Volume 1
Integrated Management Plan

Working Draft
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PREFACE

In the spring of 1997, the Seal Predation Committee of the Comox Valley Watershed Assembly released its final recommendations to Fisheries and Oceans Canada (FOC) regarding strategies to protect endangered salmon stocks in the Courtenay/Puntledge watershed. These recommendations addressed mitigation of harbour seal predation on endangered salmon stocks as well as habitat restoration initiatives within adjoining watersheds. In particular, the Seal Predation Committee recommended that FOC work with local governments to develop a management plan for the Courtenay River estuary. FOC acknowledged this recommendation by committing funds from the Pacific Salmon Revitalization Strategy to initiate an estuary management planning process.

An Interim Steering Committee was formed in September 1997 to produce terms of reference for a contract to develop an Estuary Management Plan. Members of the Committee included representatives from the Comox Indian Band, Town of Comox, City of Courtenay, Regional District of Comox-Strathcona, Ministry of Fisheries (then the Ministry of Agriculture, Fisheries and Food), Ministry of Environment, Lands and Parks, and Fisheries and Oceans Canada. Through a competitive bid process, ECL Envirowest Consultants Limited was hired in April 1998. The Interim Steering Committee was restructured in July 1998 as an Advisory Committee comprised of key government agencies with legislated mandates to regulate resources in the estuary. Membership was expanded to include the Agricultural Land Commission, the Ministry of Agriculture and Food and the Islands Trust.

The Terms of Reference for the preparation of the Estuary Management Plan stated that the Plan should:

- guide habitat restoration work, human activity, and economic development in the Courtenay River estuary, and lay a framework for on-going coordinated management giving high priority to the health of the river, the estuary, and its living resources;
- include the Courtenay River and its estuary, including all waters and lands defined by the 200 year flood plain extending from Goose Spit to Gartley Point and thence upstream to the confluence of the Puntledge and Tsolum Rivers;
- define a common vision for the estuary;
- establish long term goals for human activities in the estuary;
- be founded on inherent biophysical capabilities of the estuary;
- recognize the long-term socio-economic needs of the community as it relates to land and water use decisions;

- give high priority to long term benefits to ecosystems and to future generations over short term gains by any one agency, organization or user group;
- minimize or prevent negative impacts of human development on water quality and aquatic ecosystems;
- be developed through an open process involving the public and all stakeholders in the estuary; and
- consist of goals and actions to address the following themes:
    - environmental protection - water quality; water quantity and temperature; fish and wildlife habitat; river and estuary processes; and
    - human activities - navigation and dredging; flood management; log transport; civic air park use; aquaculture; barge loading/unloading; drydock; industrial, agricultural and urban development; waste management; recreation, parks and open space; harbour marina management; and hydro-electric development.

Proposed elements of the Estuary Management Plan were developed in a consultation process conducted between May 1998 and March 1999. Participants included interested individuals, community and environmental groups, local businesses and business organizations, Crown corporations, and government agencies (local, provincial and federal). Key aspects of the consultation process included:

- a government agency Advisory Committee;
- a referral list/mail-out process;
- public events (2 open houses and a workshop); and
- one-on-one meetings.

Participants in the consultation process reviewed the Vision, Goals and Objectives, Plan Boundary, Administrative Models, Coordinated Project Review concepts, Land and Water Use status mapping, Habitat Classification mapping, and Action Program concepts. These comments have been considered in the development of the Estuary Management Plan.

The Estuary Management Plan is comprised of three volumes: Volume 1. Integrated Management Plan – Working Draft; Volume 2. Consultation Process; and Volume 3. Resource Values. As the subtitle of Volume 1, "Working Draft" suggests, this document is not the final statement on the policy concepts, administrative structures and action initiatives appropriate for managing the Courtenay River Estuary. Additional effort will be required on the part of agencies and stakeholders to finalize the Estuary Management Plan.

1.0 INTRODUCTION

1.1 Rationale

The abundance and diversity of vegetation, fish and wildlife associated with the Courtenay River estuary has been known to human inhabitants for countless generations. As is often noted, the name "Comox", the geographic name for the Courtenay River estuary, is derived from a First Nations word for 'plenty' or 'abundance' (Isenor *et al*. 1987). An inventory of one part of the estuary reported 137 species of terrestrial plants, 21 species of salt marsh vascular plants, 32 species of algae, 106 species of marine fauna including 14 species of fish and 124 species of resident and migratory birds (Brooks *et al*. 1994). The estuary is known to support all five species of Pacific salmon at various stages of their life histories as well as some of the largest populations of migratory birds in the Strait of Georgia (Dawe *et al*. 1998).

The ecological values of the Courtenay River estuary have been modified by various human interventions over time, notably dyking and river channelization, upstream damming of the Puntledge River, development in intertidal and nearshore subtidal environments, and stormwater and sewage discharges to the estuary. These changes have compromised river-floodplain connectivity, eroded the habitat base and degraded water quality. The two most widely known negative impacts associated with these interventions are the decline of once bountiful runs of Chinook salmon and closure of shellfish harvesting in the estuary. Ongoing development pressures, associated with a growing population, continue to strain the estuary's resources.

Maintaining and, where possible, restoring the biological productivity of the Courtenay River estuary is a difficult challenge, as competing demands for space and resources associated with the estuary are ongoing and likely to continue as the population grows. At the same time, the communities of the Comox Valley want to protect the natural habitats and improve the environmental quality of the estuary. Finding a balance will depend primarily on the willingness of agencies and citizens with diverse and sometimes opposing economic, social and environmental interests to work together toward sustainable management of the estuary's resources. The Courtenay River Estuary Management Plan attempts to set a direction for such management.

1.2 Purpose

The Estuary Management Plan has four purposes:

1. With respect to defining **policy**, the purpose of the Estuary Management Plan is to provide goals and objectives to guide human activity and economic development in the estuary, while maintaining and enhancing, where possible, the estuary's environmental values.

2. In terms of **strategy**, the purpose of the Estuary Management Plan is to establish a framework for ongoing coordinated management of interests and activities associated with the estuary.

3. Regarding **actions**, the purpose of the Estuary Management Plan is to define the steps necessary to implement the Estuary Management Plan, including program targets and activities, management tools such as Area Designation Agreements, and opportunities to involve citizens and businesses.

4. With respect to **process**, the purpose of the Estuary Management Plan is to incorporate mechanisms to monitor, evaluate, and improve successful aspects of the Estuary Management Plan and identify areas that require change. The Estuary Management Plan is a dynamic document that will be updated to meet future needs and address changing social, environmental, and economic conditions.

Through greater coordination of planning and management activities within the estuary, the following benefits can be expected:

- reduced time and resources required by individual jurisdictions to plan and manage the foreshore and adjacent upland areas;

- greater certainty for project proponents interested in developing or changing uses in particular areas of the estuary; and

- increased efficiency and responsiveness to proposed actions by various agencies and private interests.

In summary, the Estuary Management Plan will be a guide and will provide a planning process for all of those using the Courtenay River estuary.

1.3 Mandate

The Estuary Management Plan is a policy-based document initiated by the Habitat and Enhancement Branch of Fisheries and Oceans Canada. Under the Federal *Oceans Act*, Fisheries and Oceans Canada is mandated to lead in the development and implementation of management plans for all activities in or affecting coastlines and estuaries. Such initiatives are to be undertaken in collaboration with other agencies and affected communities and individuals. They are further to be guided by the broad principles of sustainable development, integrated management and the precautionary principle.

The Courtenay River Estuary Management Plan is designed to achieve integrated management and coordinated decision-making among agencies. Accordingly, the scope and authority of the Estuary Management Plan will be based on a Co-operative Agreement among agencies with legislated mandates to manage land and water resources in the estuary.

1.4 Limitations

The Estuary Management Plan addresses only those parts of the Puntledge/Courtenay River watershed and Baynes Sound ecosystem that are within the planning boundaries. It is recognized that activities occurring within these larger biophysical units, outside of the planning area, may negatively impact the estuary.

As a policy document, the Estuary Management Plan does not have regulatory force at any level of government, although this status may be conferred through entrenchment in existing or new legislation, regulations or by-laws. Individual agencies that sign a Co-operative Agreement can pursue their individual mandates while meeting the broader goals of the Estuary Management Plan.

1.5 Plan Area

The Courtenay River Estuary (latitude 498 41' N, longitude 1258 07' W) is located in the Comox Valley, approximately 230 kilometres northwest of Victoria on Vancouver Island. The Courtenay River Estuary Management Plan planning area (Figure 1) covers approximately 2,170 hectares of land and water, of which 1,566 ha is aquatic, and 604 ha is terrestrial. Included in this area are parts of Electoral Areas A and B of the Regional District of Comox Strathcona, parts of the City of Courtenay and the Town of Comox, and part of Comox Indian Reserves 1 and 2 and all of Reserve 3.

The eastern boundary of the planning area corresponds generally to the mouth of Comox Harbour. It is more specifically defined by a line projected in a northeasterly direction across the mouth of Comox Harbour from St. Lima Road to a line projected 420 metres east from the northeast boundary of Plan 34947, near Goose Spit. The western boundary of the planning area is delineated by right-of-way 759, which traverses the Tsolum River approximately 1 kilometre upstream from its confluence with the Puntledge River. The southern and northern boundaries are generally set back 100 metres from high water, except in those instances where the setback encompasses the Courtenay River 200 year floodplain delineation. In those instances, the floodplain delineation substitutes for the 100 metre setback as the planning boundary.

1.6 Plan Review

It is intended that the Estuary Management Plan will be subject to periodic review. A comprehensive review should be completed within five years after the co-operative agreement is signed.

