. The chronology of the process, and a Summary of Public Participation is detailed in Appendix B.

Subsequent to the completion and approval of the 1987 Plan further public input was obtained which resulted in the waste reduction initiatives.

A review of the CRD Solid Waste Management Plan, conducted along the lines of a public enquiry, was undertaken by Mr. Douglas MacKay, P.Eng., in 1990/1991. To ensure the public had ample opportunity to voice concerns and make comments on the Plan, a number of open houses, public hearings and public meetings were held. Details and chronology of these events are provided both in Appendix B and in the MacKay Report¹.

2.3 Population Projections and Estimated Waste Quantities

The population, its projected growth, and the corresponding waste stream tonnage are key elements in the Plan. The original estimates have been updated on the basis of current information and are presented in Table 1. The figures suggest higher population growth in the Region, a higher per capita rate of waste generation, and a corresponding increase in annual waste tonnage than was originally projected in 1987.

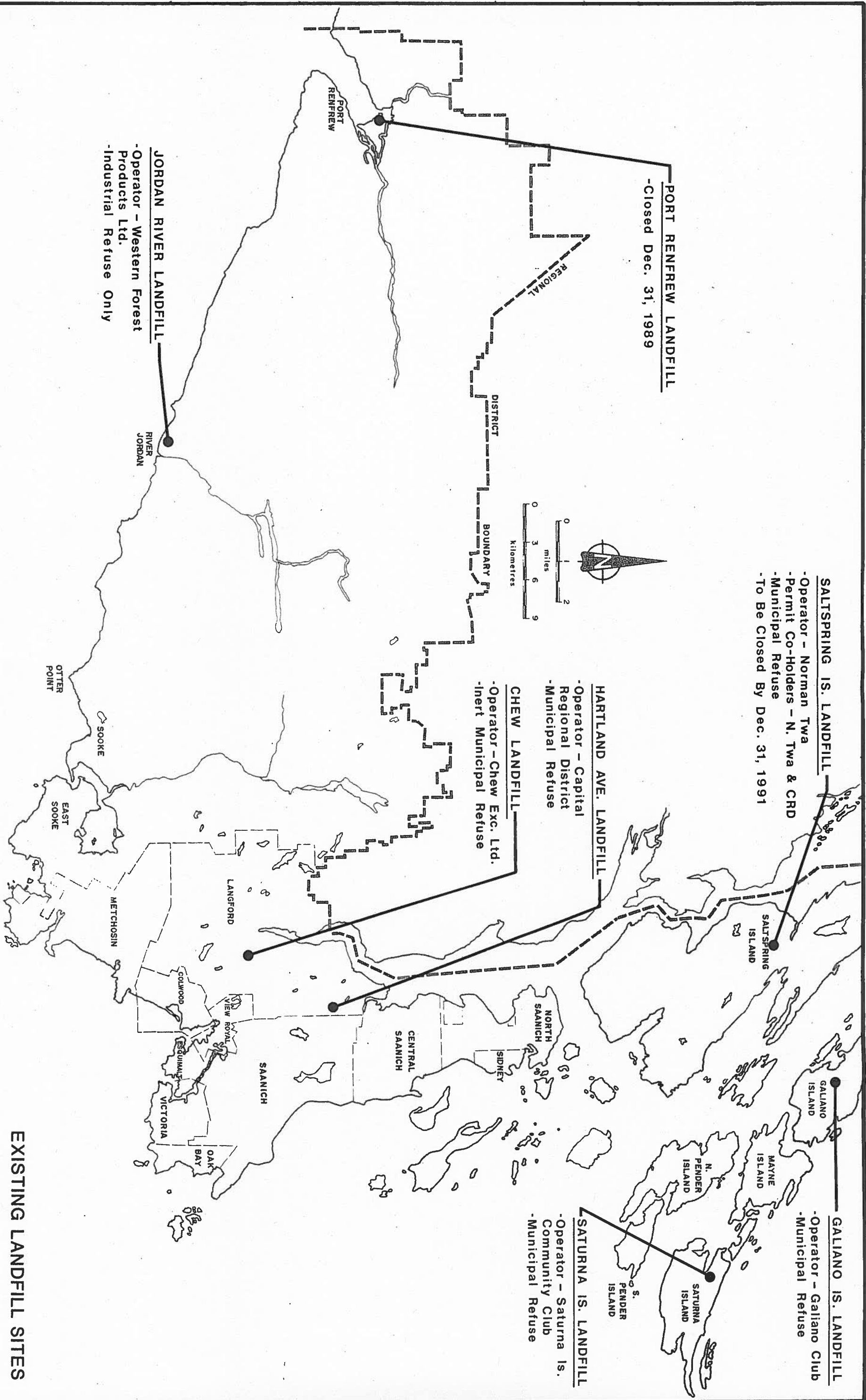
The current estimates for population are based on P.E.O.P.L.E.² projection data provided by the Ministry of Finance, Province of British Columbia, July 22, 1990. A per capita waste generation rate (0.67 tonnes per person per year) was used to project the annual waste tonnage expected for the Regional District. The rate is based on the sum of the total tonnage landfilled at Hartland Landfill, plus waste diverted through District recycling programs, averaged for the years 1987 to 1990, and current population projections.

For 1989, the base year for this Plan, the actual tonnage landfilled at Hartland Landfill amounted to 190,424 tonnes. This value, and the population from Table 1, yield an annual per capita waste landfilled ratio of 0.672 tonnes per capita for 1989.

TABLE 1
ANTICIPATED ANNUAL WASTE TONNAGE, ALL AREAS

YEAR OF PLAN	YEAR	ESTIMATED POPULATION	MAXIMUM ANTICIPATED WASTE TONNAGE/YEAR
---	1987	270,440	$172,500^{(1)} + 1,444^{(2)} - 173,944^{(3)}$
---	1988	275,925	$182,520^{(1)} + 1,463^{(2)} - 183,983^{(3)}$
---	1989	283,036	$190,424^{(1)} + 6,339^{(2)} - 196,763^{(3)}$
1	1990	290,671	$186,527^{(1)} + 10,549^{(2)} - 197,076^{(3)}$
2	1991	297,478	199,608
3	1992	303,153	203,416
4	1993	308,235	206,826
5	1994	313,364	210,267
6	1995	318,586	213,771
7	1996	323,912	217,345
8	1997	329,219	220,906
9	1998	334,435	224,406
10	1999	339,433	227,760
11	2000	344,357	231,064
12	2001	349,407	234,452
13	2002	354,666	237,981
14	2003	360,087	241,618
15	2004	365,527	245,269
16	2005	370,874	248,857
17	2006	376,136	252,387
18	2007	381,293	255,848
19	2008	386,330	259,227
20	2009	391,265	262,539
21	2010	396,069	265,762
22	2011	400,725	268,886
23	2012	405,288	271,948
24	2013	409,765	274,952
25	2014	414,150	277,895
26	2015	418,426	280,764
27	2016	422,584	283,554

1. Actual Data, Tonnage of materials landfilled at Hartland Avenue (year 1987-1990).
2. Actual Data, Tonnage of materials diverted from Hartland through Regional Recycling Programs (1987-1990).
3. Total, Tonnage of waste generated (1 + 2) (1987 to 1990)



EXISTING LANDFILL SITES

Figure 1

3.0 CURRENT STATUS OF FACILITIES AND PROGRAMS

The status of facilities and programs to April 1991 is presented to update the original Plan.

3.1 Landfills

Of the seven active residential refuse disposal landfills identified in the original Plan, one has since been closed down (Fletcher Challenge, Port Renfrew), one is not presently accepting residential refuse (Jordan River) and one is scheduled for closure at the end of 1991 (Blackburn Road Landfill on Saltspring Island). Existing landfill sites are shown on Figure 1. The present operating status of existing landfills is as follows:

- Jordan River Landfill presently accepts only industrial wood waste. The residents of the area now direct haul their refuse to Hartland Landfill. The permit number PR6965 is in the name of Western Forest Products Ltd.
- Blackburn Road Landfill on Saltspring Island will be closed at the end of 1991. Correspondence from the Ministry of the Environment is referenced in Appendix C.
- Galiano Island Landfill continues to be operated by the Galiano Club under permit number PR5559. Recently, MacMillan Bloedel, owner of the land on which the landfill is located, has offered the property for sale, putting the future of this landfill in question. As a consequence Island residents are looking at ways to acquire the land.
- Saturna Island Landfill continues to be operated by the Saturna Island Community Club. As with the Galiano Landfill, the Saturna Landfill is operating on private land, hence the local residents may, at some time in the future, face pressure to close the site or purchase the land. The permit number PR2083 is issued in the name of The Saturna Island Community Club.
- Hartland Landfill, as before, receives over 99% of municipal refuse from within the Regional District. Refuse from Port Renfrew is now transferred to Hartland, Pender Island continues to use Hartland and

one of the options for residents of Saltspring Island will be to transfer their refuse to the site. The area at Hartland, referenced as Phase I (Figure 2) is expected to be landfilled to final elevation by December 1992. Preparations are currently underway for access and filling in the Phase II area.

- The Chew Excavating Landfill is operated under permit number PR5280 in the name of Chew Excavating Ltd. and is authorized to receive inert municipal refuse including stumps, trees, land clearing waste, building demolition, debris, ashes, earth and rock fill. The District has no control over this landfill which is not part of the 1987 Solid Waste Management Plan.

3.2 Transfer Stations

The District has operated a temporary transfer station located at Port Renfrew, since the closure of the Fletcher Challenge Landfill in December 1989. A permanent transfer station is proposed to be in operation by the end of 1991. There are no other transfer stations operated by the Region.

3.3 Recycling Programs

The 1987 Plan called for phasing out of the existing Regional recycling program (Borden Street), and the concurrent introduction of a multi material curbside pick up program, first for the Core Area and then to include the outlying areas. Programs are now in place.

The District contracted with International Paper Industries in 1988, and a curbside collection system for the municipalities of Oak Bay, Saanich (urban core), Victoria, and Esquimalt was launched in March 1989. Laidlaw Waste Systems Ltd. was awarded a contract in 1990 to expand the Program to the Western Communities and the Saanich Peninsula municipalities. At present the expanded program extends to 117,000 households and includes curbside and apartment collection and drop boxes.

To qualify for curbside pick up, a collection area must contain at least 200 residences and the density must be a minimum of 3 households per acre. A number of areas in the District have been provided with drop boxes in lieu of curbside pick up. Drop box areas include Port Renfrew, Saltspring Island, and certain rural areas of the Western Communities, Sooke, Saanich

and the Saanich Peninsula. In all, a total of 17 drop boxes are strategically located in these areas.

The Core Area contract with International Paper Industries will expire in December 1993. The Western Communities/Saanich Peninsula contract with Laidlaw Waste Systems will expire in December 1994. Both contractors are required to pick up newspaper, glass and metal food and beverage containers only.

3.4 Composting

The status of composting on a Regional basis has not altered appreciably since the drafting of the 1987 Plan. Municipalities continue the composting of leaf material as an alternative to disposal and recently yard waste collection programs have been introduced on a small scale.

