



EnviroEmerg Consulting

3520 Glenora Road, Duncan, B.C. CANADA V9L 6S2

Tel: 250 532-5515 E-mail: Stafford.Reid@shaw.ca Web: enviroemerg.ca

Submissions, reviews, plans, strategies, technical and discussion papers prepared by Stafford Reid - Principal of EnviroEmerg Consulting

SUBMISSIONS & REVIEWS

For Coastal First Nation – Great Bear Initiative and Transport Canada: November 2018. *Peer Review of Transport Canada's Regional Risk Assessment for Ship Source Oil Spills in Canadian Waters Guidance Document and Regional Risk Assessment for Ship-Source Oil Spills in Northern Shelf Bioregion Pilot Areas, British Columbia*

For Marine Planning Partnership for the North Pacific Coast (MaPP),- *A Guide for Preparing Geographic Response Plans and Strategies for Marine Incidents in the MaPP Region*. Prepared with Nuka Research and Planning Group, Plymouth, Mass, USA.

For Cowichan Tribe pertaining impact assessment statements submitted by proponent:

- ❖ *A Technical Evaluation Related to Reconsideration of Marine Transportation Aspects of the Trans Mountain Pipeline Expansion Project*. Submitted to the National Energy Board for the Trans Mountain Pipeline Expansion Project (November, 2018)
- ❖ *Roberts Bank Terminal 2 Project Addendum to The Environmental Impact Statement Marine Shipping Supplemental Report* (January 2016)
- ❖ *A Technical Evaluation of Project Application Related to Marine Transportation*. Submitted to the National Energy Board for the Trans Mountain Pipeline Expansion Project (May 2015)

For Gitga'at First Nation pertaining impact assessment statements submitted by proponents of LNG terminals and marine transportation:

- ❖ *A Technical Review of LNG Canada - Marine Response Plan - Construction* (November 2017)
- ❖ *A Technical Review of LNG Canada - Marine Access Traffic Management Plan - Construction* (November 2017)
- ❖ *A Technical Review of TERMPOL Reports Provided for the Kitimat LNG Project by Chevron/Apache* (May 2015)
- ❖ *Technical Comments on LNG Carriers' Accidents or Malfunctions Pertaining the Proposed LNG Canada Export Terminal Project (Section 10) -* (November 2014)
- ❖ *Technical Comments on Draft Application Information Requirements – LNG Canada Project LNG Carrier Transportation* (September 2013)

For Gitga'at First Nation pertaining messages and interpretations provided by an expert panel of tanker safety commissioned by Transport Canada.

- ❖ *An Evaluation of a Review of Canada's Ship-source Oil Spill Preparedness and Response Regime - Setting the Course for the Future Prepared by the Tanker Safety Expert Panel for Transport Canada*

For Marine Planning Partnership for the North Pacific Coast (MaPP) - a collaborative planning process for coastal areas between the Province, the Coastal First Nations-Great Bear Initiative, the North Coast-Skeena First Nations Stewardship Society and the *Nanwakolas Council*:

- ❖ *Strategies for Geographic Response Plans for British Columbia's West Coast* (February 2015)
- ❖ *Major Marine Vessel Casualty Prevention, Preparedness and Response along British Columbia's Northern Coastal Waters: Issues and Solutions Statement* (June 2013);
- ❖ *Coastal Emergency Response Vessels A Benefit to First Nations, Coastal Communities and the Shipping Industry of British Columbia (Concept Paper)* (December 2012), and
- ❖ *Building Coastal Emergency Response Capacity: A Benefit to First Nations, Coastal Communities and the Shipping Industry of British Columbia* (December 2012)



For *Living Oceans Society* to provide insights into and evaluations of the proposed tanker casualty risk reduction and spill preparedness measures identified in the proponent's environmental impact statements to the National Energy Board's Joint Review Panel:

- ❖ *A Technical Analysis of Marine Transportation Statements for the Enbridge Northern Gateway Project Tanker Casualty Risk Reduction and Spill Response Preparedness. (2011)*

For *Living Oceans Society*, examines the risk of a major vessel casualty on British Columbia's (CANADA) west coast, the nature of the shipping industry and response preparedness related to oil spill, rescue tugs, escort tugs, wildlife rescue, incident management, salvage and more.

