

Burrard Inlet
Environmental
Action
Program



Fraser River
Estuary
Management
Program

A Summary Report for the

Consolidated Environmental Management Plan

For Burrard Inlet

June 2004
(with revisions made September 2004)

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1. INTRODUCTION

The Consolidated Environmental Management Plan (CEMP) for Burrard Inlet was developed over a two-year period prior to its approval by the partners in the Burrard Inlet Environmental Action Program (BIEAP) on July 26, 2002. The CEMP for Burrard Inlet has 21 actions outlined to achieve 4 shared goals of the BIEAP partners:

Goal #1	Improve water quality in Burrard Inlet
Goal #2	Minimize the effects of contaminated soils and sediments on human and ecological health
Goal #3	Maintain and enhance productive fish and wildlife habitat and the natural biodiversity of Burrard Inlet
Goal #4	Encourage human and economic development activities that enhance the environmental quality of Burrard Inlet

In support of these goals, 21 action items were identified as follows:

Water Quality, Waste Management and Air Quality

1. Continue to coordinate the management of liquid waste in Burrard Inlet
2. Develop and implement a coordinated ambient water quality monitoring program in Burrard Inlet
3. Review and make recommendations on the provincial permit discharge standards for industrial wastes
4. Share information and contribute to the effort to eliminate non-point source pollution in Burrard Inlet
5. Develop and enhance Industrial Best Management Practices (BMPs) and strengthen partnerships with the industrial sector
6. Share information and explore ways how BIEAP could contribute to air quality initiatives in the region

Historically Contaminated Lands and Sediments

7. Develop and implement a risk-based sediment management plan for False Creek
8. Develop a database to monitor historically contaminated lands and sediments in Burrard Inlet
9. Develop risk-based sediment management plans for historically contaminated areas of Burrard Inlet as required
10. Make use of global research efforts to provide management options for contaminated lands and sediments

Healthy Ecosystems and Biodiversity in Burrard Inlet

11. Confirm and acknowledge existing “protected” areas in Burrard Inlet
12. Assist the Greater Vancouver Biodiversity Conservation Strategy by identifying areas of ecological significance in Burrard Inlet for future protection and enhancement
13. Use legislative tools such as Marine Protected Areas, Wildlife Management Areas and ecological corridors to protect and enhance valuable areas in the Burrard Inlet ecosystem
14. Provide information and resources to all municipal, regional and port planning initiatives along the shoreline and in adjoining watersheds
15. Coordinate and provide support and technical expertise to stewardship and community stakeholder groups in their efforts to improve the environment
16. Identify areas for habitat compensation banking
17. Develop environmental guidelines for recreation access, and park development and maintenance
18. Update and promote the BIEAP Shoreline Development Guidelines
19. Develop pilot projects in cooperation with the public and private sectors to showcase innovative environmentally sensitive designs
20. Develop an inventory of archeologically significant sites
21. Explore and develop models to deal with the cumulative effects of development within Burrard Inlet.

In addition to the above, the CEMP identifies:

- Six sub-basins within Burrard Inlet and describes partnership actions for each sub-basin. The 6 sub-basins are the Outer Harbour, False Creek, Inner Harbour, Central Harbour, Port Moody Arm and Indian Arm. For a map of the BIEAP area of interest, go to <http://www.bieapfrempp.org/maps.html>.
- Stakeholders including community groups, First Nations, municipal governments, and agencies within regional government, provincial government and federal government.

The CEMP is documented in a second print issued in November 2002 (BIEAP, 2002).

2. THIS REPORT

A requirement of the CEMP is an annual reporting system. The CEMP (BIEAP, 2002, p. 86) describes this requirement to “Institute an annual public reporting system on the work achieved through the BIEAP partnership”.

This report contains information about past, ongoing and future projects related to priority action plans. The information is summarized and documented here for the reporting period of September 15, 2003 to May 28, 2004. The agencies and municipalities have agreed to do periodic updates.

The scope of work involved in this report was developed with input and guidance from BIEAP, who with input from the BIEAP Plan Implementation Committee (PIC) identified the following priority CEMP Action items for inclusion in this report:

- #2 Develop and implement a coordinated ambient water quality monitoring program in Burrard Inlet
- #4 Share information and contribute to the effort to eliminate non-point source (NPS) pollution in Burrard Inlet
- #5 Develop and enhance industrial Best Management Practices (BMPs) and strengthen partnerships with the industrial sector.
- #6 Share information and explore ways how BIEAP could contribute to air quality initiatives in the region
- #15 Coordinate and provide support and technical expertise to stewardship groups and community stakeholders in their efforts to improve the environment
- #17 Develop environmental guidelines for recreation access and park development and maintenance
- #19 Develop pilot projects in cooperation with the public and private sectors to showcase innovative environmentally friendly sensitive designs.
- #20 Develop an inventory of archeologically significant sites.
- #21 Explore and develop models to deal with the cumulative effects of development within Burrard Inlet.