3.5 Funding of Programs

From 1990, all expenditures related to solid waste have been recovered through tipping fees at Hartland Landfill. Tipping fees from 1985 to 1991 have increased from \$8.50/tonne to \$45.00/tonne respectively. Tipping fees are projected to increase as programs are expanded or introduced. The District will review the process of funding of Solid Waste programs in this manner with the member municipalities (MacKay Report Recommendation # 15).

3.6 Education

To compliment the residential recycling program the Regional Board approved an education/promotion department and budget. The Regional recycling coordinator and the Recycling Hotline were established in late 1988. The Recycling Hotline acts as the focal point for the community to locate information about the existing residential recycling program, other initiatives of the CRD, educational material on the 3Rs, household hazardous waste, backyard composting as well as speakers for schools and community groups.

Each municipality and electoral area has a municipal recycling coordinator who reports to the Municipal Council as well as liaise with the Environmental Education Coordinator.

4.0 REVISED MANAGEMENT PLAN

The Revised Solid Waste Management Plan for the period of 1991 to 1995 provides for expanded use of the Hartland Avenue Landfill site, and sets out an aggressive program of waste reduction to achieve the District's goal to reduce the tonnage landfilled by 50% by the end of 1995.

This target reduction is to be based in the 1989 annual per capita Hartland disposal rate which is 0.672 tonnes per capita. The target rate for waste disposal to Hartland Landfill in 1995 is therefore 0.336 tonnes per capita.

It is anticipated that solid waste plans for the existing Gulf Island disposal locations will be formulated during this time period in accordance with direction from the Ministry and as required by the Waste Management Act.

4.1 Hartland Landfill

The need to retain and expand the landfill at Hartland Avenue was identified in the 1987 Solid Waste Management Plan. The MacKay Report concluded that the District required a landfill and recommended the Hartland site as the most appropriate in the Greater Victoria area (MacKay Recommendation # 7).

Phase I filling to a final elevation of 174 m. will complete the original active landfill area by December 1992, and Phase II will be developed to accept waste by January 1993 (Recommendation #s 7, 8, 9). The development of Phase II will proceed following the draining of Heal Lake. The new landfill will be designed and operated to conform with the Class A level of operation required by the Ministry.

4.1.1 Accepted Wastes

Standard municipal refuse, is accepted from residential, commercial and industrial users. The landfill also accepts building demolition, soil, hog fuel, yard debris, stumps and brush and controlled waste which includes sewage screenings and asbestos. Source separated recyclables (corrugated cardboard, newspaper, food and beverage, glass and tin and aluminum cans) are accepted free of charge.

To ensure that environmental impacts are minimized and that workers are protected from hazardous situations, some wastes are not

accepted. They are prohibited wastes. Prohibited wastes include, but are not limited to:

- i. liquids except as permitted
- ii. empty waste containers unless they are crushed, shredded or similarly reduced in volume
- iii. ignitable waste
- iv. reactive waste
- v. motor vehicle bodies
- vi. special waste excluding waste asbestos
- vii. refuse that is on fire or smouldering
- viii. biohazardous waste
- ix. cytotoxic waste.

CRD Bylaw 1615 detailing "Controlled" and "Prohibited" wastes is referenced in Appendix D.

4.1.2 Filling Plan

The Hartland Landfill Filling Plan, shown on Figure 2, outlines the final fill elevations for Phase I and for Phase II. The 1987 Plan indicated that the final fill elevation for Phase II would be reached by 2017. The filling period will be extended considerably beyond the original date projected as a consequence of the waste reduction and recycling programs currently initiated or proposed. The Ministry will receive information on the progression of landfilling through updates of the Hartland Landfill Operating Plan³.

4.1.3 Operating Plan

A draft Hartland Landfill Operating Plan was submitted in April 1991, to the Ministry of Environment in compliance with the requirements issued upon acceptance of the CRD Solid Waste Management Plan. The Operating Plan³, details physical features of the site, present operating conditions, work and safety procedures, filling plans, and addresses the requirements of operation of a well managed site.

4.1.4 Phase I Works

A. Leachate

A variety of works have been completed in connection with the Phase I landfill area. Leachate disposal works, including on site storage lagoon and intake, leachate pipeline, and

monitoring and control works were completed and placed in operation in 1990, eliminating discharge to Heal/Tod Creeks. Recycling and spraying of leachate onto the landfill site was discontinued in the summer of 1989.

Having eliminated leachate discharge to the Heal Creek/Tod Creek drainage systems, the Board approved funding to first assess what effect the past practice of leachate discharge has had on the drainage systems and second to undertake works as may be required to rehabilitate the drainage courses.

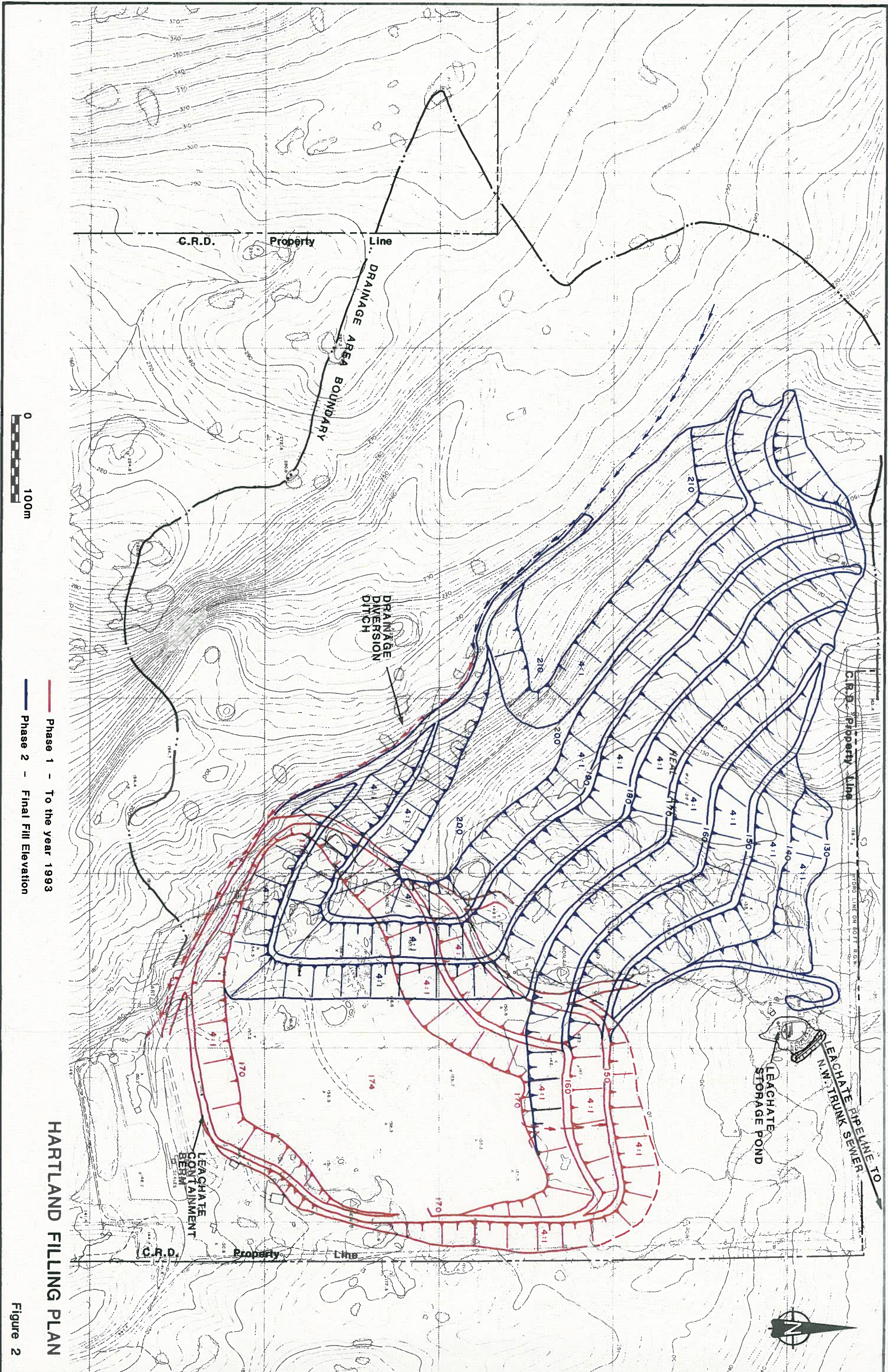
B. Bird Control

The problems of scavenging gulls have been addressed by more consistent use of daily cover, and by installation of elevated bird control wires across the site.

C. Groundwater Monitoring

Groundwater movement and quality are assessed on a regular basis at 23 locations within and around the perimeter of the landfill area, and at 10 domestic wells on properties south of the site. The results are analyzed and reported in an annual monitoring report. The 1990 report was compiled by Gartner Lee Limited⁴. Groundwater monitoring will be expanded in 1991 to the Heal Lake basin and north of the leachate lagoon as part of the design and long term monitoring requirements for the Phase II fill area.

The MacKay Report noted that residents in the area of the site were concerned with groundwater quality, and recommended (Recommendation # 17) that the District, to alleviate such fears, extend domestic water to all residents between Wallace Drive and the site from Hartland Road to Durrance Lake Road. The District has worked with the Corporation of the District of Saanich to extend water along Hartland Avenue, to three residents closest to the landfill, and will consider the MacKay recommendation in detail.



HARTLAND FILLING PLAN

Figure 2

D. Drainage

On site drainage is designed on an ongoing basis as areas are landfilled. The purpose is to divert as much surface runoff as possible away from the landfilled areas. On completion of Phase I, clean surface water from the completed fill area will be directed to the North to Heal Creek.

E. Gas Control and Recovery

Odour from the landfill is a concern to local residents. The District is committed to installation of a landfill gas recovery system to mitigate the odour from the site (MacKay Recommendation # 12).

Environmental Technology Incorporated completed a partial system of gas wells and a collection system along the North, East and South perimeter of the site in June 1991. Collected gas is flared at one location. When Phase I is closed, the system will be extended and a gas recovery plant is scheduled for operation by the fall of 1993. It is intended that gas recovery will include a facility and operation for the recovery, processing, production and sale of energy in the form of electricity, methanol, compressed natural gas or other fuel.

F. Burning

Burning of stumps, brush and wood waste is no longer carried out on site. The last burn took place in the spring of 1990. Wood waste is now chipped and shredded and used to supplement daily cover.

G. Composting

Facilities for the composting of available feedstock are planned for installation on the Hartland site. The composting will include the processing of the stock, the retail sale of the compost, as well as the use of compost for reclamation of Phase I and later for cover on Phase II.

H. Landfilling

Landfilling of Phase I will proceed to maximize lifespan of the area. Phase I landfilling is projected to be complete by December 1992.

