

## SALMON AQUACULTURE - COMPARISON OF REGULATIONS

### Issue: ESCAPE PREVENTION

British Columbia	Nova Scotia	Newfoundland	New Brunswick	Norway	Washington	Maine	Chile	Scotland
<ul style="list-style-type: none"> <li>Escapes absolutely prohibited under legislation.</li> <li>Best Management Practices (BMP) plans required as condition of license for operation/maintenance of facilities and staff training exceed requirements of all other jurisdictions.</li> <li>All equipment, materials and structures must be designed, constructed, installed, inspected and maintained to prevent escapes.</li> <li>Detailed anchoring/structural plans required.</li> <li>Only jurisdiction to legislate daily inspection &amp; record-keeping requirements.</li> <li>Only jurisdiction to require inspections following events that may stress containment structures.</li> <li>Comprehensive minimum net-strength standards described in detail for each net over its lifespan (BC first to legislate). Only jurisdiction to require minimum net inspection schedule.</li> <li>All net handling practices must be documented in BMPs.</li> <li>Reporting of actual and suspected escapes required within 24 hours, and in writing within 1 week.</li> <li>Written escape response plans (with step-by-step procedures) required.</li> <li>Reasonable measures to recapture escaped fish required (including pre-arrangements for timely federal approvals).</li> </ul>	<ul style="list-style-type: none"> <li>Several aspects of farm design requirements address escapes.</li> <li>Management Plan requires all equipment, materials and structures must be designed, constructed, installed, inspected and maintained to prevent escapes (not as extensive as BC).</li> <li>Required to report fish escapes as condition of licence.</li> </ul>	<ul style="list-style-type: none"> <li>BMP plans required as condition of licence. BMP requirements for operation/maintenance of facilities and staff training are not as stringent as BC's.</li> <li>All equipment, materials and structures must be designed, constructed, installed, inspected and maintained to prevent escapes (not as extensive as BC).</li> <li>Compliance with escape reporting provision of Code of Containment required as condition of licence.</li> <li>No absolute prohibition of escapes.</li> <li>Compliance with minimum net-strength standards of Code of Containment required as condition of licence.</li> </ul>	<ul style="list-style-type: none"> <li>Escapes are absolutely prohibited.</li> <li>Provincial Application Guide for Management Plan requirements.</li> <li>Code of Practice indirectly addresses escapes - requirements for operation/maintenance of facilities and staff training are not as stringent as BC's.</li> <li>Some aspects of farm design requirements address escapes.</li> <li>All equipment, materials and structures must be designed, constructed, installed, inspected and maintained to prevent escapes (not as extensive as BC).</li> <li>No requirement to report fish escapes.</li> </ul>	<ul style="list-style-type: none"> <li>Requirements for operation/maintenance of facilities and staff training are not as stringent as BC's.</li> <li>All equipment, materials and structures must be designed, constructed, installed, inspected and maintained to prevent escapes (not as extensive as BC).</li> <li>Advises daily inspections and after bad weather. Reporting of inspections via submission of monthly activity journals.</li> <li>Records of escapes must be kept and notification must be made to government, but no timeframe specified.</li> <li>Recapture efforts must follow escape events.</li> <li>Oct to April farms must deploy prescribed nets at 20m distance from farms to monitor continuously for escapes.</li> <li>Minimum net-strength standards are in place.</li> </ul>	<ul style="list-style-type: none"> <li>Escapes may be treated as an offence depending on circumstances.</li> <li>Escape Prevention Plans cover routine procedures (requirements for operation/maintenance of facilities and staff training are not as stringent as BC's).</li> <li>"Significant" escapes (3000 or more fish of 1kg or less in size; 1500 fish of 1kg or more) must be reported within 24 hours.</li> <li>Annual escape reports must be submitted.</li> <li>Contingency planning for escape events is required.</li> </ul>	<ul style="list-style-type: none"> <li>BMP plans required as condition of licence. BMP requirements for operation/maintenance of facilities and staff training are not as stringent as BC's.</li> <li>All equipment, materials and structures must be designed, constructed, installed, inspected and maintained to prevent escapes (not as extensive as BC).</li> <li>Escape reporting required, but only for escapes of 50 or more fish 2kg or more.</li> </ul>	<ul style="list-style-type: none"> <li>Escapes are absolutely prohibited.</li> <li>Does not specify escape prevention practices.</li> <li>Escapes must be reported.</li> <li>Contingency planning for escape events is required.</li> </ul>	<ul style="list-style-type: none"> <li>Escapes may be treated as an offence depending on circumstances.</li> <li>Voluntary Code of Practice (requirements for operation/maintenance of facilities and staff training are not as stringent as BC's).</li> <li>Escapes must be reported.</li> <li>Code of Practice addresses recapture and contingency planning.</li> </ul>