- ❖ *Major Marine Vessel Casualty Risk and Response Preparedness in British Columbia (2008)*

For BC Ministry of Environment, a preliminary analysis of environmental emergency preparedness for train derailments:

- ❖ *BC Railway Sector Review on Environmental Emergency Preparedness and Response Capacity (2006)*

For BC Ministry of Environment, a strategic and technical analysis of Transport Canada draft Places of Refuge Plan that identified fundamental issues and gaps related to provincial involvement in making a decision regarding a stricken vessel disposition.

- ❖ *Analysis of Transport Canada's (Marine Safety) Draft National Places of Refuge Contingency Plan by BC Ministry of Environment, (2006)*

For BC Ministry of Environment, a charter for a new society to enhance wildlife rescue preparedness for British Columbia.

- ❖ *Oiled Wildlife Society of British Columbia Constitution under the BC Society Act, (1999)*

For BC Ministry of Environment, a joint industry/government survey of local government's preparedness to manage hazardous material incidents.

- ❖ *Safer Communities: a Survey of Community Preparedness for Hazardous Materials (1998)*

For BC Ministry of Environment, a review of provincial emergency preparedness to handle hazardous material in the event of a major earthquake submitted to the BC Auditor General

- ❖ *Performance Audit of the State of Earthquake preparedness In British Columbia (1998)*

A comprehensive evaluation of the Ministry Environmental Emergency Program based on incident records, surveys, and interviews.

- ❖ *Environmental Emergency Program Evaluation (1995)*

For Province of British Columbia's spill prevention initiative prepared for the Canadian Council of Ministers of the Environment.

- ❖ *Spill Prevention: Committed to the Protection of Marine and Freshwater Environments (1994)*

For Province, an international agreement between the Province of BC and the State of Washington Office of Marine Safety to share in marine spill prevention efforts.

- ❖ *Marine Spill Prevention Cooperative Agreement (1994)*

For Province, a draft regulation for major vessels to submit Marine Spill Prevention Plans submitted to the Canadian Council of Ministers of the Environment's Pollution Prevention Work Group.

- ❖ *Marine Spill Prevention Plan Regulation (draft) (1994)*

For Province, an overview and issue identification report pertaining to marine spill prevention, preparedness and response in British Columbia and west coast States.

- ❖ *Issue Summary Document: Marine Oil Spill Prevention, Preparedness and Response (1993)*

For Province, an inter-agency protocol on defining a hazardous material and determining appropriate initial response actions and organization.

- ❖ *Initial Response Protocol for Incidents Involving Hazardous Materials, (1999)*



For Province, a Ministry of Environment position statement clarifying the roles and relationship of provincial and local government during an environmental emergency.

- ❖ *Ministry Position on the Union of British Columbia's Municipalities (UBCM) Resolution on Role of Local Government during an Environmental Emergency, (1999)*

For Province, international co-operative agreements written pursuant to the *Oil Spill Memorandum of Co-operation between British Columbia and States of Washington, Oregon, Alaska and California (1993)*

Mutual Aid Plan

- *The Incident Command System for Unified Response to Marine Oil Spills*
- *Marine Spill Reporting Number*
- *Marine Oil Spill Response Information System*

For Province, a federal/provincial MoU on cooperative management during environmental emergencies.

- ❖ *British Columbia/Canada Memorandum of Understanding of Environmental Emergency Interactions (1992)*

An internal evaluation of British Columbia's participation in an international marine oil spill marine exercise sponsored by the US Coast Guard (April 24th - 26th, 1991).

- ❖ *SPILLEX 91 - Marine Oil Spill Exercise - An Internal BC Environment Evaluation (1990)*

A review of Ministry of Environment's on-site response to the Sooke Oil Spill on November 23rd, 1989.

- ❖ *Internal Review and Evaluation of Ministry Response Activities in the Sooke Oil Spill. (1989)*

A review of the insights and impressions by provincial personnel who attended the Exxon Valdez spill in Alaska in March 1991.

- ❖ *Internal Review and Evaluation of the Alaska Oil Spill (1989)*

Environmental terms-of-reference for a mine access road in Northwestern BC; submitted to the Ministry of Energy, Mines & Petroleum Resources for environmental studies funding.