1.7 Document Structure

The Courtenay River Estuary Management Plan, Volume 1. Integrated Management Plan consists of two sections, the Introduction and the Integrated Management Plan. The Integrated Management Plan presents policy statements, administrative structures and action programs for managing the Courtenay River Estuary. Volume 2. Consultation Process provides a summary of consultation activities and includes key documents produced during the consultation process. Volume 3. Resource Values, provides background information on the fish and wildlife resources and land and water uses associated with the Courtenay River Estuary.

1.8 Glossary

Consensus — The result of a process for making group decisions without voting. The goal is to reach decisions that accommodate rather than compromise the interests of all group members who have a stake in carrying out the decision.

Conserve — The planned management of human activities that might affect fish and wildlife habitat to prevent their destruction.

Enhance — The creation or improvement of fish and wildlife habitat to maintain or increase the capacity of these habitats to sustain fish and wildlife.

Estuary — A semi-enclosed coastal water body with a free connection with the open ocean, and within which seawater is measurably diluted with fresh water derived from land drainage.

Functional Capacity — The maximum natural capability of habitats to sustain fish and wildlife.

Habitat — A place in the environment where an organism lives or is expected to live in order to fulfil an important function such as feeding or rearing young.

Habitat Budget — An itemized summary of expected gains and losses of fish habitat associated with a proposed activity or development.

Integrated Management — A dynamic process in which a coordinated strategy is developed and implemented for the allocation of

environmental, socio-cultural and institutional resources to achieve the conservation and sustainable multiple use of coastal resources.

Precautionary Approach

Defined in the Federal *Oceans Act* as "erring on the side of caution" in the face of scientific uncertainties.

Safe Levels

Safe levels of pollutants with respect to the protection drinking water, aquatic life, recreation and agricultural uses, are substance-specific numeric criteria set out by the Province of British Columbia in water quality guidelines.

Sustainable Development

Defined in the Federal *Oceans Act* as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This broad principle is employed at the federal level to provide a framework for the integration of environmental policies and development strategies.

2.0 INTEGRATED MANAGEMENT PLAN

2.1 Introduction

Section 2 presents an integrated management plan for the Courtenay River estuary, including Vision, Goals and Objectives, an Administrative Program, a Coordinated Review Process, and Action Programs. Jurisdictions and mandates of agencies are also described in this section, as recognition of these mandates and coordination among respective agencies is an essential element of the integrated management approach.

2.2 Vision, Goals and Objectives

The Vision, Goals and Objectives for the Courtenay River Estuary Management Plan provide a policy framework for the Administrative and Action Programs. They were initially modeled on the Management Plan for the Fraser River Estuary Management Program (Fraser River Estuary Management Plan, 1994) and subsequently revised based on feedback from the Advisory Committee, other agencies and the public. The Vision, Goals and Objectives are not static; as priorities for the estuary change over time, they may be modified as well.

2.2.1 Vision

The vision for the Courtenay River Estuary is timeless, focusing on the enduring integrity of the natural ecosystem irrespective of human values placed upon the system or any of its components. Protection of the estuarine ecosystem is a high priority. Human activities are to be managed to minimize impacts to the integrity of the ecosystem and to restore historic, natural elements of the system. The following statement evokes a timeless, ecosystem-based vision:

The Courtenay River Estuary is a natural and productive estuary for plants, fish, wildlife and people.

2.2.2 Goals

a. Conserve and enhance the quality of estuarine environments to the benefit of plants, fish, wildlife and people. This goal is of primary importance in the implementation of the Estuary Management Plan.

b. Acknowledge the estuary=s role, as a natural and productive ecosystem, in the long-term environmental, social, economic and recreational well-being of the Comox Valley.

c. Encourage human activities that protect and enhance the estuary=s natural environment and discourage human activities harmful to this environment.

d. Accommodate the long-term socio-economic needs of the community as they relate to land and water use decisions, provided that they are compatible with the goal of conserving and enhancing the estuary's natural environment.

e. Recognize the importance of agricultural land within the Management Plan area both for its role in providing wildlife habitat, and for its role in producing food for the community at large.

f. Recognize the importance of existing industrial and commercial activities in the Management Plan area for their role in the economic well-being of the community at large.

2.2.3 Objectives

2.2.3.1 Objectives for Conserving and Enhancing the Estuary

a. Conserve and Enhance the Health of the Estuary

Waste from human activities will not exceed safe levels for plants, fish, wildlife and people.

b. Conserve and Enhance Habitat

Fish and wildlife habitat will be conserved and enhanced to increase the functional capacity of the estuary for fish and wildlife. This Management Plan gives priority to the avoidance of any further losses of habitat in the Courtenay River Estuary as a result of human activity. In the rare event that habitats are lost due to human activity, they are to be replaced in accordance with Fisheries and Oceans Canada policy.

2.2.3.2 Objectives for Integrated Management

a. Encourage Multiple Uses within the Estuary

Mixed, compatible environmental, economic, social and recreational uses should be pursued where practical. In many instances, habitat conservation will take precedence.

b. Promote Integrated Decision-Making

The environmental, economic and social implications of all activities within the estuary are to be considered by regulatory agencies and the proponents of activities.

c. Establish and Maintain Informed Management Processes

Current and sound knowledge of Courtenay River estuary resources should be maintained, pursued and utilized to facilitate informed decision-making. All interested parties and the public are to be informed, advised and where appropriate, involved in planning and management initiatives.

2.2.3.3 Objectives of Fairness, Equity and Accountability

a. Promote and Employ Consensus-Based Decision-Making

Consensus is the primary and preferred mode of decision-making in the implementation of the management plan. Acknowledging the limits of agency mandates, participating agencies are to actively support decision-making by consensus. Where consensus is not achieved, each agency shall exercise its mandate where appropriate.

b. Provide Equitable Access to the Estuary

Equitable opportunities to access and enjoy the estuary are to be provided as long as those opportunities are environmentally sustainable.

c. Establish and Maintain Accountable Management Processes

Estuary management goals, targets, actions and procedures will be regularly monitored, objectively evaluated and refined as necessary. Monitoring and evaluation will be undertaken by accredited professionals expert in environmental auditing procedures. The monitoring and evaluation results will be communicated to the public and interested parties on a regular basis.

d. Develop Active Partnerships with the Public in Management Activities

All interested parties will be offered the opportunity to contribute to the pooling and sharing of expertise and information. The management plan should promote the participation of interested parties in the stewardship of natural resources.

2.3 Jurisdictions and Mandates

2.3.1 Fisheries and Oceans Canada

2.3.1.1 Integrated Coastal Zone Management

The Federal *Oceans Act* contains provisions for Fisheries and Oceans Canada (FOC) to take the lead in developing and implementing a national strategy for the

management of estuarine, coastal and marine ecosystems within Canada=s jurisdiction. The principles of this strategy include sustainable development; integrated management; and the precautionary principle. On a practical level, the *Oceans Act* authorizes FOC to take the lead in developing and implementing integrated management plans for estuaries, coastal and marine waters. Integrated management planning is to be undertaken in Acollaboration≅ with appropriate agencies and affected groups and persons.

2.3.1.2 Fisheries Management and Habitat Conservation

Fisheries and Oceans Canada (FOC) is responsible for administering the Federal *Fisheries Act*, which provides for the management of the fisheries resource, protection of fish and protection of those natural environments that support fish. Sections 20 to 42 of the *Fisheries Act* define and describe fish habitat protection and pollution control provisions. Section 35 prohibits harmful alteration, disruption or destruction of fish habitat. Section 36, which is administered by Environment Canada under agreement with FOC through a Memorandum of Understanding signed in 1985, prohibits the deposit of deleterious substances in waters frequented by fish unless authorized by regulation under the Federal *Fisheries Act*. The Minister of Fisheries and Oceans remains accountable to Parliament for all components of the Federal *Fisheries Act*.

FOC pursues a Anet gain≅ policy for the management of fish habitat, in which conservation, restoration and habitat creation are key goals (Fisheries and Oceans Canada, 1986). Conservation of current productive capacity is guided by the Ano net loss≅ principle. This principle commits FOC to balance unavoidable habitat loss with habitat replacement on a project-by-project basis. Habitat restoration and creation contribute to the increase in the productive capacity of fish habitat resources.

2.3.1.3 Small Craft Harbours

The Small Craft Harbours Branch of Fisheries and Oceans Canada develops, manages, and maintains fishing harbours across Canada, and is responsible for administering the Federal *Fishing and Recreational Harbours Act*. The Small Craft Harbours Branch provides and maintains harbour facilities, including boat moorage, breakwaters, wharves, piers, boat launching ramps and skidways, as well as associated facilities and services, such as parking lots, harbour offices and public buildings, water and electrical services, garbage collection and waste oil collection. Comox Harbour and Courtenay Slough federally scheduled harbours under the *Fishing and Recreational Harbours Act.*

The Small Craft Harbours Branch recently transferred its management responsibility for the Comox Harbour and Courtenay Slough Harbour facilities to the Comox Valley Harbour Authority. Under FOC=s Harbour Authority Program, communities and/or harbour users can form a non-profit corporation, with a board

of directors, to which all of FOC=s harbour assets are leased. This corporation is named an Harbour Authority and takes over the complete operation of the harbour. The board of directors of the Harbour Authority carry out the management and development of the harbour under guidance from the Small Craft Harbours Branch and in terms of the lease agreement. FOC maintains ownership of the assets and responsibility for major repairs as well as for developing partnership arrangements for approved major projects.