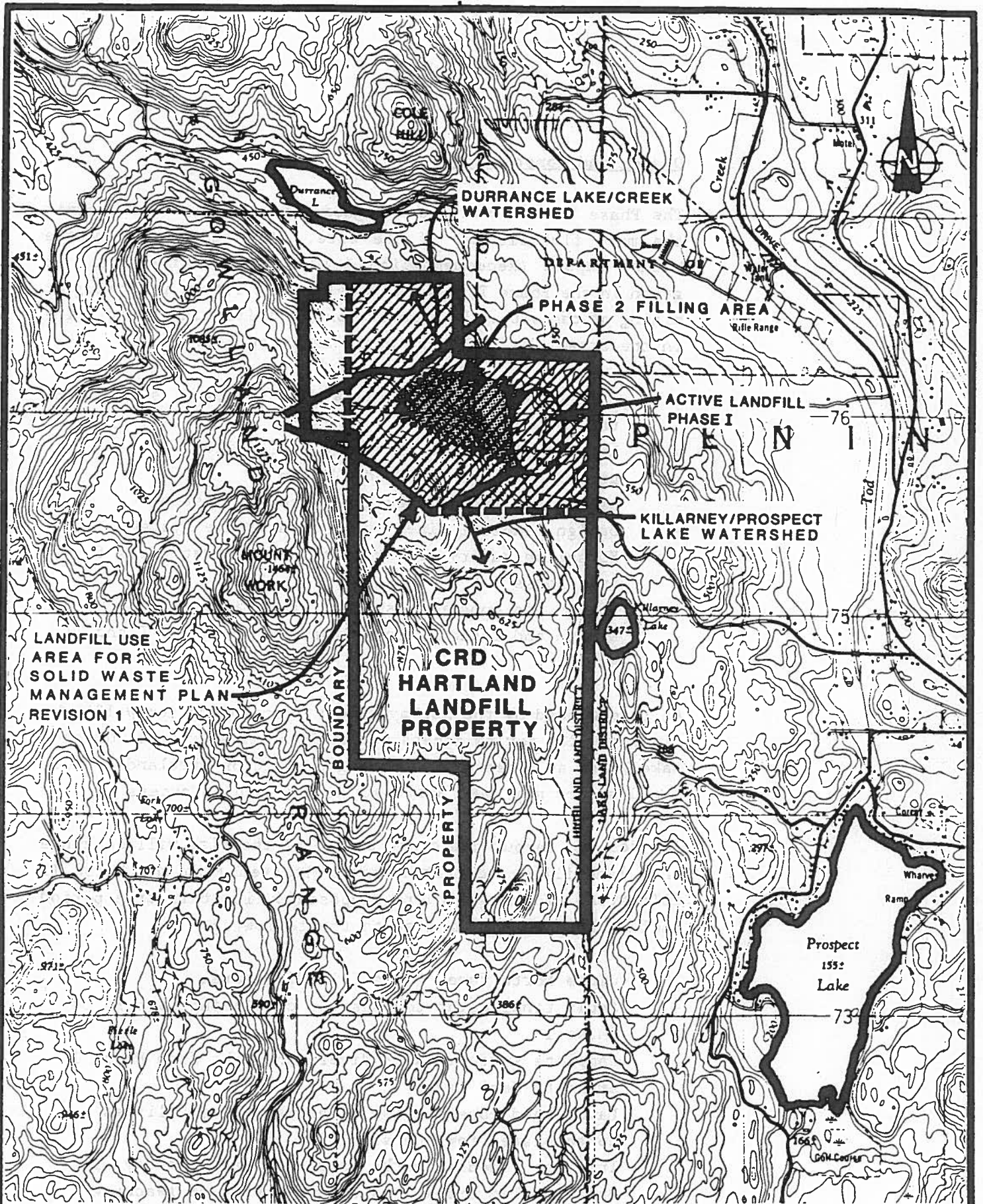
4.1.5 Phase II Works

A. General

Development and landfilling of the Phase II area, detailed on Figure 2, will enable the District to maintain landfilling operations for an extended time period. Ultimate utilization of the site is projected to include the following:

- Landfilling and processing of solid waste, special waste and liquid waste
- Composting facility
- Administration and weigh scale facilities
- Landfill monitoring facilities
- Materials processing and recovery
- White goods recovery
- Storage facilities, both for on site operations and for temporary collection and storage of hazardous waste materials
- Leachate handling, pretreatment and disposal
- Landfill gas collection, processing, conversion and utilization
- Rock quarrying, processing plant and sales facilities
- Waste exchange and salvaging operations
- Landfill mining and reclamation
- Recreation uses (following Phase I completion)
- Sales off site of composted materials, materials from the quarry operation, recycled materials and energy in the form of electricity, methanol, compressed natural gas or other fuel
- Application and evaluation of new and innovative waste disposal or reduction technology
- Other solid waste disposal and reduction initiatives as approved by the Board.

The area for all these uses is outlined in Figure 3.



**HARTLAND LANDFILL -
LANDFILL USE AREA FOR
SOLID WASTE MANAGEMENT PLAN REVISION 1**

B. Design and Construction

The Phase II area will be designed and constructed to permit the most flexible use of the site. As recommended by the MacKay Report (Recommendation # 10), consideration will be given in the Phase II design to permit the future recycling or mining of the site. In preparation for initiating landfilling in the area, the following works are proposed:

- Undertake Hydrogeological and Geotechnical studies of the Phase II area
- Log and clear site in stages as required
- Drain Heal Lake and dredge basin
- Design and install leachate recovery system
- Design landfill liner subliner drainage systems
- Establish quarry operation to provide materials for site works
- Design and construct surface water diversion works
- Design and install access roadways to Phase I and II areas.

As recommended by the MacKay Report (Recommendation # 13) the District will review access to the Phase II site from Durrance Lake Road, as a means of reducing traffic on Hartland Avenue. The District may make application for such an access.

The design, layout and construction of the site will continue once landfilling activities are initiated into the Phase II fill area. Works which are proposed during this time period include but are not limited to the following:

- Close North face, Phase I landfill area
- Apply final cover to Phase I, completing closure of Phase I
- Complete surface water diversion works from Phase I areas to Heal Creek
- Layout and construction of additional facilities contemplated for the site
- Initiate remedial works as determined by study, for Heal and Tod Creeks, as a consequence of leachate contamination prior to 1990.

C. Leachate

The strategy for collection and disposal of leachate, will be developed concurrent with Phase II landfill design. Leachate production will be controlled through surface water diversion and properly executed filling operations. Existing leachate collection and disposal works will be utilized and upgraded as necessary. The requirement for on site treatment of leachate is the subject of a study completed in 1991⁵.

The Ministry will be updated on the progress of the leachate program through amendments to the Hartland Operating Plan.

D. Mitigation

The MacKay Report concluded that Mitigation and Compensation is required as a result of draining Heal Lake, and recommended (Recommendation # 18) that the remainder of the Hartland site, excluding Phase I and II be declared as surplus and formally dedicated to public use and that as compensation for the loss of Heal Lake, the District contribute to the development and use of the site. Through the Regional Parks Department, the District is initiating discussion with the local community and other interested potential users to determine the appropriate use for the surplus property, and will keep the Ministry apprised of the situation.

E. Associated Landfill Uses

A number of ancillary uses of the site are contemplated.

Quarrying of rock, (MacKay Recommendation # 19), will be evaluated early in the project as a means to provide materials for construction of roadways necessary for preparation of Phase II landfill operations. The quarry operation, seen to provide additional space for future landfilling, may also provide revenue to the District if excess materials are sold off site. Facilities for the sale of quarried materials will be provided if warranted.

Composting and gas recovery and gas sale facilities and other waste recycling, processing, and reuse facilities proposed by the District are intended to be established on the Hartland site.

The District will make allowance for the temporary storage of hazardous wastes at the site.

4.2 Blackburn Road Landfill - Salt Spring Island

Ministry of Environment, Environmental Protection has advised that the permit for Blackburn Road landfill will not be renewed after December 31, 1991 and that the site must be closed. As of this date, residents of Salt Spring Island will be using direct haul of refuse from the Island to the Hartland Landfill, a concept supported by the District. Alternative landfill sites on Salt Spring have been discussed and this option is supported by the District if the residents of Salt Spring Island decide to opt out of the Regional Solid Waste function and undertake, at their own expense and liability, their own function as a local service under the authority of the Region.

The Board will address issues such as the closure plan and associated costs for the Blackburn Road site in 1991/1992.

4.3 Galiano Landfill - Galiano Island

The Galiano Landfill is located on land currently owned by MacMillan Bloedel, and presently offered for sale. Residents have been appraised of the situation and are reviewing alternatives. The District has prepared options for consideration by the Galiano Club including:

- a) Direct haul to Hartland Landfill,
- b) Purchase property occupied by the landfill and maintain the operation,
- c) Close the landfill and construct a transfer station and haul refuse to Hartland Landfill.

In all the three options, the District will be responsible for disposal either as part of the Regional funding or as a local service. The District will keep the Ministry apprised of developments.

4.4 Saturna Landfill - Saturna Island

No change in the operation of the Saturna Landfill by the Saturna residents is anticipated in the immediate future. Residents will be encouraged to consider long range plans for refuse disposal for the Island. The landfill will continue to operate under its existing permit.

4.5 Port Renfrew Landfill

Port Renfrew Landfill was closed by Fletcher Challenge effective 31 December 1989. The District has been operating a transfer station for residents within a Solid Waste Local Service Area since that date, and has been hauling all refuse to Hartland Landfill. This will continue.

4.6 Jordan River and Chew Excavating Landfills

These will continue as at present but the Region will explore with the Ministry of Environment opportunities to control materials being landfilled at these locations to complement this Plan and Provincial waste reduction initiatives.

4.7 Other Landfills

No other landfills will be permitted except as provided for in this Plan.

4.8 Transfer Stations

As recommended by the MacKay Report (Recommendation # 14), the District will investigate the transfer of waste to the Hartland Landfill site from strategic locations in order to reduce traffic flow to the landfill.

4.9 Waste Reduction

a) Background

The 1989 Plan directed the District towards recycling and mechanized materials recovery. The District has implemented a residential curbside/drop box recycling program for all areas of the Region except the outer Gulf Islands. The Gulf Islands receive Grants from the District to support established recycling programs on each Island. In lieu of

mechanized materials recovery the District has moved toward source separation of materials, and composting of organic waste. The need to clearly define the extent, cost and content of the Waste Reduction programs was a recommendation of the Mackay Report (Recommendation #s 2, 3, 4, 5). The goal of the District is to reduce the waste to Hartland by 50% by the end of 1995 based on the annual average per capita tonnage of waste received at Hartland in 1989. The per capita disposal value for 1989 was 0.672 tonnes per capita. The target value for 1995 is 0.336 tonnes per capita.

The goal of 50% diversion was set exclusive of the ongoing material diversion carried out by the Industrial / Commercial / Institutional sectors in the Region. It is estimated that 38,000 tonnes of material annually is currently diverted by this sector, exclusive of any District programs.

b) Philosophy and Strategy

The philosophy of the Waste Reduction program is to involve every individual in the community in the process. The basic strategy of the Waste Reduction program is to:

- first, reduce generation by encouraging people to refuse to acquire unneeded or unwanted materials and to reuse whatever possible and to reduce the amount discarded by, for example, backyard composting;
- then to, maximize source separation so that discarded materials are more easily processed to reduce contamination and thus more easily marketed;
- then to, collect, process and market in a community scale after the first two priorities are optimized;
- and finally to undertake further mechanized recovery of the residual waste stream only after the first three priorities have been optimized.

c) Initiatives

The Board approved a number of Solid Waste Management Initiatives on February 28, 1991. The Initiatives illustrate the extent of the Waste Reduction program planned for the District to meet the objective of reducing materials landfilled by 50% by the end of 1995. The Initiatives and Schedule are summarized in Appendix E and Figure 4.