- ❖ *Iskut Road Study Environmental Terms-of-reference (1989)*

Technical briefing notes for an international steel plant tour to Taiwan that included the Minister of Environment.

- ❖ *The Making of Steel - British Columbia's Environmental Perspective (1989)*

A technical compilation and analyses of the Equity Silver Mine's Decommissioning and Closure Plan prepared on behalf of the Surveillance Committee for submission to the Reclamation Advisory Committee.

- ❖ *The Equity Public Surveillance Committee's Review of Equity Silver Mine's Decommissioning and Closure Plan (1989)*

Review of an *Application for an Energy Project Certificate* for a power plant to determine environmental concerns and, in turn prescribe environmental conditions.

- ❖ *BC Environment's Review of Cinola Gold Project's 25MW Diesel fired Power Plant (1989)*

Submissions prepared for the Mine Development Steering Committee in to support decisions on mine approval in principle and to provide any further requirements for environmental impact assessment and management.

- ❖ *Ministry of Environment's Impact Assessment of:*
 - *Prospectus Review of the J&L (Equinox) Project (1989)*
 - *Stage I Review of the Congress Gold Project (1989)*
 - *Stage II Review of the Klappan Coal Project (1989)*
 - *Stage I Review of the Samatosum Gold Project (1988)*

An analysis of the coastal information needs of the Ministry presented to the Aquatic Information Steering Committee.



- ❖ *Coastal Information Needs Analysis for the Ministry of Environment and Parks (1987)*

An environmental analysis submitted to the Task Force on Northwest Economic Development.

- ❖ *Preferred Route to Provide Road Access to the Kutcho Creek Mineral Properties in Northwest British Columbia (1985)*

Submitted to the Federal Environmental Assessment Panel established to examine the long-term implications of transportation and utility development in the Thompson and Fraser river corridor.

- ❖ *The Thompson/Fraser Corridor Options for Environmental Planning and Management of Linear Developments (1985)*

Reports submitted to the BC Ministry of Industry and Small Business Development as part of the *Provincial Northwest Economic Study*:

- ❖ *Preliminary Environmental Assessment: Railway Corridor Options to Service Mount Klappan Coal Project and the Northwest Region of British Columbia (1984)*
- ❖ *Terms of Reference for Baseline Environmental Studies on Railway Corridor Selection in Northwest British Columbia (1984)*

Submitted to the BC Ministry of Intergovernmental Relations to provide the technical basis for international negotiations between Canada and United States.

- ❖ *Preliminary Environmental Assessment: Potential Access Corridors through the Alaska Panhandle from British Columbia (1984)*

Identifies fisheries and wildlife habitat improvements should the railway be upgraded submitted to BC Rail.

- ❖ *British Columbia Railway Dease Lake Extension Environmental Inspection (1984)*

Submitted to the Energy Project Coordinating Committee as a series of compiled and analyzed government comments pertaining to environmental, resource and land use matters.

- ❖ *Energy Project Review Comments and Summaries for the Keenleyside/Murphy Creek Hydroelectric Project (1983)*

Submitted to the *Federal Environmental Assessment and Review Panel* in response to an investigation of CNR's major project in the Fraser and Thompson Corridors.

- ❖ *Canadian National Railway Twin-tracking in British Columbia (1983)*

Provincial government comments submitted to the Coal Guidelines Steering Committee as chairman of the Environment/Resources/Land Use Working Committee.

- ❖ *Environmental Issues Related to the BC Hydro and Power Authority's Proposed Hat Creek Thermal power Generation Project (1982)*

Prepared for the International Joint Commission in response to Provincial request to address the matter of further flooding of the Skagit Valley.

- ❖ *Environmental and Social Impacts from the Proposed High Ross Dam and Further Flooding of the Skagit Valley in British Columbia (1982)*

Submitted to the Ministry executive in order to provide the technical basis for a coal project's approval.