2.3.1.4 Canadian Coast Guard

The Canadian Coast Guard (CCG) is responsible for administering the Federal *Navigable Waters Protection Act*. The primary purpose of this Act is to protect the public right and safety of navigation in all navigable waters of Canada, which includes inland and coastal waterways. This is achieved by ensuring that the CCG, on behalf of the Minister of Fisheries and Oceans, approves or otherwise disapproves the construction or placement of 'works' in, upon, over, under, through, or across any navigable waterway. The Act defines 'work' to include such things as bridges, booms, docks, pipelines, overhead cables and any dumping of fill, etc. In addition, the Act provides for the removal of obstructions to navigation (e.g. wrecked vessels) that fall beyond the scope of 'works'.

2.3.2 Environment Canada

2.3.2.1 Canadian Wildlife Service

The Canadian Wildlife Service (CWS) addresses wildlife matters that are the responsibility of the federal government. These include protection and management of migratory birds and their habitats, nationally significant and endangered species, and other wildlife issues of national and international importance. Legislation administered by CWS includes the Federal *Migratory Birds Convention Act* and the Federal *Canada Wildlife Act*. CWS is a partner, along with Ducks Unlimited Canada, in the delivery of the Comox Valley Waterfowl Management Project. The Project is designed to mitigate the impacts of waterfowl foraging activities on agricultural land (additional information regarding this project is provided in Volume 2 - Resource Values).

2.3.2.2 Environmental Protection Branch

The Environmental Protection Branch (EPB) of Environment Canada is responsible for administering the Federal *Canadian Environmental Protection Act*, the Federal *Canadian Environmental Assessment Act* and Section 36 of the Federal *Fisheries Act* (through a Memorandum of Understanding between Fisheries and Oceans Canada and Environment Canada). In addition, the Environmental Protection Branch, in conjunction with Fisheries and Oceans Canada, administers the >Canadian Shellfish Sanitation Program=. The primary objective of this program is to protect public health by preventing human

consumption of contaminated shellfish. This objective is achieved by controlling the recreational and commercial harvesting of shellfish within Canada. The legal authority for CSSP is provided by the Federal *Fisheries Act* >Management of Contaminated Fisheries Regulations' and the Federal *Fish Inspection Act* >Fish Inspection Regulations=. EPB is the lead agency in terms of water quality and classification of shellfish growing areas. FOC is the lead agency with regard to administering openings and closures, and for controlling production and harvesting in classified areas (Environment Canada, 1998).

2.3.3 Canadian Environmental Assessment Act

The *Canadian Environmental Assessment Act* (CEAA) sets out the responsibilities and procedures for the environmental assessment of projects involving the federal government. Under the Act's "triggering" provisions (*Section 5*), an assessment is required whenever a federal department or agency proposes a project, provides funding or land for a project, or exercises a regulatory duty for a project to go ahead. The Act establishes four types of environmental assessment intended to match the scale of likely adverse environmental effects of the project: screenings, comprehensive studies, mediations and panel reviews. Screenings and comprehensive studies are 'self-directed' processes conducted by the federal department or agency whose actions or authority triggered the process (responsible authority). Mediations and panel reviews are 'independent' processes initiated by the federal Minister of the Environment. The CEAA process has been harmonized with the *British Columbia Environmental Assessment Act* to avoid duplication and ensure that both provincial and federal legislative requirements are met.

2.3.4 B.C. Ministry of Environment, Lands and Parks

2.3.4.1 Land Administration

Under the Federal *Constitution Act* (1982), the Province of British Columbia has jurisdiction over the sale and management of public lands belonging to it. In addition to its upland land assets, the Province owns the beds of streams and lakes as well as the foreshore, seabed and subsoil of coastal inland waters, including the Juan de Fuca, Georgia, Johnstone and Queen Charlotte straits. The rights and responsibilities of the Minister of Environment, Lands and Parks with respect to the sale and management of provincial Crown lands are set out in the Provincial *Land Act*. Key agencies involved in the administration of this Act include the Crown Lands Branch and the British Columbia Assets and Land Corporation.

The Crown Lands Branch plays a major role in the development of policy, procedures, standards, and legal tenure documents relating to the management, administration and disposition of Crown land. The Crown Lands Branch also provides leadership and professional/technical expertise related to provincial acquisition of proposed protected areas, trails and critical habitat. Day-today

responsibility for the management of certain Crown land programs has been delegated by the Minister of Environment, Lands and Parks to the B.C. Assets and Land Corporation (BCAL). BCAL is responsible for marketing Crown lands and assets, and for managing Crown land tenures such as leases and licenses. Presently, BCAL (out of the Nanaimo Regional Office) manages 35 active tenures of Crown land in the Courtenay River estuary. Types of tenure include log storage, marinas, aquaculture beds, general commercial uses, private boating facilities, utility right-of-ways, conservation designations, and military defense activities (see Figure 2).

2.3.4.2 Water Management

The Province of British Columbia owns the surface water and groundwater supplies in British Columbia and has the proprietary right to protect and manage these resources. The Provincial *Water Act* sets out provisions for the management of water and watercourses, defined as groundwater supplies and surface water features such as rivers, lakes, creeks, springs and swamps. The Water Management Branch has primary responsibility for administering these provisions.

Provisions of the *Water Act* pertain to activities that could affect the volumes of water in a watercourse or result in the temporary or permanent alteration of a watercourse. A licence must be obtained from the comptroller of water rights or regional water manager for activities involving the withdrawal, diversion, storage and use of water from a natural watercourse. Section 9 of the Act affords the comptroller or regional water manager the right to grant an approval that sets out conditions under which 'works in and about a stream' may be undertaken. Part 7 of the *Water Act Regulation* (BC Reg 217/96) elaborates on the conditions for 'works in and about a stream', specifically requiring that proponents ensure the protection of water quality, fish and wildlife habitat, and other water users. The Provincial *Water Act* was amended in 1997 to incorporate provisions of the Provincial *Fish Protection Act*, discussed in Section 2.3.6 of this document.

Floodplain hazard management is also an important responsibility of the Water Management Branch, encompassing the application of structural and non-structural measures aimed at reducing flood hazards. Structural flood hazard protection includes measures such as channel modifications, diking and floodproofing. Non-structural measures include initiatives such as flood protection planning and floodplain mapping.

In this regard, the federal and provincial governments initiated the Floodplain Mapping Program in 1987, in order to identify, map and designate areas highly susceptible to flooding. The Courtenay, Puntledge and Tsolum River floodplain was designated in September 1991 (Ministry of Environment, Lands and Parks, 1991). Development initiatives in designated floodplains are subject to restrictions and require the approval of the regional water manager. Crown agencies such as

the Canada Mortgage and Housing Corporation do not support development on designated floodplains unless adequate flood proofing measures, such as elevation of building foundations, are undertaken. Local governments may impose further restrictions. Flood hazard management objectives have been incorporated into provincial laws respecting land development. These include the Provincial *Land Title Act*, which provides for provincial approval of the subdivision of floodplain lands, and the Provincial *Municipal Act*, which enables local governments to consider the impacts of flooding in their land planning and management responsibilities.

The Water Management Branch is also responsible for administering the Provincial *Dike Maintenance Act*, which provides the legislative basis for the operation and maintenance of public dikes in B.C. The Act establishes the role of an Inspector of Dikes who is responsible for the approval of all works in and about dikes, joint inspections with local authorities to monitor and audit dikes management programs, and the issuance of orders to protect public safety. The Provincial *Drainage, Ditch and Dike Act*, and the Provincial *Municipal Act* provide local governments with the authority to undertake diking and drainage initiatives through the application of local bylaws and the creation of Improvement Districts. Responsibility for the maintenance of dikes constructed by local diking authorities, diking districts and municipalities is vested in these organizations. Presently, the Corporation of the City of Courtenay is the diking authority responsible for the Lewis Park Dike and the Anderton Avenue Retaining Wall.

2.3.4.3 Fish, Wildlife and Habitat Protection

The Provincial *Wildlife Act* is the key legislation administered by the Fish, Wildlife and Habitat Protection (FWHP) unit. The Provincial *Wildlife Act* defines Awildlife≅ as fish, aquatic invertebrates, amphibians, reptiles, birds and mammals. Under this Act, ownership of all wildlife within the province is vested in the Crown. The Act provides for the creation of Wildlife Management Areas and Wildlife Sanctuaries, the protection of wildlife and wildlife habitat, and the management of hunting and freshwater recreational fishing, including licensing. In addition, the FWHP unit has been delegated the authority to enforce the Federal *Fisheries Act* as it pertains to resident fish, anadromous trout and char. The FWHP unit is also partially responsible for administration of the Provincial *Fish Protection Act*, particularly regarding directives on streamside habitat protection.

2.3.4.4 Pollution Prevention and Pesticide Management

The Pollution Prevention and Pesticide Management Branch has primary responsibility for administering the Provincial *Waste Management Act* and its regulations pertaining to municipal and industrial wastes, contaminated sites and special wastes. This agency authorizes solid waste, effluent, and emission discharge permits.

2.3.5 B.C. Ministry of Agriculture and Food

Key statutes administered by the Ministry of Agriculture and Food include the Provincial *Agricultural Land Commission Act* and the Provincial *Farm Practices Protection Act.* The Provincial *Agricultural Land Commission Act* provides for the establishment and operation of an independent Agricultural Land Commission. The Commission is responsible for the preservation and protection of British Columbia=s farmlands. It conducts land use planning in partnership with local communities, adjudicates applications for use of land in the Agricultural Land Reserve, and encourages farming in order to provide a basis for a sustainable economy and a secure food source. The Provincial *Farm Practices Protection Act* establishes the right of farmers to pursue agricultural activities, provided they use >normal farm practices= and comply other legislation including the Provincial *Waste Management Act*, *Pesticide Control Act* and *Health Act*. The Provincial Farm Protection Act addresses the issue of increasing conflicts between farmers and non-farming neighbours resulting from urban residential encroachment upon agricultural areas.