3. INFORMATION SOURCES

Table 1 outlines which stakeholders provided information on specific CEMP Action Items.

Table 1.

Action Item	Stakeholders Involved	Appendix
Action #2 (CEMP action 1.2) <i>Develop and implement a coordinated ambient water quality monitoring program in Burrard Inlet</i>	Environment Canada, DFO, MWLAP, GVRD	A
Action #4 (CEMP action 1.4) <i>Share information and contribute to the effort to eliminate non-point source (NPS) pollution in Burrard Inlet</i>	Environment Canada, DFO, MWLAP, District of North Vancouver, City of Burnaby, City of North Vancouver, GVRD, VPA	B
Action #5 (CEMP action 1.5) <i>Develop and enhance industrial Best Management Practices (BMPs) and strengthen partnerships with the industrial sector</i>	Environment Canada, City of Burnaby, GVRD, VPA	C
Action #6 (CEMP Action 1.6) <i>Share information and explore ways how BIEAP could contribute to air quality initiatives in the region</i>	GVRD, VPA	D
Action #15 (CEMP Action 4.2) <i>Coordinate and provide support and technical expertise to stewardship groups and community stakeholders in their efforts to improve the environment</i>	Environment Canada, City of North Vancouver, Village of Belcarra, GVRD, VPA	E
Action #17 (CEMP action 4.4) <i>Develop environmental guidelines for recreation access and park development and maintenance</i>	District of North Vancouver, City of Burnaby, City of North Vancouver, Village of Belcarra	F
Action #19 (CEMP Action 4.6) <i>Develop pilot projects in cooperation with the public and private sectors to showcase innovative environmentally sensitive designs</i>	Environment Canada, District of North Vancouver, City of North Vancouver, GVRD, VPA	G
Action #20 (CEMP action 4.7) <i>Develop an inventory of archeologically significant sites</i>	Ministry of Sustainable Resource Management	H
Action #21 (CEMP action 4.8) <i>Explore and develop models to deal with the cumulative effects of development within Burrard Inlet</i>	Canadian Environmental Assessment Agency, MWLAP, District of North Vancouver, Village of Belcarra	I

4. PROGRESS REPORTED

The information gathered for this report is summarized below.

4.1 BIEAP Plan Implementation Committee

The BIEAP Plan Implementation Committee (PIC) was established and is guiding actions taken to meet the goals of the CEMP. The PIC consists of representatives from the BIEAP partner agencies and the surrounding municipalities. These are: Environment Canada, Fisheries and Oceans Canada, Vancouver Port Authority, BC Ministry of Water, Land and Air Protection, Greater Vancouver Regional District, City of Burnaby, City of North Vancouver, City of Port Moody, City of Vancouver, District of North Vancouver, District of West Vancouver, Squamish First Nation, Musqueam First Nation, Tsleil-Waututh First Nation, Village of Anmore, and Village of Belcarra.

4.2 Action # 2 (CEMP action 1.2)

Develop and implement a coordinated ambient water quality monitoring program in Burrard Inlet

Environment Canada

Environment Canada is on the Stormwater Interagency Liaison Group (see GVRD section below).

Fisheries and Oceans Canada (DFO)

DFO collects water quality data associated with investigations of regulatory violations.

Ministry of Water, Land and Air Protection (MWLAP)

MWLAP monitors ambient water quality at sites in each basin to determine if the Burrard Inlet Water Quality Objectives (available online) are being met. Water, sediment and fish tissue have been collected in each sub-basin with variable sampling frequency. They are currently completing a draft report of the 2002 monitoring and in the process of implementing a 2003 sampling program. Much of the Burrard Inlet data is available online at <http://wlapwww.gov.bc.ca/wat/wq/wqhome.html>. There is also a collaborative sampling project with SFU to study bioaccumulative impacts to the marine trophic food web.

Greater Vancouver Regional District (GVRD)

A program to monitor the receiving environment with respect to GVRD's waste water treatment facilities, is undertaken by the GVRD. A process to protect the receiving environment and ensure water quality objectives are met was recently prepared by the GVRD and submitted to the Ministry of Water, Land and Air Protection (GVRD, Cautions, Warnings and Triggers: A Process for Protection of the Receiving Environment, 2004).