4.9.1 Regional Waste Reduction Program

A number of Initiatives relating to waste reduction were identified by the Board and are being implemented by the District as follows:

The development, in association with the member municipalities, of a User Pay System for waste disposal.

The District's current blue box curbside collection and drop box programs are proposed to be maintained as part of the overall waste reduction strategy. A Region wide program to collect recyclables and compostables will be designed to integrate with existing systems for the collection of residuals. A pilot program, to evaluate the potential and economic feasibility of curbside collection of ten materials instead of three, has been approved for 1991.

Certain goods will be banned from disposal at Hartland Landfill. Programs to provide alternative means of disposal for corrugated cardboard, car batteries, tires, drywall, and white goods are expected to be launched in 1991/1992. A program to collect, and recycle white goods in 1991/1992 is proposed. This program will include the capture and recycle of CFCs from refrigeration units.

An office paper recycling program has been successfully launched in five Capital Regional District offices and an Office Recycling Guide has been produced for the benefit of other agencies, to heighten awareness and promote waste reduction and waste recycling in the office.

The potential for waste diversion in the Industrial / Commercial / Institutional sectors is recognized and the Board has approved funds

to be expended to promote waste reduction in this sector. Direct involvement is not planned.

The burning of wood waste is no longer permitted at the Hartland Landfill. Such waste is now chipped and reused to supplement daily cover on site.

The development of a Region wide municipal procurement policy is underway and is an ongoing process.

The MacKay Report recognized that the cost of recycling programs is substantial, and recommended (Recommendation # 4) that the District undertake a cost benefit analysis of these programs. The District will undertake such analyses as part of an ongoing evaluation of its Waste Reduction programs.

4.9.2 Composting Program

The District has developed a three point composting strategy as follows:

First, to promote and encourage residents to compost their own yard and organic waste.

Second, once the backyard compost programs have been optimized, introduction of promotion of municipal programs for collection, storage and processing of heavy brush, leaves and yard waste for the benefit of municipal residents.

Third, to accommodate compostable material presently landfilled at Hartland Landfill through a Regional composting program. The Regional strategy may also accommodate food waste products from commercial and institutional facilities, and waste surplus to residential or municipal programs.

Under consideration are programs to collect residential and commercial/institutional organic waste and one to the establish compost facilities at the Hartland Landfill site. The composting facility, planned for construction on site will divert organic waste

presently landfilled. This program is anticipated to be constructed in phases as outlined in Appendix F. Phase I will receive all yard and wood waste currently being received at the site; Phase II may composting of additional feed stock from the waste stream. The product from the operation may be utilized on site or may be offered or sold off site.

4.9.3 Biomedical Waste

Bill 58, requires all Regional District's to implement a biomedical waste disposal program by December 31, 1992. A Provincial program is expected to be implemented for the disposal of biomedical waste from publicly funded institutions, relieving the District of the responsibility for this aspect of biomedical waste disposal. For biomedical waste from non-publicly funded sources such as laboratories, doctors offices, clinics and veterinarians, the District will provide the leadership, directions and, if needed, the facilities for managing this waste.

4.9.4 Hazardous Waste

The District recognizes the need to divert household hazardous wastes from the landfill and sewers in the District and will work with the B.C. Hazardous Waste Management Corporation (BCHWMC) to develop a local collection program.

A waste/chemical contaminant education program is planned for initiation in 1991 and the District will be meeting with BCHWMC to discuss detailed siting of a permanent hazardous waste storage facility.

Designated controlled waste and liquid waste disposal areas will continue to be provided at Hartland Landfill where landfilling of such wastes is allowed.

4.9.5 Education Program

The Regional Board has approved the expansion of the education group to include an Environmental Educator; Industrial / Commercial / Institutional Educator; Residential Educator; as well as an expanded Hotline.

The Mission statement for this group is "To inform people of and encourage them to participate in waste management solutions to protect the environment and the community health."

This group prepares annual goals to support this mission statement and the Regional Board's priorities in waste reduction.

Waste Management

The Regional Board has approved the formation of the education group to inform and encourage participation in waste management solutions. The group will focus on providing information and resources to the community. The group will also work to identify and address waste management issues in the community. The group will be responsible for developing and implementing educational programs and materials. The group will also be responsible for monitoring and evaluating the effectiveness of these programs. The group will report to the Regional Board on its progress and activities.

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5.0 AMENDED PLAN IMPLEMENTATION

Although the Solid Waste Management Plan is a long term document, the detailed scheduling of programs and work is best provided over a more manageable time period. For Revision I of the Plan, it is appropriate to ensure the Schedule for implementation of programs is well defined to achieve the current goal set by the CRD Board to reduce the quantity of material landfilled at Hartland by 50% by the end of 1995.

5.1 Public Involvement

The District has involved the public in all major decision making processes regarding the development of the Solid Waste Disposal Strategy. The District will continue to be proactive with the public in general, and specifically with those most directly affected by the Solid Waste Management Plan. Regular meetings with residents around the Hartland landfill will convey upcoming plans. Local residents, interested organizations and the public in general will assist the District in the development of final use plans for Phase I, and for the remainder of the landfill property, which is surplus to the planned operation.

5.2 Schedule

The Plan schedule for the continuing use and development of the Gulf Island landfills, and the Hartland landfill, (Phase I and II) is shown on Table 2. The Schedule for the continuing development and implementation of Waste Reduction programs is summarized on Figure 4.

5.3 Funding and Costs

The Board has applied for authority to borrow funds necessary to carry out the Capital Works as detailed in the Plan. The estimated cost for the works is \$22,115,000 as summarized in Table 3. In addition, further capital funding of up to \$15 million may be needed for an invessel multimaterial Composting Plant. The costs of the Solid Waste programs, Capital Debt retirement and annual operating costs will be paid for out of the tipping fee. It is projected that the tipping fee will increase annually as noted in Table 4. These projections include all the capital expenditures noted above and allow for a one-third capital grant from the Province for the Composting Plant.

TABLE 2

SCHEDULE - LANDFILLING

PROGRAM/FACILITY	TARGET DATE	ACTION
Blackburn Road Landfill	Dec/91 Jan/92	- Closure of landfill - Direct haul to Hartland
Galiano Landfill	1991	- Residents to consider options for refuse disposal.
Saturna Landfill	1991	- Ongoing operation as existing
Hartland Landfill	1991	- Design and construction work to prepare Phase II, Heal Lake basin, for landfilling - Initiate Tod Creek rehabilitation - Odour control, Phase I - drill gas wells, install collection system and flare - Close North face Phase I - Design compost facility - Implement ban on problem waste, construct recycle depot - Ban burning, shred wood waste to site
	1992	- Close remainder of Phase I - Complete gas collection, install recovery system - Continue Tod Creek rehabilitation - Complete construction Phase II area, Leachate, lining, access, diversion facilities, landfill monitoring, Bird control - Construct phase I compost plant - Quarry rock for site
	1993	- Continue Tod Creek rehabilitation - Commence landfilling, Phase II - Evaluate leachate treatment - Evaluate Phase II operations - Evaluate further composting expansion
Port Renfrew Transfer Station	1991	- Construct permanent transfer station for refuse and recyclable

JUN JUL AUG SEPT OCT NOV DEC 1992 JAN FEB MAR APR MAY JUN JUL AUG SEPT OCT NOV DEC 1993 JAN FEB MAR APR MAY JUN JUL AUG SEPT OCT NOV DEC 1994 JAN FEB MAR APR MAY JUN JUL AUG SEPT OCT NOV DEC 1995

1	<p>USER PAY (GARBAGE)</p> <p>PRESENT TO MUNICIPAL COUNCILS PHASE 1 STARTS CONSULTANT'S REPORT (PHASE 2) PHASE 2 STARTS FULL SCALE USER PAY STARTS</p>
2	<p>HARTLAND RECYCLING</p> <p>BOARD APPROVAL TEMP. FACILITY OPENS PERMANENT FACILITY OPENS</p>
3	<p>BLUE BOX PLUS RECYCLABLES COLLECTION</p> <p>BOARD APPROVAL FOR DEPOT PILOT CONSULTANT'S REPORT CURBSIDE PILOT STUDIES DEPOT PILOT STUDY FULL SCALE IMPLEMENTATION</p>
4	<p>REGIONAL COMPOSTING - TEMPORARY FACILITY - PERMANENT FACILITIES</p> <p>BOARD APPROVAL SITE OPENS BOARD APPROVAL OPEN PHASE 1 OPEN PHASE 2</p>
5	<p>BACK YARD COMPOSTING</p> <p>CONSUMER SURVEY COMPLETED BOARD REPORT RE: DISTRIBUTION DEMO SITE OPENS</p>
6	<p>INDUSTRIAL/COMMERCIAL INSTITUTIONAL (ICI) ORGANIC COLLECTION</p> <p>PRIVATE SECTOR FACILITY OPENS</p>
7	<p>HAZARDOUS WASTE PERMANENT SYSTEM</p> <p>BOARD APPROVAL PERMANENT SYSTEM IN PLACE</p>
8	<p>INDUSTRIAL/COMMERCIAL INSTITUTIONAL (ICI) PROMOTION</p> <p>REPORT ON PROGRAM ANNUAL REPORT ANNUAL REPORT</p>
9	<p>HARTLAND SALVAGING</p> <p>BOARD REPORT BOARD APPROVAL FACILITY OPENS</p>
10	<p>BIO MEDICAL WASTE</p> <p>SYSTEM DESIGNED SYSTEM IN PLACE</p>
11	<p>WHITE GOODS COLLECTION</p> <p>BOARD APPROVAL COLLECTION STARTS</p>
12	<p>MATERIAL BANS/ INCENTIVES</p> <p>DRYWALL BAN STARTS AUTO BATTERIES AND TIRES BANS START INCENTIVES FOR RECYCLABLES AT HARTLAND IN PLACE CARDBOARD BAN START</p>
13	<p>DIVERSION GRANT FOR NON-PROFIT</p> <p>GRANTS BEGIN</p>
14	<p>CONSTRUCT/DEMO. WASTE</p> <p>BOARD REPORT SYSTEM IN OPERATION</p>

CAPITAL REGIONAL DISTRICT

1991 SOLID WASTE MANAGEMENT PLAN REVIEW
SUMMARY OF RECOMMENDATIONS

MACKAY RECOMMENDATIONS

CRD ENGINEERING RECOMMENDATIONS

CRD ENGINEERING FURTHER
RECOMMENDATIONS

1. That landfilling continue as an integral part of the Capital Regional District Waste Management Plan.
2. That the CRD continue with initiatives to do with reduction, reuse and recycling.
3. That the CRD apply an objective benefit-cost analysis procedure to all reuse and recycling programs.
4. That the CRD use the results of the benefit-cost analysis to set priorities for reuse and recycle programs and that both the benefit-cost analysis and the results of reuse and recycle programs be publicized.
5. That the CRD continue with the initiative to do with a central composting plant.

Approve.

Approve.

Approve in principle.

Approve in principle.

Approve.

That a procedure for cost/benefit analysis be developed at a cost of \$7,000 (\$5,000 consult. + \$2,000 staff).

That incentives options for backyard composting be examined at a cost of \$4,000 and brought back for consideration.

Approve.