2.3.6 B.C. Ministry of Fisheries

The Ministry of Fisheries is responsible for the management and development of the seafood industry in both the commercial fishing and aquaculture sectors, for management of the freshwater recreational fishery, and for conservation and protection of fish and fish habitat. The Ministry administers a number of statutes, including the Provincial *Fisheries Act* and the Provincial *Fish Protection Act.* The Provincial *Fisheries Act* provides for licensing and regulatory control of activities associated with commercial fisheries and aquaculture operations. The Provincial *Fish Protection Act*, enacted in 1997, stipulates that impacts to fish and fish habitat must be considered prior to issuance of water licences, approvals or amendments, and in the development of water management plans. The Act also provides for the creation of provincial directives on protection and enhancement of riparian areas that may be subject to residential, commercial or industrial development. Such directives will be established on a case-by-case basis and must be included in municipal and rural land use zoning bylaws. The Ministry of Fisheries, along with the Ministry of Environment, Lands and Parks, will be involved in the administration of Provincial *Fish Protection Act* regulations, once these have been established.

2.3.7 Ministry of Small Business, Tourism and Culture

2.3.6.1 Archaeology Branch

The Archaeology Branch administers the Provincial *Heritage Conservation Act* as it relates to the protection and conservation of archaeological sites in British

Columbia. The Act protects all sites showing evidence of human habitation or use prior to 1846, as well as other sites such as burial places, rock art and heritage wrecks, whether or not they are designated as provincial heritage sites. These sites may not be changed (altered in any manner) without a permit, pursuant to Section 12 and 14 of the Provincial *Heritage Conservation Act*. The Archaeological Branch requires notification of physical works in the Estuary Management Plan planning area, whether the works are associated with environmental improvements, or with residential, commercial or industrial development. This applies to both recorded and unrecorded sites.

2.3.8 Local Governments

Incorporated municipalities and regional districts possess a number of regulatory powers, pursuant to the Provincial *Municipal Act*, associated with land use planning and development. Municipalities may establish one or more official community plans and implement such plans through the provision of zoning bylaws. A community plan is a bylaw that provides the broad objectives and policies of the local government with respect to the form and character of existing and proposed land uses and associated municipal services. A zoning bylaw regulates the use, density, size, dimensions, and boundaries of land and structures within zones established by the bylaw. Regional districts may establish rural land use bylaws, which combine community plan functions with zoning bylaw functions, for areas outside municipal jurisdiction. If a local government has adopted a community plan, it can also establish development permit areas, imposing additional conditions for certain types of areas, such as the preservation of environmental features. Generally, local government land use bylaws are implemented through approvals and permitting processes that vary between communities.

Within the Courtenay River Estuary Management Plan, three local governments manage land use and development as prescribed by the *Municipal Act*, including the Regional District of Comox-Strathcona, the City of Courtenay and the Town of Comox. Municipal land use policies relevant to the Estuary Management Plan planning area are defined in the *Rural Comox Valley Official Community Plan* (Regional District of Comox-Strathcona, 1998), the *City of Courtenay Official Community Plan* (City of Courtenay, 1998), and the *Town of Comox Official Community Plan* (Town of Comox, 1997). Figure 2 shows generalized local government land use policies.

The Provincial *Islands Trust Act*, enacted in 1974 and amended in 1990, established the Islands Trust as an autonomous local government with land use planning authority in the Trust Area. The Islands Trust Council interprets the wording of 'Schedule A' of the Islands Trust Act, which defines the Trust Area, to include the Courtenay River estuary within its jurisdiction. Accordingly, the Courtenay River estuary falls within the administrative boundaries of the Denman Island Trust Committee. Relevant Islands Trust policy documents include the *Islands Trust Policy Statement Bylaw* and the *Object of the Trust*.

The Comox Indian Band Council, elected according to the Federal *Indian Act*, is responsible for government of the Band and has the authority to pass bylaws on reserve lands. In addition, the Band has aboriginal rights, particularly fishing and hunting rights, related to the use of the estuary=s resources. The Comox Indian Band submitted a Statement of Intent to the British Columbia Treaty Commission in 1996. The Band is affiliated with the Kwakiutl District Council for funding purposes.

2.4 Plan Administration

2.4.1 Introduction

Effective implementation of the Courtenay River Estuary Management Plan requires an administrative body specifically tasked to implement the plan. This administrative body, or administrator, in turn works within the auspices of an administrative structure that facilitates comprehensive decision-making. In selecting a preferred administrative structure for the Courtenay River Estuary Management Plan, four administrative models were considered, specifically:

- **Model 1. Interagency Management**

  The administrator in this model is a Management Committee composed of regulatory agencies with a legislative mandate to manage land and water uses within the estuary. It is a consensus-based model of administration, whereby committee actions are implemented when members either approve or have no objection to an action. In acting upon decisions and initiatives, the members are constrained to their agency's legislative mandate.

- **Model 2. Agency-Public Management**

  The administrator in this model is a Management Committee composed of a mix of regulatory agencies and public and community interest groups. It is a consensus-based model of administration, whereby committee actions are implemented when members either approve or have no objection to an action. In acting upon decisions and initiatives, regulatory agency members are constrained to the authority of their agency's legislative mandate.

  Public and community interest groups function on an equal basis with regulatory agencies. Consensus-based decision-making involving all members of the Committee requires careful consideration of the legislative mandates of regulatory agencies; regulatory agencies cannot abrogate their responsibility to enforce their mandates.

- **Model 3. Estuary Management Authority**

An Estuary Management Authority is the administrator of the Program in this model. The Authority is established through either Provincial or Federal legislation. The legislation affords the Authority to manage land and water uses. It is comprised of administrative staff and a Board of Governors. The governors are nominated by the community and appointed by the government under which the legislation has been passed.

Although possessing a mandate to manage land and water uses, the Authority is governed by other pieces of legislation, the number of which is dependent upon which government passes the legislation that establishes the Authority (e.g. federal agencies are not obliged to comply with provincial legislation, while provincial agencies are obliged to comply with federal legislation). To facilitate coordination of decision making regarding issues specific to the estuary, a Memorandum of Understanding between the Authority and other regulatory agencies is required.

- **Model 4. Estuary Council**

  In this model, the administrator of the Plan is an Estuary Council. The Council is a facilitative body without a legislative mandate to manage land and water uses. It pursues implementation of the Management Plan by soliciting regulatory agency and public and community stakeholder participation.

  The Council is incorporated under the Provincial *Societies Act*, with Council directors elected by membership. Balanced representation is achieved through designation of director seats to government, First Nations, and stakeholders representing economic, social and environmental interests.

For all models, the administrator may form ad hoc committees to efficiently pursue management initiatives. For example, to develop a Recreational Plan for the estuary, a Recreational Planning Committee may be established. Ad hoc committees report directly to the administrator. Ad hoc committee membership may be diverse, representing regulatory agency, public and community interests. The administrator is responsible for determining the membership of ad hoc committees.

At least one of three standing committees provide may report to the administrator of the Plan. These committees consist of an Environment Review Committee (ERC), Public Advisory Committee (PAC) and a Government Advisory Committee (GAC).

An ERC reports to the administrator in Models 1, 2 and 3. The ERC assesses the environmental impacts of proposed activities or projects within the estuary. The reviewed activity or project may be a Management Plan initiative developed through an ad hoc committee, or a proposed endeavour by a public or private interest not affiliated with the Plan. The ERC is composed of regulatory agencies with a legislative mandate to manage environmental resources. The primary function of the ERC is to provide a coordinated environmental review of all proposed activities and works. Through is participation in the review of all projects within the planning area, a single standard for

project review can be maintained regardless of whether or not an activity or works has its origins within the Plan.

An ERC is not associated with Model 4 as project review is not administered by this model; the review of proposed activities or projects within the planning area is conducted under the auspices of existing project review processes.

A PAC reports to the administrator in Models 1 and 3. The PAC affords a formal means of consultation with the public and community interests regarding management initiatives developed through ad hoc committees or a proposed endeavour by a public or private interest not affiliated with the Plan. The PAC provides a measure of accountability for the Plan regarding consideration of public and community issues and concerns; however, the PAC does not possess any regulatory authority or decision making power.

A PAC is not associated with Models 2 and 4 as public and community interests are directly represented by the administrator.

A GAC reports to the administrator in Models 3 and 4. The GAC affords the administrator a formal means of consultation with regulatory agencies regarding management initiatives developed through ad hoc committees. In Model 3, this consultation is focused upon non-environmental regulatory agencies as an ERC is a component of the model. In Model 4, this consultation includes all regulatory agencies as committees composed of regulatory agency representatives are absent.

A GAC is not associated with Models 1 and 2 as regulatory agencies are directly represented by the administrator.

Model 1 is the preferred administrative model for the Courtenay River Estuary Management Plan. Important advantages of the interagency administrative model are listed below.

- Management Committee (administrator) possesses existing legislative authority to implement management decisions and initiatives;
- Management Committee provides explicit means for maintaining contact between regulatory agencies;
- Public Advisory Committee provides explicit means for public consultation; and
- Environmental Review Committee provides measure of consistency between environmental assessments conducted for internal and external projects and initiatives.

An apparent disadvantage of the model is that the effectiveness of the administrator is contingent, in large part, upon consensus-based decision making amongst regulatory agencies; an agency may exploit the opportunity to delay or prevent a decision from being achieved by the Management Committee as a whole. Dependency upon consensus-based

decision making, however, is a challenge faced by many environmental management initiatives.