An inter-agency Environmental Monitoring Committee involving the Department of Fisheries and Oceans, Environment Canada, Ministry of Water, Land and Air Protection, Ministry of Agriculture Food and Fisheries, Ministry of Health, municipalities, universities and a member of the public advises the GVRD on implementation of the LWMP based on the process of continuous monitoring, evaluation and adaptive management.

Other activities under the LWMP include monitoring combined sewers and advancing integrated stormwater management. Through the Stormwater Interagency Liaison Group, the GVRD is working with

federal, provincial, and municipal staff to coordinate the development of integrated stormwater management plans which include measures to protect and enhance aquatic and riparian habitat. A program to evaluate urban stream health through monitoring of benthic invertebrates is also underway.

4.3 Action #4 (CEMP action 1.4)

Share information and contribute to the effort to eliminate non-point source (NPS) pollution in Burrard Inlet

Environment Canada

Environment Canada currently works under the Georgia Basin Action Plan with other levels of government and other partners, on the issue of NPS pollution. Urban and agricultural sources are studied. Most tools developed to investigate and manage NPS pollution are relevant Basin-wide, and so also apply to Burrard Inlet. Examples of such tools include:

- Stormwater planning guidebook for British Columbia
- Water balance model for British Columbia and
- Model stormwater bylaw and codes of practice.

Several Best Management Practices (BMPs) are in place that deal directly or indirectly with NPS pollution. The BMPs for boatyard/shipyard operations and possibly for the fish processing sector are scheduled to be updated this year. There are also plans for the creation of BMPs with regards to automotive and parking lot operations, construction and development activities, recreation facilities, roads and streets, mobile power washing, and exterior painting operations. Environment Canada has provided a reference list of BMPs that are available from BIEAP or in the BIEAP-FREMP Project Review Toolbox at <http://www.bieapfremf.org/toolbox/index.cfm>.

Fisheries and Oceans Canada (DFO)

The DFO identified publications completed to date regarding this action item. DFO also listed BMP references similar to those provided by Environment Canada for action #5 and many of which are available at <http://www.bieapfremf.org/toolbox/index.cfm> or at www.pac.dfo-mpo.gc.ca. Land development guidelines for the protection of aquatic habitat (jointly published with MWLAP) outlines methods for preventing the release of sediment from land development activities. Further publications include guidelines to protect fish and fish habitat from treated wood used in aquatic environments in the Pacific region, and bridge maintenance guidelines. DFO is not currently developing any other BMPs for NPS pollution in Burrard Inlet.

Ministry of Water, Land and Air Protection (MWLAP)

In terms of NPS pollution, the MWLAP conducts ambient quality monitoring in Burrard Inlet at sites in each sub-basin. Many sites have been monitored since the 1970s, with varying frequency of measurement of a variable range of parameters. Along with water quality, sediment and fish tissue have also been collected in each sub-basin. Annual reports on water quality monitoring have been completed since 1990. Currently, the 2002 report is being finalized and the 2003 sampling program is underway. For more information, visit <http://wlapwww.gov.bc.ca/wat/wq/wqhome.html>.

District of North Vancouver (DNV)

An Integrated Stormwater Management Plan (ISMP) is being developed for watersheds in the DNV. This includes flow monitoring and water quality (benthic) sampling through the streams and watercourses at risk of NPS pollution in the DNV. Specific projects dealing with NPS pollution include the installation

and maintenance of seventeen large oil/water and grit separators on storm lines prior to discharge into the local streams or Burrard Inlet. In conjunction with the City of North Vancouver and the District of West Vancouver, the DNV has sponsored a pesticide reduction education campaign through the North Shore Recycling Program.

The DNV is in the process of identifying areas of important NPS sources that are not being addressed. One of these sources is storm drainage pollution from industrial and commercial operations. Examples of such pollution include routine spillage from product handling and drainage of wastewater from washing of vehicles, equipment and containers to the storm drainage system. The DNV suggests that this is most relevant to light industrial multi-tenant complexes. In order to better collaborate on NPS issues with the other stakeholders in Burrard Inlet, the DNV suggests much greater emphasis on education about NPS issues.

City of Burnaby

The City of Burnaby has adopted a citywide Total Stormwater Policy. A report on the Total Stormwater Management Approach is available through the City of Burnaby website at <http://www.city.burnaby.bc.ca/cityhall/boards/index.html> (click on “Committee Reports” and search for “Total stormwater”). An educational Cosmetic Herbicide Reduction Programme has been implemented in Burnaby. In addition, multi-family residential developments now require car wash stalls and new parking lots require oil-grease interceptors.