6. That the CRD encourage home composting and establish an incentive program for home composting.

Approve.

7. That Hartland Road continue as the CRD landfill.

Approve.

8. That Hartland Road Landfill Phase I be completed to permitted elevations in accordance with the Waste Management Plan.

Approve.

9. That preparations begin immediately to develop Hartland Phase II in order that Phase II is ready to receive refuse when Phase I is full.

Approve in principal.

10. That in design of Hartland Phase II, consideration be given to recycling (mining) the landfill.

That the costs and opportunities for future landfill mining be examined at a cost of \$12,000 (10,000 consult. + \$2,000 staff) and report be brought back for consideration.

For further consideration.

11. That the CRD extend domestic water to all residents between Wallace Drive and the landfill from Hartland Road to Durrance Lake Road.

That this recommendation be further examined at a cost of \$5,000 (\$4,000 consult. + \$1,000 staff) and a report be brought back for consideration.

12. That the CRD proceed immediately with the gas extraction project now under consideration for Hartland Phase I and that a similar project to be implemented for Phase II.

Approve for Phase I; approve in principle for Phase II.

- 1) That work on an interim odour control system for Phase I be started immediately and a report brought back for consideration.
- 2) That an odour control system for Phase II be incorporated into the detailed design but not necessarily restricted to the same design as for Phase I.

13. That the CRD investigate the benefits and costs of using Durrance Lake Road as access to the Hartland landfill.

Approve.

That a budget of \$ 8,000 (\$6,000 consult. + \$2,000 staff) be approved and a report be brought back for consideration.

14. That the CRD investigate transfer of refuse both for bulk transfer of all refuse and for transfer of refuse now delivered in small vehicles. The investigation to consider the opportunities for recycling at transfer stations.

Approve.

That a budget of \$ 20,000 (\$15,000 consult. + \$5,000 for staff) this work be approved and a report brought back for consideration.

15. That the CRD review landfill fees and methods of funding the solid waste function with the Member municipalities.

Approve.

That a budget of \$ 4,000 for this work be approved.

16. That the CRD work with the Member municipalities to

Approve.

That a budget of \$ 4,000 for this work be approved.

develop a standard by-law to control indiscriminate dumping of refuse.

17. That Hartland Phase II be confined to the Heal Lake drainage basin and the remainder of the Hartland site (except Phase I and II areas) be declared as surplus to the needs for landfill and formally dedicated to public use.

18. That the CRD work with the local community and other interested groups of potential users to determine appropriate use for the surplus Hartland property and further that the CRD contribute to development and use of this property as mitigation and compensation for Heal Lake.

19. That the CRD investigate, along with the local aggregate industry, the quarrying of the Phase II area in conjunction with landfilling.

That in conjunction with CRD Parks, a task force of interested groups be set up to examine this recommendation and that a budget of \$ 25,000 (including \$20,000 parks, \$3,000 consult., \$2,000 staff) be approved for this work and a report brought back for consideration.

That a budget of \$ 17,000 (including \$15,000 consult., \$2,000 staff) be approved and a report brought back for consideration.

Approve in principle.

Approve in principle.

Approve.

20. That the CRD apply for amendments to the Waste Management Plan to incorporate all approved reduction, reuse, recycle and recovery programs.

Approve.

That a plan amendment be brought back for consideration.

Summary of Costs:

plus	58,000 consultants
plus	28,000 staff time
Total	<u>20,000 parks</u>
	\$106,000

APPENDIX B

CAPITAL REGIONAL DISTRICT

SOLID WASTE MANAGEMENT PLAN PREPARATION

CHRONOLOGY

DATE	
May 7, 1986	Committee approved preparation of Stage I report
May 14, 1986	Board approved preparation of Stage I report
July 23, 1986	Board approved Stage I report
	Board approved preparation of Stage II report
Sept 2, 1986	Minister approved Stage I report
June 1986 to November 1987	Technical work
	Public meetings:
Oct. 27, 1986	Camosun College, Ewing Building
Oct. 30, 1986	U. Vic
Jan. 6, 1987	Camosun, Interurban Campus
Jan. 7, 1987	Sooke Community Hall
Jan. 26, 1987	Langford Firehall
Jan. 27, 1987	U. Vic
	Open Houses:
Feb. 26, 1987	Parish Hall, Our Lady of the Rosary, Langford
March 12, 1987	Holyrood House, Victoria
March 18, 1987	Lions Hall, E.Saanich Road, Central Saanich
March 19, 1987	Prospect L. Community Hall, Saanich
April 21, 1987	Mahon Hall, Salt Spring Island
April 25, 1987	Agriculture Centre, Mayne Island
April 27, 1987	Pender Island School, Pender Island
May 8, 1987	Saturna Community Centre, Saturna Island
May 16, 1987	Galiano Community Hall, Galiano Island
	Technical Subcommittee reports:
December 1986	Landfilling
	Recycling/Composting
	Incineration/Materials recovery
	Satellite Facilities
	Gulf Island Disposal Facilities
Jan. 21, 1987	Technical presentation to Committee
Feb. 4, 1987	Concepts Report to Committee
June 15/30, 1987	Public Presentations to Committee
Nov. 4, 1987	Draft SWMP to Committee
Nov. 25, 1987	Board approval of SWMP
Dec. 4, 1987	Submission of SWMP to Minister of Environment
Jan. 24, 1989	Letter of Approval from Minister of Environment

SOLID WASTE MANAGEMENT PLAN

SUMMARY OF PUBLIC PARTICIPATION 1987

- 20 Newspaper articles
- 11 Community organizations invited to participate
- 26 Groups subsequently expressed an interest to attend
- 53 Letters received
- 40 Phone calls received
- 7 Public Meetings, with approximate total of 200 people attending
- 9 Open Houses attended by 755 people
- 538 Questionnaires completed
- 5 Newsletters, of which a total 58,300 copies were circulated
- 17 Presentations to Sanitation and Water Committee after invitation by advertising

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11	Community organizations invited to participate	
26	Groups subsequently expressed an interest to attend	
53	Letters received	
40	Phone calls received	
7	Public Meetings, with approximate total of 200 people attending	
9	Open Houses attended by 755 people	
538	Questionnaires completed	
5	Newsletters, of which a total 58,300 copies were circulated	
17	Presentations to Sanitation and Water Committee after invitation by advertising	

SOLID WASTE MANAGEMENT PLAN

1990/1991 REVIEW

SUMMARY OF PUBLIC PARTICIPATION

3 Open Houses

Sept. 13/90	119	Ramada Inn
Sept. 20/90	58	Juan de Fuca Rec. Centre
Sept. 27/90	60	Sanscha Hall, Sidney

Advertising for Open Houses

September 5, 9, 12, 15, 19, 26, 1990

2 Public Hearings 17 Submissions

Advertising for Public Hearings

October 3 and 10, 1990

Newsletters Distribution

Sept. 4, 1990	119,000
Nov. 7, 1990	119,000

Public Meetings

Feb. 19/91	Sidney	9 submissions)
Feb. 20/91	Saanich	22 submissions)
Feb. 21/91	Juan de Fuca Rec. Centre	22 submissions)

103 people attending

STATE OF TEXAS

1991-1992

COMMISSION ON THE STATE

1991-1992

1991-1992	1991-1992
1991-1992	1991-1992
1991-1992	1991-1992

1991-1992

September 2, 1991

1991-1992

1991-1992

October 1, 1991

1991-1992

1991-1992	1991-1992
1991-1992	1991-1992

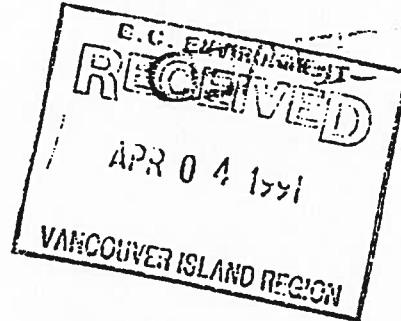
1991-1992

1991-1992	1991-1992	1991-1992
1991-1992	1991-1992	1991-1992
1991-1992	1991-1992	1991-1992

APPENDIX C

MAR 26 1991

RECEIVED
APR 11 1991



Mr. Robert Andrew, Chairperson
Solid Waste Management Committee
Box 485
Ganges, British Columbia
V0S 1E0

Dear Mr. Andrew:

Thank you for your letter dated February 1, 1991, regarding the Blackburn Road Dump Site on Saltspring Island.

I am pleased to hear of the efforts of your Solid Waste Management Committee to change residents' habits on solid waste generation and disposal and to increase recycling activities on the island. Such efforts complement the Ministry's solid waste management strategy to reduce the amount of garbage we produce.

With regard to your inquiry about Waste Management Permit PR-1839, I can confirm that I will cancel this permit and require closure of this landfill site by December 31, 1991.

I appreciate you bringing your concerns to my attention.

Sincerely,

Original Signed by
MINISTER

Cliff Serwa
Minister

FINNIE/les/csp

Ref: MO 33116

bcc: Minister's Office

Assistant Deputy Minister's Office

✓ Mr. G. E. Oldham

Director of Vancouver Island Region 1

APPROVED BY E. WARNOCK ON 91/02/25

RECEIVED

MAR 1 1981

ATTENTION C

MAR 1 1981

RECEIVED
MAR 1 1981
MINISTER OF ENVIRONMENT

Mr. Robert Andrew, Chairperson
Solid Waste Management Committee
Box 183
Sandy, British Columbia
V0S 1B0

Dear Mr. Andrew,

Thank you for your letter dated February 11, 1981, regarding
the Alaskan Road Dump Site in Bulkley Valley.

I am pleased to hear of the efforts of your Solid Waste
Management Committee to change existing laws - an solid
waste generation and disposal and to increase recycling
activities on the island. Such efforts complement the
Ministry's solid waste management strategy to reduce the
amount of garbage we produce.

I will review your inquiry about Waste Management Permit
No. 1521. I can confirm that I will contact your permit and
regarding closure of this landfill site by December 31, 1981.

I appreciate you bringing your concerns to my attention.

Sincerely,

Official signed by
MINISTER

Bill Gair
Minister

FINNIS J. GARDNER
Acting Minister's Office
Minister's Office
Mr. G. E. Gardner
Director of Vancouver Island Region I

APPROVED BY: J. GARDNER ON 01/02/81

APPENDIX D

CAPITAL REGIONAL DISTRICT
BY-LAW NO. 1615

**A BY-LAW FOR THE PURPOSE OF ESTABLISHING A TIPPING FEE AND REGULATIONS
FOR SOLID WASTE DISPOSAL AT HARTLAND LANDFILL**

WHEREAS by Supplementary Letters Patent, dated 4th October, 1973, the Capital Regional was granted the function of Refuse Disposal under Division X of its Letters Patent;

AND WHEREAS the Capital Regional District is empowered to establish a scale of charges payable for depositing refuse at a disposal site;

AND WHEREAS the Regional Board of the Capital Regional District deems it advisable to enact regulations pertaining to solid waste disposal and to establish a charge for depositing refuse;

NOW THEREFORE the Regional Board of the Capital Regional District in open meeting assembled enacts as follows:

SECTION 1 - DEFINITION

In this Bylaw unless the context otherwise requires:

"CONTROLLED WASTE", means certain Hazardous Waste, liquid waste, and refuse which is Approved for disposal at the Hartland Avenue Landfill site but which, because of its inherent nature and quantity, may require special handling and disposal techniques to avoid creating health hazards, nuisances, or environmental pollution. Controlled Waste includes, but is not limited to:

- (i) water containing soil, sand, gravel, other non-hazardous solids, sewage solids, trace levels of petroleum products, and/or grease, including:
 - (a) pumpings from parking lot drainage sumps;
 - (b) pumpings from domestic and municipal sewage treatment plants and sand filters and pump stations;
 - (c) pumpings from domestic septic tanks;
 - (d) pumpings from laundry lint traps;
 - (e) pumpings from sumps which collect runoff from vehicle washing facilities only, but not from facilities used for maintenance or lubrication of automobile components or where solvents or sandblasting are employed for removal of paint, grease, or oil;
 - (f) spent charcoal from water purification plants;
- (ii) screenings from municipal sewage treatment plants and pump stations;
- (iii) waste sludge from municipal sewage treatment plants and pump stations;
- (iv) condemned foods;
- (v) waste asbestos;

- (vi) food processing wastes;
- (vii) dead animals;
- (viii) bulky waste.