- ❖ *Environmental Problem Analysis of the Proposed Sage Creek Coal Project in the Flathead Valley of British Columbia (1980)*

PLANS AND STRATEGIES

- ❖ Revisions and up-dates to the BC Ministry of Environment's provincial-level response plans and supporting operational guidelines/position task books(2013)
 - *BC Marine Oil Spill Response Plan*
 - *BC Inland Oil Spill Response Plan*
 - *BC Hazardous Material Response Plan.*





Findings and recommendations of the BC oil spill alliance trade-mission. Provides strategic plan for development of Taiwan spill preparedness and response

- ❖ *British Columbia – Taiwan Mission 2002. Oil and Chemical Spill Preparedness and Response October 16th to 22nd, 2002*

Policy and inter-active risk model to guide Provincial Emergency Response Officers on when to attend spills in the field.

- ❖ *Risk-based Spill Response Decision Model (2002)*

Federal and provincial policy and when and how to undertake in-situ oil burning during a major marine oil spill.

- ❖ *British Columbia/Canada In-situ Burning Policy and Decision Guideline (2001)*

BC Hazardous Material Response Plan (2005)

BC Inland Oil Spill Response Plan (2005)

BC Marine Oil Spill Response Plan (2005)

Provincial-level emergency response plans to manage spill events of provincial, national or international significance

- ❖ *Operational Guidelines for Environmental Emergencies (1995-2005) Related to Major Spills as follows:*

FOR AN AGENCY EXECUTIVE/POLICY GROUP

An Agency Executive/Policy Group Guide for Major Environmental Emergencies

FOR SUPPORT EMERGENCY OPERATIONS CENTRES

Emergency Operations Centre [HQs] and Regional Operations Centre [Affected Region]

FOR INCIDENT MANAGEMENT

Legislation and Agreements

BC Ministry of Environment's Authority under the Environmental Management Act.

Statutes & Legislation Related to Environmental Emergencies

Letter (template) Requesting to Establish Unified Command

Organizational

Initial Incident Situation Analysis

Incident Command System and Unified Command

Operational Guideline on the ICS process

Incident Command Post Signage System

Incident Command System Forms

Emergency Personnel Registration Database

Operational Guidelines for Selected ICS positions at an Incident Command Post:

- Incident Commander
- Liaison Officer
- Information Officer
- Operations Section Chief
- Planning Section Chief
- Resource Unit Leader
- Situation Unit Leader
- Logistics Section Chief
- Finance /Administration Section Chief

Joint Information Centre Design and Implementation



Liaison Office Manual

Technical – General

Glossary of Terms & Acronyms
Electronic Communication
Public & Media Relations

Technical – Hazard Specific

Decision Guideline on Places of Refuge for Major Vessels
Specifications for Technical Specialists
Outline of Shore Treatment Methods
Wildlife Rescue & Rehabilitation
Oily Waste Disposal
Role of Field Observer and Shoreline Clean-up & Assessment Team

Comprehensive re-drafting of Ministry's 1992 guidelines for Industry Emergency Response Plans
❖ *Revised Guideline for Industry Emergency Response Plans (2001)*

An interim planning document to guide in the development of the vision, values, issues for the *Nootka Integrated Coastal Use Plan* coordinated by the Land Use Coordination Office
❖ *Nootka Coastal Resource Use Plan: An Interim Planning Document (2000)*

A federal/provincial strategy on marine protection areas drafted from a discussion paper on the same subject prepared by the Land Use Coordination Office and Fisheries and Oceans Canada in 1998.
❖ *Marine Protected Areas: A Strategy for Canada's West Coast (2000)*

A strategic corporate plan for Minister of Environment consideration pertaining to marine spill prevention from vessels and coastal oil handling facilities.
❖ *Marine Spill Prevention: An Imperative For Coastal Protection (1994)*

Prepared for Ministry of Environment outlining an administrative and organizational capability for addressing marine spill prevention for the province.
❖ *Office of Marine Spill Prevention (1994)*

Prepared for Ministry Environment outlining office functions, previous initiatives, and incident analyses.
❖ *Establishing an Environmental Emergency Coordination Office (1993)*

(As a contributing author) Provides the guiding principles and strategic policies of the Province of British Columbia to prevent and to response to major marine oil spills.
❖ *Provincial Marine Oil Spill Preparedness and Response Strategy (1990)*

A response plan that guides BC Environment's role in the field assessment of minor and major floods.
❖ *BC Environment Flood Response Plan (1991)*

A program (corporate) plan that outlines management strategies over a five-year period for the Ministry's Pesticide Program.
❖ *Pesticide Control Program Plan (1988)*



POLICIES AND PROCEDURES

Prepared to guide regional Environmental Emergency Response Officers in determine when and what type of oil and hazardous material spills to attend in the field.