An ISMP for Still Creek is to be completed by spring/summer 2004. Still Creek is outside the CEMP area, but it includes NPS initiatives that may have citywide implications.

City of North Vancouver (CNV)

CNV is in the process of completing the ISMP for the Mission/Wagg Creek watershed and developing a “Stream & Drainage System Protection Bylaw” which will provide new mechanisms for compliance and increase penalties and enforcement. There are several site-specific initiatives to reduce NPS pollution. CNV is implementing the use of BMPs in development guidelines, in training of operations staff and for high-risk businesses. These BMPs relate to stormwater management, sediment and erosion control, industry-specific practices and pesticide control. There is an ongoing public education program about NPS. Water quality sampling has been done in several waterways and extensively in Mission/Wagg Creek.

Greater Vancouver Regional District (GVRD)

The GVRD has developed a template for Integrated Stormwater Management Plans (ISMP) in cooperation with member municipal and senior environmental agency staff. The GVRD also coordinates the Stormwater Interagency Liaison Group to advance integrated stormwater management throughout the region.

Stormwater management is primarily the responsibility of the member municipalities. There are several municipal Integrated Stormwater Management Plans underway in the GVRD that will likely result in reduced NPS pollution into streams and Burrard Inlet. Data is currently being collected and details will be available in the GVRD Biannual LWMP report in 2004.

To monitor NPS pollution, the GVRD will establish a network of water quality monitoring sites on several local streams. Stream health will be monitored by measuring the Biologic Index of Benthic Integrity.

Municipalities of the GVRD have access to a Best Management Practices Guide for Stormwater, available on the GVRD website. This guide summarizes the costs and benefits of various Best Management Practices to allow the municipalities to choose appropriate combinations of BMPs. Non-structural BMPs (i.e. riparian corridors, wetlands or vegetation), Structural BMPs (i.e. flood control, erosion control or water quality improvement), and Operational and Maintenance BMPs (i.e. removal of captured trash or vegetation control to ensure the maintenance of the structural BMPs) are outlined in the document. Also GVRD Source Control Design Guidelines for Stormwater will be available in 2004.

Vancouver Port Authority

The Vancouver Port Authority seeks to eliminate NPS associated to construction and maintenance activities in Burrard Inlet through project review by the Burrard Environmental Review Committee (BERC). Any project with potential to impact the BIEAP mandate area is referred to BERC for review. BERC gives advice for the mitigation of impacts, which include any NPS discharges that would result from the project. Referrals and projects are ongoing, and the intent is to continue in this manner indefinitely.

4.4 Action #5 (CEMP action 1.5)

Develop and enhance industrial Best Management Practices (BMPs) and strengthen partnerships with the industrial sector.

Environment Canada

Environment Canada has completed several BMPs with respect to the industrial sector, many of which are available at <http://www.bieapfrempp.org/toolbox/index.cfm> and Http://www.rem.sfu.ca/FRAP/PDF_list. These include BMPs completed in 1994 for marinas and small boatyards in British Columbia, and the ship and boat building and repair industry in British Columbia, as well as the Environment Canada industrial programs section environmental protection guide for best management practices for process water management at fish processing plants in British Columbia. From 1995 to 1997, several Technical Pollution Prevention Guides were created for the following industries:

- Ready mix concrete operations
- Pressure wood preservation facilities
- Fruit and vegetable processing industry
- Foundries
- Dry bulk terminals
- Dairy processing operations
- Brewery and winery operations
- Asphalt preparation operations in the Lower Fraser Basin.

Environment Canada has also published guidelines on storage, use and disposal of wood residue for the protection of fish habitat in British Columbia (1996), and for monitoring benthos in freshwater environments (1993).

City of Burnaby

The City of Burnaby works with Chevron, Kask and other industrial landowners to adopt and upgrade industrial BMPs.

Greater Vancouver Regional District

With respect to the industrial sector, there are emissions regulations issued pursuant to the GVRD Air Quality Management Bylaw No. 937, 1999. This bylaw encompasses emission regulations for Ready Mix Concrete and the Concrete Products Industry, Gasoline Distribution Terminals, Gasoline Bulk Plants, Fuel Transfer Vehicles, and Automotive Refinishing Facilities. A Code of Practice for Wastewater Management at Food Sector Establishments is issued pursuant to GVS&DD Sewer Use Bylaw No. 164.