Among the other models, disadvantages that were considered sufficient to disqualify them from further consideration consisted of:

Model 2 — Consensus-based decision-making by Management Committee (administrator) may be encumbered by conflicts between regulatory agency mandates and community interests.

Model 3 — Implementation of a Management Plan would be extensively delayed until legislation to empower the Authority is passed.

Model 4 — Direct implementation of Management Plan is hindered by an administrator that lacks the legislative mandate to manage land and water uses; and,

a project review process not incorporated as a function of the administrator, thereby creating two environmental management activities within the planning area that, in turn, challenges the consistent application of environmental standards throughout the area.

2.4.2 Administrative Structure

The administrative structure of the Courtenay River Estuary Management Plan consists of three (3) standing committees: a Management Committee, a Public Advisory Committee and an Environmental Review Committee. The structural relationship of these committees is hierarchical, with primary responsibility for administration and implementation resting with the Management Committee. Figure 3 illustrates this hierarchy.

The Management Committee is composed of regulatory agencies with a legislative mandate to manage land and water uses within the estuary. Successful implementation of the Plan is contingent upon Committee agencies working together cooperatively and progressively. A Co-operative Agreement amongst regulatory agencies formalizes endorsement of the Management Plan, and itself creates and maintains strong working linkages amongst all participants in the Plan. The Agreement sets forth the obligations and commitments of the agencies, including joint funding for project planning and coordination, monitoring and research activities. Administration of the Plan is consensus-based, whereby Management Committee actions are implemented when Committee members either approve or have no objection to an action. The committee format provides an explicit means for regulatory agencies to maintain formal contact regarding management issues within the planning area. In acting upon decisions and initiatives, the members are constrained to the authority of their agency's legislative mandate.

2.5 Coordinated Project Review

2.5.1 Introduction

Proposed activities or works within shoreline environments typically require formal approvals or position statements (e.g. objection or no objection) from government agencies that possess a legislative mandate to regulate land and water uses within the affected shoreline environment. Each government agency possesses its own project review and permitting process. Pursued independently, project approvals or position statements granted by regulatory agencies can often result in project requirements of one agency unnecessarily conflicting with the requirements of another. Such conflicts are not based upon the specific mandate of individual agencies, but rather are due to a lack of understanding of how requirements can be structured to achieve harmony amongst the requirements of several government agencies.

Coordinated Project Review facilitates dialogue amongst regulatory agencies during the review of proposed activities or works and before the issuance of individual agency approvals or statements. The regulatory agencies are afforded an opportunity to share information regarding resource values sustained by the prospective project site and their sensitivities to the proposed activity or works. With special reference to federal agencies, where often there is an obligation to address socio-economic and environmental values under the auspices of the *Canadian Environmental Assessment Act*, the coordinated sharing of information increases the efficiency and effectiveness of project review. Through a shared understanding of the concerns of all regulatory agencies participating in Coordinated Project Review, approvals and statements can be structured to minimize conflicts in project requirements. In jurisdictions other than that proposed for the Courtenay River Estuary Management Plan, many regulatory agencies often state that their approval or statement is contingent upon the proponent of an activity or works satisfactorily addressing the concerns or requirements of other agency or of all agencies participating in the Coordinated Project Review Process.

2.5.2 Coordinated Project Review Process

Figure 4 outlines the Coordinated Review Process developed for the Estuary Management Plan.

Coordinated Project Review ensures that an application is reviewed by all regulatory agencies with legislative authority over a proposed activity or works. Coordinated Project Review is facilitated by a member of the Management Committee who is in receipt of an application for approval of an activity and/or works under the auspices of their specific legislative authority. If the location of the proposed activity and/or works occurs within the jurisdictional area of the Courtenay River Estuary Management Plan, the receiving agency has the applicant fill out a Management Plan application form. This form is structured to retrieve information that is of prospective interest to member agencies of the Management Committee.

The receiving agency becomes the referral agency, referring the Management Plan application form and related information (application package) to other members of the Management Committee. The application package is also referred to the Environmental Review Committee and the Public Advisory Committee. The PAC is requested to submit their coordinated response to the referral agency within 30 days. Upon receipt of the PAC coordinated response, the referral agency disseminates the response to the member agencies of Management Committee and the Environmental Review Committee. The members of the Environmental Review Committee coordinate their response, while other members of the Management Committee respond independently. All members are requested to respond within 15 days of receipt of the PAC coordinated response.

The member agencies of the Management Committee and the Environmental Review Committee respond to the application package according to their specific management authority as afforded by legislation. Further, the member agencies consider the PAC coordinated response as dictated by legislation.

Upon receipt of all responses, the referral agency coordinates the responses into a single response to the applicant. The referral agency conducts a review of the responses to ensure that the responses are based upon a clear understanding of the proposed activity or works. Outstanding concerns, conditions of approval, and requirements for further information are identified and communicated by the coordinated response. Often, to expedite resolution of an outstanding issue, the referral agency will direct the applicant to approach a specific agency directly. In such a circumstance, the applicant would be required to provide the referral agency with documentation confirming resolution of the issue before submitting a formal decision regarding the proposed activity or works. The Co-operative Agreement outlining participation in the Courtenay River Estuary Management Plan will require that referral agency approval of a proposed activity or works be contingent upon approval or a statement of no objection from all member agencies.

2.6 Action Programs

2.6.1 Introduction

The organization of planning and management activities into definable programs greatly facilitates the effective and efficient implementation of the management plan. Planning and management activities may be collectively defined as actions, all of which are implemented in pursuit of specific management objectives. The objectives and related actions may be organized according to specific themes, or action programs. Action programs defined for the Courtenay River Estuary Management Plan consist of:

- Industrial and Urban Development;
- Log Storage and Handling Management;

- Navigation and Dredging;
- Recreation;
- Water Quality Management; and
- Plant, Fish and Wildlife Habitat.

The responsibility for implementation of the action programs will be accepted by those agencies with a defined legislative mandate to address management issues identified by the programs. This responsibility will be confirmed by the Co-Operative Agreement amongst regulatory agencies for the Courtenay River Estuary Management Plan. The Management Committee will coordinate implementation of the action programs.

2.6.2 Industrial and Urban Development Action Program

In the past, the environmental management of industrial and urban development has been reactive. Proponents of development conduct project design according to the planning and engineering standards of municipal governments. Typically, there has been little interaction between proponents of development and provincial and federal environmental agencies during the feasibility and preliminary design phases of development. The Industrial and Urban Development Action Program will facilitate progressive interactions between proponents of development and all levels of government during the early design phases of projects.

Objective **To direct development to areas within the planning area where conflicts with environmental conservation and incompatible uses are minimized.**

- **Action** Complete area designation agreements for all municipalities.

  Area designation determines shoreline zoning. For example, designations identify: conservation areas; where log storage can occur within red-coded habitats; where access points for recreation can be integrated within developed areas; and where water-based industrial uses can operate without encroachment by incompatible uses.

  Area designations must account for upland uses, Official Community Plans, municipal zoning and CREMP habitat classifications. Agreements are between the Department of Fisheries and Oceans and the respective municipality, and are to be facilitated by the Management Committee.

Objective **To produce environmental design guidelines for shoreline development**

- **Action** Prepare design guidelines for industrial and urban developments. The guidelines are to incorporate elements within the overall project design that accommodate other estuarine uses.

  The guidelines are to identify general design criteria that incorporate features for other uses, such as visual and acoustic buffers, public access to shoreline areas, and habitat creation and enhancement. The guidelines are to be disseminated by all levels of government.

2.6.3 Log Storage and Handling Management Action Program

The storage and handling of logs within the estuary results in the deposition of log debris upon environments that are productive habitat for plants, fish and wildlife. Further, at several existing storage sites, logs ground upon intertidal and subtidal flats during low tide. Grounding limits the capability of these flats to function as productive habitat.

The environmental implications of log storage and handling within the estuary are well known to industry, all levels of government, the public and other stakeholders. Despite this widespread knowledge, a comprehensive strategy for log storage and handling management has not been developed. The Log Storage and Handling Management Action Program will facilitate such a strategy.

Objective To produce a Log Storage and Handling Management Plan

- **Action** Map and confirm tenure of log storage areas and identify future storage needs.

- **Action** Identify and map sources, and sites of accumulation, of log debris within the estuary. The volume of debris produced on an annual basis, and the volume of accumulated debris throughout the estuary, are to be calculated on a source and site basis, respectively. Assess impact of debris on environmental resources, and as required, prescribe methods to both reduce the volume of debris produced and collect and dispose of accumulated debris.

- **Action** Identify sites where log booms ground during low tide. Assess impact of grounding on environmental resources. Develop log management guidelines to mitigate the impact of log booms on environmental resources attributable to grounding.

- **Action** Determine extent of accretion and erosion of sediments within log storage areas. Assess impact upon log storage and determine appropriate management prescription (e.g. erosion protection, dredging, etc.). Management prescriptions to consider need for continued log storage at existing location, the feasibility for relocation of log storage, and

environmental impacts of prescription options. Management of dredged material, if dredging is prescribed and permitted by the Environmental Review Committee, to be conducted according to the guidelines presented by the Dredged Material Management Plan.

2.6.4 Navigation and Dredging Action Program

The recent departure of the Canadian Coast Guard as the manager of the navigation channel that links the Courtenay River to Baynes Sound has created uncertainty regarding both the administration and funding of the operation and maintenance of the channel. Uncertainty is created by the absence of a managing agency, and the lack of an inventory of existing and prospective future uses.

Objective **To define and maintain a functional navigation system that supports water-dependent uses.**

- **Action** Identify water-dependent uses that require a navigation channel through the estuary. Design a navigation channel adequate to accommodate water-dependent uses without compromising environmental resources and other uses.