"BULKY WASTE" means metal containers or other manufactured articles with a volume greater than one and a half cubic metres.

"DEAD ANIMALS" means dead animals, or portions thereof, equal to or greater than 5 kilograms in weight;

"ENGINEER" means the Chief Engineer of the Capital Regional District or his authorized agent.

"HAZARDOUS WASTE" means gaseous, liquid and solid waste which because of its inherent nature and quantity requires special disposal techniques to avoid creating health hazards, nuisances or environmental pollution. Hazardous Wastes are toxins or poisons, corrosives, irritants, strong sensitizers, flammables, explosives, infectious wastes, condemned foods, etc. Flammable wastes exclude plastics, paper, paper products and the like;

"IGNITABLE" means having the properties of:

- (a) flammable gas,
- (b) flammable liquid, or
- (c) flammable solids, substances liable to spontaneous combustion or substances that on contact with water emit flammable gases

as defined in the Special Waste Regulation.

"PERSON" means an individual, a body corporate, a firm partnership, association or any other legal entity or an employee or agent thereof.

"PROHIBITED WASTE" means gaseous liquid and solid waste not acceptable for landfilling at the Hartland Avenue Landfill. Prohibited waste includes, but is not limited to:

- (i) liquids, except as permitted herein;
- (ii) empty waste containers unless they are crushed, shredded or similarly reduced in volume to the maximum practical extent;
- (iii) ignitable wastes;
- (iv) reactive wastes;
- (v) radioactive wastes;
- (vi) hazardous waste except as permitted herein;
- (vii) motor vehicle bodies and farm implements;
- (viii) special waste, excluding waste asbestos;
- (ix) refuse that is on fire or smouldering;

"RADIOACTIVE WASTE" means waste containing a prescribed substance as defined in the "Atomic Energy Control Act" in sufficient quantity or concentration to require a licence for possession or use under that Act and regulations made under that Act.

"REACTIVE" means waste which is:

- (a) explosive, oxidizing, or so unstable that it readily undergoes violent change in the presence of air or water;
- (b) generates toxic gases, vapours, or fumes by itself or when mixed with water; or
- (c) polymerizes in whole or in part by chemical action and causes damage by generating heat or increasing in volume

as defined in the Special Waste Regulation.

"REFUSE" includes, but is not necessarily limited to food wastes, market wastes, combustibles such as paper, cardboard, plastics, leather, yard trimmings; noncombustibles such as metal cans, glass containers, crockery, dirt, ashes from fireplaces and on-site incinerators, street sweepings; bulky wastes such as furniture, refrigerators, tires and stumps; construction and demolition refuse such as pipe, concrete, lumber, plastic and wire; all arising from domestic, commercial, institutional or municipal activities. Refuse resulting from industrial operations is not included.

"REGIONAL BOARD" means the Board of the Capital Regional District.

"REGIONAL DISTRICT" means Capital Regional District.

"SOLID WASTE" means refuse and controlled waste suitable for landfilling at Hartland Avenue Landfill site but excluding Prohibited Waste;

"SPECIAL WASTE" means any chemical, compound, mixture, substance or article which is defined as such in the Special Waste Regulation.

"SPECIAL WASTE REGULATION" means a regulation of the Province of British Columbia under the Waste Management Act or the draft Special Waste Regulation issued by the Province of British Columbia on 15 October 1987, until a Special Waste Regulation is promulgated.

"WASTE ASBESTOS" means waste containing friable asbestos fibres or asbestos dust as defined in the Special Waste Regulation.

"DISPOSAL SITE" means Hartland Landfill, more particularly described in Schedule "A" attached hereto.

SECTION 2 - CONDITIONS

- (a) No person shall, in depositing refuse at a Disposal Site.
 - (i) deposit a Prohibited Waste;

- (ii) deposit Solid Waste except as directed by regulations for the use of the Disposal Site;
 - (iii) unless permitted by the Engineer, deposit Solid Waste without first having it weighed on the scales at the Disposal site;
 - (iv) drive a vehicle anywhere on the Disposal Site except on roads provided by the Regional District for that purpose unless otherwise instructed;
 - (v) act in a manner contrary to the posted site regulations.
- (b) Controlled Waste will not be accepted for disposal at the Hartland Avenue Landfill Site without written approval from the Engineer. This requirement may be waived, at the option of the Engineer, if the Engineer determines that special handling and disposal techniques are not required to dispose of the Controlled Waste. Controlled Waste for which special handling and disposal techniques are required are subject to a Special Disposal Fee as outlined in Schedule "C" of this bylaw.

SECTION 3 - CHARGES

- (a) Every person depositing refuse at the Disposal Site shall pay to the Regional District the applicable charge set out in Schedule "B" attached hereto.
- (b) Where a charge is not paid within the time specified in Schedule "B" for its payment the person liable to pay such charge shall:
 - (i) in addition to such charge pay interest thereon at the rate set out in Schedule "B" from the date the charge was due to the date of payment;
 - (ii) not deposit any refuse on or at the Disposal Site until such charge and interest owing thereon has been paid in full.

SECTION 4 - VIOLATIONS & PENALTIES

- (a) No person shall do any act or suffer or permit any act or thing to be done in contravention of this Bylaw.
- (b) Every person who contravenes this Bylaw, by doing any act which the By-law forbids, or omits to do any act which the By-law requires to be done:
 - (i) is guilty of an offence and is liable, on summary conviction, to a fine of not less than \$200.00 and more than \$2,000.00 for a first offence and for each subsequent offence to a fine of not less than \$500.00 and not more than \$2,000.00. A separate offence shall be deemed to be committed upon each day during and in which the contravention occurs or continues.
 - (ii) may be prohibited from depositing refuse at the disposal site.
- (c) The penalties imposed under subsection (b) hereof. shall be in addition to and not in substitution for any other penalty or remedy imposed by this Bylaw or any other statute, law or regulation.

SECTION 5 - REPEAL

Bylaw No. 1310 is hereby repealed except insofar as they repeal any other bylaw.

SECTION 6 - TITLE

This bylaw may be cited as the "Hartland Landfill Tipping Fee and Regulation Bylaw No. 2/1988".

READ A FIRST TIME THIS 9th day of March 1988

READ A SECOND TIME THIS 9th day of March 1988

READ A THIRD TIME THIS 9th day of March 1988

RECONSIDERED AND FINALLY ADOPTED THIS 13th day of April 1988

APPENDIX D

CAPITAL REGIONAL DISTRICT

BYLAW No. 1935

A BYLAW TO AMEND BYLAW No. 1615, HARTLAND LANDFILL TIPPING FEE AND REGULATION BYLAW NO. 2, 1988.

The Board of the Capital Regional District in open meeting assembled, enacts as follows:

1. Bylaw No. 1615, "Hartland Landfill Tipping Fee and Regulation Bylaw No. 2, 1988", is amended as follows:

(a) By adding to SECTION 1, before the definition "CONTROLLED WASTE" the following definition:

"ACTIVE FACE" means that area of the DISPOSAL SITE which is currently involved in active landfilling SOLID WASTE.

(b) By deleting from SECTION 1, the definition "BULKY WASTE" and substituting the following:

"BULKY WASTE" means metal containers or other manufactured articles with a volume greater than one and a half cubic metres and timbers greater than 2.5 metres in length.

(c) By adding to SECTION 1, before the definition "PERSON" the following definition:

"LOADS" means that SOLID WASTE which arrives at the DISPOSAL SITE in a VEHICLE.

(d) By adding to SECTION 1, DEFINITION - "PROHIBITED WASTE" the following:

(x) gypsum board/wallboard, including new construction off-cuts or scraps and old wallboard that has been painted, covered in wallpaper, vinyl, or ceramic tiles and is "stripped-out" during renovation, but excluding wallboard from demolition sites or wallboard associated with asbestos;

- (e) By adding to SECTION 1, after the definition "REGIONAL DISTRICT" the following definitions:

"SITE REGULATIONS" means regulations, as described in Schedule A1 attached hereto, which must be adhered to by all persons using the DISPOSAL SITE.

"SMALL LOAD" means SOLID WASTE that arrives at the DISPOSAL SITE in a VEHICLE having a maximum G.V.W. (Gross Vehicle Weight) of 3200 kilograms.

- (f) By adding to SECTION 1, after the definition "SPECIAL WASTE REGULATION" the following definition:

"VEHICLE" means a motorized carrier, as defined in the Motor Vehicle Act of B.C.

- (g) By deleting the word "refuse" from the first line of SECTION 2 - CONDITIONS and substituting the words "SOLID WASTE".

- (h) By deleting SECTION 3 - CHARGES and substituting with the following:

SECTION 3 - CHARGES

(a) Every person depositing SOLID WASTE at the DISPOSAL SITE shall pay to the Regional District the applicable charges at the time and in the amount set out in Schedule B, and where applicable the charges set in Schedule C, attached hereto.

(b) Where a charge is not paid within the time specified in Schedule B for its payment the person liable to pay such charge shall:

(i) in addition to such charge pay interest thereon at the rate set out in Schedule B from the date the charge was due to the date of payment;

(ii) not deposit any SOLID WASTE on or at the DISPOSAL SITE until such charge and interest owing thereon has been paid in full.

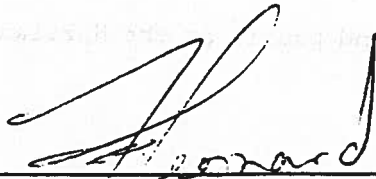
- (l) By adding the attached Schedule A1 to the Bylaw.

- (m) By deleting Schedule B and substituting therefor the attached amended Schedule B.

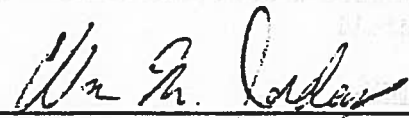
2. This Bylaw may be cited as the "Hartland Landfill Tipping Fee and Regulation Bylaw No. 2, 1988, Amendment Bylaw No. 5, 1991".
3. This Bylaw shall take effect on the date of final adoption except Section 1 (d)(x) which shall take effect on August 1, 1991.