In 2003, the GVRD initiated work on Eco-Industrial Networking (EIN). EIN helps businesses work together to identify shared opportunities for resource efficiency, reduced demands for treatment services and related cost-savings. It complements eco-efficiency efforts of individual companies and can help them achieve even greater demand reductions and efficiency gains. Several EIN initiatives are underway, including the Maplewood Eco-Industrial Partnership in the District of North Vancouver and Tilbury Eco-Industrial Partnership in Delta. Additional work underway in 2004 includes an EIN Liquid Waste and Stormwater Solutions Study, an EIN Small Networks study to assess what role information technologies such as the internet could play in facilitating EIN at the community level, and an EIN feasibility assessment for agriculturally-based initiatives in Richmond.

With respect to the commercial sector, the GVRD initiated work to develop SmartSteps™ in 2002. SmartSteps™ is a Sustainable Businesses Program, to promote eco-efficiency (efficient use of materials and resources) and sustainable work practices among industrial, commercial and institutional (ICI) businesses within GVRD. SmartSteps™ will provide internet and print-based information, technical assistance products and tools to help businesses reduce demand for regional services in the areas of solid waste and recycling, water conservation, liquid waste discharges and air quality management. Technical resources are in development for eight priority sectors. These priority sectors include commercial offices, retail, hospitality – hotel, motel, hospitality – restaurants, schools and institutions, transportation services, manufacturing, and wholesale/ warehousing. Additional SmartSteps technical resources will be developed in 2004 for health services, automotive services, recreation facilities, and wood products manufacturing.

Vancouver Port Authority

The Vancouver Port Authority has a Harbour Operations Manual and has recently revised Ballast Water procedures effective April 30, 2004. There is a collaborative process for the Administrative Oversight of Effluent Discharge into Burrard Inlet. As well, the Marine Emissions Working Group deals with problems associated with air emissions in the marine environment.

Currently, Transport Canada is developing Cruise Industry Guidelines for waste and wastewater management of cruise ships. The 2004 focus of the Port Environmental Managers Association is on emergency preparedness practices. The Association also looks at partnerships among the industry sectors of the Port, environmental issues of common concern, the development of BMPs and the use of environmental management systems.

For 2004-2005, the VPA plans on compiling an inventory of best practices for air emissions reductions and air emission control and to document innovative practices among the industrial tenants of the Port.

4.5 Action #6 (CEMP Action 1.6)

Share information and explore ways how BIEAP could contribute to air quality initiatives in the region.

Greater Vancouver Regional District

The GVRD has completed an inventory of air emissions, including common air contaminants and greenhouse gases, from all sources at the municipal and regional levels for the year 2000. An inventory of marine vessel emissions includes detailed spatial and geographic data for all areas, including Burrard Inlet. The GVRD has also completed a forecast of the regional emissions from 2000 to 2025, in five-year increments. The emission inventories and forecasts are carried out for the following compounds: CO, NO_x, VOC, PM, PM10, PM2.5, SO_x, NH₃, CO₂, CH₄, N₂O. Continuous to intermittent ambient air monitoring is performed for SO₂, NO₂, CO, ozone, PM10, VOCs, metals, and meteorology. The samples vary by location and contaminant. Links to online reports and general estimated annual emissions are available at http://www.gvrd.bc.ca/air/emission_inventories.htm and <http://www.gvrd.bc.ca/air/monitoring.htm>.

Currently the GVRD is preparing an Air Quality Management Plan. In addition, the GVRD is conducting an inventory and forecast of emissions of toxic air contaminants, including more detailed spatial and geographic reporting. The GVRD is also assessing air quality related health impacts (e.g. from particulate matter, ozone, air toxics) and performing emission reduction assessments for heavy-duty diesel vehicles, permitted sources, area sources, non-road diesel sources, and marine vessels. An anti-idling municipal bylaw is currently being modelled.

Vancouver Port Authority

The Vancouver Port Authority has set up a marine air emissions working group to consider cost-effective emissions reduction opportunities in the Port of Vancouver. Participating in the working group are federal, provincial and municipal agencies along with sectors of the marine industry. Some members of the marine community have been conducting pilot programs and tests regarding: improvement of combustion efficiencies in diesel engines; clean fuels; and, modification of operational functions to reduce emissions and improve operational efficiency.

Currently, the VPA is looking for funding from local and federal governments to continue to inventory current emissions reduction practices and look for new technological solutions. As well, work has commenced to bring about a low sulphur fuel zone designation for North America, as per the International Marine Organization.

One of the goals of the VPA for 2005 is to have a reliable emissions inventory methodology in place to ensure the accuracy of the 2005 regional inventory. A compilation of emissions reductions projects and technologies used in the Port of Vancouver is planned for 2004-2005. Other goals for the future include: the development of a technology clearinghouse in conjunction with West Coast Ports; exploration of the use of taxation and market incentives in emissions reductions strategies; and, collaboration with the oil industry on the issue of the use of cleaner fuels.