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### **Issue: SITING**

**NOTE: All jurisdictions have siting criteria and policies that address environmental and social issues. BC's are at least as rigorous as other jurisdictions and in many cases stronger..**

British Columbia	Nova Scotia	Newfoundland	New Brunswick	Norway	Washington	Maine	Chile	Scotland
<ul style="list-style-type: none"> <li>BC farms must be at least 1 km from farms owned by the same company, and at least 3 km from farms owned by other companies.</li> <li>Application of the federal CEAA screening process is extremely rigorous in BC (confirmed by producers in other provinces). Data collection and analysis costs to proponents have exceeded \$100,000 and taken as long as 4 years in some cases.</li> <li>Baseline survey data requirements for BC's Ministry of Water Land and Air Protection (WLAP) are more specific than for any other jurisdiction. For example, 2,800 current data points must be collected over a lunar cycle from deep and shallow meter locations.</li> <li>A Protocol Handbook specifies: types of current meters that must be used and how they must be moored, and the format for reports showing calibration and maintenance history. Maps must be submitted with current meter reports showing GPS coordinates of the meters relative to the net cage (information is also required for anchoring reports, CEAA screening, and DEPOMOD analysis).</li> </ul>	<ul style="list-style-type: none"> <li>Farm separation buffer: minimum 1 km typically required.</li> <li>Suite of baseline data required according to Environmental Monitoring Program.</li> <li>Federal <i>Fisheries Act</i> s.35 review.</li> <li>Federal CEAA screening required.</li> </ul>	<ul style="list-style-type: none"> <li>Farm separation buffer: minimum 1 km.</li> <li>Baseline data required, for example, average current speed, redox and sulphide.</li> <li>Federal <i>Fisheries Act</i> s.35 review.</li> <li>Federal CEAA screening required.</li> </ul>	<ul style="list-style-type: none"> <li>Farm separation buffer: minimum 300m.</li> <li>Baseline data requirements (extensive) outlined in the "Bay of Fundy Marine Aquaculture Site Allocation Application Guide" include: current speed, redox, sulphide, % organic content, grain size, video, flora, fauna and marine resource assessment.</li> <li>Federal <i>Fisheries Act</i> s.35 review.</li> <li>Federal CEAA screening required.</li> </ul>	<ul style="list-style-type: none"> <li>Farm separation buffer: minimum 1 km.</li> <li>Some baseline data required, for example, average current speed.</li> </ul>	<ul style="list-style-type: none"> <li>Distance between farms is not specified.</li> <li>Some baseline data required, for example, average current speed.</li> </ul>	<ul style="list-style-type: none"> <li>Farm separation buffer: minimum 613 m.</li> <li>Regulatory authority to collect baseline data on siting, benthic habitat and water quality information.</li> </ul>	<ul style="list-style-type: none"> <li>Farm separation buffer: minimum 2.78 km.</li> </ul>	<ul style="list-style-type: none"> <li>Farm separation buffer: minimum 8 km (exceptions are available in practice).</li> </ul>