- **Action** Identify a manager of the navigation system. The manager must be able, or provided the means, to both administrate and fund the operation and management of the system.

- **Action** Develop a hydraulic and sediment transport model for the Puntledge, Tsolum and Courtenay rivers. Develop a monitoring and maintenance program that determines the need for dredging to maintain channel design standards.

Objective **To produce a Dredged Material Management Plan**

- **Action** Prepare a Dredged Material Management Plan that identifies disposal sites, and defines opportunities for the beneficial use of dredge material, whether they be associated with revenue generation to fund the management of the navigation system, or environmental enhancement of the estuary, such as habitat creation or beach augmentation.

2.6.5 Recreation Action Program

Numerous recreational opportunities are provided by the Courtenay River estuary. These opportunities will be increasingly exploited as the population of the surrounding communities increases. A comprehensive strategy for the management of recreational activities within the Courtenay River estuary is required.

Objective **To produce a Courtenay River Estuary Recreation Plan**

- **Action** Identify and secure tenure to natural areas, recreational sites or parks that can function as a principle attraction or core feature. These areas or sites must represent regionally significant attributes. The values or uses sustained by each site must be clearly defined by the Plan; management prescriptions must seek to preserve these values or uses.

- **Action** Determine viewscapes to be maintained from both land and water. Critical viewscapes warranting protection and management should be identified and mapped.

  Implement viewscape management strategies utilizing various land-use management techniques available to CREMP members (e.g. zoning regulations, development permit criteria, urban design reviews, etc.)

- **Action** Develop and implement an estuary-wide interpretive program.

  Develop a network of interpretive sites within the estuary to enhance community understanding of the estuary. Provide educational opportunities through direct exposure to the estuary, as well as signage, facilities, and programs delivered in conjunction with community festivals and special events. The interpretive program is to address all values and uses within estuary, such as human and natural history, environmental conservation, log storage, small craft moorage, commercial fishing and water-dependent industries.

2.6.6 Water Quality Management Action Program

Water quality is a central management issue within the estuary. Water directly links urban, agricultural and industrial water and land uses with the environmental health of estuary. The majority of estuarine water quality issues are concerned with the management of:

- septic field leachates and sewage treatment plant effluents;
- urban, agricultural and industrial runoff;
- upstream control of flows and impacts upon temperature; and
- risk of spills and other environmental emergencies.

The responsibilities for water quality management are shared amongst federal, provincial and local governments. Integration of the responsibilities will facilitate more efficient and effective management of water quality within the estuary.

Objective **To develop a Water Quality Management Plan that promotes an integrated approach to water quality management in the estuary.**

- **Action** Establish principles and an administrative framework for water quality management in the estuary.

  A review of the principles that currently guide decision making (e.g. provincial Water Quality Criteria, Canadian Shellfish Sanitation Program, etc.) within the estuary and proximal areas is required. A decision is required as to whether it is desirable that an independent water quality management plan be established for the estuary, or whether water quality management within the estuary be integrated as par of an existing planning exercise (e.g. the Baynes Sound Round Table).

Objective **To achieve an integrated water quality monitoring program for the estuary.**

- **Action** Establish an information management system to track ongoing water quality monitoring and research programs in the planning area.

- **Action** Obtain CREMP agency commitments to a single integrated monitoring program; the monitoring plan would serve as framework for individual agency planning initiatives and funding allocation for their own monitoring activities.

- **Action** Based on findings of monitoring activities, make recommendations to the appropriate agencies for priorities and actions to control sources of discharges and implement pollution abatement measures.

Objective **To improve water quality in the estuary**

- **Action** Agencies with jurisdiction within CREMP planning boundaries are to continue to develop guidelines and enforcing legislation regarding abatement of pollution from specific sources. Agencies are to act upon CREMP recommendations regarding actions to control sources of discharges and implementation of pollution abatement measures.

Objective **To prepare and implement a Coordinated Environmental Emergency Response Plan for episodic spills**

- **Action** Prepare a strategy that will coordinate the Environmental Emergency Response Plans of all agencies for episodic spills within the planning area.

2.6.7 Plant, Fish and Wildlife Habitat Action Program

The Courtenay River estuary provides critical habitats for many plant, fish and wildlife species. In the past, such habitats have been converted to urban, agricultural and industrial uses. Development pressures to further accommodate these uses within the estuary continue. The successful management of plant, fish and wildlife habitats will be a critical component of the overall success of the management plan.

Objective **To maintain and improve the capacity of the estuary to support vigorous populations of plants, fish and wildlife.**

- **Action** Develop and implement a habitat and development classification system for the estuary.

  A three-tiered habitat classification and development model is to be employed, whereby colour codes are utilized to delineate the value of plant, fish and wildlife habitats and corresponding constraints to development. Colour codes are to be assigned to each of three general habitat types, specifically riparian, foreshore and below low water.

  Red colour-coded habitat types sustain high habitat values; developments must not negatively impact the functional capacity of red coded habitats for plants, fish and wildlife. Yellow colour-coded habitat types sustain moderate habitat values; developments must mitigate to greatest extent practical impacts to the functional capacity of yellow-coded habitats. Unmitigable impacts are compensated for through the creation of new habitats. Green colour coded habitat types sustain low habitat values; development within green coded habitats must adequately mitigate impacts.

  The classification system is to include both habitat and development terminology in recognition of the emphasis on both habitat valuation and environmental criteria for development. Colour-coded related constraints placed upon development are based upon the practical feasibility of mitigating impacts to plant, fish and wildlife habitats, and upon federal and provincial legislation and policies that empower resource agencies to protect plant, fish and wildlife habitats.

  The system is to be utilized as a tool for the sustainable management of environmental resources within the Courtenay River estuary. It is not to be a substitute for detailed environmental impact assessments of development proposals within the planning area.

- **Action** Undertake habitat improvement projects.

Identify and tabulate, in order of priority, habitat improvement opportunities including habitat enhancement, restoring degraded habitat areas to former productivity, and the creation of new habitats. Habitat improvement projects that provide opportunities for public involvement and partnership amongst the public, First Nations, industry and government agencies should be promoted.

- **Action** Undertake research and demonstration projects for habitat enhancement, restoration and creation.

  A key element of the successful management of natural resources within environments that are subject to development pressures is the ability to restore, enhance and create habitats for plants, fish and wildlife. Furthermore, an understanding of the ecological functions sustained by these habitats contributes to their value as management tools in achieving the stated objective.

  Research projects are to analyze and document the feasibility and ecological functions of habitat restoration, creation and enhancement projects. The Management Committee, under its direct administration or under the auspices of an ad hoc Research Committee, will coordinate the establishment of administrative and financial arrangements between academic institutions, government agencies and the private sector to facilitate research projects.

Objective **To maintain historical and contemporary habitat budgets for estuary.**

Habitat budgets for the estuary afford an important measure of the success of management programs within the estuary. Historical budgets quantify the extent of habitat degradation and destruction. These budgets allow goals to be set regarding the type and areal extent of habitat restoration and enhancement within the estuary. Contemporary budgets, calculated on a periodic basis (one to five year periods), facilitate a quantitative assessment of the success of management programs in achieving sustainable habitat management within the estuary.

- **Action** An inventory of habitat types (e.g. intertidal marsh, riparian woodland, etc.) is to be conducted to establish a contemporary baseline of habitat types and areal coverage. The inventory should include a digital map of habitat types, linked to a database (e.g. GIS). An audit of all development projects should be conducted to quantify the success of these projects in achieving "no-net-loss" of habitats.

Objective **To secure legal protection of environments with high ecological values.**

- **Action** Enhance legal protection of environments possessing high ecological values through the following means.

  o Revision of existing, or creation of new legislation to protect important environmental resources.

    Often, the most expeditious and effective legislation that can be utilized to protect local environmental resources is the *Municipal Act*. The *Act*, through Official and Neighbourhood Community Plans, can be utilized to establish environmental development permit areas, park reserves and nature reserves.

  o Designation of Wildlife Management Areas for Crown Lands.

    The Provincial *Land Act* contains provisions that afford the designation of Wildlife Management Areas, which are directly administered, under the auspices of the Provincial *Wildlife Act*, by the Ministry of Environment, Lands and Parks (MELP). MELP develops a management plan for designated areas, outlining management priorities and prescriptions for environmental resources.

  o Securement, for conservation purposes, of long-term tenure for private lands.

    Long-term tenure of lands can be achieved through the transfer of title (e.g. acquisition or donation) to government or non-government agencies (e.g. Pacific Estuary Conservation Program or Ducks Unlimited Canada), restrictive covenants or management agreements.