- ❖ *Risk Based Spill Response Policy and Model 2002*

Prepared for Environmental Emergency Program to guide regional and headquarters emergency preparedness and response to oil, chemical and water-related threats.

- ❖ *Environmental Emergency Program Policy and Procedures:*
 - *Introduction*
 - *Notification*
 - *Response*
 - *Training and Equipment*
 - *Spill Cost Recovery*

WORKING AND DISCUSSION PAPERS

The following working papers provided the basis for environmental management practices and policies of government and industry (Manuscript Status):

S. Reid, 2016 *Take-a-ways from Federal Announcement on National Oceans Protection Plan*. Discussion Paper

S. Reid 2016. *North Coast Marine Vessel Traffic Project using Automatic Information System (AIS) Data*. Discussion Paper

S. Reid, 2016 *A Technical Evaluation of Transport Canada's New Geographical and Hierarchical Approach to Oil Spill Planning, Preparedness In Canada: Areas of Response, Area Response Plan, and Area Risk Assessment*

S. Reid, 2010. *Duality of the Environmental Unit (EU) and the federal Regional Environmental Emergency Team (REET) under the Incident Command System*.

S. Reid,, 2000. *Marine Oil Spill Response in British Columbia and Coastal Inventory and Oil Sensitivity Mapping in the Context of Oil and Gas Exploration Moratorium*

S. Reid, 2000. *Defining the Coastal Zone at a Regional Level*

S. Reid, 2000. *Defining Critical Marine Habitat*

S. Reid, 1999. *An Examination of Federal and Provincial Jurisdiction on the Marine Environment*

S. Reid, 1998. *Principles of Mitigation and Compensation for Natural Resource Losses*

S. Reid, 1998. *Spill Cost Recovery: Establishing a Regulation under the Waste Management Act for Recovering the Cost of Spill Response by the Government of British Columbia*.

S. Reid, 1993. *Unified Command - Joining Forces during and Multi-jurisdictional Environmental Emergency*

S. Reid, 1993. *Introduction to the Incident Command System for Emergency Response*

S. Reid, 1992. *Incident Command System Training Worksheets*

S. Reid and K. Lozoway, 1989. *Issues and Comments Stemming from the Gold Mining Effluent Treatment Seminar in Vancouver*



- R. Langford, S. Reid, L. Harding, 1988. *Marine Environmental Quality in Canada, Status and Issues: The Pacific Coast*
- S. Reid and J. Arber, 1988. *Environmental Guidelines for Marine Fish Farms and Ancillary Operations*
- S. Reid, 1987, *Biophysical Description of Coquihalla Summit Recreation Area*
- S. Reid, J. Arber, B. Kangasniemi, 1987. *A Strategic Evaluation of the Need for Waste Management Regulations of Marine Fish Farm Operations*
- G. Caine, J. Truscott, S. Reid and K. Ricker, 1987. *Biophysical Criteria for Siting Salmon Farms in British Columbia*
- S. Reid, 1987 *Marine Fish Farm Development Plan*
- S. Reid, 1986. *Computer Mapping and Information System for Coastal Areas in British Columbia with Special Reference to Mariculture*
- S. Reid, 1986. *Implementation a Moratorium on Applications for Salmon Farm Sites in Selected Coastal Areas*
- S. Reid, 1986. *Strategies for Growout of Marine Fish*
- S. Reid, 1985. *Marine Fish Farm Model: Nutrient and Organic Loadings*
- S. Reid, 1985. *Coastal Planning and Management for Mariculture in BC*
- S. Reid, 1985, *Problems, Trends and Future Activities in Environmental Impact Assessment*
- S. Reid, 1985, *A Review of Fisheries and Oceans Canada Proposed Policy and Procedures for Fish Habitat Management*
- S. Reid and J. Saremba, 1985. *Onsite Management of Environmental Impacts*
- S. Reid, 1985, J. Mattison and B. Langford, 1984. *Environmental Impact Monitoring for Major Resource Developments*
- S. Reid and J. Saremba, 1984. *Environmental Surveillance, Supervision and Monitoring*
- S. Reid, 1984. *Standards and Enforcement: A discussion paper*
- S. Reid, 1983. *Effects of Acid Precipitation on Materials*
- S. Reid, 1983. *Environmental Issues Related to Canadian Pacific Railway Realignment and Rail Car Facility at Golden, BC*
- S. Reid, 1983. *Transportation and Utility Development within the Corridors of the Thompson and South Thompson Rivers*
- J. Saremba and S. Reid, 1983. *Terms of Reference for an Environmental Supervisor*
- S. Reid and D. Parsons, 1983. *A Guide to the Permits, Licenses and Approvals Administered by the Ministry of Environment*
- J. Saremba and S. Reid, 1983. *Environmental Component of Contract Specifications for Railway Construction*
- S. Reid, 1983. *Major Assessment and Review Processes in British Columbia*