It is expected that the combination of current technology and upcoming fuel quality regulations will result in significant reductions of air emissions from the Port of Vancouver.

4.6 Action #15 (CEMP Action 4.2)

Coordinate and provide support and technical expertise to stewardship groups and community stakeholders in their efforts to improve the environment

Below is a list of stewardship groups supported by stakeholders as found on stakeholder websites.

List of Burrard Inlet Stewardship Groups Supported by BIEAP Stakeholders		
Stakeholder	Stewardship Group	Website / Contact Information
Department of Fisheries & Oceans	Shorekeepers Guide	http://www.keepersweb.org/Shorekeepers/
	Reefkeepers Guide	http://www.keepersweb.org/Reefkeepers/
	Pacific Streamkeepers Federation	http://www.pskf.ca
Ministry for Water, Land & Air Protection	Naturescape British Columbia	http://www.hctf.ca/nature.htm
	Wild BC	http://www.hctf.ca/wild.htm
City of Vancouver	Stanley Park Ecology Society	http://www.stanleyparkecology.ca
City of North Vancouver	Mosquito Creek Stewardship Society	http://www.mosquitocreek.org
	Evergreen	http://www.evergreen.ca
	Mahon Park Stewardship Society	http://www.evergreen.ca/en/registry/view_project.php?ID=00379
	North Shore Fish & Game Club	http://www.nsfgc.ca
	North Shore Streamkeepers	For more information call: 604.988.4072
City of Port Moody	Port Moody Ecological Society	http://www.vcn.bc.ca/pmcs ; or call 604.469.9106
District of North Vancouver	Lynn Canyon Ecology Centre	http://www.dnv.org/ecology/index.htm
	North Shore Streamkeepers	For more information call: 604.988.4072
	Wild Bird Trust of BC	For more information call: 604.924.2581
	North Shore Fish & Game Club	http://www.nsfgc.ca ; or call 604.988.1682
	Seymour Salmonid Society	For more information call: 604.980.9893
	Vancouver Natural History Society	For more information call: 604.737.3074
District of West Vancouver	West Vancouver Streamkeeper Society	For more information call: 604.925.0507
Village of Belcarra	Belcarra Beachkeepers	
	Bedwell Bay Barnacle Club	
Village of Anmore	Buntzen Ridge Wilderness Recreation & Parks Association	http://www.anmore.com/wrap/BRWRAP.HTML

Environment Canada

Environment Canada has provided contact information for two stewardship groups in the False Creek area, including Friends of False Creek and Southeast False Creek Working Group.

City of North Vancouver (CNV)

CNV is involved with a few groups, including the Friends of Mahon Park (in partnership with Evergreen) and Mosquito Creek Stewardship Society. The groups are relatively self-sufficient though advice, resources and expertise are shared by the CNV. CNV suggests that the BIEAP PIC can best support stewardship by serving as a facilitator of information sharing between groups in Burrard Inlet.

Village of Belcarra

The Village of Belcarra recognizes the importance of stewardship groups for the community input they provide. There are plans for the creation of stewardship groups to provide feedback issues in Bedwell Bay, riparian zones and other foreshore areas within the boundaries of the municipality. These stewardship groups would also provide input into OCP, zoning and other policy related procedures in the municipality.

Greater Vancouver Regional District

The GVRD works in collaboration with member municipalities and community partners to design, develop and deliver kindergarten to Grade 12 education programs and public outreach initiatives with pollution prevention or demand management benefits. These initiatives aim to influence behaviour by raising awareness about the personal choices individuals can make about their health and lifestyle, and the benefits and impacts of those choices in reducing demand on regional services. The GVRD has adjusted its outreach strategy to deliver messaging under the themes of "around the home," "around the yard" and "around the community," which highlight better choices relating to all environmental areas—solid waste reduction, water use and energy use efficiency and the protection of air quality and waterways.

The GVRD is also involved with Municipal Committee and Community Group Networks. The GVRD facilitates information sharing between municipalities through three groups—the Sustainable Home and Garden Education Network (SHGEN), the Water Conservation Municipal Co-ordinators and the Municipal Recycling Co-ordinators. Although some of these committees have focused interest on a specific environmental area, their members use and integrate multi-environmental information in their outreach activities.