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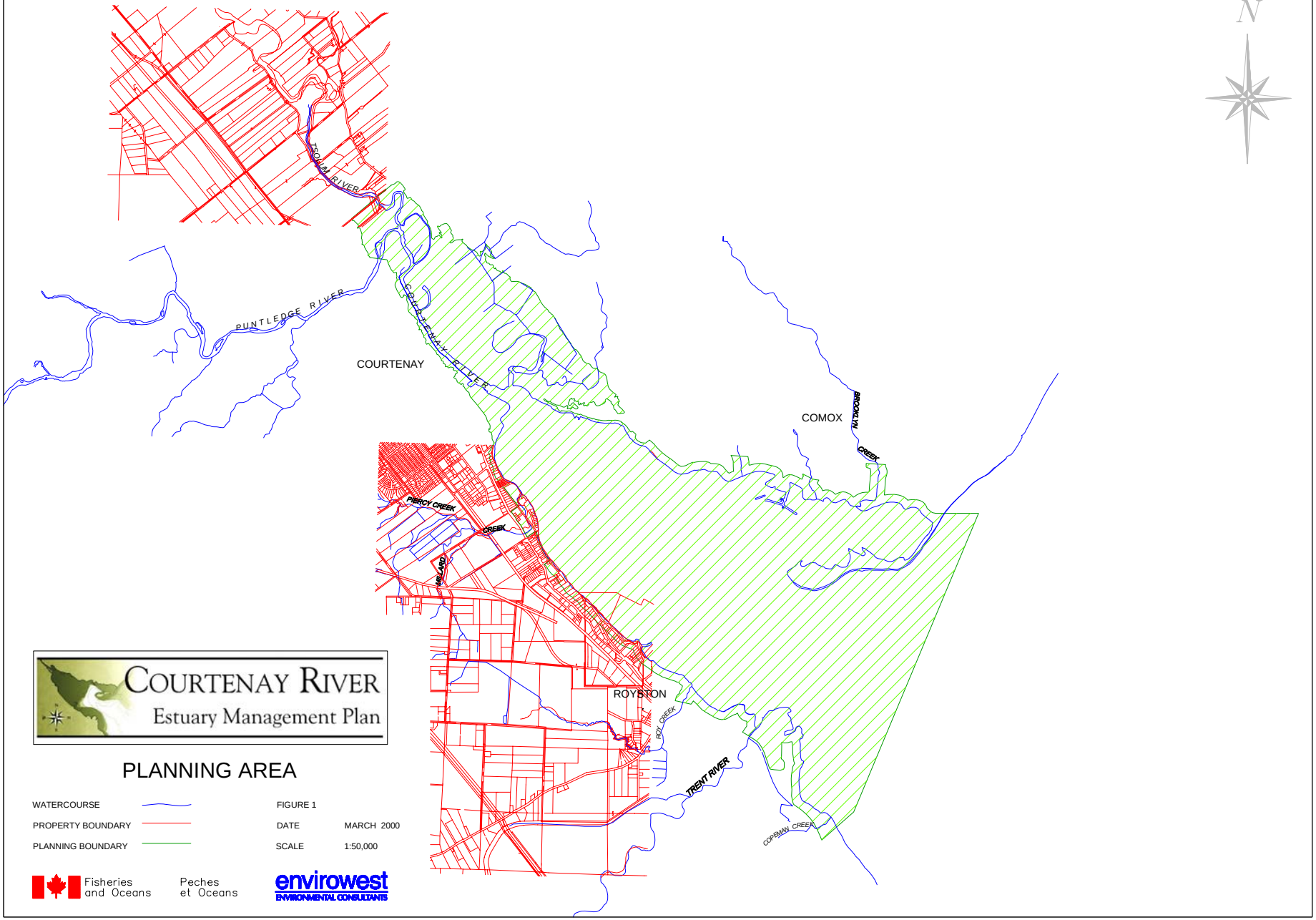
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Estuary Management Plan
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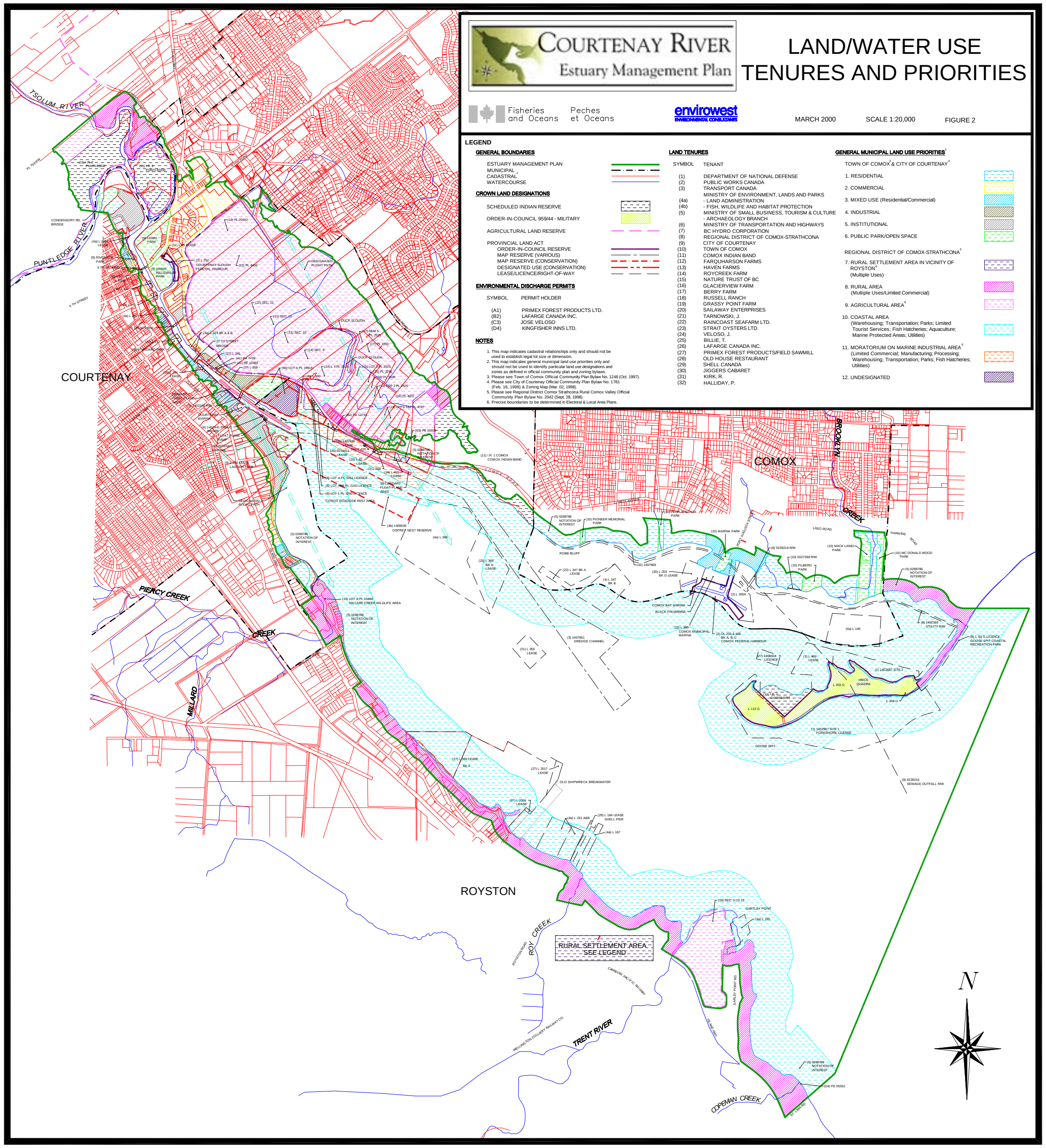
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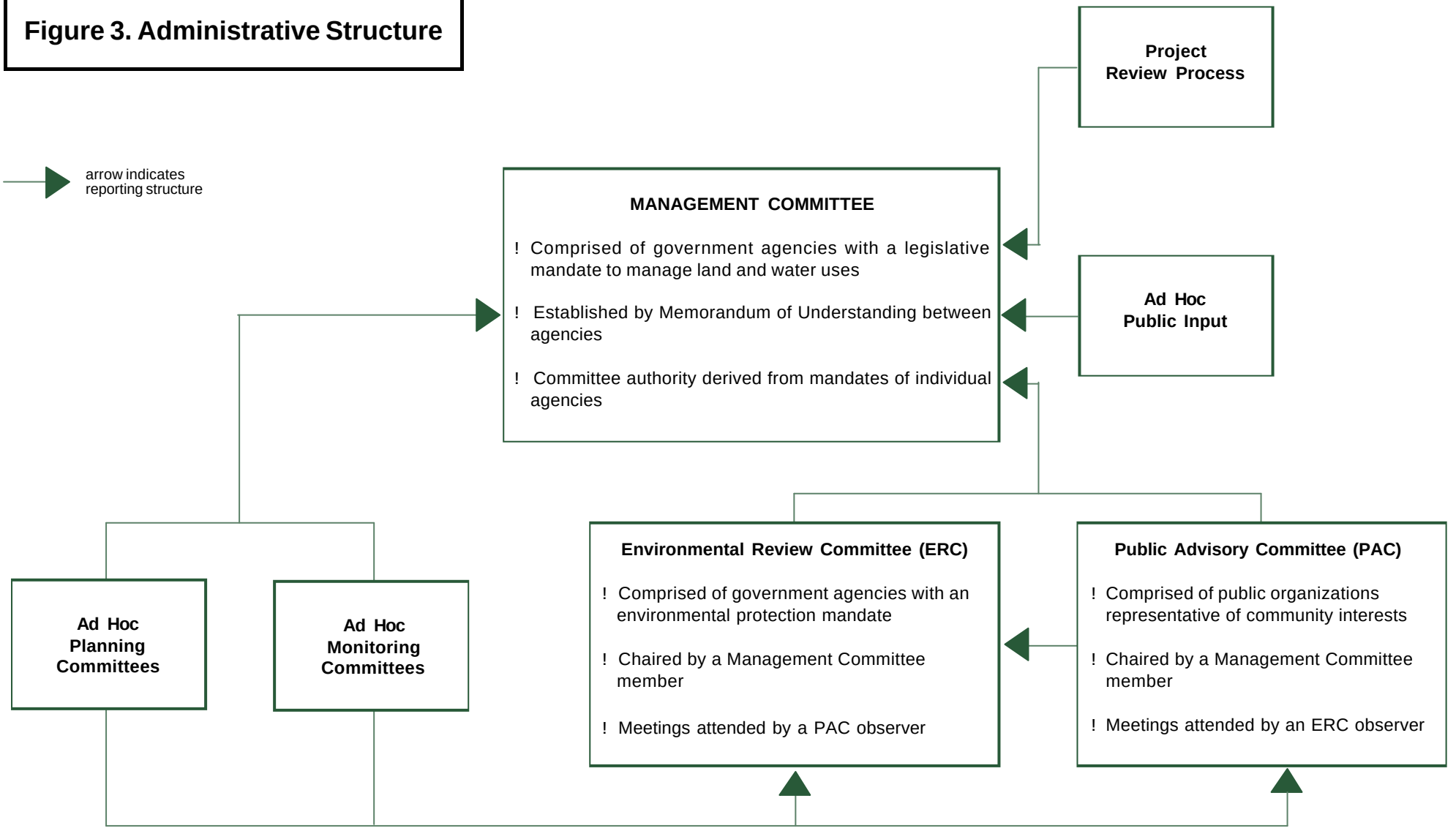
CADASTRAL[1]
WATERCOURSE
CROWN LAND DESIGNATIONS
SCHEDULED INDIAN RESERVE
ORDER-IN-COUNCIL 959/44 - MILITARY
AGRICULTURAL LAND RESERVE
PROVINCIAL LAND ACT
ORDER-IN-COUNCIL RESERVE
MAP RESERVE (VARIOUS)
MAP RESERVE (CONSERVATION)
DESIGNATED USE (CONSERVATION)
LEASE/LICENCE/RIGHT-OF-WAY
ENVIRONMENTAL DISCHARGE PERMITS
SYMBOL PERMIT HOLDER
(A1) PRIMEX FOREST PRODUCTS LTD.
(B2) LAFARGE CANADA INC.
(C3) JOSE VELOSO
(D4) KINGFISHER INNS LTD.
NOTES
1. This map indicates cadastral relationships only and should not be used to establish legal lot size or dimension.
2. This map indicates general municipal land use priorities only and should not be used to identify particular land use designations and zones as defined in official community plan and zoning bylaws.
3. Please see Town of Comox Official Community Plan Bylaw No. 1248 (Oct. 1997).
4. Please see City of Courtenay Official Community Plan Bylaw No. 1781 (Feb. 16, 1998) & Zoning Map (Mar. 02, 1998).
5. Please see Regional District Comox Strathcona Rural Comox Valley Official Community Plan Bylaw No. 2042 (Sept. 28, 1998).
6. Precise boundaries to be determined in Electoral & Local Area Plans.
LAND TENURES
SYMBOL TENANT
(1) DEPARTMENT OF NATIONAL DEFENSE
(2) PUBLIC WORKS CANADA
(3) TRANSPORT CANADA
MINISTRY OF ENVIRONMENT, LANDS AND PARKS
(4a) - LAND ADMINISTRATION
(4b) - FISH, WILDLIFE AND HABITAT PROTECTION
(5) MINISTRY OF SMALL BUSINESS, TOURISM & CULTURE - ARCHAEOLOGY BRANCH
(6) MINISTRY OF TRANSPORTATION AND HIGHWAYS
(7) BC HYDRO CORPORATION
(8) REGIONAL DISTRICT OF COMOX-STRATHCONA
(9) CITY OF COURTENAY
(10) TOWN OF COMOX
(11) COMOX INDIAN BAND
(12) FARQUHARSON FARMS
(13) HAVEN FARMS
(14) ROYCREEK FARM
(15) NATURE TRUST OF BC
(16) GLACIERVIEW FARM
(17) BERRY FARM
(18) RUSSELL RANCH
(19) GRASSY POINT FARM
(20) SAILAWAY ENTERPRISES
(21) TARNOWSKI, J.
(22) RAINCOAST SEAFARM LTD.
(23) STRAIT OYSTERS LTD.
(24) VELOSO, J.
(25) BILLIE, T.
(26) LAFARGE CANADA INC.
(27) PRIMEX FOREST PRODUCTS/FIELD SAWMILL
(28) OLD HOUSE RESTAURANT
(29) SHELL CANADA
(30) JIGGERS CABARET
(31) KIRK, R.
(32) HALLIDAY, P.
GENERAL MUNICIPAL LAND USE PRIORITIES[2]
TOWN OF COMOX[3] & CITY OF COURTENAY[4]
1. RESIDENTIAL
2. COMMERCIAL
3. MIXED USE (Residential/Commercial)
4. INDUSTRIAL
5. INSTITUTIONAL
6. PUBLIC PARK/OPEN SPACE
REGIONAL DISTRICT OF COMOX-STRATHCONA[5]
7. RURAL SETTLEMENT AREA IN VICINITY OF ROYSTON[6] (Multiple Uses)
8. RURAL AREA (Multiple Uses/Limited Commercial)
9. AGRICULTURAL AREA[6]
10. COASTAL AREA (Warehousing; Transportation; Parks; Limited Tourist Services; Fish Hatcheries; Aquaculture; Marine Protected Areas; Utilities)
11. MORATORIUM ON MARINE INDUSTRIAL AREA[6] (Limited Commercial; Manufacturing; Processing; Warehousing; Transportation; Parks; Fish Hatcheries; Utilities)
12. UNDESIGNATED
TSOLUM RIVER
PUNTLEDGE RIVER
COURTENAY
COMOX
BROOKLYN CREEK
PIERCY CREEK
MILLARD CREEK
ROYSTON
ROY CREEK
RURAL SETTLEMENT AREA SEE LEGEND
TRENT RIVER
COPEMAN CREEK
N