- S. Reid, 1983. *Environmental Terms of Reference for the Liard River Hydroelectric Project*
- S. Reid, 1982. *Legislative and Administrative Framework for Coal Developments in British Columbia*
- S. Reid, 1980. *Mitigation and Compensation for Fish and Wildlife Losses during Resource Developments in British Columbia and Alberta, Masters Thesis*
- S. Reid, 1979. *Economic Analysis of Environmental Policy. U. of Calgary*
- S. Reid, 1979. *The Impact of Highways on Wildlife: A Review and Synthesis of Available Information. U. of Calgary*

INFORMATIONAL & TECHNICAL PAPERS

- S. Reid, 1994. *Marine Spill Prevention*
- S. Reid, 1992. *Environmental Emergency Incident (Monthly Reports)*
- S. Reid, 1991. *Marine Oil Spills: Planning & Response*
- S. Reid, 1990. *Emergency Preparedness & Response Newsletter(s)*
- S. Reid, 1978. *Coal Developments in Northwest British Columbia*
- S. Reid, 1978. *Fish and Wildlife Habitat Protection during Coal Development in Northeastern British Columbia*
- S. Reid, R.G. Mullett and R.L. Morley, 1977. *Monitoring of an Aerial Herbicide Treatment at Holberg, BC Monitoring Study No. 2*
- R.L. Morley and S. Reid, 1977. *2,4D: A Summary of Information Relative to Its Possible Effects on Fish and Wildlife when used in Aquatic Weed Control Programs*
- R.L. Morley and S. Reid, 1975. *Monitoring of an Aerial Herbicide Treatment at Toba Inlet, BC Monitoring Study No. 1*
- S. Reid, 1975. *Aquatic Weed Control in Vernon Arm, Okanagan Lake*
- R.S. Hooton and S. Reid, 1975. *Impact of Stream Channelization on Fish and Wildlife*
- S. Reid and R.L. Morley, 1975. *Mercury Contamination of Fish from Pinchi Lake, BC*

TRAINING COURSES

Shoreline Cleanup and Assessment Techniques Course for both marine temperate and tropical environments and inland (freshwater) environments.

Incident Command System (ICS) Courses: 100 Orientation, 200 Basic, and 300 Intermediate and Refresher Course

ICS Exercise Resource Material Package: ICS Forms, Incident Command Post Signage, Truth/Control System.

OTHER

Presentations (Powerpoint)

- *Places of Refuge for Major Vessels Needing Assistance In British Columbia's Coastal Waters (2015)*
- *Place of Refuge: Examination of a Risk-Based Decision Aid (2015)*



- *Impacts of Major Marine Oil Spills*
- *Major Marine Vessels Vessel Casualty Risk & Consequences, Response Challenges and Solutions (2015)*
- *LNG Carriers - Their Nature, Products and Risks (2014)*
- *Compensation and Restoration for Marine Oil Spills*
- *Incident Management Teams for Environmental Emergencies*
- *Executive Presentation on Environmental Emergency Preparedness*
- *Oil and Chemical Spill Response (Presentation to Taiwan-BC Trade Mission 2002)*
- *Prestige Oil Spill – social, environmental and economic impacts (2004)*

Databases and Models

Risk-based Decision Model for Places of Refuge in British Columbia (2016)
Spill Incident Database for Emergency Program evaluations (2005)
Emergency Response Personnel Database (2000)

Emergency Preparedness

Comprehensive over-flight kit for mobile Incident Command Post