READ A FIRST TIME THIS 22nd day of May 1991.
READ A SECOND TIME THIS 22nd day of May 1991.
READ A THIRD TIME THIS 22nd day of May 1991.

RECONSIDERED AND FINALLY ADOPTED THIS 12th day of June 1991.



CHAIRPERSON



SECRETARY

CAPITAL REGIONAL DISTRICT

BYLAW No. 1935

SCHEDULE A1

SITE REGULATIONS

PURPOSE

To ensure a safe and orderly environment for the staff and public at the Hartland Landfill.

POLICY

These site regulations shall be observed by anyone using the DISPOSAL SITE.

PROCEDURES

1. VEHICLES

No VEHICLE will be permitted on the landfill site if:

- (a) The VEHICLE'S load exceeds the permitted weight limits set out in the regulations passed pursuant to the Motor Vehicle Act, or the Commercial Transport Act; or
- (b) It exceeds the posted speed limits; or
- (c) It is noisy due to improper or poor muffling and braking systems; or
- (d) The load is poorly secured as to be noisy and/or dangerous.

2. LOADS

All LOADS of SOLID WASTE entering the DISPOSAL SITE shall be secured and covered. A cover shall be defined as a tarpaulin or other overlay that is used to confine the load to the vehicle. The following items will be permitted onto the DISPOSAL SITE without covers:

- (a) Stumps - chained on flat bed or within confines of truck box.
- (b) Soil, Sand, Gravel, Rock - within the confines of their box (tailgates closed).
- (c) Bulky Wastes - metal containers or manufactured items with a volume greater than 1.5 cubic metres (53 cubic feet/330 gallons) strapped on flat beds or within confines of truck box. Timbers greater than 2.5 metres in length.

Schedule A1 cont'd.

A double charge will apply to all LOADS not meeting the above requirements.

3. DISPOSAL SITE

- (a) Persons delivering SOLID WASTE to the DISPOSAL SITE shall drive their vehicles only on the roads provided by the Regional District.
- (b) Persons delivering SOLID WASTE to the DISPOSAL SITE shall deposit the SOLID WASTE in such a place and in such a manner as directed by the Regional District staff and/or the landfill contractor.
- (c) All SOLID WASTE deposited on the DISPOSAL SITE shall become the property of the Regional District.
- (d) Salvage and/or removal of deposited SOLID WASTE from the DISPOSAL SITE is prohibited.
- (e) No loitering is allowed on the DISPOSAL SITE. Vehicles must proceed directly to the dumping area then leave the DISPOSAL SITE as soon as possible after unloading.
- (f) The washdown facility is only for the use of vehicles using the ACTIVE FACE. Washing out of boxes is prohibited.

4. SAFETY

- (a) Persons entering the DISPOSAL SITE do so at their own risk. The Capital Regional District accepts no responsibility (liability) for damage and/or injury to persons or to property.
- (b) Children are not permitted on the DISPOSAL SITE except when they are inside a VEHICLE.
- (c) No smoking is permitted within the DISPOSAL SITE.
- (d) All visitors to the DISPOSAL SITE must check in at the site office and complete the appropriate waiver forms.

5. General

- (a) "CONTROLLED WASTES" must be manifested as required by the Capital Regional District and by the British Columbia Ministry of Environment. In addition, twenty-four (24) hours notice is required prior to acceptance at the DISPOSAL SITE. CONTROLLED WASTES will only be accepted Tuesday to Friday, from 10:00 a.m. to 2:00 p.m.
- (b) The Capital Regional District reserves the right to refuse acceptance of SOLID WASTE originating outside the Capital Region.

Schedule A1 cont'd.

(c) These regulations are subject to change from time to time by the Capital Regional District.

(d) Anyone who contravenes these regulations and/or fails to comply with the posted notices and signs on the DISPOSAL SITE may be refused (prohibited) entry onto the DISPOSAL SITE.

(e) This policy is to be read in conjunction with all other policies and procedures affecting the DISPOSAL SITE. Those other policies form part of these regulations.

CAPITAL REGIONAL DISTRICT

BYLAW No. 1935

SCHEDULE B

CHARGES

1. The charge for depositing COVERED SOLID WASTE at the DISPOSAL SITE effective July 1, 1991 is:
 - (a) \$55.00 per tonne as measured by weight on the scale provided at the DISPOSAL SITE by the Regional District, or
 - (b) \$5.00 per load in the event that the weight of the SOLID WASTE to be deposited at the DISPOSAL SITE is less than or equal to 90 kg; or
 - (c) \$10.00 per load in the event that the weight of the SOLID WASTE to be deposited at the disposal site is greater than 90 kg. but less than or equal to 180 kg.
 - (d) As outlined in Schedule C for disposal of CONTROLLED WASTE.
 - (e) In the event that the scales provided are not operational, or in the event of traffic congestion, or at the discretion of the ENGINEER, weights shall be as estimated by the ENGINEER and a flat fee shall be charged as outlined in Section 1.
2. The fee to be charged for all loads of SOLID WASTE which arrive at the DISPOSAL SITE uncovered shall be double the normal fee for loads of COVERED SOLID WASTE.
3. All cash charges referred to in Sections 1 or 2 shall be rounded up or down to the nearest quarter of a dollar.
4. All charges payable under this bylaw shall be paid in cash prior to the deposit of the SOLID WASTE for which the charge is made.
5. Notwithstanding Section 4, where the charge for depositing is under Section 1(a, b, c, d), the charge payable shall be paid following the weighing of the empty truck after the load is deposited and shall be based on the difference in weight between the loaded weight and the weight of the empty truck.
6. Notwithstanding Sections 4 and 5, persons depositing SOLID WASTE at a DISPOSAL SITE on a regular basis may apply to the Regional District for credit and if credit is granted to that person, then payment of the charge imposed under Section 1 shall be made and the credit extended on condition that:

Schedule B cont'd.

- (a) Payment in full shall be received by the Regional District within thirty (30) days of the last day of the month for which an invoice has been submitted. The Regional District will invoice monthly for SOLID WASTE delivered during the preceding month. The invoice amount will be based on the total quantity of SOLID WASTE delivered during the month, and the posted disposal rates in effect at the time of delivery.
- (b) Late payment(s) will be subject to an interest penalty charge of 1.5% month.
- (c) The Regional District reserves the right to cancel, upon five (5) days' notice, the credit offered herein for late payment, nonpayment or other justified cause as judged solely by the Engineer.

CAPITAL REGIONAL DISTRICT

BYLAW No.

SCHEDULE C

CHARGES FOR THE DISPOSAL OF CONTROLLED WASTE

The charges, as measured by weight on the scales for the depositing of CONTROLLED WASTE at the DISPOSAL SITE, are payable prior to deposit of the CONTROLLED WASTE and are:

a)	Water containing oil, sand, gravel, other nonhazardous solids, sewage solids, trace levels of petroleum products, and/or grease.	\$ 63.00 per tonne
b)	Pumpings from parking lot drainage pumps.	\$ 63.00 per tonne
c)	Pumpings from domestic and municipal sewage treatment plants and sand filters and pump stations.	\$ 63.00 per tonne
d)	Pumpings from domestic septic tanks.	\$ 63.00 per tonne
e)	Pumpings from laundry lint traps.	\$ 63.00 per tonne
f)	Pumpings from pumps which collect run-off from vehicle washing facilities.	\$ 63.00 per tonne
g)	Spent charcoal from water purification plants.	\$ 63.00 per tonne
h)	Screenings from municipal sewage treatment plants and pump stations.	\$ 63.00 per tonne
i)	Waste sludge from sewage treatment plants and pump stations.	\$ 63.00 per tonne
j)	Condemned foods.	\$ 245.00 per tonne
k)	Waste asbestos.	\$ 245.00 per tonne
l)	Food processing wastes.	\$ 63.00 per tonne
m)	Dead animals.	\$ 245.00 per tonne
n)	Bulky waste.	\$ 245.00 per tonne

CAPITAL REGIONAL DISTRICT

EXHIBIT No.

SCHEDULE C

CHARGES FOR THE DISPOSAL OF SOLIDIFIED WASTE

The charges are assessed by weight on the scales for the disposal of SOLIDIFIED WASTE at the REGIONAL SITE, and payable prior to receipt of the SOLIDIFIED WASTE and fees:

a)	Waste containing oil and grease, other non-hazardous solids, acids, alkalis, trace levels of petroleum products and/or grease.	\$ 51.00 per tonne
b)	Runoffs from parking lot drainage ditches.	\$ 53.00 per tonne
c)	Runoffs from domestic and municipal sewage treatment plants and land fillers and pump stations.	\$ 51.00 per tonne
d)	Runoffs from domestic acidic tanks.	\$ 51.00 per tonne
e)	Runoffs from laundry lint traps.	\$ 53.00 per tonne
f)	Runoffs from pumps which collect run-off from vehicle washing facilities.	\$ 53.00 per tonne
g)	Spent chemical from water purification plants.	\$ 51.00 per tonne
h)	Runoffs from municipal sewage treatment plants and pump stations.	\$ 51.00 per tonne
i)	Waste sludge from sewage treatment plants and pump stations.	\$ 53.00 per tonne
j)	Condensed gases.	\$ 121.00 per tonne
k)	Waste asbestos.	\$ 245.00 per tonne
l)	Waste oil containing waste.	\$ 53.00 per tonne
m)	Dead animals.	\$ 245.00 per tonne
n)	Bulky waste.	\$ 121.00 per tonne

APPENDIX E

SOLID WASTE REDUCTION INITIATIVES SUMMARY AND DIVERSION POTENTIAL*

1. **USER PAY SYSTEM FOR GARBAGE COLLECTION -(3-5%)**
 - establish a user pay system in core area for garbage collection by January 1st, 1992. (phase one)
 - establish a CRD-wide user pay system for garbage collection from consultant's recommendation (phase 2)
2. **RECYCLING AREA AT HARTLAND LANDFILL - (4-5%)**
 - a temporary recycling area at Hartland that allows for source separation of recyclables would be built; this would be followed by a permanent facility
 - a preferential tipping fee for recyclables would be established to encourage source separation
3. **BLUE BOX PLUS - (4-6%)**
 - two pilot curbside studies will address collection options for a 10 item recyclable stream which will not include kitchen organics
 - a staffed recycling depot pilot for the additional 7 items will allow comparison between curbside pilot studies in terms of costs, participation, contamination, capture rate, etc.
 - consultant will be hired to recommend preferred approach
4. **REGIONAL COMPOSTING FACILITY -(10 -15%)**
 - in phase 1, a temporary facility designed to accept yard waste will be established at the Hartland landfill
 - the siting of a permanent facility or facilities will be addressed while the siting of a temporary facility is in operation
 - in phase 2, the permanent site may expand to receive organic material other than yard waste
5. **BACKYARD COMPOSTING - (5-10%)**
 - a consumer survey to test consumer interest in using back yard composters will be conducted
 - demonstration sites to educate consumers on backyard composting will be undertaken
 - a mechanism to allow for distribution of units will be examined
6. **INDUSTRIAL COMMERCIAL INSTITUTIONAL (ICI) ORGANIC WASTE COLLECTION -(3-4%)**
 - an organic waste collection system for restaurants, hospitals, groceries stores etc. will be encouraged
 - the private sector is expected to provide the alternative market for this compostable material