In addition, the GVRD has print information material available. Environmental area-specific brochures and fact sheets provide information about a regional issue and the environmental benefits of making different everyday choices in and around the home and community. Some examples of this print information material follow:

- *HomePages*—Choices for Wiser Living – an eight-page insert in the front section of the five regional phonebooks ("SUPERPAGES" White directory). Provides information and tips to help residents make better everyday choices. Specific messaging about household hazardous products and the use of garburators is included.
- *Better Solutions* – a brochure that provides information on the impacts of household hazardous products on receiving water quality and lists alternatives to hazardous products.
- *Leading Change guide* – a booklet of regional information and resources prepared for community leaders or advocates. Provides liquid waste information and alternatives, along with contacts for responsible disposal of hazardous products. Composting is noted as a preferred alternative to garburator use.

Electronic and Hotline Information provides residents with information on how to reduce their impact on wastewater through web-based and public information hotline services. This electronic and hotline information (such as the Recycling Council of BC Hotline and the Compost Hotline) is contracted by or funded in part by the GVRD. Choices Calculator is an online tool for the calculation of environmental impacts resulting from choices residents make around the home, in the yard and in the community.

Public awareness and participation successes have been achieved through a number of public education outreach initiatives. It is important to note that this success is not a result of only GVRD's outreach efforts— municipal staff and community groups across the region are also active and effective in engaging increasing numbers of residents in environmentally responsible behaviour. Some examples of Community Presence, Public Events, and Education Activities follow:

- *Overwaitea's CHANGES Recycling Centres* - the GVRD in partnership with Overwaitea's CHANGES Recycling Centres and public libraries across the region. Public education is also delivered during tours of the regional wastewater treatment facilities offered to residents, educators and student groups. The GVRD also conducts activities on liquid waste issues at community events across the region, such as Children's Festival and B.C. Rivers Day.
- *Water Pollution Model Network* – provision of ongoing support for nine hubs established throughout the region. "*Enviroscape*" is a three dimensional interactive model of a community illustrating the connection between people and water pollution. Community groups may borrow this model from any of the nine hubs to help in their community outreach.
- *Our World Gallery* – permanent water and wastewater interactive exhibit at Science World.
- *What Happens When You Flush?* – interpretive signage providing an overview of the treatment process at Annacis Island (currently in the lobby of the Annacis WWTP and on the Annacis Island Wetland Walk adjacent to the treatment plant).
- *GVRD Participation at Public Events* – connections to LWMP messages that are delivered through the use of the *Enviroscape* model to promote wiser choices at home, including:
 - Fraser River Festival (1000+ attendees)
 - Children's Festival (10,000+ attendees)
 - Great Salmon Send Off (400+ attendees)
 - Generation 2010 (1000+ attendees)
 - Vancouver Landfill Public Open House (500+ attendees).
- *CHANGES Recycling Centre Displays and Posters* – long-term displays at CHANGES Recycling Centres across the region. The display is part of a series of five and is available to municipalities and community groups and for public events.
- *Educator Workshops Incorporating Liquid Waste Messaging* – delivery of curriculum development and educator workshops.
- *Source to Sea Workshops* – five workshops were delivered in 2003, two of them at a wastewater treatment plant following a tour of the facility.
- *Education Tours of Regional Wastewater Treatment Facilities* – providing support materials to tour group leaders, participants, educators and others.

Vancouver Port Authority

The Vancouver Port Authority has supported the following community programs: United Way, Mission Possible, Ray-Cam Cooperative Centre, Roberts Bank Partners Community Grants Fund, Delta Millennium Trail, Partners in Education, and scholarships with Vancouver and Delta secondary schools. VPA was a sponsor of GLOBE 2004.

As defined by the Canadian Environmental Assessment Act (CEAA), community consultation is carried out for all projects. The types of consultation include: web postings, open houses, and formal

government-to-government consultation. First Nations, municipal governments and community groups are some of the stakeholders consulted. A local community consultation process is in place for East Vancouver.

The Vanterm Presentation Centre operates as a community outreach project. Community groups, special industry groups and schools are provided with information and presentations about the Port. Historical development, the cruise ship industry, the environment and business are topics the Centre deals with. The Centre also has a speaker's bureau for community groups interested in the Port.

4.7 Action #17 (CEMP action 4.4)

Develop environmental guidelines for recreation access and park development and maintenance

District of North Vancouver

In conjunction with DFO, the District of North Vancouver maintains shorelines, piers and floating docks at Cates Park and Deep Cove.

In 1997, a shoreline survey of sensitive habitat areas in relation to beach/foreshore access was completed.

City of Burnaby

The City of Burnaby has two management plans in progress: Management Plan for Barnet Marine Park and Burrard Inlet Foreshore and Upland Management Plan. These plans will include guidance on recreational access and use of foreshore areas, including environmentally sensitive areas.