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<b>Issue: FISH HEALTH</b>								
<b>British Columbia</b>	<b>Nova Scotia</b>	<b>Newfoundland</b>	<b>New Brunswick</b>	<b>Norway</b>	<b>Washington</b>	<b>Maine</b>	<b>Chile</b>	<b>Scotland</b>
<ul style="list-style-type: none"> <li>– BC is a world leader in fish health regulation for marine finfish aquaculture.</li> <li>– BC and Norway are only jurisdictions with mandatory sea lice monitoring, reporting and auditing.</li> <li>– BC is the first jurisdiction to require comprehensive Fish Health Management Plans (FHMPs) for all aquaculture operations.</li> <li>– FHMPs must contain plans for routine disease monitoring, record-keeping of health status, and preventing, controlling or treating disease.</li> <li>– FHMPs specify operators must: employ resources/personnel to effectively address fish health issues; have rapid response plans for disease events; detail all monitoring activities, including those focusing on the effectiveness of treatments and controls, and notify fed/prov authorities of disease outbreaks.</li> </ul>	<ul style="list-style-type: none"> <li>– Regulations require that records of disease presence and drug treatments must be kept.</li> <li>– Provincial Fish Health Veterinarian has authority to quarantine, treat or destroy infected fish under legislation.</li> </ul>	<ul style="list-style-type: none"> <li>– Must report disease outbreaks and take measures as directed.</li> </ul>	<ul style="list-style-type: none"> <li>– Regulations address mort handling and health monitoring.</li> <li>– Industry and government partner in extensive Fish Health Surveillance Program.</li> <li>– Single-year class entry operating practices required.</li> </ul>	<ul style="list-style-type: none"> <li>– Mandatory sea lice monitoring, reporting and auditing.</li> <li>– A condition for receiving an aquaculture licence is that the activity does not comprise a danger for the spreading of fish diseases.</li> <li>– Management Plans must be approved by Animal Health Authority.</li> <li>– Must keep records of disease outbreaks, diagnoses, testing and treatment</li> <li>– Regular health control by a qualified person must be carried out at fish farms according to guidelines issued by the Animal Health Authority.</li> <li>– Must post public notice of antibiotic use.</li> <li>– Mandatory following.</li> </ul>	<ul style="list-style-type: none"> <li>– Disease control regulations require establishment of disease control policies. The Salmonid Disease Control Policy of the Fisheries Co-Managers of Washington State requires that all serious pathogen outbreaks are addressed immediately and reported to Department of Fish &amp; Wildlife and Treaty Indian Tribes within 2 working days.</li> </ul>	<ul style="list-style-type: none"> <li>– Regulatory authority to collect data on disease incidents and use of therapeutants.</li> <li>– Must post public notice of antibiotic use.</li> </ul>	<ul style="list-style-type: none"> <li>– Extensive protection, control and eradication measures for aquatic animal diseases.</li> <li>– Sanitary regulations address disease classes, emergency measures, health program development (by activity and disease), therapeutant use, certification of diagnostic labs, and mandatory registration of facilities.</li> </ul>	<ul style="list-style-type: none"> <li>– Mandatory registration of facilities, reporting of prescribed diseases and treatment procedures, harvest/disposal of infected stock.</li> <li>– Compliance with industry's Code of Practice to Avoid and Minimize the Impact of Infectious Salmon Anemia is monitored by government audit/survey.</li> </ul>

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### **Issue: WASTE MANAGEMENT**

**NOTE: All jurisdictions require environmental monitoring.**

British Columbia	Nova Scotia	Newfoundland	New Brunswick	Norway	Washington	Maine	Chile	Scotland
<ul style="list-style-type: none"> <li>Although all jurisdictions require environmental monitoring, MAFF and WLAP monitoring requirements, in conjunction with federal CEAA, far exceed those of other jurisdictions.</li> <li>Baseline site information for benthic monitoring, sampling and reporting, and compliance with standards for chemical indicators in the benthic environment are required.</li> <li>Disposal of all wastes resulting from aquaculture operations, including domestic wastes from accommodation facilities and fish mortalities are regulated under the provincial <i>Waste Management Act</i> and the <i>Finfish Aquaculture Waste Control Regulation</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental monitoring required (<i>Provincial Environmental Monitoring Program</i> requirements).</li> <li>Wastes from aquaculture operations, including fish mortalities are regulated through conditions of licence.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental monitoring required.</li> <li>Wastes from aquaculture operations, including fish mortalities are regulated through conditions of licence.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental monitoring required (<i>Provincial Environmental Monitoring Program</i> requirements).</li> <li>Waste Management Plans required as condition of licence address waste management, chemical storage and handling, remediation, and record keeping.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental monitoring required.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental monitoring required.</li> <li>Baseline site information for benthic monitoring, sampling and reporting, and compliance with standards for chemical indicators in the benthic environment is required.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental monitoring required.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental monitoring required.</li> <li>Baseline site information for benthic monitoring, sampling and reporting, and compliance with standards for chemical indicators in the benthic environment is required.</li> <li>Aerobic conditions must be maintained in benthic sediment.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental monitoring required.</li> <li>Baseline site information for benthic monitoring, sampling and reporting, and compliance with standards for chemical indicators in the benthic environment is required.</li> </ul>