7. HOUSEHOLD HAZARDOUS WASTE (HHW) (less than 1%)
 - CRD staff will work with the BC Hazardous Waste Management Corporation to establish collection systems in the CRD
8. (ICI) PROMOTION (2-3%)
 - develop an incentive program to encourage waste generators to reduce their own waste
 - provide educational support prior to introduction of new ICI programs (eg. corrugated cardboard ban, ICI organic waste collection)
9. SALVAGING OPERATION AT HARTLAND - (less than 1%)
 - establish a designated area at Hartland where reusable and easily repairable items can be left and retrieved
10. BIOMEDICAL WASTE
 - Provide leadership and facilitate the development of a system to manage biomedical waste from laboratories, physician and veterinarian offices
11. WHITE GOODS COLLECTION AND REPAIR/REUSE - (less than 1%)
 - establish a collection system for white goods and work with the private sector and/or the non-profit agencies to establish markets for the goods
12. MATERIAL BANS/INCENTIVES -(8-12%)
 - develop bans for drywall, corrugated cardboard, lead-acid batteries, white goods and tires
 - work with waste generators and haulers, B.C. Environment to redirect material to alternative markets
 - develop enforcement policy to prevent illegal dumping of these materials
 - develop incentives to encourage recycling and source separation
13. DIVERSION CREDITS FOR NON-PROFITS (less than 1%)
 - develop program for rewarding the non-profit groups for their 3 R's efforts
14. CONSTRUCTION AND DEMOLITION WASTE RECYCLING (5-10)
 - work with the private sector to put in place processing equipment that will separate various materials into marketable items
 - work with B.C. Environment, waste haulers and generators to develop collection and marketing systems

* Represents diversion potential based on the tonnages received at the Hartland landfill in 1990. Figures are shown in brackets beside initiative headings.
TOTAL DIVERSION BASED ON ALL THE ABOVE INITIATIVES = 44% - 70%

APPENDIX F

COMPOSTING FACILITY - STAGING

In order to maximize the opportunity for successful acceptance and continuing operations, the following approach will be applied in phasing the design, construction and operation of the central composting facility:

- Phase I: Initially, the facility will accept feedstock such as yard waste the quality consistency and quantity of which can be closely regulated, which will produce a marketable end product, and which represents the lowest cost per tonne to compost.
- Phase II: Limited quantities of feedstocks which cannot be as closely regulated as that for Phase I (eg. food wastes) will be accepted, and the effects on compost quality will be determined.
- Phase III: Limited quantities of feedstocks such as sewage sludge, diapers and septage will be added to the process in a phased approach and the effects on process, economics and compost quality will be assessed.
- Phase IV: Processing of compostables separated from a mixed waste stream in a plant designed for this purpose.
- Phase V: Review of operations in Phases I to IV, leading to adjustments in feedstock, etc, prior not continuing operation of the facility.

OPERATIONAL FACILITY - PHASE I

In order to maximize the opportunity for successful construction and commissioning operations, the following approach will be used in planning the facility construction and operation at the initial operating facility.

Phase I: Initially, the facility will accept feedback and on-site data to identify construction and operating conditions which can be directly regulated. These will include a feedback loop and which represent the lowest cost and time to correct.

Phase II: Limited quantities of feedback which cannot be directly regulated (e.g. gas flow rates) will be accepted and the effects on control quality will be determined.

Phase III: Further quantities of feedback such as pressure, flow, etc. will be used to the process in a phased approach and the effects on process, product and control quality will be assessed.

Phase IV: Feedback of variables regulated from a single source such as a plant control system will be accepted.

Phase V: Review of operation in Phase I to IV, leading to adjustments in feedback and prior to commissioning operation of the facility.

APPENDIX G

BIBLIOGRAPHY

1. MacKay, Douglas L., P.Eng., Report of The Review of Capital Regional District SOLID WASTE MANAGEMENT PLAN, 1990/1991.
2. P.E.O.P.L.E. - Population Extrapolation for Organizational Planning with Less Error. Population information is compiled by the Planning and Statistics Division, Ministry of Finance and Corporate Relations using this computer model.
3. Engineering Department, Capital Regional District, Hartland Avenue Landfill Operating Plan, Draft 1991.
4. Gartner Lee Limited, Hartland Avenue Landfill (Year) Monitoring Report for Capital Regional District
5. Gartner Lee Limited, Hartland Landfill Leachate Treatability Study, Draft 1991.

APPENDIX

1. Regional Development Report of the Ministry of Regional Development
1980-1981

2. Regional Development Report of the Ministry of Regional Development
1982-1983

3. Regional Development Report of the Ministry of Regional Development
1984-1985

4. Regional Development Report of the Ministry of Regional Development
1986-1987

5. Regional Development Report of the Ministry of Regional Development
1988-1989

TABLE 3
HARTLAND LANDFILL - CAPITAL IMPROVEMENT PROJECTION (DOLLARS)

Ref. #	DESCRIPTION	1991	1992	1993
1	Southwest Access Road Paving		70,000	
2	Extend South West Access Road	35,000		
3	Closing Phase 1 (a) (North face)	430,000		
	(b) (South side)		525,000	
	(c) (East side)		90,000	
	(d) (West side)		527,000	
4	Clear Heal Lake	65,000		
5	Extend South West Access Road	424,000		
6	Prospect Lake/Tod Creek Water Study and Rehabilitation	60,000	60,000	60,000
7	Port Renfrew Transfer Station	50,000		
9	Gas Collection (a) (North, East Perimeter)	240,000	50,000	
	(b) (Remainder of Site)			
10	South West Access Road Around Heal Lake	292,000		
11	Drain Heal Lake	58,000		
12	Dredge Heal Lake and Line	292,000	2,000,000	
13	Hydrogeological/Geotechnical Consultants	150,000	100,000	80,000
14	Leachate Monitoring Wells	75,000		
16	Bird Control System over Heal Lake		175,000	
17	Leachate Collection and Treatment System	100,000	2,000,000	1,500,000
18	Complete Closure of Phase 1			500,000
19	Contingency	730,000	200,000	
20	Lagoon Fence	45,000		
21	Relocate Powerlines		15,000	
22	Central Composting Facility (Stage 1 Yard Waste)	1,000,000	1,821,000	
23	TOTAL	4,046,000	7,633,000	2,140,000
24	Administration, Interim Financing Bylaw Construction and Design and Engineering, Contingency, Inflation	2,284,000	4,728,000	1,284,000
25	Bylaw Borrowing Amount	6,330,000	12,361,000	3,424,000

TABLE 4

PROJECTED SOLID WASTE BUDGET 1990-1995

YEAR	OPERATIONS, AND DEBT AMORTIZATION FOR HARTLAND LANDFILL AND ALL WASTE DIVERSION PROGRAMS	ASSOCIATED TIPPING FEE
1990	\$ 6,574,000	\$22 - \$30*
1991	\$ 9,502,000	\$45 - \$55*
1992	\$13,470,000	\$ 95
1993	\$13,905,000	\$122
1994	\$13,922,000	\$130
1995	\$14,340,000	\$140

* Tipping fee changed mid year sales off site of composted materials, materials from the quarry operation, recycled materials and energy.

LIST OF APPENDICES

- APPENDIX A - Solid Waste Management Plan Review, MacKay Report
Recommendations (Staff Report to CRD Environment Committee)
- APPENDIX B - Solid Waste Management Plan (1989) Preparation, Chronology of
Events, Summary of Public Participation 1987
- Solid Waste Management Plan (1990/1991) Review, Summary of
Public Participation
- APPENDIX C - Ministry of Environment, Correspondence regarding Blackburn
Road Landfill, Salt Spring Island
- APPENDIX D - CRD Bylaw 1615 and Amending CRD Bylaw 1935
- APPENDIX E - Solid Waste Reduction Initiatives Summary
- APPENDIX F - Composting Facility - Staging
- APPENDIX G - Bibliography

LIST OF APPENDICES

APPENDIX A	Letter to the Management from the Audit Report
APPENDIX B	Management's Reply to the Audit Report
APPENDIX C	Letter from the Management to the Audit Report
APPENDIX D	Letter from the Audit Report to the Management
APPENDIX E	Letter from the Audit Report to the Management
APPENDIX F	Letter from the Audit Report to the Management
APPENDIX G	Letter from the Audit Report to the Management
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APPENDIX L	Letter from the Audit Report to the Management
APPENDIX M	Letter from the Audit Report to the Management
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APPENDIX O	Letter from the Audit Report to the Management
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APPENDIX R	Letter from the Audit Report to the Management
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APPENDIX V	Letter from the Audit Report to the Management
APPENDIX W	Letter from the Audit Report to the Management
APPENDIX X	Letter from the Audit Report to the Management
APPENDIX Y	Letter from the Audit Report to the Management
APPENDIX Z	Letter from the Audit Report to the Management

APPENDIX A

ENGINEERING DEPARTMENT
CAPITAL REGIONAL DISTRICT

STAFF REPORT
ENVIRONMENT COMMITTEE
6 MARCH 1991

SUBJECT: SOLID WASTE MANAGEMENT PLAN REVIEW
 MACKAY REPORT RECOMMENDATIONS

BACKGROUND:

On 16 January 1991, the Committee heard a presentation by Mr. D. MacKay and received his report entitled, "Report of the Review of Capital Regional District Solid Waste Management Plan", by Douglas L. MacKay, P.Eng., and dated January 1991.

Mr. MacKay made 20 recommendations in his report, which are listed on the attached "Summary of Recommendations". A CRD Engineering recommendation is listed opposite each MacKay recommendation, and where more investigation is needed, a further recommendation is listed.

The cost of the further recommendations is estimated to be \$106,000. This amount has been included in the 1991 budget request approved by the Committee on 11 February 1991.

RECOMMENDATION:

That the Environment Committee recommend to the Board that:

- 1) The recommendations on the attached sheets entitled "1991 Solid Waste Management Plan Review, Summary of Recommendations", be approved.
- 2) The costs up to \$106,000 be charged to the 1991 Solid Waste Operating budget.
- 3) An application to the Provincial Ministry of Environment to drain Heal Lake be made immediately, and the Lake drained as soon as approval is received.
- 4) An application to rezone the necessary areas for Phase II landfilling, composting, quarrying, storage facilities and leachate treatment, be made immediately.

Page 2
Environment Cttee. re: SWMP MacKay recomm.
6 March 1991

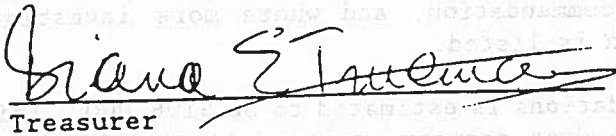
- 5) The first stage of Phase II be cleared immediately and the costs of up to \$50,000 charged to Bylaw 1334, in which \$161,043 remain as of 31 December 1990.



M.C. Williams, P.Eng.
Chief Engineer

Attachment
MCW:mr

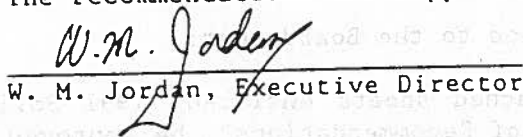
I agree with the funding aspects of this report.



Treasurer

EXECUTIVE DIRECTOR'S COMMENTS:

The recommendations are supported.



W. M. Jordan, Executive Director