City of North Vancouver (CNV)

Maintenance guidelines exist for Kings Mill Park. General maintenance guidelines are being developed for natural parkland, and riparian zones within parks.

Village of Belcarra

The Village of Belcarra currently has a mandate to proceed with the development of a sustainability plan that would include best practices guidelines with respect to recreation access and park development or maintenance. The Village of Belcarra recognizes the importance of adopting a plan that balances the needs of all the stakeholders and has future plans to incorporate the sustainability plan into bylaws and policies.

Greater Vancouver Regional District

The GVRD implements a variety of environmental best management practices in GVRD Parks including those along Burrard Inlet.

4.8 Action #19 (CEMP Action 4.6)

Develop pilot projects in cooperation with the public and private sectors to showcase innovative environmentally sensitive designs.

Environment Canada

Environment Canada has sponsored the construction of a green roof research facility with BCIT, at which the impact on stormwater runoff and energy efficiency is being monitored. Other such demonstration projects related to "sustainable development" are ongoing.

District of North Vancouver

In a unique planning project involving residents, industry and commercial sectors, the District of North Vancouver developed a plan for the Maplewood area, applying sustainable community and eco-industrial principles. Expected completion date for the final report is November 2003.

City of North Vancouver (CNV)

Several projects throughout the City are described. They include stream habitat rehabilitation, trail improvements, resource-efficient landscaping, a “bio-swale” to collect run-off, an artificial wetland and alternative street design incorporating stormwater BMPs.

Greater Vancouver Regional District

Pacific Coast Terminals and the GVRD developed a pilot project on industrial stormwater management to minimize sanitary sewer overflows.

Vancouver Port Authority

The Vancouver Port Authority has set up artificial reefs and marine habitat in Burrard Inlet.

Currently, the VPA is involved in a LEED building design for the new office at Canada Place. In terms of infrastructure improvement, retrofits of sediment/oil interceptors are part of the Centerm Container Terminal expansion. Further, the Port has a brownfields development program that ensures effective and efficient use of Port land.

Proposed capacity expansions of Lynnterm (2004), Centerm (2005), Vanterm (2005) and Deltaport (2009) container terminals incorporate environmentally sensitive designs.

4.9 Action #20 (CEMP action 4.7)

Develop an inventory of archeologically significant sites.

Ministry of Sustainable Resource Management

None of the BIEAP stakeholders were able to provide information towards developing an inventory of archaeologically significant sites. However, through web-based searches, it was discovered that the Ministry of Sustainable Resource Management has an Archaeology and Registry Services Branch.

The Ministry of Sustainable Resource Management has online instructions on how to obtain provincial archaeological site information. The information is contained in the Provincial Heritage Register and the Provincial Archaeological Site Inventory. This information is accessible by two methods. The first method is Self Service Access through the Remote Access to Archaeological Data (RAAD) website. Only three groups may access information by this method, they are the First Nations governments, the Federal, Provincial and local government agencies with land or resource management functions, and the professional archaeological consulting community. The second method is via Data Requests. The data request form is available on the Archaeology and Registry Services Branch website. For the purposes of BIEAP, Land management level reports, containing maps and site locations, may be the most useful to develop an inventory of archaeologically significant sites in the Burrard Inlet area.

4.10 Action #21 (CEMP action 4.8)

Explore and develop models to deal with the cumulative effects of development within Burrard Inlet.

Canadian Environmental Assessment Agency

All projects under review by the Canadian Environmental Assessment Agency are required to include a consideration of cumulative effects likely to occur as a result of the project. Currently, the CEAA and the Province of British Columbia are conducting a joint review of the proposed Vancouver Convention Centre Expansion Project. Upon completion, the application will be placed on the CEAA website and will include an assessment of the project's cumulative effects.

Ministry of Water, Land and Air Protection

In collaboration with Simon Fraser University, MWLAP is currently planning a sampling program to investigate food web impacts from bioaccumulative substances discharged into the inlet. In a few of the sub-basins, sediment and fish tissue samples will be collected and substances that tend to bioaccumulate will be monitored. Sampling is planned for a 2003 program.

The District of North Vancouver

The District of North Vancouver believes that work pertaining to this action item is likely being done within projects, but is not yet able to track cumulative effects.

The Village of Belcarra

With a completed mandate to prepare a sustainability plan, the Village of Belcarra is considering developing a model to deal with interest generated to expand into the recreational private wharf facilities. The Village of Belcarra understands the importance of adopting a model that will balance the needs of all stakeholders and plans to adopt a model that can be shared with other jurisdictions.