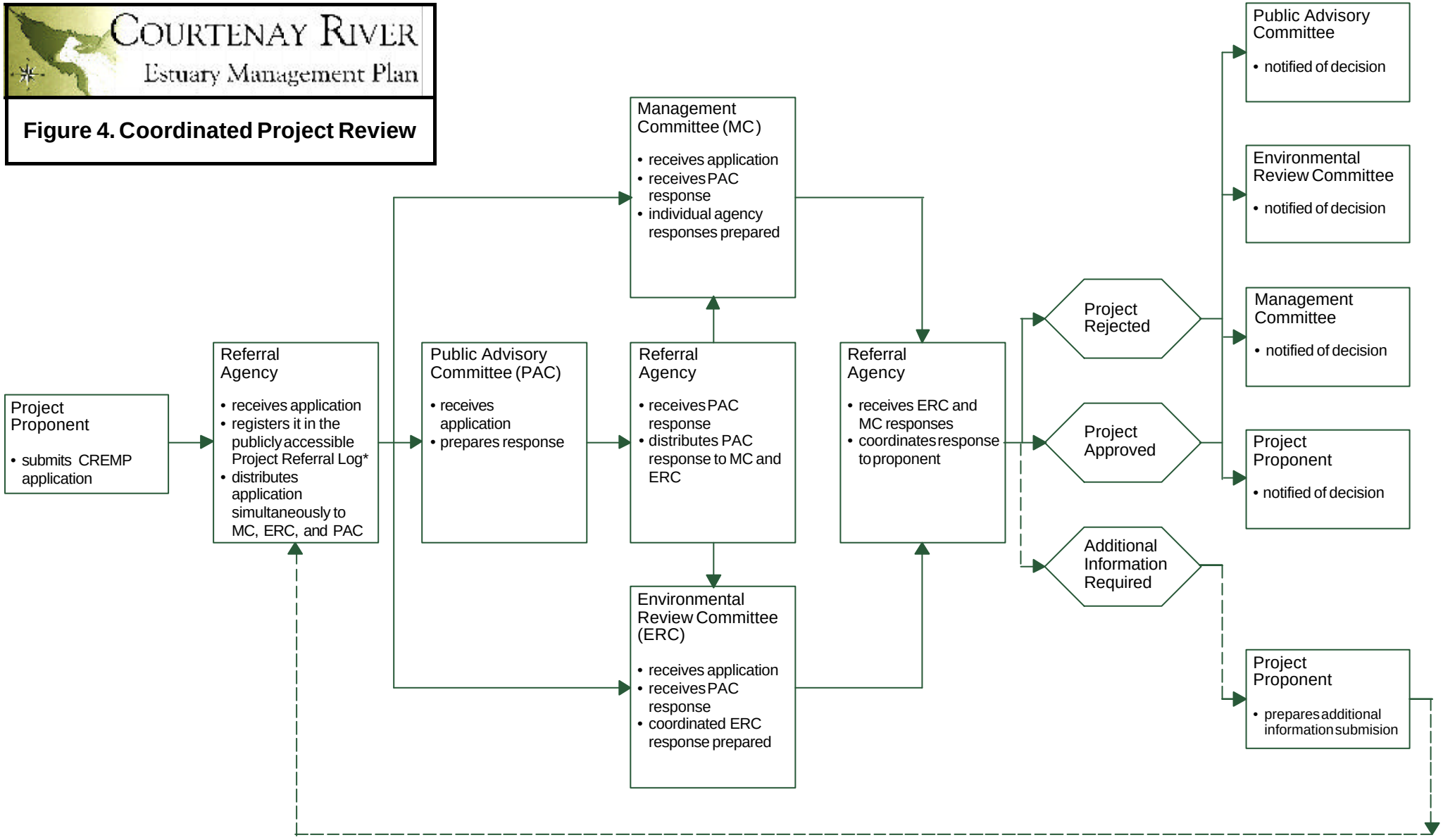
COURTENAY RIVER
Estuary Management Plan

Figure 3. Administrative Structure



COURTENAY RIVER
Estuary Management Plan

Figure 4. Coordinated Project Review



* The publicly accessible Project Referral Log is updated at each stage of the coordinated project review process.